Monroe County Traffic Signal Guidelines (rev 8-28-2025)

1. Design Requirements

Traffic Signal Poles	Payment Items / Notes
Mast arm poles are required for new or replacement signals. Mounting height for all mast arms shall be 20'. Use NYSDOT pay items (not the "MO" specs). Do not use "Fatigue" deisgn poles. Vibration dampener required for arm lengths above 40'. Include County signal detail for anchor bolt pattern options and post-to-arm connection dimensions.	680.6220XX: TRAFFIC SIGNAL POLE, MAST ARM, 20 FEET MOUNTING HEIGHT,XX FEET ARM LENGTH 680.6320YY: TRAFFIC SIGNAL POLE WITH DUAL ARMS, 20 FEET MOUNTING HEIGHT, YY FEET ARM LENGTH 680.64XXYY04: TRAFFIC SIGNAL POLE WITH MAST ARM WITH LIGHTING ARM, XX FEET MOUNTING HEIGHT, YY FEET ARM LENGTH 680.65XXYY04: TRAFFIC SIGNAL POLE WITH DUAL MAST ARM WITH LIGHTING ARM, XX FEET MOUNTING HEIGHT, YY FEET ARM LENGTH
All Trafffic Signal Mast Arms and Poles, shall meet NYSDOT structual guidance.	
3' Minimum Horizontal Clearance from edge of pavement/curb to edge of foundation.	
Where feasible (typically 3 legged intersections), dual mast arm designs are preferred.	680.6320YY: TRAFFIC SIGN. POLE-DUAL MAST ARM 20 FEET MOUNTING HEIGHT YY FEET ARM LENGTH

Pedestrian Signals	Payment Items / Notes
Use 16" x 18" ped heads	680.813109: PEDESTRIAN SIGNAL SECTION - POLYCARBONATE, TYPE 1 FOR 16 INCH BY 18 INCH LED MODULE 680.821618MO: 16x18 PEDESTRIAN SIGNAL - PERSON (FULL) HAND (FULL) 2 DIGIT COUNTDOWN TIME MODULE - TYPE A UNITS 680.813104: INSTALL LED PEDESTRIAN SIGNAL MODULE
Individual Indication Pedestrian Pole - 8' Aluminum post top mount poles.	680.670802: PEDESTRIAN SIGNAL POLE POST TOP MOUNT, 8 FEET OVERALL POLE HEIGHT ALUMINIUM 680.8142: PEDESTRIAN SIGNAL POST TOP MOUNT ASSEMBLY
Dual Indication Pedestrian Pole - 10' Aluminum post top mount poles (non-tapered 4.5" diameter).	680.681002: PEDESTRIAN SIGNAL POLE - BRACKET MOUNTY 10 FEET OVERALL POLE HEIGHT - ALUMINIUM 680.8141: PEDESTRIAN SIGNAL BRACKET MOUNT ASSEMBLY
Signal modifications will require the installation of APS for ADA compliance. Use County detail for pedestrian poles (buttons must be Polara, 9" x 15" sign)	680.8151: ACCESSIBLE PEDESTRIAN SIGNAL (APS) W/O POST
Foundations - Follow MCDOT Traffic Signal Construction Details	680.5001: POLE EZCAVATION AND CONCRETE FOUNDATION
When locating new ped heads, use traffic signal poles when possible (one APS on signal pole, the 2nd one on a separate ped pole). Two APS can be installed on a single pole if absolutely necessary (custom voice messages needed for these instances)	
Pedestrian signal push buttons shall be installed at a height of 3'-6" (42" centerline of push button) to meet ADA, MUTCD and NYSDOT sheet requirements.	

Traffic Signals	Payment Items / Notes
Minimum of two (2) signal heads will be required on each approach	680.810121MO LED TRAFFIC SIGNAL MODULE - 12 INCH DIAMETER, RED BALL 680.810122MO LED TRAFFIC SIGNAL MODULE - 12 INCH DIAMETER, RED ARROW 680.810123MO LED TRAFFIC SIGNAL MODULE - 12 INCH DIAMETER, YELLOW BALL 680.810124MO LED TRAFFIC SIGNAL MODULE - 12 INCH DIAMETER, YELLOW ARROW 680.810125MO LED TRAFFIC SIGNAL MODULE - 12 INCH, DIAMETER GREEN BALL 680.810126MO LED TRAFFIC SIGNAL MODULE - 12 INCH, DIAMETER GREEN ARROW 680.810128MO LED TRAFFIC SIGNAL MODULE - 12 INCH, BI-MODAL ARROW, YELLOW/GREEN 680.810308 INSTALL BALL/ARROW LED TRAFFIC SIGNAL MODULE 680.810601 TRAFFIC SIGNAL SECTION - POLYCARBONATE, TYPE 1, 12 INCH 680.8111 TRAFFIC SIGNAL BRACKET ASSEMBLY - 1 WAY 680.8112 TRAFFIC SIGNAL BRACKET ASSEMBLY - 2 WAY
Traffic signal heads for **thru lanes** shall be located as follows:	
1. Single (1) lane approach – First head 2' left of the centerline markings with 10' separation to the second head.	
2. Two-lane (2) approach – two (2) center on each travel lane	
3. Three-lane (3) approach – three (3) signal heads centered on each travel lane	
Separate four (4) section head required when accommodating left-turn protected/permissive and a flashing yellow arrow.	Shall meet MUTCD 11th Edition, Section 4F.08 (Figure 4F-7)
Separate three (3) section head required when accommodating flashing yellow arrow for permissive only left-turns.	Shall meet MUTCD 11th Edition, Section 4F.04 (Figure 4F-2)
Backplates required for all mast arm applications, loading analysis to be completed by consultant	680.8199: Backplates for Traffic Signal Heads
Backplates are not to be specified on span wire applications	

Controller Cabinet & Electrical Power supply	Payment Items / Notes
All new controller cabinets shall be ground-mounted. Controller cabinets shall be purchased from Monroe County and installed by the contractor, contact the project manager for cabinet cost to be included in bid documents.	680.5002: CONCRETE BASE FOR CONTROLLER CABINET 680.802708MO: INSTALL ACTUATED 8 PHASE GROUND MOUNTED TRAFFIC SIGNAL CABINET AND RELATED EQUIPMENT (FURNISHED BY COUNTY) 680.80990MO: ACTUATED 8 PHASE GROUND MOUNTED TRAFFIC SIGNAL CABINET AND RELATED EQUIPMENT (PURCHASED FROM COUNTY)
2" steel conduit to run directly from power point to traffic cabinet base (external conduit); into utility the meter pan, then into the generator transfer switch and then into the traffic cabinet to supply power.	680.520106: CONDUIT, METAL STEEL, ZINC-COATED, 2" DIAMETER 680.700606: RISER ASSEMBLY, 2" DIAMETER
Utility meter and generator transfer switch are required for new signals or signal replacements where the power point changes, installation per Monroe County DOT specifications (www.monroecounty.gov/dot-standarddetails). Meters and disconnect switches shall be mounted on side of controller cabinet (per detail)	680.95600004: ELECTRIC METER PAN 680.90920001: ELECTRIC METER SOCKET, 100 AMP, SINGLE PHASE, 120 VOLT FOR TRAFFIC SIGNAL INSTALLATIONS 680.949970MO: FURNISH AND INSTALL ELECTRICAL DISCONNECT/GENERATOR TRANSFER SWITCH
Include an item for furnishing electrical service to reimburse the contractor for all costs to the utility.	662.600100004: FURNISHING ELECTRICAL SERVICE
If a generator/transfer switch is not provided, a fuse kit still required in pullbox before entering controller cabinet	(Cost for fuse kit to be included in other items)
Grounding	670.7501: GROUND WIRE NO.6 AWG
If deemed required for protection of the traffic cabinet, 4" steel bollards shall be installed (with yellow retroflective tape)	618.78101115: SECURITY BOLLARD FIXED, CAST IN PLACE, DEEP
If there is a need for Cat 5E (Miovision/CCTV/ETC…)	683.10010001: FURNISH AND INSTALL CATEGORY 5E OUTSIDE PLANT CABLE
If there is a need for 12 strand fiber	680.9211208: FIBER OPTIC CABLE -12 FIBERS
If there is fiber present at the cabinet, a new Ethernet Switch shall be provided.	683.09230208: FIELD HARDENED ETHERNET SWITCH TYPE II

The traffic signal cabinet shall be positioned in the intersection with the following considerations:
1) 3' Minimum Horizontal Clearance from edge of pavement/curb to edge of foundation
2) Does not impede pedestrian access
3) Visibility to as many signal heads as possible
4) Safe accessibility for maintenance crews
5) Proximity to utility power point
6) Sight distance impacts
7) Cabinet door when possible does not face the intersection, when this is not possible it does not impede pedestrians

Wiring

	Payment Items / Notes
Traffic signal heads shall utilize a 10-conductor, 4-section heads (with turn arrows) shall have a dedicated 10-conductor cable, the remaining heads (3-section heads) can share (1) 7-conductor and be "daisy-chained" to one another.	680.731014: SIGNAL CABLE, 10 CONDUCTORS, 14 AWG 680.730714: SIGNAL CABLE, 7 CONDUCTORS, 14 AWG
Pedestrian signal heads shall utilize a 7-conductor.	680.730714: SIGNAL CABLE, 7 CONDUCTORS, 14 AWG

Inductance Loops / Non-Intrusive Detection Systems

	Payment Items / Notes
County preference is for the installation and setup of non-intrusive detection systems at all new/replacement signals prior to the start of construction to maintain detection throughout the construction cycle. *Consult with the project manager during project scoping for exact system requirements and plan placement of hardware.	Federal Aid projects will necessitate the submission of PIF/SERF to NYSDOT by the project manager prior to bidding for approval by FHWA.
A 360° degree camera detection system is required when stop bar detection is needed at three (3) or more approaches; OR if three (3) or more in-pavement loops are to be replaced; OR as deemed per the project manager.	Monroe County Department of Transportation to procure and install for all City and County projects, work will be noted as such on the plan set.
A fixed camera detection system is required when only minor movement stop bar detection is needed; OR as deemed per the project manager.	Monroe County Department of Transportation to procure and install for all City and County projects, work will be noted as such on the plan set.
A radar detection system is required for high speed vehicle detection needs over 45 mph; OR as deemed per the project manager.	Monroe County Department of Transportation to procure and install for all City and County projects, work will be noted as such on the plan set.
Front Loop and Rear loops - 6 x 20 Quad (2-4-2 Turns) with 10' separation between front and back loops	680.54: INDUCTANCE LOOP INSTALLATION 680.72: INDUCTANCE LOOP WIRE
Front loops shall begin 2' in front of the stop bar.	
Loops shall utilize a singular pullbox located between the front and rear loop.	
One (1) conduit per loop from pavement to pullbox (liquid-tite conduit not approved)	680.520703: TRAFFIC SIGNAL CONDUIT RIGID PLASTIC, CLASS 1, 1"
One (1) separate shielded lead-in cable for each loop from the pullbox to the traffic controller cabinet (splicing not approved)	680.71: SHIELDED LEAD-IN CABLE

Underground System

	Payment Items / Notes
Controller Pullbox – 30" Communications Pullbox with splice canister- 30" Communications Pullbox without splice canister - 24" Standard Pullbox – 24" Over 8 conduits entering pullbox 30"	680.510401: PULLBOX - CIRCULAR, 30" DIAMETER, REINFORCED CONCRETE 680.510301: PULLBOX - CIRCULAR, 24" DIAMETER, REINFORCED CONCRETE
A continuous conduit system shall be placed around entire intersection (i.e. across all 4 legs)	
Conduit sizes: Connection to Controller Cabinet – two 4" PVC conduits Across roadway approaches – two 3" PVC conduits Connection to Traffic Signal Poles – one 3" PVC conduit Connection to Pedestrian Pole – one 2" PVC conduit Longitudinal Conduits for Loops – one-3" conduit Pull box to Pull box - two 3" PVC conduits Connection to Loops – one 1" PVC conduit (liquid-tite conduit not approved)	680.520703: TRAFFIC SIGNAL CONDUIT RIGID PLASTIC, CLASS 1, 1" 680.520506: TRAFFIC SIGNAL CONDUIT RIGID PLASTIC, CLASS 1, 2" 680.520508: TRAFFIC SIGNAL CONDUIT RIGID PLASTIC, CLASS 1, 3" 680.520510: TRAFFIC SIGNAL CONDUIT RIGID PLASTIC, CLASS 1, 4"
Jack and boring for conduit installations may be required under pavement areas. Boring grade conduit required for jacking/boring locations	680.53: CONDUIT JACKING OR BORING
Warning tape shall be placed in the open cut trenches approximately 6 inches above all Rigid Plastic conduit.	See MC Standard Construction Details
A ground wire (tracer wire) shall be installed in all empty and communications rigid plastic conduits for future underground utility locate needs.	
All conduit shall have a low stretch polyester pull tape installed for future needs.	

Street Lighting

Street lighting arms may still be placed on MC traffic signal poles, separate 2" conduit shall be provided for power

Pavement Markings

10' wide Type L crosswalks shall be used at traffic signals (if it's a school crossing, Type LS is required)

Overhead Signs

Street name Signs

1. Overhead signs placed on mast arms between signal heads
2. Sign face layouts shall be provided for review
*Note that Monroe County does not use z-bars and has a special detail for overhead sign (long and short brackets). One long bracket is acceptable for overhead lane designation signs, multiple short brackets needed for street name signs

Traffic Signal Removals

Existing Pullbox removals	680.82250801 – REMOVE TRAFFIC SIGNAL PULLBOXES.
Existing Traffic Signal Poles/Cabinet/Heads/etc...	680.790X05: REMOVE TRAFFIC SIGNAL INSTALLATION

2. Signal Plan Submissions/Review

Traffic Signal Plans shall include the following (separate signal plans required for new underground systems or vertical infrastructure):	
1. General Plan layout – 20 Scale preferred	In applicable, add note that "All existing Fire Preempt shall be removed and reinstalled by contractor"
2. Phasing Diagrams	Number vehicle phases as follows (omit any that do not apply): Phase 1 = SB left, Phase 2 = NB through, Phase 3 = WB left, Phase 4 = EB through, Phase 5 = NB left, Phase 6 = SB through, Phase 7 = EB left, Phase 8 = WB through Number pedestrian phases to match the vehicle phase they move with concurrently, adding a "P" in front. For example, "P2" would be the east leg crosswalk that moves with Phase 2. Show the number of lanes on phasing diagrams and their geometric orientation.
3. Wiring Diagrams	
4. Mast Arm Diagrams depicting head and sign placements with dimensions.	
5. Table of Operations	
6. Table of Clearances	
7. Table of Switch Packs	
8. Detection Tables	
9. Site Specific General Notes	
10. Estimate of Quantities	
11. Traffic Signal Notes	
12. Traffic Signal Details	
13. Jurisdictional Table	Define ownership, maintenance and operational jurisdictional oversight

3. Construction Considerations / Equipment Preferences

	Notes
Pedestrian Push Button	POLARA BULLDOG (42" C/L push button)
Accessible Pedestrian Signals (APS)	POLARA INX (Bluetooth)
Ped Pole Foundations	NYSDOT STANDARD SHEET 680-10 "PEDESTRIAN SIGNALS AND FLASHING BEACON INSTALLATION DETAILS"
Anchor Bolts for RRFB & aluminum pedestrian poles	Shall be 3/4" diameter
Pedestrian pole(s)	Aluminum round non-tapered 4" (brushed aluminum finish (County)/black powder coat (City of Rochester))
Signal Pole Foundations	NYSDOT STANDARD SHEET 680-01 TRAFFIC SIGNAL POLE FOUNDATIONS FOR FOUNDATION TYPE AND INSTALLATION
Anchor Bolts	Max one anchor bolt diameter and minimum 2 exposed threads
Signal Pole(s)	Steel (Galvanized finish (County)/black power coat (City of Rochester))
Rectangular Rapid Flashing Beacon(s)	Shall be Carmanah 920E or TraffiCalm Push-2-Cross
12" LED Signal Indication	GE or equivilent approved tinted lense
360° Camera Detection System	Shall be Miovision
Fixed Camera Detection System	Shall be Iteris VersiCam
Radar Detection System	Shall be Iteris Vantage Radius & Vector or Wavetronix Smart Sensor
School Flashers	Replaced as a pair in project