Greetings students of the Brookline Public Schools,

As a city planner, the safety of road intersections is of utmost interest to me. I write to you to help the city identify "safe" turns and "troublesome" intersections in our town so we may identify measures to make intersections safer. Below are how we classify "safe" and "troublesome" turns

<b>SAFE TURNS</b> These are intersections that have seen very few traffic accidents.	<b>TROUBLESOME TURNS</b> The sharp turns reduce peripheral visibility and result in more accidents with pedestrians and other cars than you'd expect.			

I require the following tasks:

- Develop a mathematical definition for "safe" turns and "troublesome" turns using these examples. Please use specific and accurate definitions and vocabulary.
- Find examples of "safe" and "troublesome" intersections in our town using a map tool (such as google maps or a physical map). Be sure to include at least two examples that include *consecutive* intersections, such as the ones with **two blue** lines above.
- On the examples you find, clearly label the turn angles going every which way. And be sure to identify patterns in the angles.

Thank you in advance, Norma Gordon City Mathematical Traffic Manager Advisor

Additional Pages excerpted from a recent Brookline developement Traffic Impact Study





Schematic Diagram: Not to Scale **Proposed Residential Development** Brookline, Massachusetts

## Existing Peak Hour Traffic Volumes

Stantec Consulting Services Inc.





![](_page_2_Picture_1.jpeg)

Schematic Diagram: Not to Scale

Stantec Consulting Services Inc.

![](_page_2_Picture_4.jpeg)

# **Existing Morning Peak Hour Pedestrian Volumes**

Brookline, Massachusetts

Proposed Residential Development

Figure 5

![](_page_3_Figure_0.jpeg)

![](_page_3_Picture_1.jpeg)

Schematic Diagram: Not to Scale

Stantec Consulting Services Inc.

## Existing Afternoon Peak Hour Pedestrian Volumes

Proposed Residential Development

Brookline, Massachusetts

Stantec

Figure 6

![](_page_4_Figure_0.jpeg)

![](_page_4_Picture_1.jpeg)

Schematic Diagram:

Proposed Residential Development Brookline, Massachusetts

## Existing Peak Hour Bicycle Volumes

Stantec Consulting Services Inc.

![](_page_4_Picture_6.jpeg)

	Beacon St/ Pleasant St	Beacon St/ Harvard St	Waldo St/ Pleasant St	John St/ Pleasant St	Green St/ John St	Green St/ Harvard St	Harvard St/ Babcock St
Year							
2012	0	4	0	1	0	0	0
2013	0	2	0	0	0	0	0
2014	0	3	0	1	0	2	0
2015	<u>0</u>	<u>6</u>	<u>0</u>	<u>1</u>	<u>1</u>	<u>1</u>	<u>1</u>
Total	0	15	0	3	1	3	1
Туре							
Angle	0	4	0	1	1	0	1
Rear-end	0	3	0	0	0	0	0
Head-on	0	0	0	0	0	0	0
Single Vehicle Crash	0	4	0	1	0	2	0
Sideswipe	0	3	0	2	0	1	0
Other/Not Reported	<u>0</u>	1	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	0	15	0	4	1	3	1
Severity							
Property Damage	0	7	0	2	1	0	1
Personal Injury	0	8	0	1	0	3	0
Fatality	0	0	0	0	0	0	0
Not Reported	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	0	15	0	3	1	3	1
Weather							
Clear	0	10	0	1	1	3	1
Cloudy	0	1	0	0	0	0	0
Rain	0	3	0	2	0	0	0
Snow/Ice	0	1	0	0	0	0	0
Fog	0	0	0	0	0	0	0
<u>Unknown</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	0	15	0	3	1	3	1
Time							
7:00AM to 9:00AM	0	2	0	0	0	2	0
9:00AM to 4:00PM	0	5	0	1	0	0	1
4:00PM to 6:00PM	0	4	0	1	0	1	0
6:00PM to 7:00AM	0	4	<u>0</u>	<u>1</u>	1	<u>0</u>	0
Total	0	15	0	3	1	3	1
Crash Rate*							
MassDOT District 6	0.70	0.70	0.53	0.53	0.53	0.53	0.70
Intersection	0.00	0.33	0.00	0.51	0.25	0.18	0.05

#### Table 4 Reported Crashes – 2012 to 2015

\*Per Million Entering Vehicles (MEV)

![](_page_5_Picture_4.jpeg)