

NYC DOT TRAFFIC SIGNALS/TIMINGS DESIGN REQUIREMENTS

A) Overview:

The Developer/ Owner/ Lead Agency shall develop traffic signal plans for the Project that shall:

- Provide for all traffic signal components.
- Provide signing, traffic signals for bicycle and pedestrian crossings within the Project Limits, where applicable.
- Provide traffic signal plans for the temporary (during construction), final/permanent, and as-built conditions.
- Any unforeseen circumstances occur during the project timeline (i.e., unsignalized intersection has changed to signalized)

B) Traffic Signal Design:

The Developer/ Owner/ Lead Agency shall provide the following for NYCDOT Traffic Signals' review/comment/approval:

General Requirements

- Developer/ Owner/ Lead Agency shall provide recent (less than 3 months old) field photos of the intersection(s), clearly showing all corner quadrants, sidewalks, and vehicular approaches (refer to file document "Photo Log Sample").
- Any work requiring the removal, relocation, or installation of new traffic signal poles, including its associated infrastructure (i.e., conduits and foundations), shall require the installation of Accessible Pedestrian Signals (APS) for the entire intersection, as per NYCDOT policy (refer to file document "APS Policy 10-21-19").
- If any project calls-out for "support and protect" existing conditions of traffic/signal infrastructure (i.e., conduits and foundations) and the contractor(s) fails to do so, then it is the responsibility of Developer/ Owner/ Lead Agency to redesign the entire intersection to conform with NYC DOT Traffic Signals/Street Lighting current standards (which means that entire intersection shall be redesigned for APS and enhance lighting as per vision zero requirements).
- The Developer/ Owner/ Lead Agency shall coordinate and prepare the temporary and final/permanent traffic signal plans using AutoCAD for submission to NYCDOT Traffic Operations for review/comment/approval as per NYCDOT's latest standards and policies. The Developer/Owner/Lead Agency shall assume that NYCDOT Signals Engineering will require approximately at least four (4) to six (6) weeks for review of each submittal. NYCDOT approval of the traffic signal/street lighting/signal timing plans shall be obtained prior to the commencement of construction for each phase. All three Traffic Operation units shall be coordinated in unison during the design process.
- Existing traffic signal plans shall be provided to the Developer/ Owner/ Lead Agency by NYCDOT Traffic Signals to develop the temporary and final/permanent condition plans.
- For all Traffic/Signal capital projects, please coordinate with the following:
 - Mr. James Celentano jcelentano@dot.nyc.gov 212-839-3129
 - Mr. Ameer Faragalla afaragalla@dot.nyc.gov 212-839-3856

- Mr. Amine Ftouhi aftouhi@dot.nyc.gov 212-839-3846
- Mr. Hasib Amini hamini@dot.nyc.gov 212-839-3386
- For any new signal requests please contact Signal Timing and Intersection Control Unit (STIC)
 - Mr. Roumany Wasef RWasef@dot.nyc.gov, 212-839-3830
 - Ms. Emily Zhang, ezhang@dot.nyc.gov, 212-839-3127

Temporary Traffic Signal Plan Requirements

- OCMC-approved MPT/WZTP plans/stipulations (NOT Permits) indicating number of lane, sidewalk, and crosswalk closures.
- Developer/Owner/Lead Agency shall provide number of work stages and durations. Each signalized intersection may require its own temporary signal plan, depending on work zone impacts. Hard/long-term stationary closures beyond 3 days shall require temporary signal drawings. For short-term closures (less than 3 days), shall be coordinated with NYC DOT Electrical Inspection Unit (EIU).
- For any crane assembly/dismantling requests shall be coordinated with NYC DOT EIU.
- Temporary traffic signal design plans in AutoCAD shall indicate placement of temporary concrete pylons, overhead cables, for vehicular/bicycle/pedestrian signals, signal removals/bagging.
- Signalized intersections containing existing APS units shall remain operational, along with pedestrian signals, if crosswalks are determined to remain open during a construction phase(s). APS units shall be installed on temporary signals/concrete pylons and shall comply with all federal MUTCD guidelines regarding APS unit placement and height requirements.
- Concrete (not wood) pylons shall be used at signalized intersections containing APS units and shall adhere to all applicable NYCDOT standards and specifications (Dwg. No. MISC-001_1).

Final/Permanent Traffic Signal Plan Requirements

- NYCDOT Geometric Design/Highway Construction/Markings/Pedestrian Ramp Program-approved geometry of the final intersection and pedestrian ramp layout.
- Traffic Signal/Timing and Street Lighting designs shall be coordinated for review and approval **prior to construction.**

As-Built Traffic Signal Plan Requirements

- Upon completion of the project and NYCDOT EIU certification, the Developer/ Owner/ Lead Agency shall provide NYCDOT Traffic Signals all AutoCAD files reflecting the as-built condition.

Traffic Signal Design Drawings: AutoCAD General Requirements

- All drawings shall be drawn and designed at 1 unit = 1' scale (1:1) in the Model Space.
- Drawings in the Paper Space is prohibited.
- Reference drawings are prohibited.

- Special plot or pen settings are prohibited. All drawings are printed with the default plot settings of 1' = 30" scale in layout.
- All drawings shall be at 0,0,0 coordinates.
- Global and object scales shall be 1.
- All drawings shall be saved in AutoCAD file format (dwg) 2022 version.
- NYCDOT templates with frame and border shall be provided by NYCDOT Traffic Signals and shall not be modified by the Developer/ Owner/ Lead Agency. When the scale of the template is changed, symbols in the legend change their meaning.
- Use NYCDOT Traffic Signal templates only. Other layers, blocks and legends are prohibited.
- Use "0" layer for all items.
- Remove all unnecessary information and frozen layers.
- Use only default line styles available in AutoCAD. No other line styles are accepted.

Drawings and Specifications

- All local street traffic signalization shall be developed as per the NYCDOT standards for traffic signal and intersection design. Traffic rules can be downloaded from NYCDOT website at:
<http://www.nyc.gov/html/dot/downloads/pdf/trafrule.pdf>.
- Traffic signal specifications are available at:
<https://www1.nyc.gov/html/dot/downloads/pdf/nycdot-traffic-signal-specifications.pdf>.
- Traffic Signal Standard drawings are available at:
<https://www1.nyc.gov/html/dot/downloads/pdf/nyc-dot-traffic-signal-standard-drawings.pdf>

C) Traffic Signal Timing Operation:

Developer/ Owner/ Lead Agency shall provide the following for Existing/Temporary/Final Traffic signal work conditions, if deemed required by NYCDOT Traffic Signal Timing Unit:

- Detour Signage Plans showing traffic flow for the entire scope of work/project limits and detailed duration time for each stage.
- **Before any lane closures and/or traffic detours are carried out**, the necessary Synchro analyses (Existing, Temp./MPT, and Final build conditions), if deemed necessary by NYCDOT Signal/Timing Unit, shall be prepared by the Developer/ Owner/ Lead Agency, and submitted to NYCDOT Traffic Signal Timings Unit for review/comment/approval. Proposed Synchro analyses for the construction condition shall cover the entire scope of work/project limits and including 2 additional intersections on each side/limit beyond the scope of work based on traffic detour signage plans for all MPT and construction work stages. Traffic volume counts Shall be within the last 18 months (as long as there are no changes to the land use at the intersection or the stretch that can generate additional traffic). Developer/ Owner/ Lead Agency shall provide a draft proposal for all project intersections in case of changes to the signal/timing operation.

- Please be advised that a traffic study and synchro analysis will be required if the construction work remains in effect for a period of 5 days or more; otherwise no analysis would be needed.
- If any major closures or traffic lane reductions occur during nighttime between 9PM and 5 AM, a synchro analysis will not be required.
- Regarding further details requirements for traffic study preparation, getting an approved signal timing database analyses for both temporary and final/permanent conditions, the contractor shall contact Nady Ibrahim of the NYCDOT Traffic Signal Timings Unit at (212) 839-3371 (nibrahim@dot.nyc.gov).

D) Traffic Signal Construction/Inspection:

Developer/ Owner/ Lead Agency design for the traffic signal work must meet the standards of Traffic Signal Design, NYCDOT. All traffic signal work shall be performed by a licensed, bonded and insured electrical contractor in compliance with NYCDOT specifications. All field personnel shall be trained and approved in a work zone safety certificate program equal to or greater than the program outlined by the International Municipal Signal Association (IMSA). A list of City-approved licensed electrical contractors is available (refer to file document “List of Approved Electrical Contractors”).

It is the policy of NYCDOT that the Developer/ Owner/ Lead Agency be responsible for the safety of traffic for the duration of this project. All temporary signal heads must be clearly visible to vehicular traffic and pedestrian signals clearly visible within the crosswalks with no obstructions. Should any additional work be required due to unforeseen field conditions it will be the responsibility of MTA and any other agencies to fund the work. Any unforeseen field conditions requiring Traffic Signal design revision shall be coordinated with and approved by NYCDOT prior to installation. All Temporary Signals must be 12” in size and remain operational during construction.

The Developer/ Owner/ Lead Agency shall remove all existing pedestrian and traffic signal equipment (poles, foundations, signal heads, mounting brackets, etc.) at each impacted signalized intersection within the project limits. Any removed traffic signal equipment shall be inspected by NYCDOT Electrical Inspections Unit (EIU) to determine whether equipment is to be salvaged or returned to the City warehouses by the Developer/ Owner/ Lead Agency. Photographs of all removed equipment (except conduit and cable) shall be taken by the Developer/ Owner/ Lead Agency and submitted to NYCDOT EIU. All removed equipment shall be stored by the Developer/ Owner/ Lead Agency for the duration of the work and upon re-installation of such equipment, NYCDOT EIU shall be notified in advance to inspect and determine if such equipment is deemed acceptable for reinstallation or if new equipment shall be furnished/installed. All new equipment shall meet current NYCDOT standards for all traffic signal infrastructure, including but not limited to traffic signal poles, foundations, controller cabinets, cables, wiring, mounting brackets and shall also meet the latest standard for APS and Pedestrian Countdown Signals (PCS) at all pedestrian crossings.

The Developer/ Owner/ Lead Agency shall coordinate all construction/inspection work with NYCDOT EIU and contact the respective Chief of each borough. The borough chief must be contacted at least 48 hours prior to any traffic signal or street lighting work. In addition, the Developer/ Owner/ Lead Agency or his duly authorized representative shall email the following

NYCDOT traffic signal personnel before 7 am on the days of the work for the respective borough, copying the Deputy Directory of EIU:

EIU Deputy Director

- Peter Aro
 - paro@dot.nyc.gov
 - (212) 839-3806

Manhattan

- Iaan Chin
 - IChin@dot.nyc.gov
 - (212) 839-3292

Brooklyn

- Patrick Kehinde
 - pkehinde@dot.nyc.gov
 - (212) 839-3303

Queens

- Albert Kong
 - akong@dot.nyc.gov
 - (212) 839-3302

Bronx

- Wayne Archibald
 - WArchibald@dot.nyc.gov
 - (212) 839-3286

Staten Island

- Jamie Clarke
 - jclarke@dot.nyc.gov
 - (212) 839-3295

Conduit/Cabling Requirements:

The following cables shall be utilized during the installation of new signal heads, pedestrian/countdown timers, interconnect, and pushbutton signs:

- A) APS Unit and Pushbutton: furnish and install APS cable for each set display;
- B) Pedestrian signal: furnish and install 7C#14 awg cable for each set display;
- C) One-way signal heads: furnish and install 7C#14 awg cable;
- D) Two-way signal heads: furnish and install 13C#14 awg cable;

- E) Three-way signal heads: furnish and install 13C#14 awg cable;
- F) Underground 2" HDPE traffic signal conduit: furnish and install 2-13c, 2c-10b cable. 2-19c, 2c-10b cable may be required if additional traffic signal timing movements are required.
- G) 6c cable for pedestrian signal to APS pole installation.
- H) Maintain all interconnect conduit systems between Empire City Subway (ECS) manholes and traffic controller.

The Developer/ Owner/ Lead Agency shall furnish and install the following conduit as a minimum:

- A) If any detection loops identified in the field, Developer/ Owner/ Lead Agency shall replace with magnetometer traffic sensor (i.e., "hockey pucks").
- B) Conduits under roadway shall be 3" Rigid Galvanized Steel (RGS) for fiber optic cable.
- C) All above-ground conduits between traffic equipment and nearest junction box shall include 2" RGS.
- D) All underground traffic signal conduit installations shall be 2" HDPE.

Signal Heads/ Signal Poles:

All signal faces to be installed as part of this Project shall be LED and of a size indicated on the signal design plans.

All pedestrian signals shall be 16" LED unless otherwise noted on the signal design plans and shall consist of combination "Walking Man"/"Hand" symbols with countdown timers, also known as pedestrian countdown signals (PCS). Per NYCDOT standards, all existing "Hand/Man" pedestrian signals removed during the work, regardless of working condition, shall be replaced new with PCS.

All traffic signal heads and pedestrian signals removed during construction shall be maintained during construction. All temporary pylons with 12" signal heads and pedestrian signals shall be clearly visible to motorists and pedestrians within the crosswalks with no obstructions. Only streetlight/FS poles shall be installed on concrete pylons.

All traffic signal pole types shall conform to the latest NYCDOT Traffic Signal Standard drawings.

Cabinet/Disconnect Switch:

The Developer/ Owner/ Lead Agency shall furnish and install one Advanced Solid-State Controller (ASTC) type non-actuated microcomputer controller and battery back-up (BBU), where applicable, in a pole-mounted cabinet in accordance with NYCDOT specifications at each of the signalized intersections. BBU systems shall be maintained, where applicable.

ASTC Power Supply:

Power shall be supplied to the ASTC cabinet from the nearest available electrical feed. The power supply cable shall be a 2 conductor, 10awg cable.

NYCDOT Protocol for Developer/ Owner/ Lead Agency Acceptance of Maintenance During Construction:

The Developer/ Owner/ Lead Agency shall submit to NYCDOT Traffic Signals a written notification of the date they will assume responsibility for traffic signal maintenance. No construction work shall proceed until traffic signal maintenance is assumed by the Developer/ Owner/ Lead Agency. The existing traffic signal shall be maintained by the Developer/ Owner/ Lead Agency under the requirements of the Standard Specifications, except for the controller, programming, and timing which shall be maintained by NYCDOT.

The Developer/ Owner/ Lead Agency shall be responsible for maintaining the existing traffic signal equipment including underground conduit and cable and the safety of traffic for the duration of this project. All signals must remain operational during construction. If applicable, left turn phases and dedicated left turn lanes must be maintained during construction. Before construction, the Developer/ Owner/ Lead Agency shall erect overhead cable to keep intersections operational during excavation. This includes preparing and submitting temporary signal design plans to NYCDOT Traffic Signals for their review and approval before construction.

Traffic signal activation shall be done by NYCDOT Traffic Signals Personnel only. The Developer/ Owner/ Lead Agency shall notify NYCDOT Traffic Signals section two weeks prior to the requested date of activation.

Coordination of Proposed/Existing Traffic Signal Enforcement/NYPD Cameras, Auxiliary/ITS, Third Party attachments:

- Thomas Kelly, TKelly@dot.nyc.gov (212)-839-3380, Prentiss Leary, PLeary@dot.nyc.gov (212)-839-2292 and Felicia Tunnah, FTunnah@dot.nyc.gov (212)-839-3330 for any Third Party Equipment including Wireless Pole Tops, removal of EZ Pass Readers, NYCDOT Cameras, NYPD Cameras, AUX/ITS equipment, 3" MSC conduit (ECS manhole to base foundation), 4" Conduit (from Fiber Optic Box to Fiber Optic Box) , RTMS devices
- Vincent Susi, vsusi@dot.nyc.gov (212)-839-3192 for removal of any automated traffic enforcement cameras (i.e., red light, speed, bus lane cameras, etc.)

Bollards Installation:

- A) All Traffic Signal poles shall be installed 2'-8" from face of curb to center of the pole foundation and all street lighting poles shall be installed 36" from face of curb.
- B) All pole foundations should be separated from bollard foundations and should be maintain a minimum distance of 12 inches clearance between edges of the two foundations.
- C) Bollards adjacent to NYCDOT poles shall be removable for maintenance.

- D) APS must be located:
- Between 3' and 5' from the pedestrian ramp.
 - Must be a minimum of 10' between APS installations at the same corner.
 - There shall be no vertical obstruction (i.e. Bollards) between the pedestrian ramp and the Accessible Pedestrian Unit.
 - Traffic Signals poles shall not be installed on APEX, unless directed otherwise by NYC DOT Traffic Signal Engineer.
 - All Traffic Signal or street lighting poles locations must be evaluated for the installation of APS with appropriate clearance provided per ADA requirements.
- E) All Traffic Signal and street lighting poles should have 360-degree clearance of 3' for maintenance purposes
Deviations may be permitted on a case-by-case basis.
- F) Bollard foundation must avoid conflict with signal and street lightings elbow entrances to the foundation (foundations are typically accessed from the curb for maintenance purposes)
- G) Bollards on all sides of the Traffic Signal or street lighting pole must be removable to allow for minimum 3' clearance for maintenance operations.
- H) Traffic Signals and street lighting pole base access door must face Vehicular traffic and maintain 3' clear to nearest object.
- I) If bollards/Traffic Signal/Street Lighting foundations are integrated/married (NOT recommended by DOT), then it requires specific Revocable Consent language addressing emergency and non-emergency maintenance coordination.
- Owner will be responsible for removing and reinstalling bollards as directed by DOT.
 - DOT have the right to remove bollard's setup without notification to owner when maintenance is required in emergency situations; Owner will be responsible for restoration of bollards removed by DOT under these conditions upon notification from DOT.
- J) At any corner(s) of the intersection where bollards are to be installed, it is required an additional foundation, conduit, and traffic pole be installed to accommodate future Accessible Pedestrian Signals (APS) equipment.
- K) There shall be no physical obstructions between the existing/proposed pole(s) and the pedestrian ramps.

NYCDOT Protocol for Acceptance of Newly Constructed Traffic Signal, Street Lights and Transfer of Maintenance Obligation:

The Developer/ Owner/ Lead Agency constructing and/or installing any Traffic and streetlight pole(s) (the "Developer/ Owner/ Lead Agency") in New York City (the "City") must, at all times, comply with all applicable engineering standards, and City rules and regulations, including, but not limited to, standards established by NYCDOT.

Prior to the start of construction, the Developer/ Owner/ Lead Agency seeking to transfer the ownership and maintenance obligations of any newly constructed traffic signal/streetlight pole(s)

to NYCDOT must first confirm, in writing and through the submission of drawings and catalog cuts, if available, that the equipment and material proposed for the installation satisfies current construction and maintenance standards, including, but not limited to, those standards established by NYCDOT's engineering divisions upon the issuance of a work permit or at any point thereafter.

Once the Developer/ Owner/ Lead Agency begins work on the construction and installation of any traffic signal/streetlight poles, the Developer/ Owner/ Lead Agency must, at all times, have an approved set of drawings on site at all times and available for review by NYCDOT upon demand. Such drawings may include, but not limited to, design drawings, shop drawings, NYCDOT approved drawings and catalog cuts of the equipment being installed. If NYCDOT approves a drawing detailing the Developer/ Owner/ Lead Agency's work at the site, that drawing must be on site at all times and available for review upon demand.

The Developer/ Owner/ Lead Agency, or its designee, must notify the NYCDOT Borough Chief, in writing, of the proposed start date for the construction and installation of the traffic signal/streetlight pole(s) and submit a proposed construction schedule. If there are any changes to this schedule, the Developer/ Owner/ Lead Agency, or its designee, must notify the NYCDOT Borough Chief two (2) business days prior to effective date of the change at issue.

At least three (3) business days prior to the completion of the work, the Developer/ Owner/ Lead Agency must submit a final inspection request to the NYCDOT Borough Chief in writing and schedule a final inspection by NYCDOT's Electrical Inspection Unit. In its written request for final inspection, the Developer/ Owner/ Lead Agency must include shop drawings, as-built drawings and/or catalog cuts of the equipment, material and/or work associated with the construction and installation of the traffic signal/streetlight pole(s). The Developer/ Owner/ Lead Agency must also designate a point of contact (the "Developer/ Owner/ Lead Agency Contact"), who will meet with the NYCDOT Electrical Inspection Unit representative at the site on the date of the final inspection and provide his or her contact information (name and number).

On the day of the final inspection, the Developer/ Owner/ Lead Agency Contact will meet the NYCDOT Electrical Inspection Unit representative at the site on the day and time set forth by NYCDOT. The Developer/ Owner/ Lead Agency Contact will deliver a copy of the PE stamped as-built drawings to the NYCDOT Electrical Inspection Unit representative.

Once NYCDOT completes its final inspection at the site, the Developer/ Owner/ Lead Agency shall submit an acceptance request package to NYCDOT's Electrical Inspection Unit, which must include the following:

- A letter to NYCDOT requesting acceptance;
- Two (2) copies of the Certificate of Compliance completed by the Developer/ Owner/ Lead Agency or its designee with raised seal certifying that the work has been performed in accordance with applicable City and State standard, rules, and regulations; and

- Two (2) copies of 24" x 36" PE stamped as-built drawing, including AutoCAD files to be submitted to NYCDOT Traffic Signals.

NYCDOT will review all complete submissions and notify the Developer/ Owner/ Lead Agency in writing if any documents must be resubmitted.

NYCDOT will issue a written confirmation to the Developer/ Owner/ Lead Agency designating the date of acceptance.

Removal, Storage and Return Traffic Signal Poles, Traffic Signal Boxes, and Misc. Developer/ Owner/ Lead Agency to coordinate removal, storage and return of Traffic Signal Poles, Traffic Signal boxes with NYCDOT EIU. Developer/ Owner/ Lead Agency to contact NYCDOT EIU for approval forms.

Removal of Existing Equipment. Any removed traffic signal/street lighting equipment shall be inspected by NYCDOT EIU to determine whether equipment is to be salvaged or returned to the City warehouses by the Developer/ Owner/ Lead Agency. All existing cable/conduits shall be removed and replaced as new. All other removed traffic signal equipment shall be photographed, stored and upon inspection by NYCDOT EIU, either re-installed or replaced as new by the Developer/ Owner/ Lead Agency as per NYCDOT EIU direction. All removed LED luminaires shall be carefully removed, neatly stored, and delivered to NYCDOT Street Lighting Store Yard. Coordination for delivery shall be done with NYCDOT Electrical Operations Unit (EOU).