

TRAFFIC CONTROL SIGNAL NEEDS STUDY

INTERSECTION OF MILITARY TURNPIKE WITH BRAND HOLLOW ROAD TOWN OF PERU, NEW YORK

INTRODUCTION

The Town of Peru has expressed interest in changing the existing multi-way stop at the intersection of Military Turnpike and Brand Hollow Road to a **signalized stop control**.

Clinton County Highway Department was contacted by the Town of Peru to conduct a traffic study at this intersection. This Department has referenced the Manual on Uniform Traffic Control Devices (MUTCD), 2009 edition published by the Federal Highway Administration in determining if a traffic signal would be warranted.

BACKGROUND

Military Turnpike:

Military Turnpike is classified as a rural minor collector road and is considered to be the **“major street”** approach to the intersection. It is a north-south two (2) lane highway with one (1) lane stop for each direction on Brand Hollow Road. Intersection stop control at each approach is achieved with a 30” x 30” high intensity prismatic **Stop Sign** located on the east and west road shoulder at the intersection. In addition, dual 30” x 30” florescent yellow **Stop Ahead** signs for each approach precede the intersection.

Brand Hollow Road:

Brand Hollow Road is classified as a rural local road and is considered the **“minor street”** approach to the intersection. It is an east-west two (2) lane highway with one (1) lane stop for each direction at Military Turnpike. Intersection stop control at each approach is achieved with a 36” x 36” high intensity prismatic **Stop Sign** located on the north and south road shoulder at the intersection. In addition, dual 36” x 36” florescent yellow **Stop Ahead** signs for each approach precede the intersection.

TRAFFIC STUDY/DATA COLLECTION

Traffic data was collected by using a vehicle classifier system. These roadside units (counters) were placed at all four approaches to the intersection from Monday 4/13/2015 to Friday 4/17/2015. Using software provided to Clinton County Highway Department from the New York State Department of Transportation, a traffic count hourly report was generated. Information contained in the traffic count hourly report is used to determine if certain criteria has been met relative to the need for a traffic signal. In addition, the vehicle classifier system is capable of producing reports such as vehicle speed and vehicle classification.

MUTCD SIGNAL WARRANTS

The investigation of the need for a traffic control signal shall include an analysis of the applicable factors contained in the following traffic signal warrants:

- * Warrant 1 - Eight-Hour Vehicular Volume
- * Warrant 2 - Four-Hour Vehicular Volume
- * Warrant 3 – Peak-Hour
- * Warrant 4 – Pedestrian Volume
- * Warrant 5 – School Crossing
- * Warrant 6 – Coordinated Signal System
- * Warrant 7 – Crash Experience
- * Warrant 8 – Roadway Network
- * Warrant 9 – Intersection near a Grade Crossing

The satisfaction of a signal warrant or warrants shall not in itself require the installation of a traffic control signal.

- **Warrant 1 – Eight-Hour Vehicular Volume:** This warrant considers the need for a traffic control signal based on conditions that exist for each of any 8 hours of an average day:

Condition A – minimum vehicular volumes is intended at locations where a large volume of intersecting traffic is the principal reason for installing a traffic signal.

Condition B – interruption of continuous traffic is intended for application where condition A is not satisfied and where the traffic on the major road is so heavy that traffic on the minor road suffers excessive delays.

Table 4C-1, page 438 in the MUTCD specifies the applicable traffic volumes.

**** Findings:** Table 4C-1, page 438 in the MUTCD specifies the minimum hourly vehicular traffic volume for the major street and the higher volume minor street as 350 and 105 respectively. Based on the traffic data collected, the eight-hour vehicle volumes for Military Turnpike and Brand Hollow Road were calculated to be 187 vehicles/hr. and 35 vehicles/hr. respectively. When applied to Table 4C-1, the observed traffic volumes fall below the minimum volumes for the eight-hour vehicular warrant. Therefore, the **warrant was not satisfied**

- **Warrant 2 – Four-Hour Vehicular Volume:** This warrant considers the need for a traffic control signal if the study finds that for each of any four hours of an average day, plotted points representing vehicles on the major and minor roads all fall above the applicable curve(s) in Figure 4C-2, page 440 of the MUTCD. This warrant is intended to be applied where the volumes of the intersecting traffic is the principal reason for installing a traffic control signal.

**** Findings:** The collected traffic data was analyzed to find the volume of any four hours and plotted against the curve values of Figure 4C-2. In this case the four-hour vehicular volume **warrant was not satisfied.**

- **Warrant 3 – Peak-Hour:** This signal warrant is intended for use at locations where minor-street traffic suffers undue delays when entering or crossing the major street and shall be applied in unusual cases where manufacturing plants or industrial complexes attract or discharge large numbers of vehicles over a short time.

**** Findings:** This **warrant does not apply** at this location.

- **Warrant 4 – Pedestrian Volume:** This signal warrant is intended for application where traffic volume on a major street is so heavy that pedestrians experience delay crossing the major street.

**** Findings:** This **signal warrant does not apply** at this location.

- **Warrant 5 – School Crossing:** The school crossing signal warrant is intended for application where the fact that school children cross the major street is the principal reason to consider installing a traffic signal.

**** Findings:** This **signal warrant does not apply** at this location.

- **Warrant 6 – Coordinated Signal System:** This warrant is intended for application where the progressive movement of traffic along a coordinated signal system is intended to maintain proper grouping of vehicles traveling together.

**** Findings:** This **signal warrant does not apply** at this location.

- **Warrant 7 – Crash Experience:** **The crash experience signal warrant** conditions are intended for application where the severity and frequency of crashes are the principal reasons to consider installing a traffic control signal. **The engineering study shall conclude that all of the following criteria are met:**

- A) adequate trial of alternatives with satisfactory observance and enforcement has failed to reduce the crash frequency; and
- B) five or more reported crashes, of the types susceptible to correction by traffic control signal, have occurred within a 12 month period.

**** Findings:** Accident history documentation obtained from NYSDOT (See Freedom of Information Law Request) for the available period of 6/1/2009 to 5/31/2014 shows three **(3)** accidents occurring at the intersection within this period. This falls short of the **required five or more crashes** stated in (B) above. Therefore, this **signal warrant is not satisfied.**

******* In 2006, Clinton County Highway Department and the Town of Peru Highway Department performed work on a joint project at the intersection. The focus of the project was to improve site distance at Brand Hollow Road intersection, looking north along Military Turnpike. The elevation of Military Turnpike was lowered as much as three feet (3) for a distance of approximately 1200 feet to the north of Brand Hollow Road, which considerably increased sight distance. Other improvements at the time included installation of double Stop Ahead signs and double Stop signs for Brand Hollow Road. This work was in the wake of a traffic fatality at the intersection that year.

In October of 2009, the Town of Peru passed a resolution to create a four-way stop control at the intersection. The Town of Peru installed double Stop Ahead and Stop signs on the Military Turnpike approaches.

- **Warrant 8 – Roadway Network:** Installing a traffic control signal at some intersections might be justified to encourage concentration and organization of traffic flow on a roadway network.

**** Findings:** *This warrant does not apply at this location.*

- **Warrant 9 – Intersection near a RR Grade Crossing:**

**** Findings:** *This warrant does not apply at this location.*

SUMMARY

The preceding report was compiled using vehicle traffic counts collected by Clinton County Highway Department in April 2015. The count information was obtained at each intersection approach and was utilized in determining if an applicable MUTCD signal warrant was met. Where justification to install a traffic signal is based on crash experience, a Freedom of Information Law (FOIL) request FMO-15-011679 was obtained from the New York State Department of Transportation.

After an analysis of the applicable factors contained in the traffic signal warrants, the installation of a traffic signal at the Military Turnpike and Brand Hollow Road intersection would not be warranted.