

**MEMORANDUM**

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Ref: 1117  
Subject: Response to Traffic Comments  
Proposed Village at Bailey's Pond  
Amesbury, Massachusetts  
From: Kim Eric Hazarvartian, Ph.D., P.E., PTOE  
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**INTRODUCTION**

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This memorandum presents responses to comments on the April 15, 2010 *Traffic Impact and Access Study, Proposed Village at Bailey's Pond, Amesbury, Massachusetts* (hereinafter TIAS), prepared for Fafard Real Estate and Development Corp. by TEPP LLC. The comments, as summarized below, were in September 28, 2012 letter regarding *Transportation Study Peer Review, Proposed Village at Bailey Pond, Amesbury, Massachusetts* from BSC Group, Inc., hereinafter BSC.

**SIGHT DISTANCES**

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**COMMENT**

The American Association of State Highway and Transportation Officials (AASHTO) indicates that intersection sight distances (ISD) that exceed SSD are desirable along the major road. BSC recommends that ISD be calculated at the four proposed driveways, to determine whether the desired ISD is achieved.

**RESPONSE**

AASHTO describes SSD, as applied to unsignalized intersections.<sup>1</sup> TEPP LLC notes that:

- SSD provides for safety and is fundamental to intersection operation
- SSD enables a driver, on the major road, to perceive and react accordingly to a vehicle entering the major road from a minor road

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<sup>1</sup> AASHTO, *A Policy on Geometric Design of Highways and Streets*, Fifth Edition (Washington, DC, 2004), page 651.

- SSD is conservative because it encompasses a wide range of brake-reaction times and deceleration rates

AASHTO also describes optional ISD.<sup>2</sup> TEPP LLC notes that:

- optional ISD is ordinarily greater than SSD and may enhance traffic operations
- optional ISD is not required for safety

Table 1 shows that:

**Table 1. Sight distances for intersection locations.**

Minor Street	To/From	Available Sight Distance			Major-Street Speeds (mph) <sup>a</sup>		
		Distance (ft)	Is SSD for Speed (mph) <sup>a</sup>	Is ISD for Speed (mph) <sup>b</sup>	Speed Limit	Mean	85 <sup>th</sup> Percentile
Route 150 Extension/ Proposed North Driveway	North	425± <sup>c</sup>	48+	39±	25	42	48
	South	615± <sup>d</sup>	51+	51+	40	44	51
Route 150 Extension/ Proposed South Driveway	North	630± <sup>d</sup>	48+	51+	25	42	48
	South	385± <sup>d</sup>	End of Street		40	44	51
Summit Avenue/ Proposed Driveway	West	700± <sup>d</sup>	44+	44+	40	34	44
	East	400± <sup>c</sup>	45+	36±	40 <sup>c</sup>	38	45
Beacon Street/ Proposed Driveway	West	520± <sup>d</sup>	33+	33+	30	27	33
	East	275± <sup>d</sup>	35+	35+	30	29	35

<sup>a</sup>AASHTO, pages 110 to 115.

<sup>b</sup>AASHTO, pages 657 to 661.

<sup>c</sup>With clearing.

<sup>d</sup>With vegetation maintenance.

- except as noted below, sight lines with maintenance of vegetation provide SSD and optional ISD for 85<sup>th</sup> percentile speeds or are otherwise appropriate
- at the Route 150 Extension/proposed north driveway intersection, clearing to/from the north will provide SSD for 85<sup>th</sup> percentile speeds and ISD for about 39 mph, which exceeds the posted speed limit of 25 mph
- at the Summit Avenue/proposed driveway intersection, clearing to/from the east will provide SSD for 85<sup>th</sup> percentile speeds and optional ISD for about 36 mph

<sup>2</sup> AASHTO, page 651.

## **FUTURE PLANNED DEVELOPMENTS**

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### **COMMENT**

The TIAS notes 80 permitted residential condominium units at Hatters Point on Merrimac Street to the east of the site. Have trips associated with these units been included in the background traffic growth resulting in the 2015 no-build volumes?

### **RESPONSE**

Trips associated with these units have been included in the background trips resulting in the 2015 no-build volumes.

## **2015 BUILD TRAFFIC OPERATIONS**

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### **COMMENT**

BSC recommends that calculated intersection delays be provided in tenths of a second. The 2015 build peak-hour factors (PHFs) do not match the 2010 existing or 2015 no-build PHFs. BSC recommends that the source of the PHFs be provided and, if necessary, the analyses be revised to reflect any changes in PHFs.

### **RESPONSE**

Tables 2 and 3 present results for the study-area intersections for weekday peak hours under 2010 existing, 2015 no-build and 2015 build conditions. The tables show computed LOS, delays in tenths of a second and queues. PHFs were based on applicable actual traffic counts and have been confirmed as matching correctly.

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**Table 2. Intersection capacity analysis summary for AM peak hour.**

Intersection and Movement	LOS <sup>a</sup> /Delay <sup>b</sup> /Queue <sup>c</sup>		
	2010 Existing	2015 No Build	2015 Build
<b>Route 150 Extension/Summit Avenue Unsignalized Intersection</b>			
Route 150 Extension SB LT	A/0.7/0	A/0.6/0	A/0.8/1
Summit Avenue WB LR	A/9.2/2	A/9.4/2	A/9.9/5
<b>Beacon Street/Route 150 Extension Unsignalized Intersection</b>			
Beacon Street EB LT	A/5.4/1	A/5.5/1	A/5.5/1
Route 150 Extension SB LR	A/9.4/6	A/9.6/8	A/9.7/9
<b>Route 150 Extension/Proposed North Driveway Unsignalized Intersection</b>			
Route 150 Extension SB LT	- <sup>d</sup>	-	A/0.8/1
Proposed North Driveway WB LR	-	-	A/9.6/4
<b>Route 150 Extension/Proposed South Driveway Unsignalized Intersection</b>			
Route 150 Extension SB LT	-	-	A/0.1/0
Proposed South Driveway WB LR	-	-	A/9.4/0
<b>Summit Avenue/Proposed Driveway Unsignalized Intersection</b>			
Summit Avenue WB LT	-	-	A/0.0/0
Proposed Driveway NB LR	-	-	A/8.7/2
<b>Beacon Street/Proposed Driveway Unsignalized Intersection</b>			
Beacon Street EB LT	-	-	A/0.0/0
Proposed Driveway SB LR	-	-	A/9.7/1

<sup>a</sup>Level of service.

<sup>b</sup>Average delay in seconds per vehicle.

<sup>c</sup>95<sup>th</sup> percentile queue in ft.

<sup>d</sup> - = not calculated or not applicable.

EB = eastbound, WB = westbound, SB = southbound, NB = northbound, L = left, T = through, R = right.

**Table 3. Intersection capacity analysis summary for PM peak hour.**

Intersection and Movement	LOS <sup>a</sup> /Delay <sup>b</sup> /Queue <sup>c</sup>		
	2010 Existing	2015 No Build	2015 Build
<b>Route 150 Extension/Summit Avenue Unsignalized Intersection</b>			
Route 150 Extension SB LT	A/0.9/1	A/0.8/1	A/1.0/1
Summit Avenue WB LR	A/9.0/1	A/9.1/1	A/9.5/3
<b>Beacon Street/Route 150 Extension Unsignalized Intersection</b>			
Beacon Street EB LT	A/4.5/1	A/4.6/1	A/4.6/1
Route 150 Extension SB LR	A/9.8/13	B/10.3/21	B/10.4/22
<b>Route 150 Extension/Proposed North Driveway Unsignalized Intersection</b>			
Route 150 Extension SB LT	- <sup>d</sup>	-	A/1.9/2
Proposed North Driveway WB LR	-	-	A/9.3/2
<b>Route 150 Extension/Proposed South Driveway Unsignalized Intersection</b>			
Route 150 Extension SB LT	-	-	A/0.1/0
Proposed South Driveway WB LR	-	-	A/0.0/0
<b>Summit Avenue/Proposed Driveway Unsignalized Intersection</b>			
Summit Avenue WB LT	-	-	A/0.0/0
Proposed Driveway NB LR	-	-	A/8.8/1
<b>Beacon Street/Proposed Driveway Unsignalized Intersection</b>			
Beacon Street EB LT	-	-	A/0.2/0
Proposed Driveway SB LR	-	-	B/10.9/0

<sup>a</sup>Level of service.

<sup>b</sup>Average delay in seconds per vehicle.

<sup>c</sup>95<sup>th</sup> percentile queue in ft.

<sup>d</sup> - = not calculated or not applicable.

EB = eastbound, WB = westbound, SB = southbound, NB = northbound, L = left, T = through, R = right.