PDN Stage 3 - Signals QC Checklist

|  |  |
| --- | --- |
| **SPOT ID/Project TIP #:** |  Click or tap to edit. |
| **Signal Inventory No.** |  Click or tap to edit. |
| **County:** |  Click or tap to edit. |

3SG1 Complete Signal Design

| **Item #** | **Review Item** | **Yes** | **No** | **N/A** |  |
| --- | --- | --- | --- | --- | --- |
|  | **Signal Plan Sheets** |  |  |  |  |
|  | Upper Title Block |[ ] [ ] [ ]   |
|  | All Data Included in Title Block in Correct Format |[ ] [ ] [ ]   |
|  | Lower Title Block |[ ] [ ] [ ]   |
|  | All Data Included in Title Block in Correct Format |[ ] [ ] [ ]   |
|  | Temporary – Phase & Step Number (i.e.: Signal Upgrade Temporary Design 1 TCP Phase x) |[ ] [ ] [ ]   |
|  | PEF Logo (PEF Plans) |[ ] [ ] [ ]   |
|  | DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED |[ ] [ ] [ ]   |
|  | Base Map |[ ] [ ] [ ]   |
|  | Edge of Pavement, Curb & Gutter, Paved Shoulder (Dashed Existing, Solid Proposed) |[ ] [ ] [ ]   |
|  | Right of Way Lines and/or Easement |[ ] [ ] [ ]   |
|  | Route Numbers & Street Names |[ ] [ ] [ ]   |
|  | Speed and Grade - Speeds match signing plans unless design speed used |[ ] [ ] [ ]   |
|  | Existing Poles / New Poles and Stations or Inset |[ ] [ ] [ ]   |
|  | Bridges & Approach Slabs, Driveways, Islands, Sidewalks, Fire Hydrants, Buildings, Large Signs, Trees, etc. |[ ] [ ] [ ]   |
|  | Area of Construction (Shade-Level 60) |[ ] [ ] [ ]   |
|  | Railroad Features and Designation |[ ] [ ] [ ]   |
|  | Check that Scale Matches Title Block |[ ] [ ] [ ]   |
|  | Curb Ramps |[ ] [ ] [ ]   |
|  | Pavement Markings |[ ] [ ] [ ]   |
|  | Stop Bars Laid Out Per Design Manual |[ ] [ ] [ ]   |
|  | Temporary Stop Bar Locations provided to Traffic Control (or PEF) |[ ] [ ] [ ]   |
|  | Final Stop Bar Locations provided to Signing and Delineation (or PEF) |[ ] [ ] [ ]   |
|  | Show Movement Arrows for each Lane (not markings) |[ ] [ ] [ ]   |
|  | Other Markings Match Traffic Control Plans or Final Pavement Marking Plans |[ ] [ ] [ ]   |
|  | Signal Design |[ ] [ ] [ ]   |
|  | New Poles with Station & Offset, or Reference Dimensions |[ ] [ ] [ ]   |
|  | Span Wires/Span Ties/Down Guys |[ ] [ ] [ ]   |
|  | Signal Heads Correctly Located, Depicted, and Numbered |[ ] [ ] [ ]   |
|  | Pedestrian Heads and Numbering |[ ] [ ] [ ]   |
|  | APS- if required |[ ] [ ] [ ]   |
|  | Pushbuttons located 10 feet apart if obtainable |[ ] [ ] [ ]   |
|  | All Appropriate Signal Signs Correctly Located, Depicted, and Numbered |[ ] [ ] [ ]   |
|  | Controller – new or existing |[ ] [ ] [ ]   |
|  | Loops Numbered (New Solid, Existing Dashed) |[ ] [ ] [ ]   |
|  | Lead-in for Each Loop |[ ] [ ] [ ]   |
|  | Pull Boxes (Max. 150’ Apart) |[ ] [ ] [ ]   |
|  | Conduit Symbol (New or Existing) or Label “Direct Bury” |[ ] [ ] [ ]   |
|  | Directional Drill for metal poles with mast arms |[ ] [ ] [ ]   |
|  | Back to Back Left Turn Conflict |[ ] [ ] [ ]   |
|  | Signal Face I.D. |[ ] [ ] [ ]   |
|  | Signal Heads Match Phasing |[ ] [ ] [ ]   |
|  | Ped. Heads and Sizes (Countdown standard) |[ ] [ ] [ ]   |
|  | Signal Heads Numbered Correctly - Shown in Order in Signal Face ID |[ ] [ ] [ ]   |
|  | Head Sizes |[ ] [ ] [ ]   |
|  | Special Features Shown (Louvers, Optically Programmed, Bi-Modal, Etc.), Denotes LED Note |[ ] [ ] [ ]   |
|  | Table of Operations |[ ] [ ] [ ]   |
|  | All Heads Listed |[ ] [ ] [ ]   |
|  | All Phases Listed |[ ] [ ] [ ]   |
|  | Phases in Correct Order |[ ] [ ] [ ]   |
|  | Flash Entered Correctly |[ ] [ ] [ ]   |
|  | Operation Shown Correctly |[ ] [ ] [ ]   |
|  | Phasing Diagram |[ ] [ ] [ ]   |
|  | Correct Phasing Diagram |[ ] [ ] [ ]   |
|  | Alternate phasing used? If so, provide documentation from DTE staff |[ ] [ ] [ ]   |
|  | Phases Numbered Correctly |[ ] [ ] [ ]   |
|  | Detected Movements Indicated |[ ] [ ] [ ]   |
|  | Free Flow and Yield Conditions Shown |[ ] [ ] [ ]   |
|  | Pedestrian Movements Shown |[ ] [ ] [ ]   |
|  | Overlaps Shown |[ ] [ ] [ ]   |
|  | RR Tracks Shown |[ ] [ ] [ ]   |
|  | Preemption Phasing Diagram and Phases Shown Correctly |[ ] [ ] [ ]   |
|  | Timed Overlap (TOL) Shown Correctly |[ ] [ ] [ ]   |
|  | Phasing Diagram Legend |[ ] [ ] [ ]   |
|  | Lag Operation at Tees |[ ] [ ] [ ]   |
|  | RTOL where applicable |[ ] [ ] [ ]   |
|  | Arrows Between Phases in Correct Direction |[ ] [ ] [ ]   |
|  | Red Revert used – If appropriate |[ ] [ ] [ ]   |
|  | Timing Chart |[ ] [ ] [ ]   |
|  | Correct Chart for Controller software / signal system / municipality |[ ] [ ] [ ]   |
|  | All Phases & TOLs Listed  |[ ] [ ] [ ]   |
|  | Basic Timing Parameters Entered  |[ ] [ ] [ ]   |
|  | Yellow and Red Change and Clearance Intervals |[ ] [ ] [ ]   |
|  | Recall Position/Call Memory/Dual Entry |[ ] [ ] [ ]   |
|  | Pedestrian Timing Parameters Entered |[ ] [ ] [ ]   |
|  | Volume Density Times Entered |[ ] [ ] [ ]   |
|  | Appropriate Preemption Chart and Values |[ ] [ ] [ ]   |
|  | Loop Chart |[ ] [ ] [ ]   |
|  | Correct Chart for Controller |[ ] [ ] [ ]   |
|  | All Loops Listed (Including System Loops) |[ ] [ ] [ ]   |
|  | Sizes/Number of Turns/Location shown and Correct |[ ] [ ] [ ]   |
|  | Video detection and/or Out of Pavement Detection shown properly |[ ] [ ] [ ]   |
|  | New or Existing Loop |[ ] [ ] [ ]   |
|  | Phase |[ ] [ ] [ ]   |
|  | New/Existing Unit/Card |[ ] [ ] [ ]   |
|  | Loop Programmed Correctly |[ ] [ ] [ ]   |
|  | Notes/Legend |[ ] [ ] [ ]   |
|  | All Applicable Notes Used |[ ] [ ] [ ]   |
|  | Includes Everything Reference on Plan |[ ] [ ] [ ]   |
|  | Signs Designed Correctly |[ ] [ ] [ ]   |
|  | Directional Drill Number of Conduits |[ ] [ ] [ ]   |
|  | Metal Pole Loading Diagrams |[ ] [ ] [ ]   |
|  | Correct Wind Zone |[ ] [ ] [ ]   |
|  | Correct Notes |[ ] [ ] [ ]   |
|  | Attachment Heights/Elevation Differences |[ ] [ ] [ ]   |
|  | Mastarm Orientations Correct |[ ] [ ] [ ]   |
|  | Load Shown Matches Legend |[ ] [ ] [ ]   |
|  | **Electrical Detail Sheets** |  |  |  |  |
|  | Upper Title Block |[ ] [ ] [ ]   |
|  | All Data Included in Title Block in Correct Format |[ ] [ ] [ ]   |
|  | Lower Title Block |[ ] [ ] [ ]   |
|  | All Data Included in Title Block in Correct Format |[ ] [ ] [ ]   |
|  | Temporary – Phase & Step Number (i.e.: Signal Upgrade Temporary Design 1 TCP Phase x) |[ ] [ ] [ ]   |
|  | PEF Logo (PEF Plans) |[ ] [ ] [ ]   |
|  | Electrical Detail Sheet # of # |[ ] [ ] [ ]   |
|  | DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED |[ ] [ ] [ ]   |
|  | Signal Plan I.D. Box |[ ] [ ] [ ]   |
|  | Signal Inventory Number |[ ] [ ] [ ]   |
|  | All Appropriate Signal Desgin/Sealed/Revised Dates |[ ] [ ] [ ]   |
|  | General Electrical Detail Notes |[ ] [ ] [ ]   |
|  | Flash Block Setup |[ ] [ ] [ ]   |
|  | Dual Entry |[ ] [ ] [ ]   |
|  | Volume Density Programming |[ ] [ ] [ ]   |
|  | Startup Sequence |[ ] [ ] [ ]   |
|  | Startup Pedestrian Calls |[ ] [ ] [ ]   |
|  | Software or Plan Specific Programming Instructions |[ ] [ ] [ ]   |
|  | Detector Logging |[ ] [ ] [ ]   |
|  | Signal System Information |[ ] [ ] [ ]   |
|  | Equipment Information |[ ] [ ] [ ]   |
|  | Controller/Cabinet/Cabinet Mount/Software |[ ] [ ] [ ]   |
|  | Output File Positions |[ ] [ ] [ ]   |
|  | Load Switches Used |[ ] [ ] [ ]   |
|  | Phases and Overlaps Used |[ ] [ ] [ ]   |
|  | Plan Specific Notes |[ ] [ ] [ ]   |
|  | Signal Head Hook-up Chart |[ ] [ ] [ ]   |
|  | Hook-up Chart Appropriate for Cabinet Being Used |[ ] [ ] [ ]   |
|  | Load Switches Labeled with Phase of Overlap Assignment |[ ] [ ] [ ]   |
|  | Signal Head Numbers |[ ] [ ] [ ]   |
|  | Field Terminal Numbers (Ball or Arrow Indications) |[ ] [ ] [ ]   |
|  | Flashing Yellow Arrows |[ ] [ ] [ ]   |
|  | Pedestrian Heads |[ ] [ ] [ ]   |
|  | Load Resistors |[ ] [ ] [ ]   |
|  | Are Load Switches Assigned so that Signal Heads on Same Span Flash Concurrently |[ ] [ ] [ ]   |
|  | Chart Legend and/or Notes |[ ] [ ] [ ]   |
|  | Conflict Monitor |[ ] [ ] [ ]   |
|  | Conflict Monitor Type |[ ] [ ] [ ]   |
|  | Watchdog Enable Switch "ON" |[ ] [ ] [ ]   |
|  | Options Switches |[ ] [ ] [ ]   |
|  | FYA Switches |[ ] [ ] [ ]   |
|  | SSM Switches |[ ] [ ] [ ]   |
|  | List of Diode Jumpers to Remove |[ ] [ ] [ ]   |
|  | Program Card Diagram with Appropriate Jumpers Removed |[ ] [ ] [ ]   |
|  | Yellow Disable Jumpers |[ ] [ ] [ ]   |
|  | Card and Table Programmed Appropriately (NEMA) |[ ] [ ] [ ]   |
|  | Monitor Specific Notes |[ ] [ ] [ ]   |
|  | Input File Position Layout |[ ] [ ] [ ]   |
|  | Vehicle Detector Cards (And System Detectors if Applicable) |[ ] [ ] [ ]   |
|  | Pedestrian DC Isolators |[ ] [ ] [ ]   |
|  | Emergency Vehicle Preemption Detectors |[ ] [ ] [ ]   |
|  | Railroad Preemption AC Isolator |[ ] [ ] [ ]   |
|  | Flash Sense and Stop Time DC Isolator |[ ] [ ] [ ]   |
|  | Empty Slots Labeled |[ ] [ ] [ ]   |
|  | Wired Inputs Labeled |[ ] [ ] [ ]   |
|  | Video, Microwave, or Other Out of Pavement Detection |[ ] [ ] [ ]   |
|  | Legend and/or Notes |[ ] [ ] [ ]   |
|  | Input File Connection and Programming Chart |[ ] [ ] [ ]   |
|  | Loop Number |[ ] [ ] [ ]   |
|  | Loop Terminal |[ ] [ ] [ ]   |
|  | Input File Position |[ ] [ ] [ ]   |
|  | Pin Number |[ ] [ ] [ ]   |
|  | Input Assignment Number (if applicable) |[ ] [ ] [ ]   |
|  | Detector Number |[ ] [ ] [ ]   |
|  | Phase Assigned |[ ] [ ] [ ]   |
|  | Detector Attributes (Call, Extend, Full Time Delay, Use Added Init. Etc.) |[ ] [ ] [ ]   |
|  | Delay Time |[ ] [ ] [ ]   |
|  | Extend (Stretch) Time |[ ] [ ] [ ]   |
|  | Wired Inputs |[ ] [ ] [ ]   |
|  | Pedestrian Detectors |[ ] [ ] [ ]   |
|  | Time of Day Detectors |[ ] [ ] [ ]   |
|  | Video, Microwave, or Other Out of Pavement Detectors |[ ] [ ] [ ]   |
|  | Time of Day Programming Notes |[ ] [ ] [ ]   |
|  | System Detector Programming Notes |[ ] [ ] [ ]   |
|  | Wired Input Notes |[ ] [ ] [ ]   |
|  | Note to Install DC Isolators in Input File |[ ] [ ] [ ]   |
|  | Misc. Software Programming Details |[ ] [ ] [ ]   |
|  | Overlap Programming Detail |[ ] [ ] [ ]   |
|  | Logic Processor Programming Detail |[ ] [ ] [ ]   |
|  | Countdown Pedestrian Head Programming Note |[ ] [ ] [ ]   |
|  | Phase Sequence Detail |[ ] [ ] [ ]   |
|  | Input Re-assignment Detail |[ ] [ ] [ ]   |
|  | Output Re-Assignment Detail |[ ] [ ] [ ]   |
|  | Load Switch Assignment Detail |[ ] [ ] [ ]   |
|  | Vehicle or Pedestrian Detector Programming Detail |[ ] [ ] [ ]   |
|  | Preemption Programing Detail (Emergency, Rail, Queue, etc.) |[ ] [ ] [ ]   |
|  | Backup Protection Programming Detail |[ ] [ ] [ ]   |
|  | Advance Flasher/Beacon Programming Detail |[ ] [ ] [ ]   |
|  | Other Special Software Programming Detail |[ ] [ ] [ ]   |
|  | Misc. Hardware Details |[ ] [ ] [ ]   |
|  | Flasher Circuit Modification Detail |[ ] [ ] [ ]   |
|  | Load Resistor Installation Detail |[ ] [ ] [ ]   |
|  | Railroad Preemption Wiring Detail |[ ] [ ] [ ]   |
|  | AC Isolator Card Programming Detail |[ ] [ ] [ ]   |
|  | EV Preemption Wiring Detail |[ ] [ ] [ ]   |
|  | Advance Flasher/Beacon Wiring Detail |[ ] [ ] [ ]   |
|  | Wireless Radio Wiring Detail |[ ] [ ] [ ]   |
|  | Other Special Hardware Detail |[ ] [ ] [ ]   |
|  | **Quantity and Cost Estimates** |  |  |  |  |
|  | All Appropriate Standard Pay Items Identified and Included |[ ] [ ] [ ]   |
|  | Non-Standard Pay Items Identified and Included |[ ] [ ] [ ]   |
|  | Linear Quantities Include Vertical Components where Applicable |[ ] [ ] [ ]   |
|  | Latest ITS & Signals Quantity Spreadsheet Used |[ ] [ ] [ ]   |
|  | All Required Conduit Sizes Included |[ ] [ ] [ ]   |
|  | **Project Special Provisions** |  |  |  |  |
|  | Latest Version of ITS & Signal Project Special Provisions Used |[ ] [ ] [ ]   |
|  | All Pay Items Identified as SP are Included |[ ] [ ] [ ]   |
|  | Unused Items Deleted from Provisions |[ ] [ ] [ ]   |
|  | Special Provision Created for Non-Standard or New Items |[ ] [ ] [ ]   |
|  | Document Named According to Convention and Sealed |[ ] [ ] [ ]   |
|  | **Project Documentation** |  |  |  |  |
|  | Provide Autoturn Simulations for Left-Turning Vehicles forall Signal Designs |[ ] [ ] [ ]   |
|  | Provide Clearance Distance Sheets for Clear Time Calculations for all Signal Designs |[ ] [ ] [ ]   |
|  | Provide Signed Clearance Calculations for all Signal Designs |[ ] [ ] [ ]   |
|  | Provide Approach Grade Documentation for all Signal Designs |[ ] [ ] [ ]   |
|  | Provide Counts and Phasing Justifications for all Signal Designs |[ ] [ ] [ ]   |
|  | Provide Correspondence with NCDOT or Municipal |[ ] [ ] [ ]   |
|  | Metal Poles |[ ] [ ] [ ]   |
|  | Provide Appropriate Elevations and Calculations of Metal Pole Clearances |[ ] [ ] [ ]   |
|  | Provide Standard Strain Pole Selection Spreadsheet |[ ] [ ] [ ]   |
|  | Provide the Controller Database or Config file for each Design |[ ] [ ] [ ]   |

*For items marked* ***No*** *that require further explanation, provide comments or action items in the table below.*

| **Item #** | **Comments and Action Items** |
| --- | --- |
|  Click to edit. |  Click to edit. |

|  |
| --- |
| ***This checklist may not be comprehensive to every project. It is the responsibility of the reviewer to ensure that an adequate review is performed.******I have reviewed the plans for consistency with this checklist and confirmed that all items have been completed.*** |
| **QC Reviewer Name:** |  Click to edit. | **Date:** |  Click to edit. |
| **QC Reviewer (Signature):** |  |  |  |