NEW YORK STATE OF OPPORTUNITY. Department of Transportation	ENGINEERING INSTRUCTION	EI 22-011

Title: **NEW TRAFFIC SIGNAL SUPPORT STRUCTURAL ANALYSIS PROGRAM (T3SAP) AND BACKPLATE POLICY**

Approved:

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Date

ADMINISTRATIVE INFORMATION:

- Effective Date: This Engineering Instruction (EI) is effective immediately.
- Superseded Issuances: EI 83-038 and EI 89-003 are hereby superseded.
- Disposition of Issued Materials: The new software is available for installation through SCCM software center (for NYSDOT employees) and through the Department's external website for non-NYSDOT employees. The backplate policy will be incorporated into HDM Ch. 11.

PURPOSE: The purpose of this EI is to announce the availability of a new traffic signal pole analysis program called Traffic Signal Support Structural Analysis Program (T3SAP). It also points to an existing backplate policy and provides a methodology to calculate the loading on existing poles using T3SAP when new backplates are being considered.

POLICY: The new Traffic Signal Support Analysis Program (T3SAP) shall be used to analyze the minimum load capacity requirement of all new signal systems and to ensure existing signal systems have sufficient capacity to accommodate changes being proposed to the system.

TECHNICAL INFORMATION:

- *Spanwire* software shall no longer be used for traffic signal structure analysis.
- The user manual for T3SAP is available under "Help".
- For policy on backplates please see TSMI-14-02.
- For spanwire systems installed before January 1, 2022, the load on poles with new backplates should be calculated using the following procedure:
  - Use T3SAP software
  - Use untethered Type I analysis
  - Final tipping load = tipping load obtained by T3SAP x 1.5/2 (safety factor of spanwire program was 1.5. Safety factor of T3SAP is a minimum of 2).
  - Compare final tipping load to design load of existing pole.
  - If installation of backplate is allowed, then move any existing tether wire or install new tether wire to the tops of signals and signs. The upper tether wire will limit the in-service movements of signs and signals due to wind.

The new *T3SAP software*:

- performs load analysis and capacity assessments in accordance with the strength and serviceability requirements of the Sixth Edition of the AASHTO *Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals (2013)* and NYSDOT Standard Specifications.
- determines loads on existing and proposed traffic signal support structures (due to dead, ice, wind, and fatigue loads) where the structure may support traffic signals, signs, and various other items

such as cameras and traffic control enclosures.
- uses the computed loads to determine internal forces (axial force, shear force, bending moment and twisting moment), associated stresses and deflections.
- performs capacity assessment at peak stress locations within the structure to determine if the structure has sufficient strength to carry the design loads and sufficient stiffness to limit deflections to permissible values.

IMPLEMENTATION:
- The new T3SAP software is available to be installed on NYSDOT computers through SCCM/ Software Center or with ITS help upon request.
- For non-DOT users T3SAP is available for download on Department's website at: https://www.dot.ny.gov/divisions/engineering/design/dqab/span-wire.

TRANSMITTED MATERIALS: None.

BACKGROUND: The existing Span Wire Analysis Program originally written in Visual Basic would only function on computers with operating systems of Windows 7 or earlier. There was also a need to update the program to current standards. The new T3SAP software functions on Windows computers and is based on AASHTO *Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals (2013 version)* and current NYSDOT Standard Specifications.

CONTACT: Questions regarding this EI may be addressed to Pratip Lahiri (pratip.lahiri@dot.ny.gov or 518-457-4092) or Christina Doughney (christina.doughney@dot.ny.gov or 518-457-5289).