TOWN OF ACTON
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Engineering Department

January 9, 2013

Pope Road at Strawberry Hill Road - Intersection Improvement Project

Members of the Board,

The Engineering Department is requesting a scenic road hearing under Town General Bylaw Chapter J (MGL Ch 40 Section 15C) for Pope Road at the intersection with Strawberry Hill Road. This request is being made so that the Town can remove an existing public shade tree located across from the driveway for 190 Pope Road. The face of the stone wall at this tree coincides with edge of the road layout.

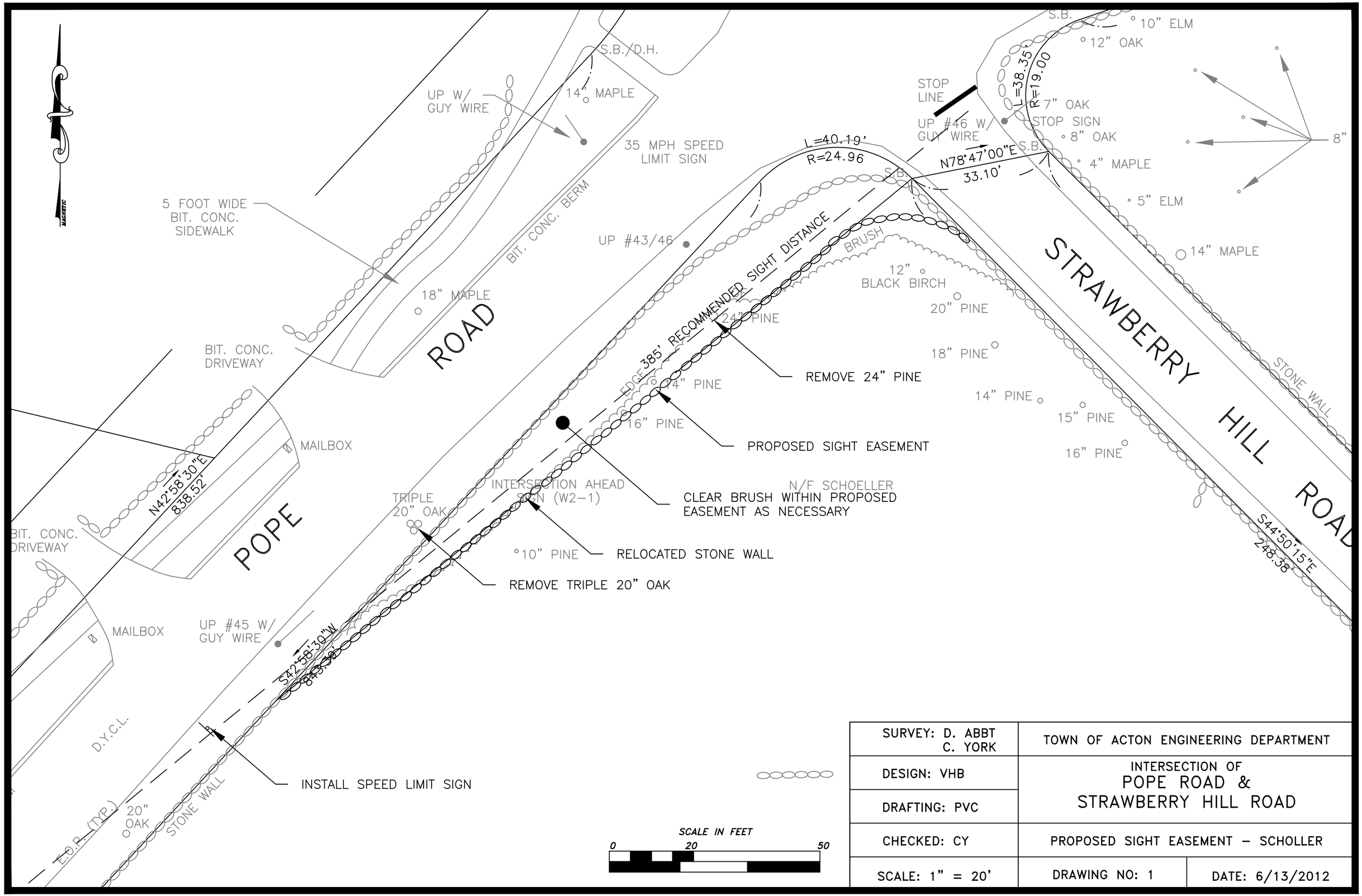
The Town had hired a consultant to assess the traffic and propose some modifications to improve the safety at this intersection. The proposed work at the intersection will improve the sight line along Pope Road for the Strawberry Hill Road westbound approach. I've attached a copy of the proposed plans and photos depicting the intersection.

Thank you

Corey York
Town Engineer / Director of Public Works

Cc: Steven Ledoux, Town Manager
Dean Charter, Tree Warden

Strawberry Hill Rd sight line
(looking towards Pope Rd)



SURVEY: D. ABBT C. YORK	TOWN OF ACTON ENGINEERING DEPARTMENT	
DESIGN: VHB	INTERSECTION OF POPE ROAD & STRAWBERRY HILL ROAD	
DRAFTING: PVC		
CHECKED: CY	PROPOSED SIGHT EASEMENT – SCHOLLER	
SCALE: 1" = 20'	DRAWING NO: 1	DATE: 6/13/2012

Drawing name: P:\Drawings\Pope & Strawberry Hill Road Intersection\dwg\Pope and Strawberry Hill Road Intersection – VHB Recommendations.dwg
Jun 13, 2012 – 11:05am

Transportation
Land Development
Environmental
Services

Vanasse Hangen Brustlin, Inc.

101 Walnut Street
Post Office Box 9151
Watertown
Massachusetts 02471
617 924 1770

Memorandum

To: David Abbt,P.L.S.
Engineering Administrator
Town of Acton
472 Main Street
Acton, MA 01720

Date: February 23, 2004

Project No.: 08766

dgreenberg@vhb.com

From: Dave Greenberg, P.E.
Kevin Wright

Re: Multiway Stop Control Evaluation
Pope Road at Strawberry Hill Road
Acton, MA

INTRODUCTION

This Technical Memorandum has been prepared to respond to a request by the Town of Acton to assess traffic control improvements for the intersection of Pope Road and Strawberry Hill Road in Acton, Massachusetts. Existing geometry/traffic control, traffic count data, accident data, speed studies, signal warrant analysis, capacity analysis, sight distance evaluation, and multiway stop control application are summarized within. This information has been reviewed and discussed further in this memo, with respect to establishing four-way stop control at this intersection. In addition, recommendations are provided to improve vehicle safety at the intersection.

EXISTING CONDITIONS

Roadway Geometry and Traffic Control

Strawberry Hill Road intersects with Pope Road from the west and east to form a four-way unsignalized intersection, and is located about 1.2 miles north of Route 2A. All approaches to the intersection consist of one general-purpose lane. Approximately 75 feet west of Pope Road, eastbound drivers have the option of continuing east on Strawberry Hill Road or diverging in a northeast direction to continue north onto Pope Road. A grass delta island (approximately 2700 s.f.) separates these two movements. Two-way traffic flow is provided on all sides of the island. This geometry is unconventional and creates multiple conflict points within a small area. Traveling north on Pope Road, roadway alignment consists of a horizontal curve with an approximate radius of 760 feet that diverges to the east as you travel through the intersection. Vertical alignment consists of an upgrade that levels off at the intersection. With the exception of a curve approximately 300 feet west of Pope Road, Strawberry Hill Road is straight and flat through the intersection. "STOP" signs control traffic turning from the Strawberry Hill Road approaches onto Pope Road. In addition, "Intersection Ahead" signs are in place on all the approaches to advise motorists of the stop condition at Strawberry Hill Road. Both Strawberry Hill Road approaches, entering the intersection, are posted at 25 MPH. Pope Road, north of Strawberry Hill Road, is posted at 30 MPH in both

directions, while, south of Strawberry Hill, is posted at 35 MPH. Land use in the area consists of single family homes.

Traffic Volumes

On Wednesday December 3, 2003, manual turning movement counts (TMCs) were collected from 7:00 AM to 6:00 PM for the study intersection. These counts were used to measure peak hour volumes and to perform capacity analysis. Review of this count data indicated that the morning peak hour occurred from 7:30 AM to 8:30 AM and the afternoon peak hour occurred from 5:00 PM to 6:00 PM. Raw TMC data is located in Appendix A.

In addition to the TMCs, Automatic Traffic Recorder counts (ATRs) were conducted by the Town of Acton for a one week period along all four approaches of the study intersection during September 2003. These counts were used to confirm daily traffic volumes along the roadways, conduct signal warrant analysis, and evaluate multiway stop control application. ATR data is located in Appendix B.

Safety

Vehicular crash data for the study intersection was obtained from the Acton Police Department for the most recent three-year period available – January 2000 through January 2003. As shown in Table 1, a review of the overall vehicular crash data for the study intersection indicates the following trends:

- A total of 7 crashes were reported over the three years (three in 2000, one in 2001, two in 2002, and one in January 2003).
- Four (57%) crashes were angle type collisions, one (14%) was head-on type collision, and two (29%) were unknown.
- Five (71%) were property damage related, two (29%) were injury related.
- Three (43%) crashes occurred on dry pavement, four (57%) occurred on wet or snowy pavement.
- Six (86%) crashes occurred under daylight conditions, and one (14%) under dark conditions with the road unlit.
- Six (86%) crashes occurred during the weekday, while one (14%) occurred during the weekend.

Using standard MassHighway formulas, a 1.45 crash rate, in the unit of accidents per million entering vehicles, was calculated. The official statewide rate for the 2003 calendar year was 0.66 for unsignalized intersections. The 2003 District 3 average crash rate for an unsignalized intersection is 0.80. The MassHighway Crash Worksheet for this intersection is located in Appendix C.

Table 1
Vehicular Crash Summary - 2000 through 2003

	Pope Road at Strawberry Hill Road
Year	
2000	3
2001	1
2002	2
2003	1
Total:	7
Collision Type	
Angle	4
Rear-end	0
Head-on	1
Unknown/Other	2
Total:	7
Severity	
Property Damage Only	5
Personal Injury	2
Fatality	0
Hit & Run	0
Total:	7
Weather	
Clear	4
Cloudy	0
Rain	1
Snow	2
Fog	0
Unknown	0
Total:	7
Light Conditions	
Daylight	6
Dawn or Dusk	0
Darkness-Road Lit	0
Darkness-Road Unlit	1
Total:	7
Day of the Week	
Monday-Friday	6
Saturday-Sunday	1
Total:	7
Time of Day	
7:00 AM to 9:00 AM	2
9:01 AM to 3:59 PM	2
4:00 PM to 6 :00 PM	2
6:01 PM to 6:59 PM	1
Total:	7
MassHighway Crash Rate	1.45

Source: Acton Police Department

Average Daily Traffic Volumes

Automatic Traffic Recorder (ATRs) counts were collected by the Town of Acton for a one week period, beginning September 24, 2003 and ending September 30, 2003, at two locations along the Pope Road and Strawberry Hill Road corridors. These ATRs were used to measure daily volumes along the corridor. The locations of these ATRs are:

- Pope Road, north of Strawberry Hill Road
- Pope Road, south of Strawberry Hill Road
- Strawberry Hill Road, ~~west~~ EAST of Pope Road
- Strawberry Hill Road, west of Pope Road

Table 2 presents these locations along the Pope Road and Strawberry Hill Road corridors with their corresponding bi-directional peak hour volumes, their average daily traffic (unadjusted), peak hour volume to daily volume ratio (K-factor), and peak hour directional distribution.

On a typical weekday Pope Road processes approximately 2,310 to 2,360 vehicles. Typical weekday morning peak flow is approximately 200 vph, while evening peak flow is approximately 250 vph. The data also indicates that the peak hours account for approximately 9 to 11 percent of the daily traffic flow, for the weekday peak periods.

On a typical weekday Strawberry Hill Road accommodates approximately 2,260 to 2,400 vehicles. Typical weekday morning peak flow ranges from 300 to 400 vph, while evening peak flow ranges from 200 to 275 vph. The data also indicates that the peak hours account for approximately 9 to 17.5 percent of the daily traffic flow, for the weekday peak periods. ATR counts are included in Appendix B of this memo.

Table 2
2003 Existing Average Weekday Daily Traffic Volumes

Roadway Segment	Peak Periods	Bi-directional Peak Hour Volume (vph)[a]	Average Daily Traffic (vpd)[a]	K-factor (Peak to Daily Ratio) (%)	Directional Distribution
Pope Road (north of Strawberry Hill Road)	Weekday Morning	201	2,310	8.7%	54% NB
	Weekday Evening	241	2,310	10.4%	57% SB
Pope Road (south of Strawberry Hill Road)	Weekday Morning	205	2,360	8.7%	53% SB
	Weekday Evening	259	2,360	10.9%	81% NB
Strawberry Hill Road (west of Pope Road)	Weekday Morning	304	2,397	12.7%	88% EB
	Weekday Evening	273	2,397	11.6%	67% WB
Strawberry Hill Road (east of Pope Road)	Weekday Morning	395	2,256	17.5%	95% EB
	Weekday Evening	203	2,256	8.9%	69% WB

[a] Based on automatic traffic recorder counts conducted by Town of Acton, Inc. in September 24, 2003.

Speed Studies

Speed studies were conducted at Pope and Strawberry Hill Road by the Town of Acton for a one week period, beginning September 24, 2003 and ending September 30, 2003.

Speed measurements along the corridors were taken by using pneumatic road tubes positioned across the roadways and interfaced with electronic recording devices. From this information, the pace, median speed, 85th percentile speed, and 95th percentile speed is determined. The pace is the 10 mph speed range containing the greatest number of vehicles. The median speed is the speed at which 50 percent of the observed traffic is traveling at or lower. The 85th percentile is the speed at which 85 percent of the observed traffic is traveling at or lower than, and is commonly used to establish regulatory speed limits. It is based on the premise that the large majority of drivers are reasonable and prudent, do not want to be in a crash and desire to reach their destination in the shortest possible time. The 95th percentile represents the speed at which 95 percent of the traffic is traveling at or lower.

As can be seen in Table 3, the 85th percentile speed along this segment of Pope Road is approximately 37 mph in the northbound direction and 39 mph in the southbound direction, exceeding the posted speed limits. The 85th percentile speed along Strawberry Hill Road is approximately 31 mph in the westbound direction and 30 mph in the eastbound direction, exceeding the posted speed limit. Detailed speed data sheets for the study intersection can be found in Appendix D of this memo.

Table 3
Pope Road at Strawberry Hill Road
Vehicle Speed Summary (mph)[a]

Roadway Location	Posted Speed[b]	Median Speed[c]	85th Percentile Speed[d]	95th Percentile Speed[e]	10 MPH Pace Range[f]
Pope Road					
Northbound	35	32	37	40	26-35
Southbound	30	34	39	42	31-40
Strawberry Hill Road					
Westbound	25	27	31	34	21-30
Eastbound	25	27	30	33	21-30

[a] Speed in miles per hour (mph) based on 24 hour pneumatic road tubes at each location.
[b] Posted speed limit along the study corridor.
[c] The median speed is the speed at which 50 percent of the observed traffic is traveling at or lower.
[d] The 85th percentile speed is the speed at which 85 percent of the observed traffic is traveling at or lower. It is commonly used in establishing regulatory speed limits.
[e] The 95th percentile speed is the speed at which 95 percent of the observed traffic is traveling at or lower.
[f] The 10 mph speed range containing the greatest number of vehicles.

TRAFFIC SIGNAL WARRANTS ANALYSIS

Traffic signal warrants analyses were performed for the intersection under 2003 existing conditions to establish the need and/or justification for traffic signal control. The methodology used to determine if traffic signal controls are warranted is based on the criteria set in the Manual on Uniform Traffic Control Devices (MUTCD)[1]. There are eight warrants defined in the MUTCD. A traffic signal should not be installed unless one or more of these warrants is met. Satisfaction of any one warrant does not necessarily mean that a signal should be installed at a given location, but does indicate that a signal *could* be installed.

Traffic signal warrants analyses were conducted for the weekday condition using the existing hourly traffic count data along Pope Road and Strawberry Hill Road. There are 8 Warrants that justify a signalized condition. Warrants 4, 5, 6, and 8 do not apply to this condition. Warrant 4 applies where traffic volumes are so heavy that they delay pedestrians crossing the major street. Warrant 5 applies to school crossing areas. Warrant 6 involves existing coordinated signal systems, and Warrant 8 applies to roadway network with greater volumes. This study focused on Warrants 1, 2, 3 and 7 to determine the need for signalization. These warrants are described below:

- **Warrant 1 (Eight-Hour Vehicular Volume):** Warrant 1 is satisfied if either of Condition A or B is met. In addition, Warrant 1 can be satisfied by 80 percent satisfaction of both Condition A **and** Condition B.

  Condition A (Minimum Vehicular Volume): Satisfied when the volume of intersecting traffic (major and minor streets) exceeds MUTCD thresholds for eight or more hours.

  Condition B (Interruption of Continuous Traffic): Satisfied when the volume of major street traffic is so heavy that minor street traffic suffers excessive delay in entering or crossing the major street for eight or more hours.

- **Warrant 2 (Four-Hour Vehicular Volume):** Satisfied when volumes (major and minor streets) exceed MUTCD thresholds for four or more hours.

- **Warrant 3 (Peak Hour):** Satisfied when for the peak hour of a typical day, major and minor street traffic exceeds MUTCD thresholds.

- **Warrant 7 (Crash Experience):** Satisfied when the severity and frequency of crashes exceeds MUTCD thresholds (five or more crashes within a 12-month period).

The methodology used to determine whether or not a signal is warranted is based on the MUTCD. As stated, it explains that traffic control signals should not be installed unless one or more of the signal warrants listed in the MUTCD is met. Table 4 presents the results of the warrants analysis completed for Pope Road and Strawberry Hill Road. The traffic signal warrants analysis worksheet is located in Appendix E.

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[1] Manual on Uniform Traffic Control Devices; Part 4 – Highway Traffic Signals; U.S. Department of Transportation/Federal Highway Administration; December 2000.

Table 4
TRAFFIC SIGNAL WARRANTS ANALYSIS SUMMARY

Condition	Warrant 1[a] Met	Warrant 2[b] Met	Warrant 3[c] Met	Warrant 7[d] Met
2003 Existing	No	No	No	No

[a]Eight-hour volume warrant.
[b]Four-hour volume warrant.
[c]Peak hour volume warrant.
[d]Crash experience warrant.

Based on the results presented in Table 4, the intersection of Pope Road at Strawberry Hill Road does not warrant signalization under 2003 existing conditions.

TRAFFIC PERFORMANCE MEASURES

Level of service (LOS) is the term used to denote the different operating conditions which occur on a given roadway segment under various traffic volume loading. It is a qualitative measure of the effect of a number of factors, including roadway geometry, speed, travel delay, freedom to maneuver, and safety. Six levels of service are defined for each type of facility. Levels of service are given designations from A to F, with LOS A representing the best operating conditions and LOS F representing the worst.

For unsignalized intersections, under two way stop control, the analysis assumes that traffic on the mainline is not affected by traffic on the side streets. Thus the level-of-service is calculated for the side street and the result reported is for the most critical movement exiting the side street, which is most often the left-turn movement. For unsignalized intersections, under multiway stop control, the analysis assumes a consensus of right-of-way that alternates between the drivers on the approaches, a consensus that depends primarily on the intersection geometry and the arrival patterns at the stop signs. The evaluation criteria used to analyze the study intersection is based on the Highway Capacity Manual[2]and described more fully in Appendix E of this memo.

Measuring existing traffic volumes quantifies traffic flow within the study intersection. To assess quality of flow, intersection capacity analyses were conducted with respect to 2003 existing traffic conditions using the Highway Capacity Software (HCS) program. This software program is recognized and accepted by MassHighway for performing capacity analysis at unsignalized intersections. A summary of the unsignalized capacity analysis results is presented in Table 5. Detailed unsignalized capacity analysis reports (HCS) for this intersection are contained in Appendix F.

[2] Highway Capacity Manual; Transportation Research Board, National Research Council; 2000.

Table 5
UNSIGNALIZED INTERSECTION CAPACITY ANALYSIS SUMMARY

Intersection/Peak Hour/Movement	EXISTING TWO WAY STOP CONTROL Delay[a]	LOS[b]	POSSIBLE MULTI-WAY STOP CONTROL Delay	LOS
Pope Road at Strawberry Hill Road				
Weekday morning				
Westbound approach	12.4	B	8.8	A
Eastbound approach	18.1	C	10.9	B
Northbound approach	-	-	9.4	A
Southbound approach	-	-	9.1	A
Weekday afternoon				
Westbound approach	12.4	B	8.8	A
Eastbound approach	11.3	B	8.2	A
Northbound approach	-	-	8.2	A
Southbound approach	-	-	8.4	A

[a] Approach delay in seconds per vehicle.
[b] Level of service.

Under existing conditions (two way stop control) all approaches currently operating at LOS C or better during the morning and afternoon peak hours. A maximum delay of approximately 18.1 seconds occurs during the morning peak hour on the Strawberry Hill Road eastbound approach. Under multiway stop control all approaches would operate at LOS B or better, with a maximum delay of approximately 11 seconds occurring on the Strawberry Hill Road eastbound approach during the morning peak hour.

INTERSECTION SIGHT DISTANCE EVALUATION

In general, intersections have the potential for different types of vehicle conflicts. The possibility of these conflicts actually occurring can be greatly reduced by providing proper sight distances and traffic controls.

Specified areas along intersection approach legs and across their included corners should be clear of obstructions (i.e., parked vehicles, hedges, building structures, bushes, fences, highway structures, terrain) that might block a driver's view of potentially conflicting vehicles. These specific areas are known as clear sight triangles. The dimensions of the legs of the sight triangles depend on design speeds of the intersecting roadways, the types of traffic control used at the intersection, roadway geometry, feasible movements, and type of vehicle. Where design speeds are not known 85th percentile speeds can be used. The type of control includes yield, stop, signal or no control. The types of movements include left-turn, straight through, and right-turn maneuvers. Roadway geometry features include widths, grades, and presence or absence of medians. These dimensions are based on observed driver behavior and are documented by space-time profiles and speed choices of drivers on intersection approaches.

The driver of a vehicle approaching an intersection should have an unobstructed view of the entire intersection, including any traffic control devices, and sufficient lengths along the intersecting roadway to permit the driver to anticipate and avoid potential collisions. Thus it is important that adequate sight distance be provided at intersections of streets with major roadways. Proper sight distance would improve safety and result in better operation conditions. The American Association of State Highway and Transportation Officials describe detailed sight distance requirements for intersections in the 2001 edition of a Policy on

Geometric Design of Highways and Streets. The standards set forth in this publication should be adhered to wherever possible.

Where traffic on a roadway is controlled by stops signs, as is the case at this study intersection, the driver of the vehicle on the minor road must have sufficient sight distance for a safe departure from the stopped position, even if the approaching vehicle comes into view as the stopped vehicle begins its departure movement. There are three basic maneuvers that were analyzed in this sight distance evaluation for the study intersection. These maneuvers are:

- Left turns from Strawberry Hill Road onto Pope Road;
- Right turns from Strawberry Hill Road onto Pope Road; and,
- Crossing Pope Road from the Strawberry Hill Road approaches.

Table 6 presents recommended and measured sight distances for these maneuvers.

Table 6
INTERSECTION SIGHT DISTANCE SUMMARY

Approach/Movement	Approximate Operating Speed[a]	Recommended Sight Distance[b]	Approximate Sight Distance[c] (Looking Left)	Approximate Sight Distance[c] (Looking Right)
Strawberry Hill Road eastbound				
Left turn	40	445'	1195'	1590'
Right turn	40	385'	1195'	1590'
Straight Through	40	385'	1195'	1590'
Strawberry Hill Road northeast				
Left turn	40	445'	310'	360'
Right turn	40	385'	310'	360'
Strawberry Hill Road westbound				
Left turn	40	445'	220'	290'
Right turn	40	385'	220'	290'
Straight Through	40	385'	220'	290'

[a] Based on 85th Percentile Speeds collected by the Town on Pope Road.
[b] Ref. "A Policy on Geometric Design of Highways and Streets" 2001 American Association of State Highway and Transportation Officials.
[c] Based on a point 10' from the edge of the major road, 3.50' eye height and 4.35' object height.

Based on the results shown in Table 6, sight distances for the Strawberry Hill Road eastbound approach are adequate in that they exceed the requirements for 85 percentile speeds collected along Pope Road in both directions. Sight distance for the Strawberry Hill Road northeast approach is restricted for left and right-turn movements. Here, approximately 70 to 80% of the recommended distance is met for left-turn movements and approximately 80 to 94% of the recommended distance is met for right-turn movements. All movements from the Strawberry Hill westbound approach have restricted sight distances. Here, approximately 49 to 65% of the recommended distance is met for left-turn movements and approximately 57 to 75% of the recommended distance is met for through/right-turn movements. This can be attributed to a combination of the horizontal curve that passes through the intersection and shrubs/trees that are obscuring lines of sight for motorists.

MULTIWAY STOP CONTROL APPLICATION

Evaluation of the multiway stop control application was performed for the study intersection under 2003 existing conditions to establish the need and/or justification for a multiway stop control. The methodology used to determine if multiway stop control is justified is based on the criteria set in the Manual of Uniform Traffic Control Devices (MUTCD)[2]. The MUTCD provides several criteria for a multiway stop installation. The MUTCD contains language that at least one or more of these criteria should be considered to permit the installation of a multiway stop control, and should improve the overall safety and/or operation of the intersection. The determination for installing multiway stop control is established partly on the criteria and partly on engineering judgment relative to the positive or negative effects of a multiway stop control. The following criteria were considered in determining if multiway stop control is applicable:

A. Where traffic control signals are justified, multiway stop is an interim measure that can be installed quickly to control traffic while arrangements are being made for the installation of the traffic control signal.

B. A crash problem, as indicated by 5 or more reported crashes in a 12-month period that are susceptible to correction by a multiway stop installation. Such crashes include right- and left-turn collisions as well as right-angle collisions.

C. Minimum volumes:

   1. The vehicular volume entering the intersection from the major street approaches (total of both approaches) averages at least 300 vehicles per hour for any 8 hours of an average day.

   2. The combined vehicular, pedestrian, and bicycle volume entering the intersection from the minor street approaches (total of both approaches) averages at least 200 units per hour for the same 8 hours, with an average delay to minor-street vehicular traffic of at least 30 seconds per vehicle during the highest hour, but

   3. If the 85th-percentile approach speed of the major-street traffic exceeds 40 MPH, the minimum vehicular volume warrants are 70 percent of the above values.

D. Where no single criterion is satisfied, but where Criteria B, C.1, and C.2 are all satisfied to 80 percent of the minimum values. Criterion C.3 is excluded from this condition.

Table 6 present a summary of the criteria for mulitway stop application. The analysis worksheet for this application is located in Appendix G.

Table 6
MULTIWAY STOP CONTROL SUMMARY

Condition	Criterion A[a] Met	Criterion B[b] Met	Criterion C1/C2[c] Met	Criterion C3[d] Met	Criterion D[e] Met
2003 Existing	No	No	No	No	No

[a]Interim for signal installation.
[b]Crash experience criteria.
[c]Intersection volume criteria, low speed.
[d]Intersection volume criteria, high speed.
[e]Combined crash/volume criteria.

Based on the results presented in Table 6, the intersection of Pope Road and Strawberry Hill Road does not justify the installation on a multiway stop control under 2003 existing conditions. Criterion C3 was analyzed because of the proximity in speed (39 MPH), for the 85th percentile on Pope Road, to the 40 MPH requirement. As shown above, Criterion C3 did justify the installation on a multiway stop control as well.

CONCLUSION AND RECOMMENDATIONS

This memorandum states that the accident rate at this intersection is greater than the state average for this area. Under existing conditions all approaches operate at LOS C or better. A multiway stop approach would operate at LOS B or better. There are sight distances issues for the northeast and westbound approaches for Strawberry Hill Road. There are also speed issues to address at this location as well.

Based on our review of the data (i.e., traffic counts, accidents, vehicle speeds, signal warrant analysis, capacity analysis, sight distance evaluation, and multiway stop control application) a traffic signal or a four way stop control, under 2003 conditions is not recommended for the intersection of Pope Road at Strawberry Hill Road. However, the following is a list of potential improvements for this intersection. Anyone of these, or combinations thereof, could be implemented to enhance vehicle safety:

- Remove the "Intersection Warning" (W2-1) signs on the Strawberry Hill Road approaches and install graphic "Stop Ahead" (W3-1A) signs. At the same time reassess the placement of the Intersection Warning (W2-1) signs on Pope Road. The intent here is to provide adequate advance warning for the driver to react and maneuver through the warned condition

- Clear/remove shrubs and trees (i.e. triple 20" Oak and 24" Pine located in the southeast quadrant of intersection) obscuring lines of sight north and south along Pope Road for the Strawberry Hill Road westbound approach. (Note: In some instances, right-of-entry would be required where clearing on private property occurs)

- Either change the northeast leg of Strawberry Hill Road from two-way traffic flow to one-way traffic flow from Pope Road and place this movement under "Yield" control at the merge with Strawberry Hill Road, or eliminate the northeast approach of Strawberry Hill Road altogether and require Strawberry Hill Road eastbound left-turns and Pope Road southbound right-turns to turn at the intersection. The radius at this corner of the intersection would have to be increased to accommodate this maneuver.

- Install an intersection control beacon. This beacon would be mounted over the roadway and would flash yellow for the Pope Road approach and red for the Strawberry Hill Road approaches. Once the beacon is installed accidents should be monitored for reduction. Should a four-way stop control be applicable in the future this intersection control beacon could be modified to a stop beacon, where all approaches would have a flashing red display.

- Install additional speed limit signs along Pope Road to reinforce existing speed limits.

- Coordinate with the Police Department to conduct periodic radar enforcement along Pope Road to discourage speeding.

- Traffic calming measures can also be considered by the Town. Speed humps and speed tables would be the most likely measures to consider because they would reduce speeds in this area while providing low to moderate reduction in volume and truck traffic