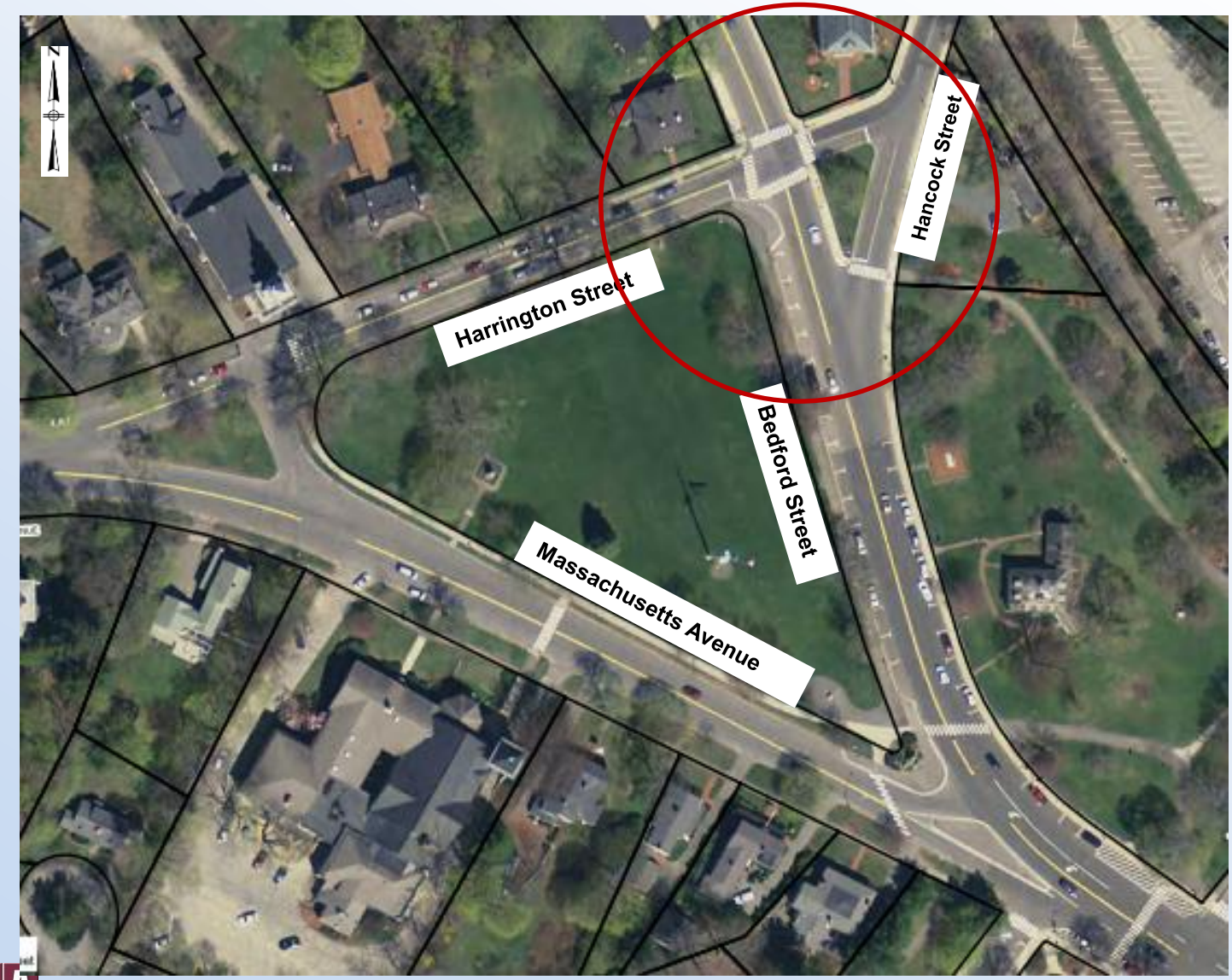
Battle Green Improvements Project
Intersection of
Bedford Street @ Hancock Street / Harrington Road

Board of Selectmen Meeting
July 13, 2015

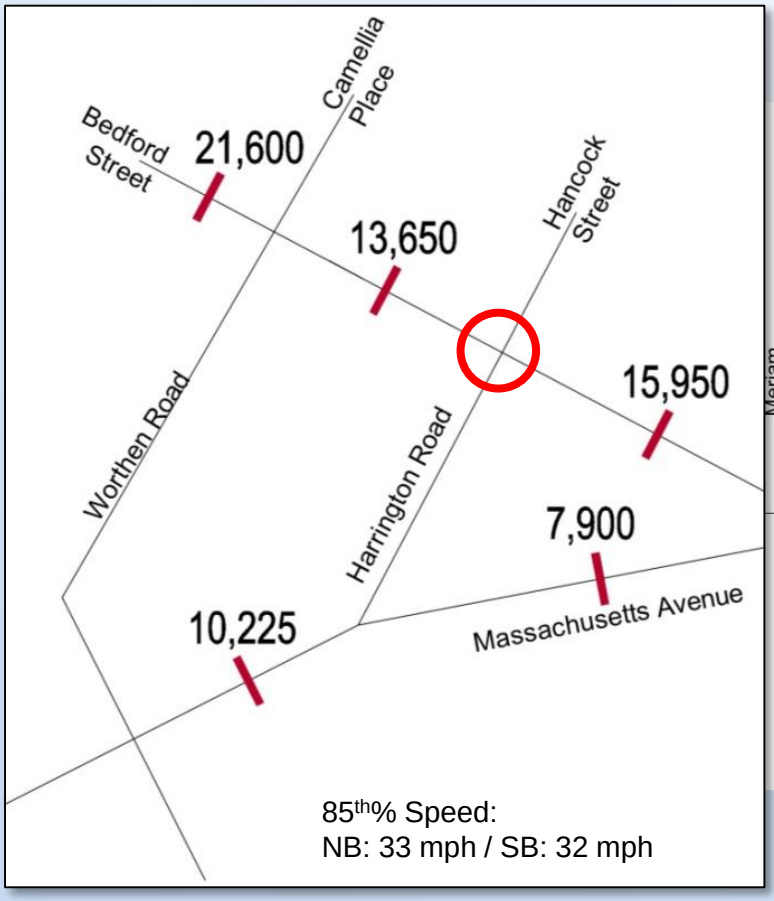
Project Limits

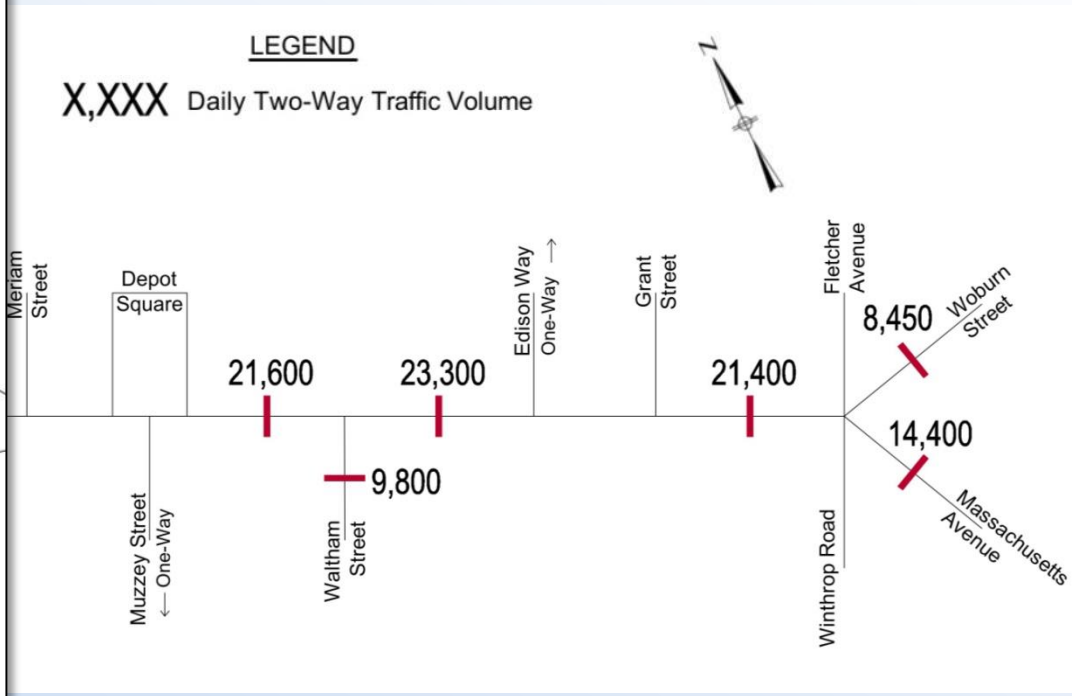


Discussion Points

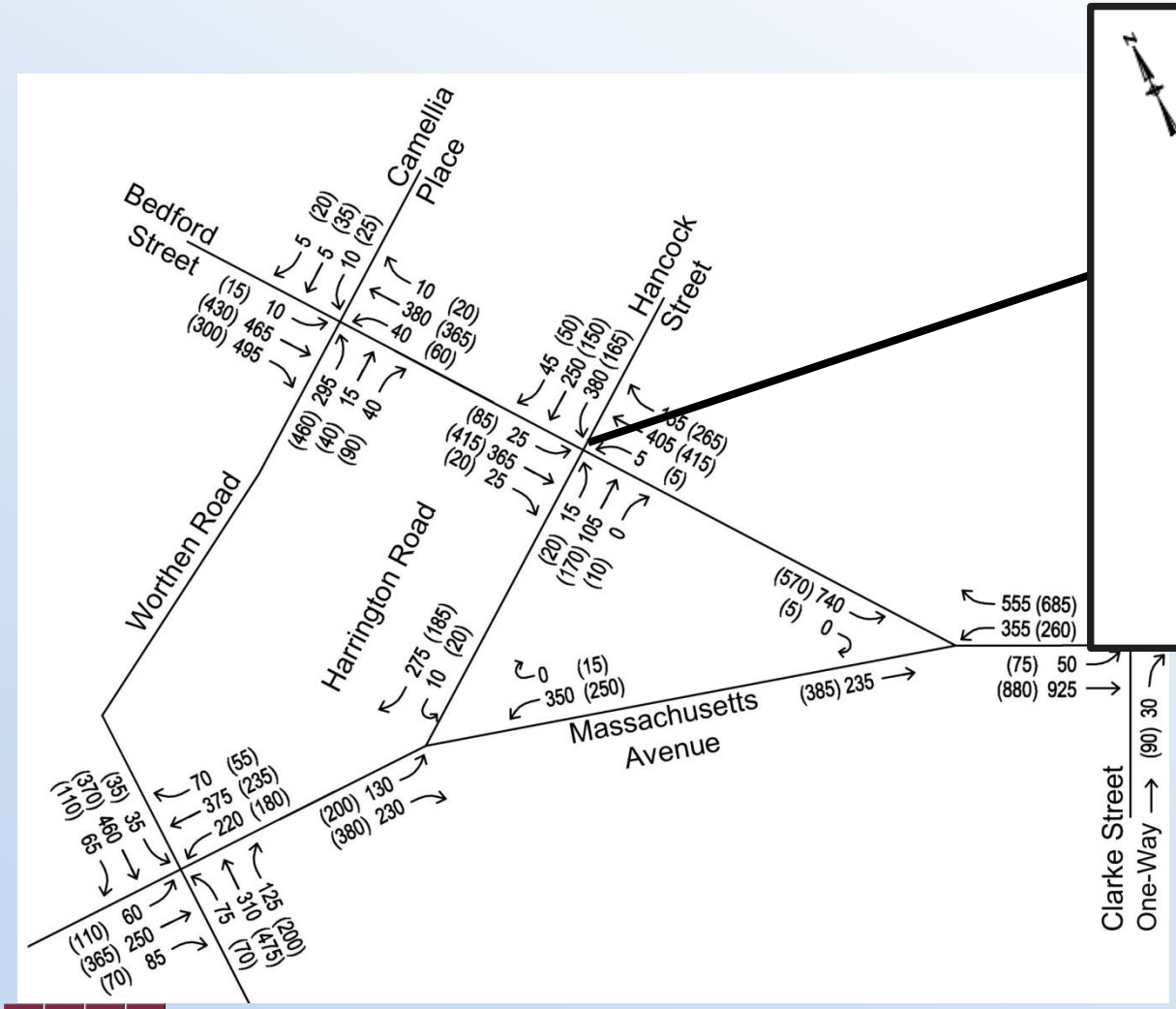
1. Traffic Data
2. Accident/Safety Analysis
3. Existing Deficiencies
4. Improvement Option Evaluation

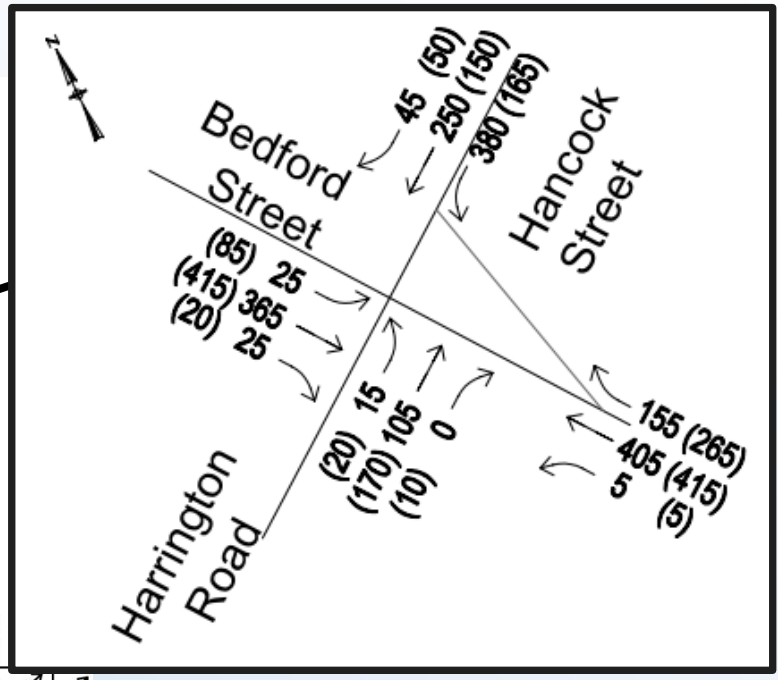
Existing Average Daily Traffic Volumes





Existing Peak AM and PM Turning Movement Volumes



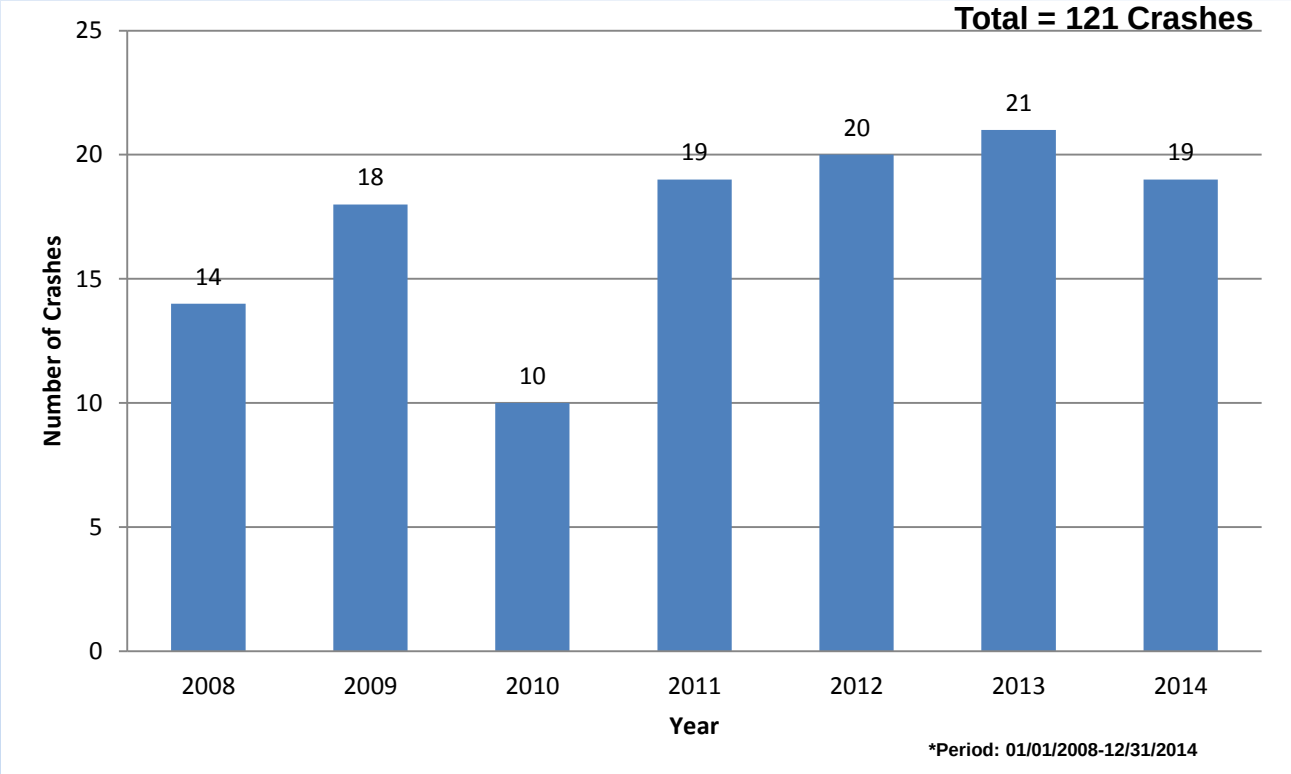


Intersection Crash History (2008-2010)

Crashes Within Entire Study Area = 196

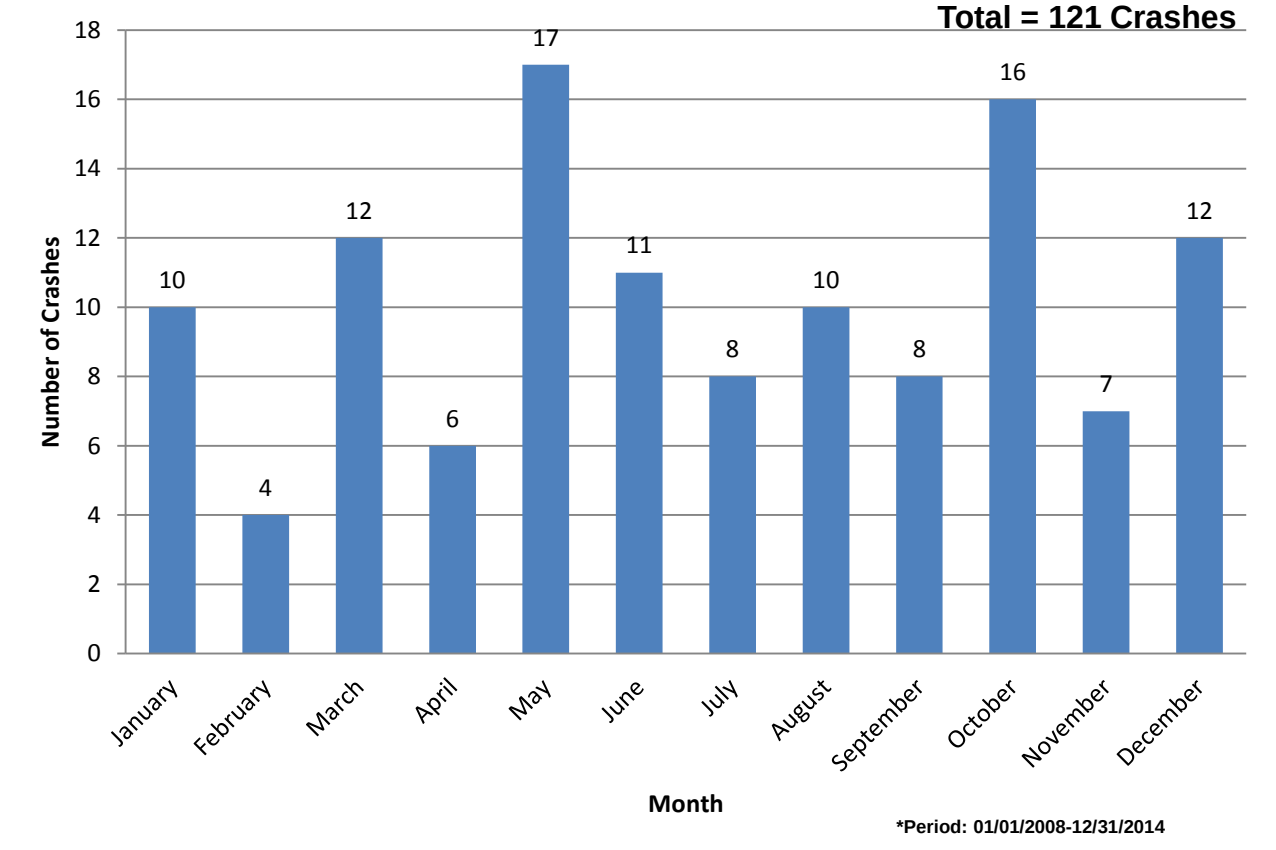
Number of Crashes by Year

Bedford Street @ Hancock Street & Harrington Road



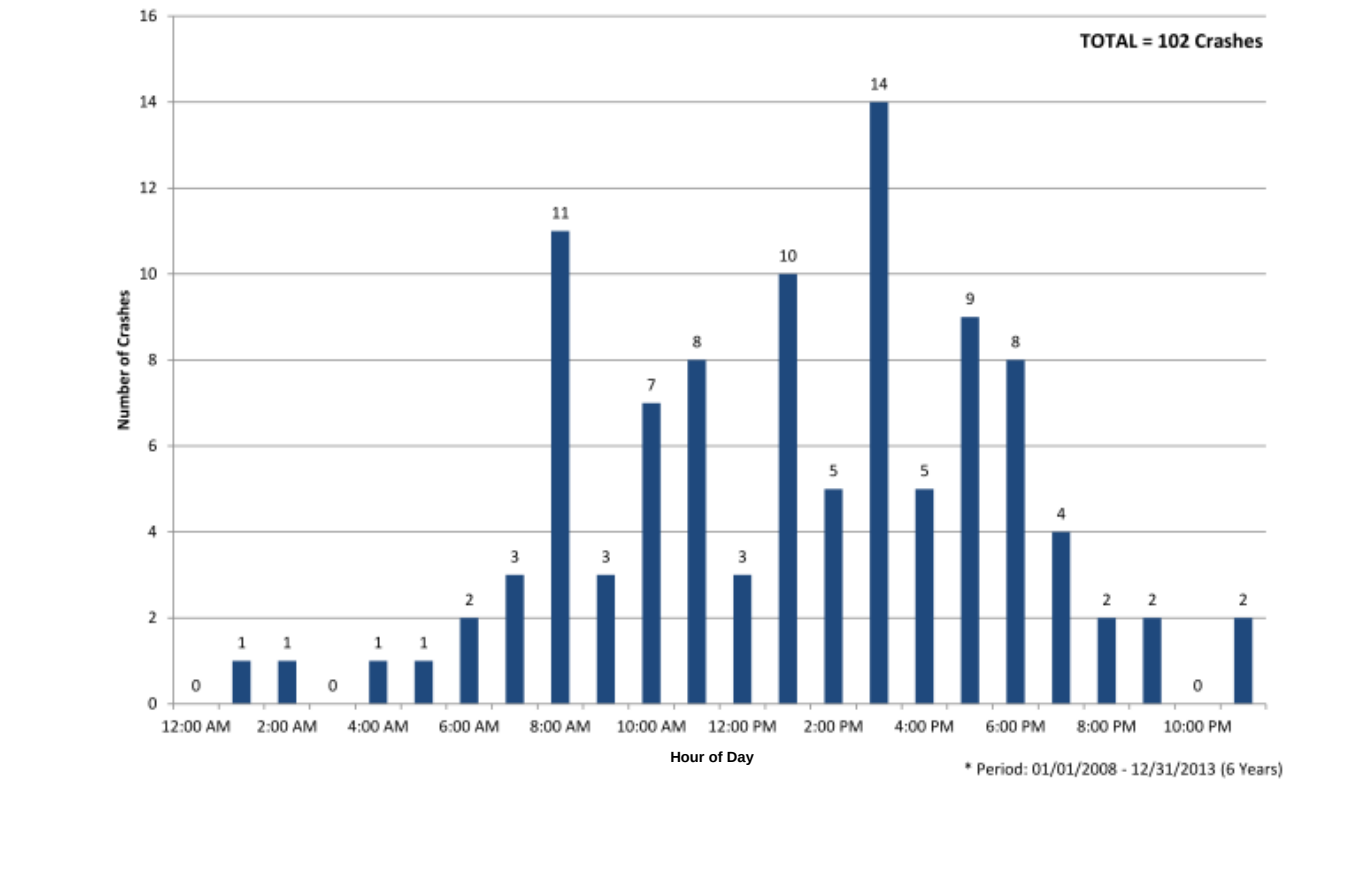
Number of Crashes by Month

Bedford Street @ Hancock Street & Harrington Road



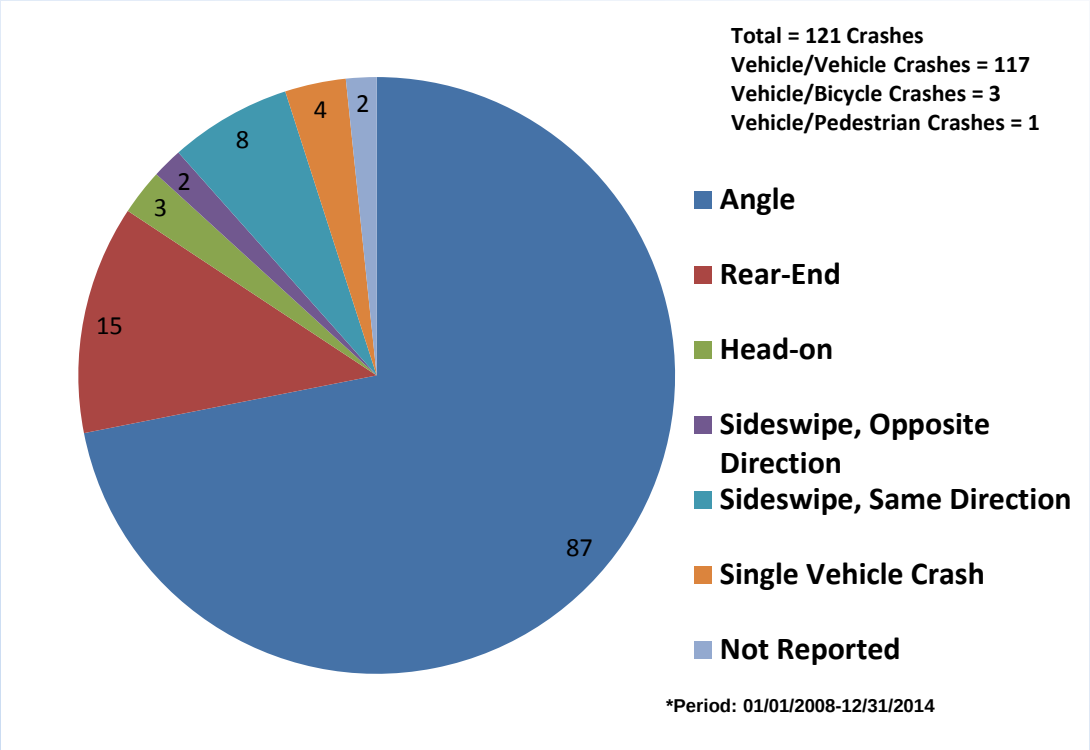
Number of Crashes by Hour of Day

Bedford Street @ Hancock Street & Harrington Road



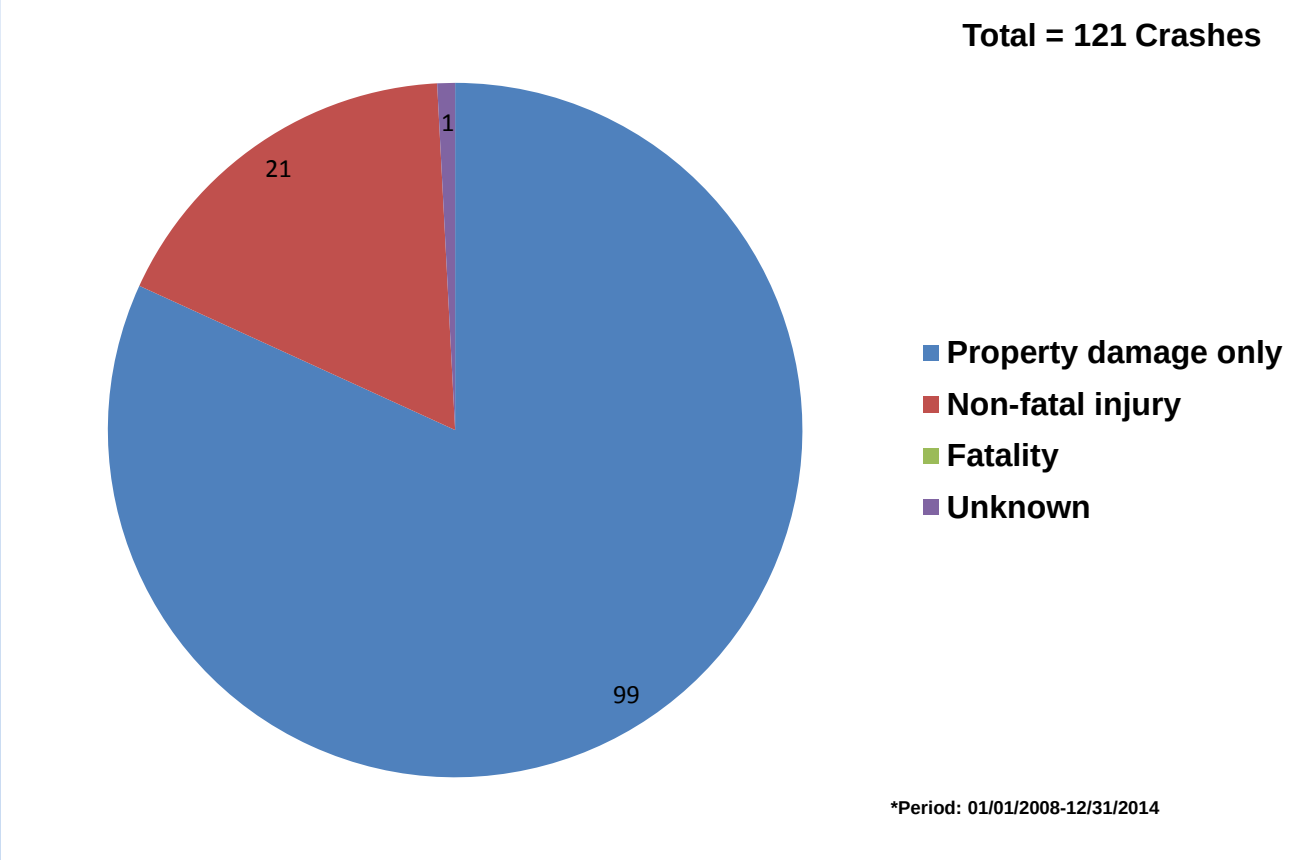
Crash Type

Bedford Street @ Hancock Street & Harrington Road



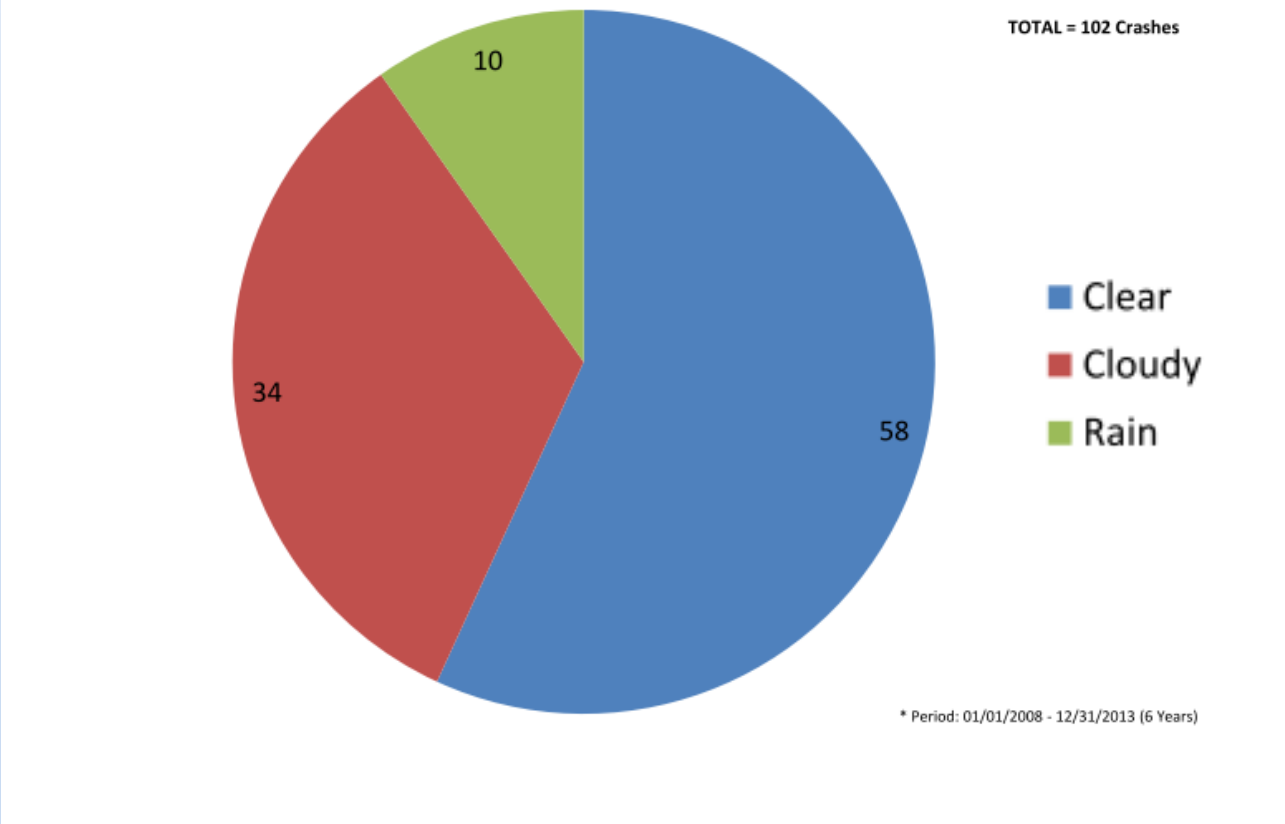
Crash Severity

Bedford Street @ Hancock Street & Harrington Road



Weather Conditions

Bedford Street @ Hancock Street & Harrington Road



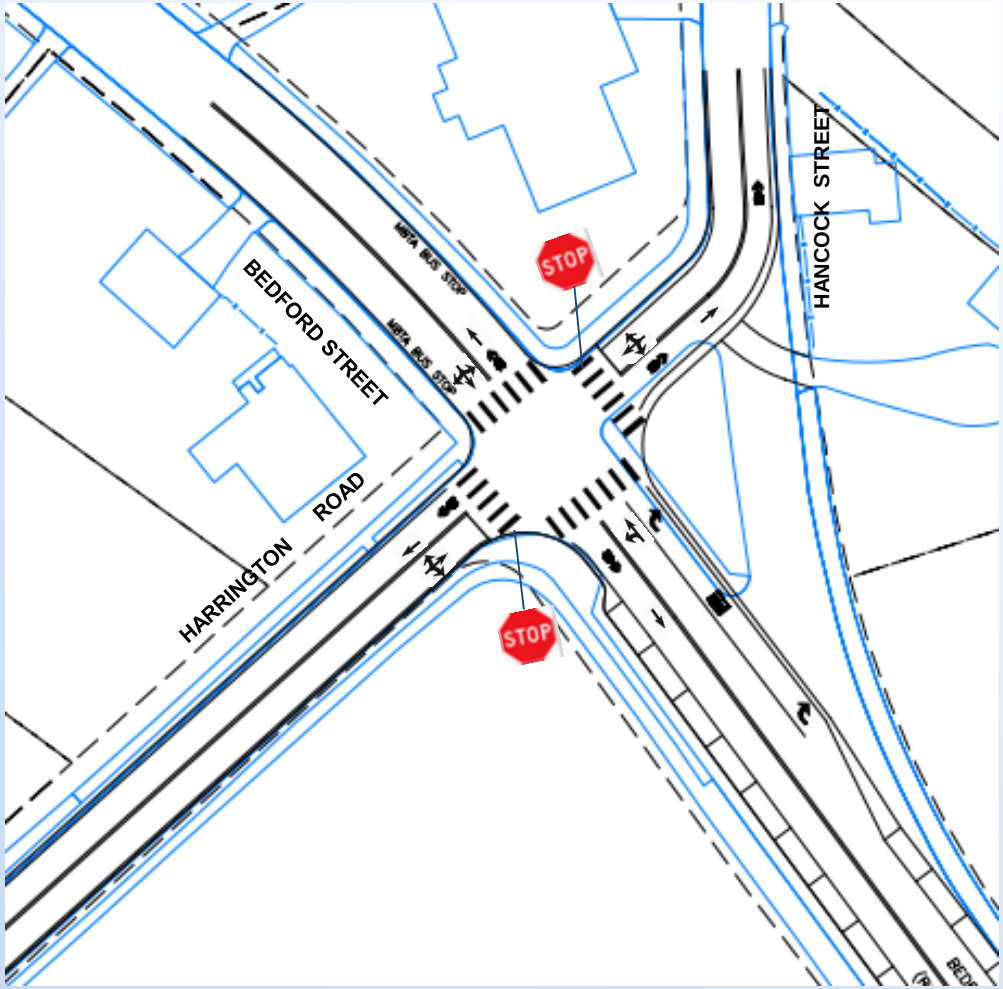
Existing Traffic Pattern

Design Options

1. Remove the Bedford Street right-turn slip lane.
2. Option 1 with traffic signals.
3. Retain the Bedford Street right-turn slip lane one-way away from Bedford Street.
4. Option 3 with traffic signals.
5. Make Harrington Road one-way away from Bedford Street (southbound). Remove the Bedford Street right-turn slip lane.
6. Make Harrington Road one-way toward Bedford Street (northbound). Two-way STOP control.
7. Make Harrington Road one-way away from Bedford Street (southbound). Retain the Bedford Street right-turn slip lane.
8. Make Harrington Road one-way away from Bedford Street (southbound). Make the Bedford Street right-turn slip lane one-way away from Bedford Street.
9. Make Harrington Road one-way away from Bedford Street (southbound). Make Bedford Street one-way between Massachusetts Avenue and Harrington Road. Roundabout.

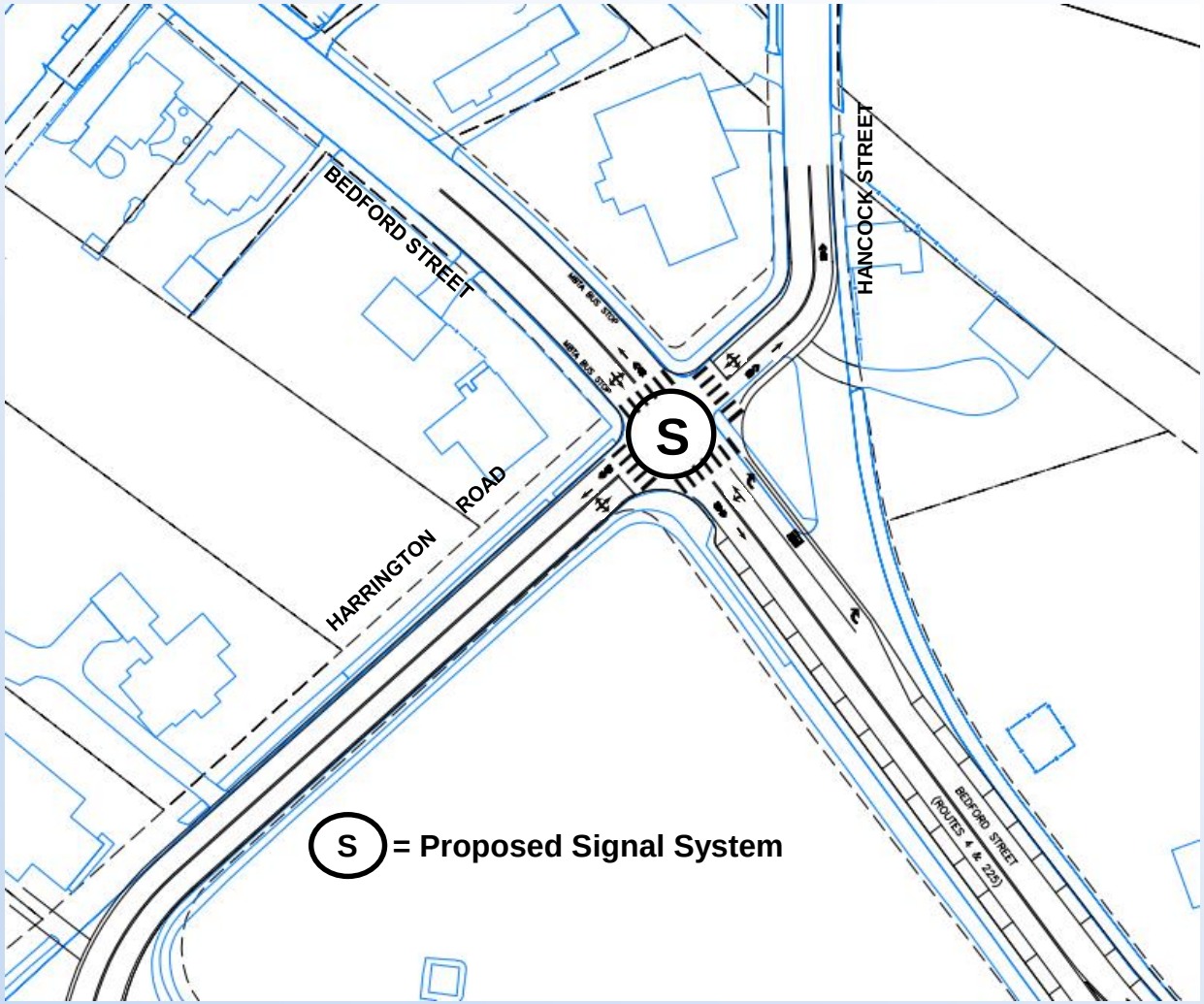
Bedford Street / Hancock Street / Harrington Road

Option 1 – Remove Bedford Street Right-Turn Slip Lane



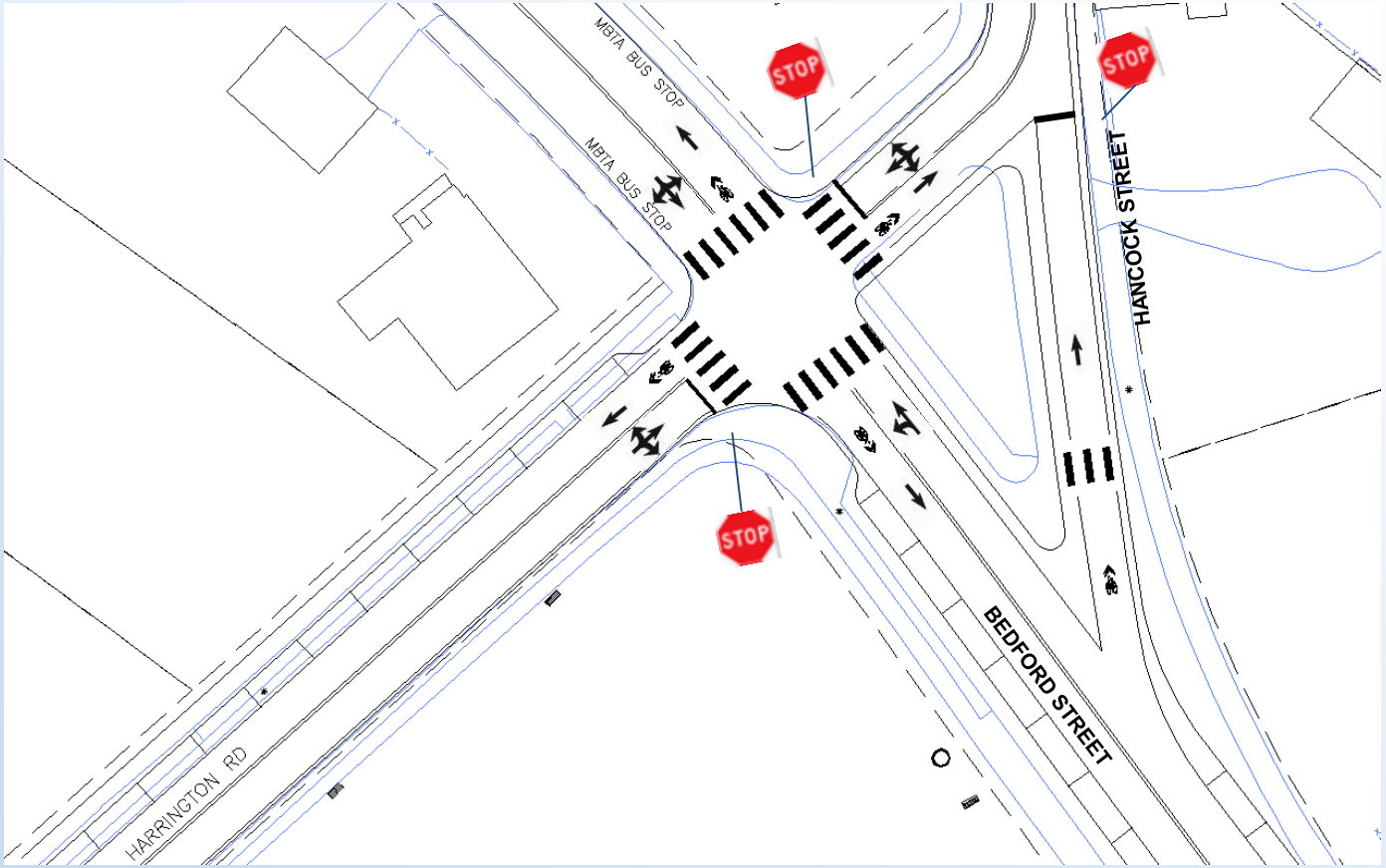
Bedford Street / Hancock Street / Harrington Road

Option 2 – Option 1 With Traffic Signals



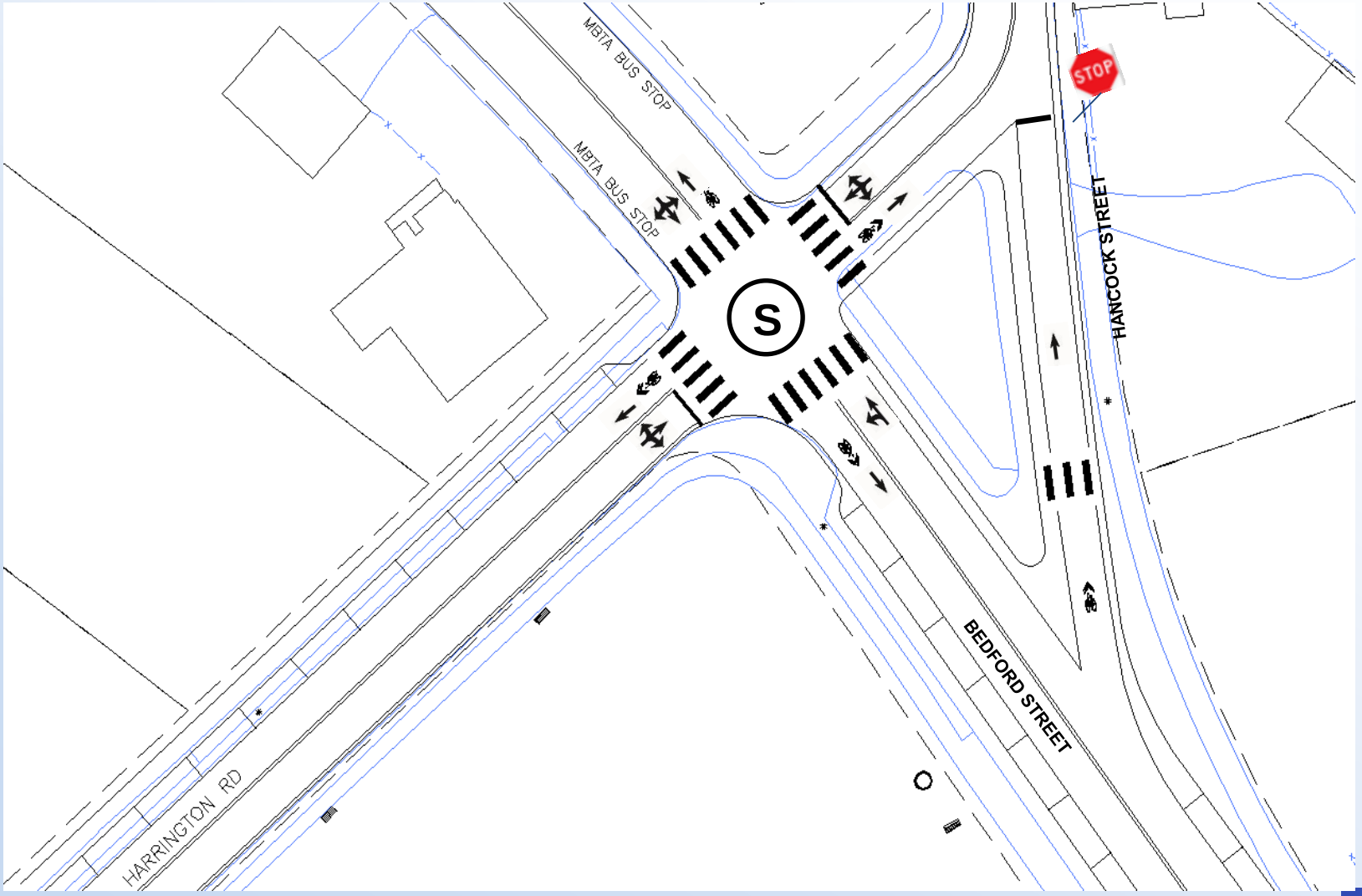
Bedford Street / Hancock Street / Harrington Road

Option 3 - Retain the Bedford Street Right-Turn Slip Lane with one-way away from Bedford Street



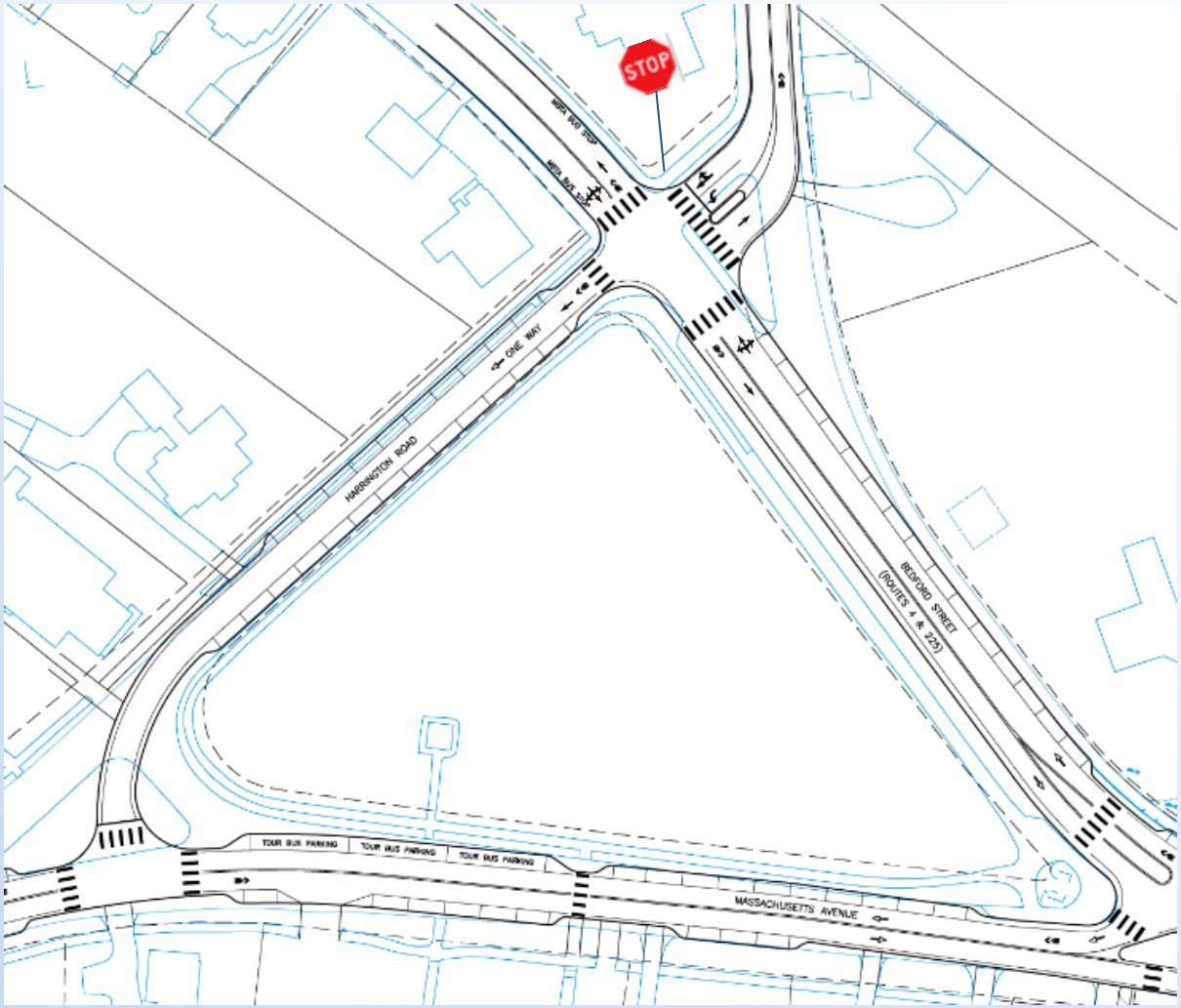
Bedford Street / Hancock Street / Harrington Road

Option 4 – Option 3 With Traffic Signals



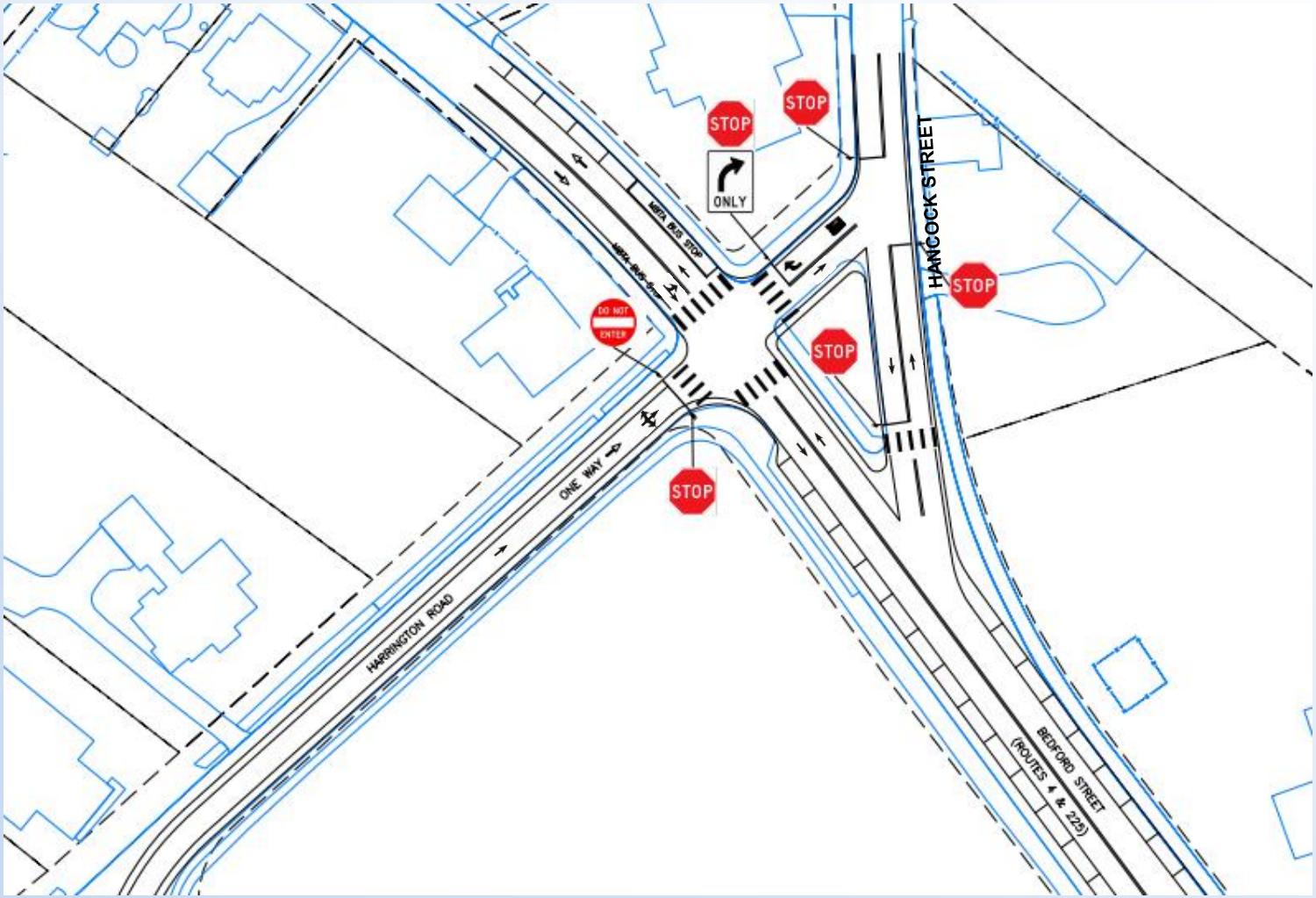
Bedford Street / Hancock Street / Harrington Road

Option 5 – Make Harrington Road One-Way From Bedford Street (Southbound)
Remove the Bedford Street right-turn slip lane



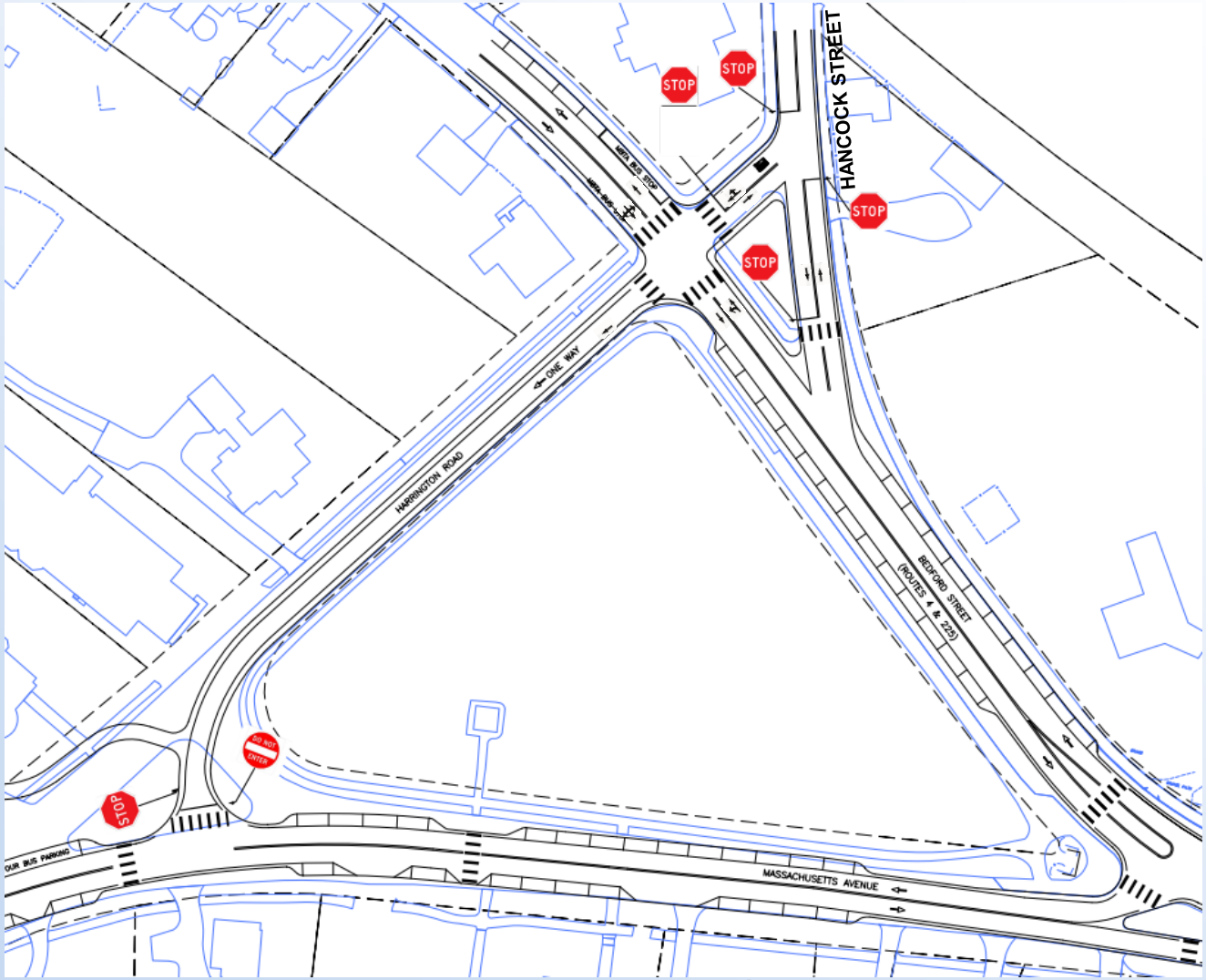
Bedford Street / Hancock Street / Harrington Road

Option 6 – Make Harrington Road One-Way Toward Bedford Street (Northbound)



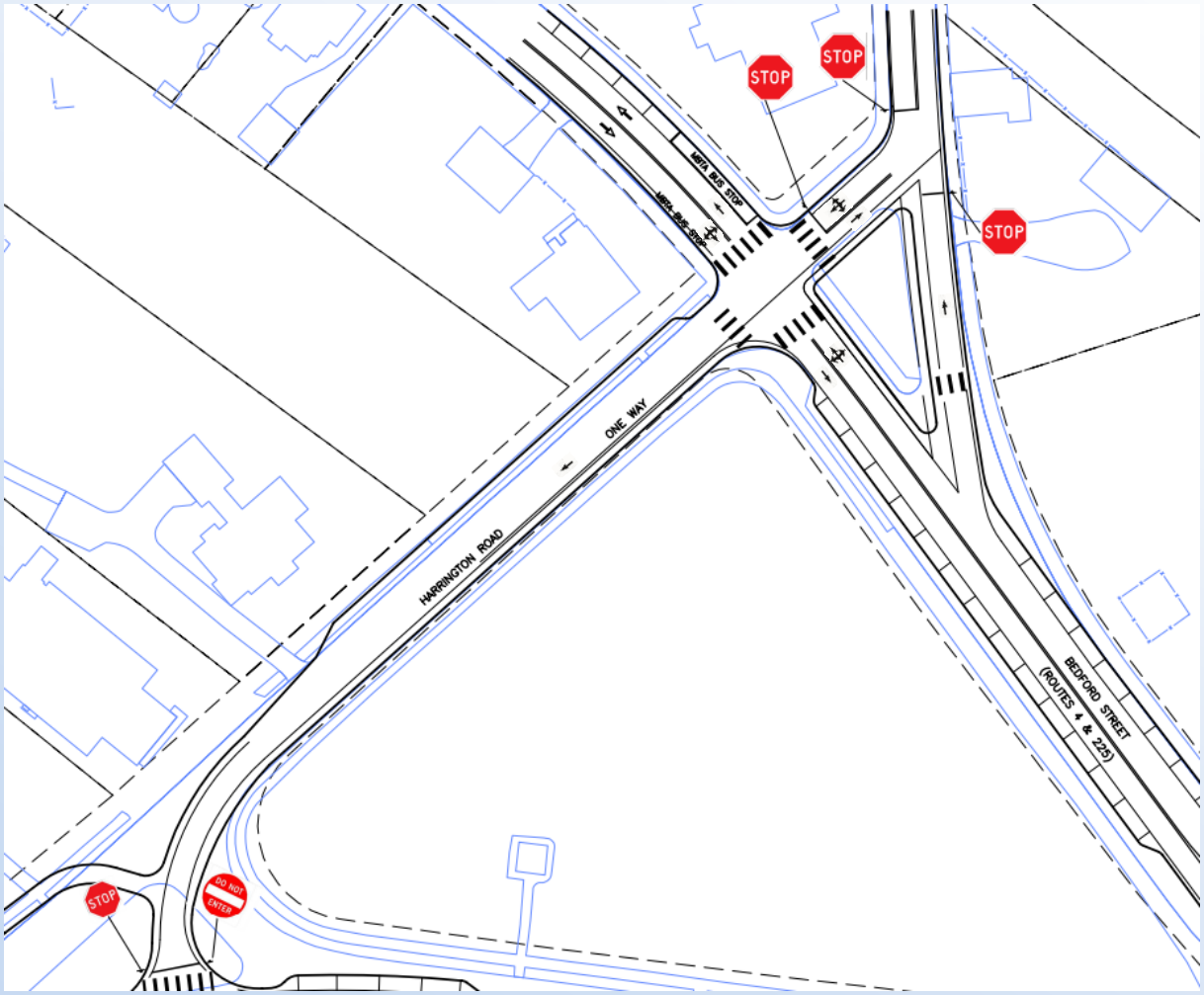
Bedford Street / Hancock Street / Harrington Road

Option 7 – Make Harrington Road One-Way From Bedford Street (Southbound)
Retain the Bedford Street right-turn slip lane



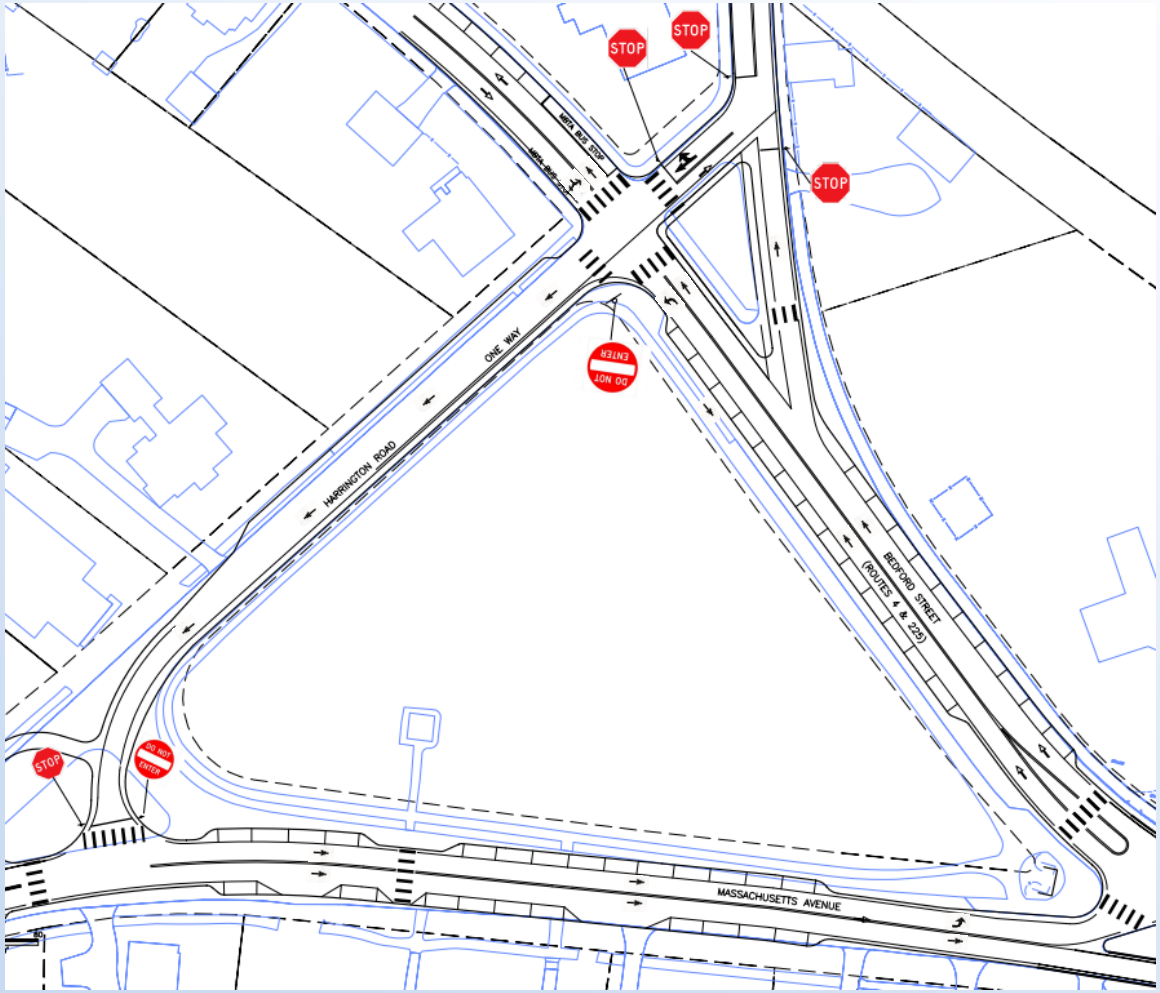
Bedford Street / Hancock Street / Harrington Road

Option 8 – Make Harrington Road One-Way From Bedford Street (Southbound) with Bedford Street right-turn slip lane one-way away from Bedford Street



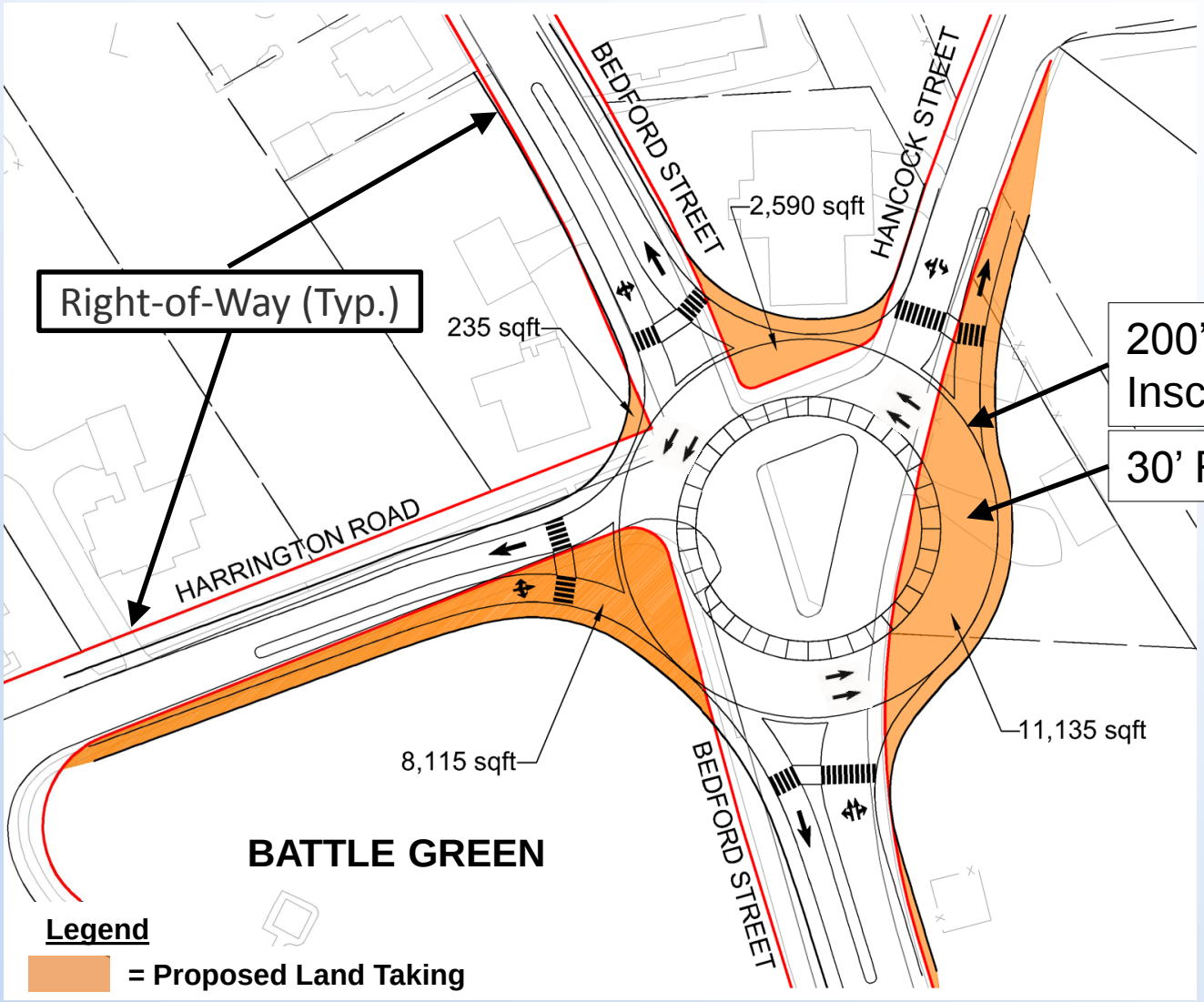
Bedford Street / Hancock Street / Harrington Road

Option 9 – Make Harrington Road One-Way From Bedford Street (Southbound), Massachusetts Avenue one-way between Harrington Road and Bedford Street & Bedford Street one-way between Massachusetts Avenue and Harrington Road.



Bedford Street / Hancock Street / Harrington Road

Option 10 - Roundabout



Traffic Analysis

Level of Service and Delays

Design Option	LOS	Delay (s)
Existing	F	>> 50 sec*
Option 1	F	>> 50 sec*
Option 2	F	>> 50 sec*
Option 3	F	>> 50 sec*
Option 4	F	>> 50 sec*
Option 5	F	>> 50 sec*
Option 6	F	>> 50 sec*
Option 7	F	>> 50 sec*
Option 8	F	>> 50 sec*
Option 9	F	>> 50 sec*
Option 10 Roundabout	B	13.2 Sec

Information reflects Hancock Street approach only.
*** Approach experiences significant delay.**

Bedford Street / Hancock Street / Harrington Road

Design Option Comparison

Design Option	Pros	Cons
Existing		• Unprotected pedestrian crosswalk • Poor operation (LOS F) • Unsafe traffic patterns • Poor sight lines
Option 1 – Remove the Bedford Street Right-Turn Slip Lane	• Improved traffic safety • Fewer conflict points	• Unprotected pedestrian crosswalk • Poor operation (LOS F) • Potential impacts to Revere Street and Meriam Street Neighborhoods
Option 2 – Option 1 with Traffic Signal	• Full pedestrian/bicycle Protection • Improved operation on Harrington Road Northbound • Improved traffic safety for side street traffic entering Bedford Street	• Poor operation (LOS F) Queue backups to Waltham Street • Signal equipment impact to historical character of Battle Green • Maintenance of traffic signals • Potential impacts to Revere Street and Meriam Street Neighborhood
Option 3 – Retain the Bedford Street Right-Turn Slip Lane with one-way away from Bedford Street	• Improved traffic safety at Hancock and Bedford Street • Fewer conflict points	• Unprotected pedestrian crosswalk • Poor operation (LOS F) • Potential impacts to Revere Street and Meriam Street Neighborhoods

Bedford Street / Hancock Street / Harrington Road

Design Option Comparison

Design Option	Pros	Cons
Option 4 – Option 3 with Traffic Signals	• Full pedestrian/bicycle Protection • Improved operation on Harrington NB • Improved traffic safety for side street traffic entering Bedford Street	• Poor operation (LOS F) Queue backups to Waltham Street • Signal equipment impact to historical character of Battle Green • Maintenance of traffic signals • Potential impacts to Revere Street and Meriam Street Neighborhoods
Option 5 – Make Harrington Road one-way from Bedford Street (southbound) Remove the Bedford Street right-turn slip lane	• Fewer conflict points • Redirect approx. 200 vehicles during peak hour period.	• Unprotected pedestrian crosswalk • Poor operation (LOS F) • Impacts to intersections of Worthen Rd @ Mass Ave and Bedford St • Potential impacts to Revere Street and Meriam Street Neighborhoods

Bedford Street / Hancock Street / Harrington Road

Design Option Comparison

Design Option	Pros	Cons
Option 6 – Make Harrington Road one-way toward Bedford Street (northbound)	• Fewer conflict points	• Unprotected pedestrian crosswalk • Poor operation (LOS F) • Impacts to intersection of Worthen Rd @ Mass Ave and Bedford St • Traffic weaving on Bedford St to Mass Ave • Potential impacts to Revere Street and Meriam Street Neighborhoods
Option 7 – Make Harrington Road one-way from Bedford Street (southbound) Retain the Bedford Street right-turn slip lane	• Fewer conflict points • Reduced approx. 200 vehicles during peak hour period.	• Unprotected pedestrian crosswalk • Poor operation (LOS F) • Impacts to intersection of Worthen Rd @ Mass Ave and Bedford St
Option 8 – Make Harrington Road one-way away from Bedford Street (southbound) Make the Bedford Street right-turn slip lane one-way away from Bedford Street	• Fewer conflict points • Reduced approx. 200 vehicles during peak hour period.	• Unprotected pedestrian crosswalk • Poor operation (LOS F) • Potential impacts to Revere Street and Meriam Street Neighborhoods

Bedford Street / Hancock Street / Harrington Road

Design Option Comparison

Design Option	Pros	Cons
Option 9 – Make Harrington Road one-way away from Bedford Street (southbound) **Make Massachusetts Avenue one-way between Harrington Road and Bedford Street** **Make Bedford Street one-way between Massachusetts Avenue and Harrington Road.**	• Simplified traffic circulation • Fewer conflict points	• Unprotected pedestrian crosswalk • Poor operation (LOS F) • Impacts to intersection of Worthen Rd @ Mass Ave and Bedford St • Potential impacts to Revere Street and Meriam Street Neighborhoods • Severe congestion around Battle Green roadways
Option 10 – Roundabout	• Controls traffic without the use of traffic signals • Satisfactory operation (LOS B)	• Requires extensive Right-of-Way • Volume requires a 2-lane roundabout

Thank You!