

CONSTRUCTION PROCEDURES HANDBOOK

SECTION VI	SUBSECTION H	DATE
CONSTRUCTION OPERATIONS	TRAFFIC SIGNAL MAINTENANCE, TURN ON AND ACCEPTANCE	09/16/2016

This procedure addresses maintenance, turn on, and acceptance of traffic signals.

Definitions:

Temporary Traffic Signal System – A new traffic signal system, to accommodate staging that did not exist prior to construction and is to be removed prior to Completion. The system may be modified more than once.

Interim Traffic Signal System – An existing traffic signal system that is modified during construction to provide timing and operation as shown on the Plans. The system may be modified more than once.

Traffic Signal – A new traffic signal that did not exist prior to construction and is to remain after Completion.

Traffic Signal Maintenance Responsibility During Construction

1. Prior to performing work on any component of an existing or new traffic signal, impeding traffic signal maintenance or modifying the configuration of the intersection, the Contractor is required to assume responsibility for the maintenance of the system until maintenance is formally assumed by the Department (or other agency)
2. The RE completes the RE and Contractor section of the Form [DC-14](#) for equipment transfer and sends a copy of the Form [DC-14](#) to the Regional Electrical Engineer (REE) and requests a date for the transfer suggesting three possible dates.

The REE will arrange a joint on-site inspection of the traffic signal with the Contractor, Electrical Operations, the REE and the RE. At the joint on-site inspection the REE will coordinate the preparation of the Form [EL-16C](#) documenting the conditions of the traffic signal system. After all parties agree that the information on the form is accurate, the Contractor will sign the form. The REE distributes copies of the completed Form [EL-16C](#) and Form [DC-14](#) to all parties at the inspection and the Bureau of Traffic Engineering (BTE) and Mobility Systems Engineering.

3. When the work on a signal has begun, the RE will notify the Contractor by letter of its responsibility for traffic signal maintenance in as specified in 702.03. The notice will document the traffic signal location and the date when the Contractor has assumed traffic signal maintenance. The RE will send a copy of the letter to the attention of the Manager, Bureau Traffic Engineering.

4. After the assumption of maintenance, the Contractor is responsible for the inspection of the traffic signal system as specified in 702.03.11. The Contractor is required to complete a Maintenance Traffic Signal Inspection Report Form [EL-16C](#) every two months after the Contractor assumes maintenance responsibility. The Contractor will provide a copy of the completed Form [EL-16C](#) to the RE. The RE will send a copy of the completed Form [EL-16C](#) to the REE and the BTE. The Contractor will also place a copy of the completed Form [EL-16C](#) in the controller cabinet. If the Contractor responds to a system failure or vehicular knock-down the RE will ensure the contractor fills out a Contractor Maintenance Emergency Call Record Form [EL-11C](#) which is supplied to the Contractor by the RE. The RE will send a copy of the completed [EL-11C](#) to the REE and the BTE.
5. The RE will notify the local municipal police department with the appropriate jurisdiction by letter that the Contractor is maintaining the traffic signal. In addition, the notice will include the Contractor's name and telephone number for emergency contact purposes.

Temporary and Interim Traffic Signal Turn-On

When a temporary or interim traffic signal system is ready to be activated, the RE will request an inspection by the Traffic Engineer and the REE. **The RE will provide a minimum of 10 working days for the inspection.** The signal will be placed into operation by the Contractor as authorized by the Traffic Engineer and the REE.

NOTE: If the Contractor requests a Traffic Control / Staging change not shown in the Contract documents, that impacts an existing or new traffic signal layout, a traffic signal and electrical Change of Plan must be prepared to address this situation and approved 3 days prior to the Traffic Signal Turn-On. The Change of Plan must be signed and sealed by a Professional Engineer, Electrical. This Plan is to be prepared by the Contractor, approved by the Designer, and reviewed by the Traffic Engineer. If the pavement markings or signs cannot be installed prior to or at the time of the inspection due to conflicts with existing pavement markings or signs still functioning, a plan needs to be worked out with the Contractor to address this issue prior to the day of the Traffic Signal Turn-On. This plan should be discussed with the Designer, Traffic Engineer, and REE to determine the actual time of the turn-on.

If the traffic signal and all associated signs and pavement markings are found to be acceptable, the traffic signal will be turned on. The RE will coordinate a time with the REE and Traffic Engineer. NOTE: If a temporary traffic signal is installed at an intersection, which did not have an existing traffic signal, the traffic signal will be placed on flashing mode for a period to be determined by the Traffic Engineer, and then placed on full operational mode. After the traffic signal has been turned on the Contractor is responsible for inspecting the signal every two months and following the procedures outlined in paragraph 4 of "Traffic Signal Maintenance Responsibility During Construction" above.

The RE will notify the local municipal police department with appropriate jurisdiction by letter that the temporary or interim traffic signal has been installed and is being maintained by the Contractor. In addition, the notice will include the Contractor's name and telephone number for emergency contact purposes.

Traffic Signal Turn-On

Signals under State and Local Jurisdiction

- a. The REE must confirm that the Traffic Signal agreement is in place and no modification is required with the BTE. The REE will contact the BTE at the time of the Precon to confirm that the traffic signal agreement, for each traffic signal to receive acceptance is in place. The execution of a Traffic Signal Agreement may take many months. The traffic signal agreement is only required for new signals and existing signals that were under other jurisdictions and are being turned over to the State. Under no circumstances will a traffic signal be turned on without an executed agreement.
- b. When a traffic signal system is ready to be turned on, the RE will request an inspection by the Traffic Engineer and the REE. **The RE will provide a minimum of 10 working days for the inspection.** The signal will be turned on by the Contractor as authorized by the Traffic Engineer and the REE.

If the traffic signal and all associated signs and pavement markings are found to be acceptable, it will be turned on. The RE will coordinate a time with the REE and Traffic Engineer. NOTE: If the traffic signal is installed at an intersection, which did not have an existing traffic signal, the traffic signal will be placed on flashing mode for a period to be determined by the Traffic Engineer, and then placed on full operational mode. After the traffic signal has been turned on, the Contractor is responsible for inspecting the signal every two months and following the procedures outlined in paragraph 4 of "Traffic Signal Maintenance Responsibility During Construction" above.

- c. The RE will notify the local municipal police department with the appropriate jurisdiction by letter that the traffic signal has been installed and is being maintained by the Contractor. In addition, the notice will include the Contractor's name and telephone number for emergency contact purposes.
- d. For traffic signals installed on roads under traffic, ensure the traffic signal is set on flashing mode for a period of 3 to 5 days (or as determined by the Traffic Engineer) prior to the Traffic Signal Acceptance Inspection. Unless required for staging purposes, the signal is set to operational mode (green, yellow, red) only when the signal is formally accepted. The Traffic Engineer will authorize how long the traffic signal is to remain in flashing mode. If a traffic signal is allowed to be set to operational mode, the REE will set it to the operational mode. NOTE: To place a signal in flash requires the participation of the Traffic Engineer and the REE.

Traffic Signal Acceptance**1. Signals under State Jurisdiction**

- a. Within 5 days of completion of all underground construction related to traffic signal work, the RE will prepare the electrical Red-Lines for the intersection and submit them to the REE. Red lines are the red penciled in record of changes to the electrical features not shown on the Plans. The RE will revise the electrical Red-Lines and resubmit them to the REE if changes to the underground construction occur.
- b. The REE will review the electrical Red-Lines and verify their accuracy within 3 days. If there are inaccuracies, the RE and REE will revise them as necessary.
- c. When the Red-Lines are accurate, the REE submits them to the Designer. The REE will submit a color PDF to the Designer via email.
- d. The Designer will complete and update the CADD file of the underground electrical and Traffic Signal Plans within 10 working days.
- e. The Designer will send an updated PDF of the electrical underground and Traffic Signal Plans to the REE via email and copy the RE.
- f. The REE has 5 days to review the accuracy of the underground electrical portion of the electrical and Traffic Signal Plans and respond. If the updated Plans are accurate the REE requests a Draft Traffic Signal Package (DTSP) from the Designer which includes:
 1. A compact disk (CD) containing PDFs of the Electrical and Traffic Signal Plan, the Micro-Station CADD file, a WORD formatted document of the timings.
 2. Eight printed copies of the Electrical and Traffic Signal Plans
- g. Upon receipt of the DTSP, the REE keeps a copy for the file and distributes the package as follows:
 1. The (CD) containing PDFs of the Electrical and Traffic Signal Plan, the Micro-Station CADD file, a WORD formatted document of the timings, Transmittal letter and a printed copy of the Electrical and Traffic Signal Plan stamped Draft to the BTE
 2. Two copies of the Electrical and Traffic Signal Plans stamped Draft to the RE.
 3. Two copies of the Electrical and Traffic Signal Plans stamped Draft to Electrical Operations.
- h. Upon receipt of the DTSP, the BTE, within 10 days, will review the CADD files for compliance with Departmental Standards. If deficiencies are found, the BTE will notify the Designer, with a list of deficiencies, and copy the RE & REE. The Designer will correct the deficiencies within 5 days and submit the corrected CADD files to the BTE and copy the RE & REE.
- i. The REE and RE monitor the progress of the work. This includes not only the electrical components, but also all the signing and striping associated with the intersection. If a Change of Plan which affects the signalized intersection is issued, the Designer will repeat step e above and the process will continue through this point. For other changes to the DTSP, the RE will contact the REE and the BTE and advise them of the changes. The REE and the BTE will advise the RE how to proceed. Minor changes to the DTSP will be corrected by the

BTE in the CADD files. The BTE will also confirm and as-built the above ground work. When all of the work for an intersection has been completed, the RE informs the REE and the BTE.

- j. The REE and RE will conduct a wiring inspection of the intersection and prepare an electrical list of incomplete and defective work within 2 days of the wiring inspection. The RE will provide the Contractor with the list. This list can be prepared as work progresses.
- k. Upon notification from the RE (See [DC-155 Project Closeout Workbook #C10A](#)) that all work for the intersection is complete, all those listed on DC-155 Project Closeout Workbook #C10A will conduct a preliminary inspection of the intersection **together** at the time indicated on the memo..
 - 1. If deficiencies are found a list of incomplete and defective work will be provided to the RE and the REE within 5 days of the preliminary inspection.
 - 2. The RE will provide the compiled list to the Contractor and those listed on the memo (See [DC-155 Project Closeout Workbook #C10B](#)) within 3 days of receiving the incomplete and defective work.
- l. The BTE prepares the Traffic Signal Directive and Traffic Signal Plan and makes required revisions to the Electrical Plan and signs the Traffic Signal Plan within 15 days of the preliminary inspection.
- m. The BTE will send an email notification to Electrical Operations and the REE informing them that the documents have been signed. The email notification will contain PDFs of the Electrical Plan, Traffic Signal Plan, and traffic signal directive.
- n. Upon receipt of the notification, the REE prepares and distributes copies of the electrical and Traffic Signal Plans.
- o. The REE will contact Electrical Operations to verify that the timing directive has been received.
- p. The REE informs the RE by email when Electrical Operations has received the timing directives. The RE will provide a copy of the Directive to the Contractor for the Traffic Signal Controller Representative.
- q. When the deficiencies noted at the preliminary inspection are corrected and the traffic signal directive has been received by Electrical Operations, the RE will arrange for a Traffic Signal Acceptance Inspection. Prior to arranging for a Traffic Signal Acceptance Inspection the RE will verify that all incomplete and defective work items have been completed. The RE will confirm with the Contractor availability of the appropriate Traffic Signal Controller Representative prior to scheduling Traffic Signal Acceptance date. The notice will indicate the name of the project and provide 10 working days' notice. (See [DC-155 Project Closeout Workbook #C10C](#)). The RE will ensure that no addition comments are provided by the reviewers. Only comments on incomplete and defective work found at the preliminary inspection will be accepted. However, only deficiencies that occurred after the preliminary inspection are acceptable comments.
- r. If there are deficiencies noted at the Traffic Signal Acceptance Inspection (See [DC-155 Project Workbook #C10D](#)), the RE will prepare a letter to the Contractor within 3 days of the Traffic Signal Acceptance Inspection compiling all identified deficiencies noted by any of the parties. When the deficiencies are corrected the RE informs the REE, the BTE and Electrical Operations by e-mail.

- s. If the traffic signal is acceptable, the RE will secure the necessary signatures on a Certificate of Traffic Signal Acceptance (See [DC-155 Project Workbook #C10E](#)). If the traffic signal is not acceptable the REE will hold the Certificate of Traffic Signal Acceptance until the deficiencies are corrected.
- t. The RE will maintain a file of the Traffic Signal Acceptances for the project. A copy of the Certificate of Traffic Signal Acceptance will be sent to the Regional Construction Engineer, the Traffic Engineer – BTE, the Electrical Operations Supervisor, and the Contractor. **NOTE:** Assumption of maintenance by the Department is considered as a Partial Acceptance as described by Subsection 108.16.
- u. The RE will notify the Contractor by letter that the manufacturer's/fabricator's/supplier's warranties are effective as of the date of Traffic Signal Acceptance. The notice will specify the traffic signal location and the date of Traffic Signal Acceptance. (See [DC-155 Project Workbook #C10G](#)).
- v. The RE will notify the local municipal police department within the appropriate jurisdiction by letter that Electrical Operations is maintaining the traffic signal. A previous notice of emergency contact concerning the traffic signal is to be rescinded.

2. Signals under Local Jurisdiction Constructed in Capital Program Management Projects

- a. Within 5 days of completion of all underground construction related to traffic signal work, the RE will prepare the electrical Red-Lines for the intersection and submit them to the REE. Red lines are the red penciled in record of changes to the electrical features not shown on the Plans. The RE will revise the electrical Red-Lines and resubmit them to the REE if changes to the underground construction occur.
- b. The REE will review the electrical Red-Lines and verify their accuracy within 3 days. If there are inaccuracies, the RE and REE will revise them as necessary.
- c. When the Red-Lines are accurate, the REE submits them to the Designer. The REE will submit a color PDF to the Designer via email.
- d. The Designer will complete and update the CADD file of the electrical and Traffic Signal Plans within 10 working days.
- e. The Designer will send an updated PDF of the electrical and Traffic Signal Plans to the REE via email and copy the RE.
- f. The REE has 3 days to review the accuracy of the electrical portion of the electrical and Traffic Signal Plans and respond. If the updated Plans are accurate the REE requests a Draft Traffic Signal Package (DTSP) from the Designer which includes:
 - 1. A compact disk (CD) containing PDFs of the Electrical and Traffic Signal Plan, the CADD file in a format acceptable to the Local Jurisdictional Authority, a WORD formatted document of the timings.
 - 2. Four printed copies of the Electrical and Traffic Signal Plans.
- g. Upon receipt of the DTSP, the REE keeps a copy for the file and distributes

the package as follows:

1. The (CD) containing PDFs of the Electrical and Traffic Signal Plan, the CADD file, a WORD formatted document of the timings, Transmittal letter and a printed copy of the Electrical and Traffic Signal Plan stamped Draft to the Local Jurisdictional Authority.
 2. Two copies of the Electrical and Traffic Signal Plans stamped Draft to the RE.
- h. The REE and RE monitor the progress of the work. This includes not only the electrical components, but also all the signing and striping associated with the intersection. If a Change of Plan which affects the signalized intersection is issued, the Designer will repeat step e and the process will continue through this point. For other changes to the DTSP, the RE will contact the REE and the BTE and advise them of the changes. The REE and the BTE will advise the RE how to proceed. Changes to the DTSP will be corrected by the Designer in the CADD files. Minor changes to the DTSP will be corrected by the BTE in the CADD files. When all of the work for an intersection has been completed, the RE informs the REE and the BTE.
- i. The REE, Local Jurisdiction and RE will conduct a wiring inspection of the intersection and prepare an electrical list of incomplete and defective work within 2 days of the wiring inspection. The RE will provide the Contractor with the list. This list can be done as work progresses.
- j. Upon notification from the RE (See [DC-155 Project Closeout Workbook #C10A](#)) that all work for the intersection is complete, all those listed on DC-155 Project Closeout Workbook #C10A will schedule and conduct a preliminary inspection of the intersection **together** at the time indicated on the memo.
1. If deficiencies are found a list of incomplete and defective work will be provided to the RE and the REE within 5 days of the preliminary inspection.
 2. The RE will provide the compiled list to the Contractor and those listed on the memo (See [DC-155 Project Closeout Workbook #C10B](#)) within 3 days of receiving the incomplete and defective work.
- k. When the deficiencies noted at the preliminary inspection are corrected, the RE will arrange for a Traffic Signal Acceptance Inspection. Prior to arranging for a Traffic Signal Acceptance Inspection the RE will verify that all incomplete and defective work items have been completed. The RE will confirm with the Contractor availability of the appropriate Traffic Signal Controller Representative prior to scheduling Traffic Signal Acceptance date. The notice will indicate the name of the project and provide 10 working days' notice. (See [DC-155 Project Closeout Workbook #C10C](#)). The RE will ensure that no additional comments are provided by the reviewers. Only comments on incomplete and defective work found at the preliminary inspection will be accepted. However, deficiencies that occurred after the preliminary inspection are acceptable comments.
- l. If there are deficiencies noted at the Traffic Signal Acceptance Inspection (See [DC-155 Project Closeout Workbook #C10D](#)), the RE will prepare a letter to the Contractor within 3 days of the Traffic Signal Acceptance Inspection compiling all identified deficiencies noted by any of the parties. When the

- deficiencies are corrected the RE informs the REE and the Bureau of Electrical Operations by e-mail.
- m. If the traffic signal is acceptable, the RE will secure the necessary signatures on a Certificate of Traffic Signal Acceptance (See [DC-155 Project Workbook #C10F](#)). If the traffic signal is not acceptable the REE will hold the Certificate of Traffic Signal Acceptance until the deficiencies are corrected.
 - n. The RE will maintain a file of the Traffic Signal Acceptances for the project. A copy of the Certificate of Traffic Signal Acceptance will be sent to the Regional Construction Engineer, the Traffic Engineer – BTE, Local Authority and the Contractor. **NOTE:** Assumption of maintenance by the Local Authority is considered as a Partial Acceptance as described by Subsection 108.16.
 - o. The RE will notify the Contractor by letter that the manufacturer's/fabricator's/supplier's warranties are effective as of the date of Traffic Signal Acceptance. The notice will specify the traffic signal location and the date of Traffic Signal Acceptance. (See [DC-155 Project Workbook #C10G](#)).
 - p. The RE will notify the local municipal police department within the appropriate jurisdiction by letter that local jurisdiction is maintaining the traffic signal. A previous notice of emergency contact concerning the traffic signal should be rescinded.