

TRAFFIC SIGNAL DESIGNER / REVIEWER CHECKLIST

The following checklist provides both the traffic signal designer and the TE/L&D Manager guidelines for preparing traffic signal plans during the different phases of design. The checklist correlates with the Project Development Process discussed in the [TEDM Section I – General, Chapter 2](#).

Project Name: _____
Project No: _____ UPC No: _____
TE/L&D Manager: _____
Traffic Signal Designer: _____
Advertisement Date: _____

SCOPING TEAM MEETING**DATE OF MEETING:** _____

➤ *The following actions should take place prior to or during the Scoping Team Meeting.*

- 1) Ensure that the limits of survey will accommodate the traffic signal design. (In proximity to traffic signals ensure that the construction limits adequately accommodate transitions between new and existing roadways, including side street termini).
- 2) Identify intersections to be considered for signalization or modification.
- 3) Identify other facilities within the project limits that will require traffic signal devices, (Schools, Safety Service Centers, etc.)
- 4) Identify other design elements that require early coordination with traffic signal design, (roadway lighting, signing, pavement markings, etc.).
- 5) Determine the agency and contact person that will own and maintain the traffic signals.
- 6) Determine the agency and contact person that will be responsible for the traffic signal design and plans.
- 7) Prepare project budget estimate.

Scoping review completed by: _____**Date reviewed:** _____

PRELIMINARY FIELD INSPECTION TEAM MEETING DATE OF MEETING: _____

➤ *The following actions should take place prior to or during the Preliminary Field Inspection Team Meeting.*

- 1) Send the Traffic Signal Design Questionnaire to the agency responsible for maintaining and operating the traffic signals (District, Residency, Municipality, etc). [\[Appendix IVB-1\]](#)

Sent To: _____ Date Sent: _____

- 2) Ensure a warrant, capacity and operational analysis of each signalized intersection has been completed.
- 3) Evaluate the roadway geometry and typical sections to ensure that appropriate right of way and (or) easements are provided for traffic signal infrastructure.
- 4) Address proprietary equipment requests. [\[Appendix IA-3\]](#), [\[Appendix IA-4\]](#)
- 5) Update project budget estimate.

PFI review completed by: _____

Date reviewed: _____

PUBLIC HEARING TEAM MEETING DATE OF MEETING: _____

➤ *The following actions should take place prior to or during the Public Hearing Team Meeting.*

- 1) Perform a traffic signal inventory (if signal(s) are to be modified).
- 2) Develop traffic signal base plans.
- 3) Ensure coordination of pedestrian paths, crosswalks and curb cuts with roadway designer.
- 4) Develop conceptual traffic signal plans showing pole/arm (mast arm and luminaire arm) arrangement and controller cabinet locations and lane assignments.
- 5) Determine availability of electrical power. [\[Appendix VB-3\]](#)
- 6) Verify right of way and (or) easements are provided for proposed traffic signal infrastructure.
- 7) Coordinate traffic signal design with structure and bridge designer when interconnect conduit or any other traffic signal equipment will be located on bridges.
- 8) Coordinate traffic signal plans with landscape, utility, median barriers, retaining walls, noise walls, etc.
- 9) Ensure coordination of all TCD plans.
- 10) Update project budget estimate.

Public Hearing review completed by: _____

Dated reviewed: _____

FIELD INSPECTION TEAM MEETING

DATE OF MEETING: _____

- *The following actions should take place prior to or during the Field Inspection Team Meeting.*

Signal Plan General Overview

- 1) Address public hearing comments.
- 2) Update conceptual traffic signal design plans with current roadway & utility design plans.

Signal Plan Coordination Issues

- 1) Determine local power provider contact person.
- 2) Coordinate power distribution with other TCD designers that require electrical service.
- 3) Verify traffic signal infrastructure is clear of overhead and underground utilities.

Construction Cost Estimate

- 1) Update project budget estimate.

F.I. review completed by: _____

Dated reviewed: _____

80% PLAN SUBMITTAL**DATE OF SUBMISSION:** _____

- *Advance to preliminary traffic signal design plans for review by Maintaining Jurisdiction, Residency, District Traffic and Utility Sections and Central Office. Plans are approximately 80% complete such that the reviewer can provide guidance.*

80% DESIGN ELEMENTS**Signal Plan Set General Overview****Stand alone Signal Plans**

- 1) Provide Title Sheet - includes latest design standard and specifications.
- 2) Provide Location Map.
- 3) Provide Revision Data Sheet.
- 4) Provide Survey & Alignment Data Sheets, if applicable.
- 5) Provide Maintenance of Traffic Sheets, if applicable.

Requirements for all Signal Plans

- 1) Use Sheet Cell from the VDOT Cell Libraries.
- 2) Incorporate design guidance provided in Traffic Signal Questionnaire. [\[Appendix IVB-1\]](#)
- 3) Provide Index of Sheets, (If applicable).
- 4) Provide Insertable Sheets.
- 5) Provide General Notes Sheet. [\[Appendix IVA-3\]](#), [\[Appendix IVB-7\]](#)
- 6) Show Project Data on plan sheets, (Project No., Series and Page No., etc.)
- 7) Show Scale, North Arrow, Match Lines, etc.

Signal Plan Coordination Issues**Roadway Plans**

- 1) Coordinate curb ramps with road designer. [\[Sec. IV, Chapter 4, 4.1, Step 7\]](#)
- 2) Ensure that poles, controller cabinets, conduits and junction boxes are not in conflict with drainage structures, retaining wall tiebacks, etc.
- 3) Evaluate proposed or existing grades for suitable installation of the pole foundations and trenching of conduit.
- 4) Reference associated roadway plan sheets in the reference box on signal plan sheet, (Series No. and Page No.). [\[Appendix IVA-5\]](#)

Pavement Marking/Marker Plans

- 1) Coordinate or locate crosswalks with regards to curb ramps and pedestrian signal heads and pushbuttons. [\[Sec. IV, Chapter 4, 4.1, Step 6\]](#)
- 2) Coordinate or locate stop bars. [\[Sec. IV, Chapter 4, 4.1, Step 8\]](#)
- 3) Coordinate pavement marking legends, (“Arrows”, “Only”, etc.) and confirm they agree with traffic signal operation, (phasing diagrams and signal head displays).
- 4) Reference associated pavement markings plan sheet in the reference box on signal plan sheet, (Series No. and Page No.). [\[Appendix IVA-5\]](#)

Sign Plans

- 1) Reference sign schedule sign and text numbers on signal plan sheet. [\[Appendix IVA-5\]](#)

80% PLAN SUBMITTAL (CONTINUED)

- 2) Reference associated sign plan sheet in the reference box on signal plan sheet, (Series No. and Page No.). [\[Appendix IVA-5\]](#)

Lighting, Utilities & Bridges Plans

- 1) Identify power source for combination luminaire signal poles and show luminaire electrical service connection. [\[Appendix VB-3\]](#)
- 2) Coordinate electrical wiring for combination luminaire signal poles with lighting design. [\[Sec. V, Chapter 4, 4.5.2\]](#)
- 3) Orient combination luminaire signal poles in accordance with the lighting design. [\[Sec. V, Chapter 4, 4.5.2\]](#)
- 4) Verify power provider approves traffic signal electrical service connection location. [\[Sec. IV, Chapter 4, 4.1, Step 11\]](#)
- 5) Ensure signal poles, mast arms, pedestal poles, etc. are not in conflict with underground or overhead utilities.
- 6) Ensure conduits and junction chambers are provided by the structure and bridge designer, if required.
- 7) Reference lighting, utility and bridge plan sheets in the reference box on signal plan sheet, (Series No. and Page No.). [\[Appendix IVA-5\]](#)

Signal Plan Layout

- 1) Update traffic signal plan base sheets with most current roadway design plan sheets. [\[Sec. IV, Chapter 4, 4.1, Step 2\]](#)
- 2) Ensure all traffic signal infrastructure is within right of way or authorized easements.
- 3) Verify traffic signal infrastructure (poles, foundations, cabinets, etc) is free from conflict with underground and overhead utilities.
- 4) Locate traffic signal structures either outside of clear zone, protected by guardrail or made breakaway design.
- 5) Locate vehicle signal heads properly and in accordance with guidance provided in the Traffic Signal Questionnaire and MUTCD. [\[Sec. IV, Chapter 4, 4.1, Step 9\]](#)
- 6) Verify pedestrian signal heads are in proximity to and visible within crosswalk. [\[Sec. IV, Chapter 4, 4.1, Step 9\]](#)
- 7) Ensure pedestrian pushbuttons are located correctly and readily accessible from the sidewalk, (meets ADA requirements). [\[Sec. IV, Chapter 4, 4.1, Step 10\]](#)
- 8) Locate the controller cabinet where maintenance activities will least likely be hindered. [\[Sec. IV, Chapter 4, 4.1, Step 11\]](#)
- 9) Identify electrical service type for the traffic signal on plan sheet and ensure it agrees with Summary of Quantities pay item. [\[Sec. IV, Chapter 4, 4.1, Step 11\]](#)
- 10) Provide electrical grounding conductors on plan sheet and included in Summary of Quantity pay items.
- 11) Ensure signal equipment (heads, pushbuttons, detections and specialty devices) are wired correctly. [\[Sec. IV, Chapter 4, 4.1, Step 14\]](#)

80% Plan Submittal (continued)

- 12) Show and label traffic signal mast arm or pole mounted signs, signals, video detection equipment, preemption equipment, etc. correctly. These items must be located and detailed in the signal pole legend. [[Sec. IV, Chapter 4, 4.1, Step 16](#)]
- 13) Detail Traffic Signal Pole Legend correctly. [[Sec. IV, Chapter 4, 4.1, Step 17](#)], [[Sec. IV, Chapter 4, 4.1, Step 18](#)]
- 14) Show traffic signal head detail correctly. [[Sec. IV, Chapter 4, 4.1, Step 18](#)]
- 15) Show phasing diagram correctly. [[Sec. IV, Chapter 4, 4.1, Step 18](#)]
- 16) Verify phase numbering convention is correct. [[Sec. IV, Chapter 2, 2.2.7](#)]
- 17) Ensure signal poles are located correctly, (signal heads must be greater than 40-feet and less than 180-feet from the stop bar, otherwise near side signal poles and signal heads will be required to satisfy this MUTCD requirement).
- 18) Verify correct luminaire mounting height is called out for combination luminaire mast arm poles.
- 19) Ensure loop detector size and location relative to the stop bars are correct. [[Sec. IV, Chapter 4, 4.1, Step 12](#)]
- 20) Verify video detection equipment locations are correct and ensure a note is provided in the plan set stating the contractor is to coordinate with the Engineer for field adjustments of the detection zones.
- 21) Verify all junction boxes, conduits and pipe sleeves, are proper size and type. Ensure that the junction boxes, conduits and pipe sleeves are properly located and not in conflict with other infrastructure. [[Sec. IV, Chapter 4, 4.1, Step 13](#)], [[Sec. IV, Chapter 4, 4.1, Step 15](#)]
- 22) Verify all plan sheet notes, summary notes, general notes and legends are correct. [[Sec. IV, Chapter 4, 4.1, Step 18](#)], [[Appendix IVA-5](#)]
- 23) Verify all charts are correct, (color sequence chart, clearance chart, loop detector amplifier chart, etc.). [[Sec. IV, Chapter 4, 4.1, Step 18](#)], [[Appendix IVA-5](#)]

Construction Cost Estimate

- 1) Show all Standard and Non-Standard Pay Items in the Summary of Quantities sheet.
- 2) Unit quantities do not need to be shown on Summary of Quantities sheet for this submittal.
- 3) Prepare construction cost estimate.

80% Plan Submittal (continued)
Submit Plan To: (If Applicable)

	Contact Person	Date Sent
Municipality	_____	_____
VDOT, Residency	_____	_____
VDOT, District Regional Engineering	_____	_____
VDOT, District Utilities Section	_____	_____
VDOT, CO – Traffic Engineering (L&D)	_____	_____
VDOT, CO – Traffic Engineering Division	_____	_____
VDOT, Scheduling and Construction	_____	_____
FHWA	_____	_____

80% review completed by: _____
Dated reviewed: _____

QC PLAN SUBMITTAL**DATE OF SUBMISSION:** _____

- *Advance the 80% traffic signal design plans to 100% design completion.*

Respond / Incorporate Review Comments From:

- 1) Municipality (if applicable)
- 2) VDOT, Residency
- 3) VDOT, Regional Traffic Engineering
- 4) VDOT, District Utilities Section
- 5) VDOT, CO – Traffic Engineering (L&D)
- 6) VDOT, CO – Traffic Engineering Division
- 7) VDOT, Scheduling and Construction
- 8) FHWA

Constructability Check

- 1) Ensure clear zone requirements are met.
- 2) Verify traffic signal infrastructure is outside of the deflection clearance of guardrails.
- 3) Update plans with other design disciplines to ensure that conflicts with drainage, utilities (overhead or underground) and landscaping have not been created with design revisions.
- 4) Verify right of way and (or) easements remain sufficient to install traffic signal infrastructure.

Plan Sheets

- 1) Finalize General Notes and Plan Notes.
- 2) Finalize traffic signal plan call-outs for conduits, junction boxes, signal pole legends, plan sheet references, sign details, etc.
- 3) Ensure plan sheet call-outs are consistent with legend and Summary of Quantities pay items, and Transport pay items.
- 4) Perform quantity take-offs and verify each pay item in the project is accounted for in the Summary of Quantities.

Plan Detail Sheets

- 1) Special plan details
- 2) Insertable sheets

Summary of Quantities / Special Provisions

- 1) Finalize Summary of Quantities Sheet. [[Appendix IVA-4](#)]
- 2) Cross check measurement and payment for each pay item and ensure it matches the VDOT standard items or non-standard items as discussed in the Specifications, Special Provisions and/or Special Provision Copied Notes. [[Sec. I, Chapter 3, 3.8](#)]
- 3) Discuss in detail the Special Provisions and Special Provision Copied Notes with Traffic Engineering Division Specifications Section.

QC PLAN SUBMITTAL (continued)

Construction Cost Estimate

- 1) Verify TRNS·PORT quantities match Summary of Quantities sheet.
- 2) Develop costs estimates per unit price for non-standard pay items and review with TE/L&D Manager.

Plan Set Submitted

- 1) Title Sheet (Stand alone project)
- 2) Location Map (Stand alone project)
- 3) Index of Sheets
- 4) Revision Data Sheet (Stand alone project)
- 5) Survey & Alignment (Stand alone project)
- 6) Maintenance of Traffic (Stand alone project)
- 7) General Notes
- 8) Insertable Sheets
- 9) Summary of Quantities Sheet
- 10) Plan Detail Sheets
- 11) Plan Sheets

Special Provisions Submitted

- 1) Special Provisions: _____
- 2) Non-Standard Items: _____

Up-Load Plans to Falcon in TIF format.

Date complete: _____

- 1) Create Plan Index in Excel format.

QA review completed by: _____

Dated reviewed: _____

PRE-ADVERTISEMENT CONFERENCE

DATE OF MEETING: _____

➤ *Advancing 100% design plans and specifications to construction plan set.*

Respond / Incorporate Review Comments From:

- 1) Municipality (if applicable)
- 2) VDOT, Residency
- 3) VDOT, Regional Traffic Engineering
- 4) VDOT, District Utilities Section
- 5) VDOT, CO – Traffic Engineering (L&D)
- 6) VDOT, CO – Traffic Engineering Division
- 7) VDOT, Scheduling and Construction
- 8) FHWA

Update Plans on Falcon. **Date complete:** _____

Up-Load Plans to Falcon in TIF format. **Date complete:** _____

- 1) Up-date Plan Index.

Revise Special Provisions. **Date complete:** _____

Update TRNS-PORT Cost Estimate. **Date complete:** _____

- 1) Verify updated TRNS-PORT quantities match Summary of Quantities sheet.

PAC review completed by: _____

Dated reviewed: _____