

Michael D. Borg
Director



Jorge O. Elorza
Mayor

DEPARTMENT OF PUBLIC WORKS
"Building Pride in Providence"

JANUARY 27, 2017

CITY COUNCIL PRESIDENT
CITY COUNCIL
25 DORRANCE STREET
PROVIDENCE RI 02903

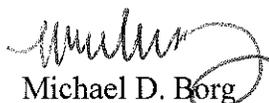
RE: DO NOT BLOCK THE BOX INITIATIVE

In response to a City Council Resolution on October 17, 2016, the Providence Department of Public Works Traffic Engineering Division has evaluated the installation of "Do Not Block The Box" (DNBTB) signing and pavement marking at intersections throughout the City.

I hereby transmit my report relative to The Do Not Block The Box Initiative.

Thank you for your assistance on this matter and please feel free to call me if you have any questions.

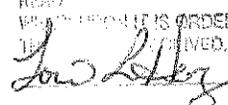
Respectfully submitted,


Michael D. Borg
Director

MDB:vc

XC: William Bombard, P.E., Nate D. Urso, PE, PTOE

IN CITY COUNCIL
FEB 02 2017

READ
WHEREUPON IT IS ORDERED THAT
THE RESOLUTION BE PASSED.
 CLERK



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INTEROFFICE MEMORANDUM

TO: THE CITY COUNCIL
FROM: MICHAEL BORG, PUBLIC WORKS DIRECTOR
SUBJECT: DO NOT BLOCK THE BOX INITIATIVE
XC: WILLIAM BOMBARD, PE, NATALE D. URSO, PE, PTOE
DATE: 12/8/2016

In response to a City Council Resolution on October 17, 2016, the Providence Department of Public Works Traffic Engineering Division has evaluated the installation of "Do Not Block The Box" (DNBTB) signing and pavement marking at intersections throughout the City. The evaluation included the following:

- An evaluation of DNBTB signing and pavement marking effectiveness
- Field Review of major roads and intersections in the City to determine based on observed traffic conditions which intersections would be candidates for DNBTB signing and pavement marking.
- Develop Recommendations and Strategies for DNBTB signing and pavement marking implementation.

Blocking the Box occurs when a vehicle is within the middle of an intersection unable to exit the intersection while the signal light indication for that approach turns red. The exit is typically blocked by vehicles queues from the downstream intersection. Blocking the Box has several negative impacts including blocking traffic for other intersection approaches causing congestion on those roadways, blocking pedestrian crosswalks and blocking emergency vehicle access through the intersection.

DO NOT BLOCK THE BOX EFFECTIVENESS

The Traffic Engineering Division researched studies and communicated with other cities to gain insight into the effectiveness of DNBTB campaigns as well as understand what strategies were most effective. Below is a list of the information that was gathered from this effort.

- In 1992 The Transportation Research Board conducted a study of intersections experiencing intersection blocking in Norman, Oklahoma. The study involved observing intersection blocking at 4 intersections with and without a DNBTB sign. No pavement

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marking or enforcement were conducted at the intersections. The results indicated little or no reduction in intersection blocking from the inclusion of the DNBTB sign.

- In 2012 the City of Boston installed signs and pavement markings indicating not to block the box at 15 intersections along with enforcement 3 to 4 days per week. The reported studies indicated a 50% reduction in intersection blockage from this campaign.
- In 2012 the San Francisco Municipal Transportation Agency study indicated 50% decrease in intersection blocking with increased enforcement.
- 2014 Georgia Institute of Technology conducted a thesis study on DNBTB operations throughout the country. The study collected traffic data which confirmed that intersection blocking did increase traffic congestion and had safety impacts to pedestrians. Also the study conducted a survey of organizations that implemented DNTB campaigns. Most of these DNTB campaigns were conducted between 2010 and present. The survey revealed that most organizations believed that enforcement was essential in an effective campaign. Additionally the survey indicated that 60% percent of the organizations believe the campaigns were successful and 70% believed the success of the campaign did not diminish over time.
- The City of Hartford, CT. began a DNBTB campaign in October of 2016. Twelve intersections that were known to experience intersection blocking were selected. The intersections were signed and striped. The next step was a month long public outreach which was mostly through Media. After public outreach there was a month long period of enforcement. The City's Traffic engineer indicated that enforcement seemed to reduce the occurrence of intersection blocking, although no detailed analysis was conducted.

From our effectiveness review it can be surmised that it is likely that a DNBTB campaign will be successful in reducing intersection blocking when enforcement is included in the campaign.

INTERSECTION CANDIDATES FOR DO NOT BLOCK THE BOX SIGNING AND STRIPING

Traffic Engineering conducted field reviews of major roads in the city and roads abutting schools during peak traffic periods to determine which intersections experienced intersection blocking. The observations included review of arterial and collector roads during morning (8AM to 9AM) and afternoon (5PM to 6PM) commuter peak periods and around schools during school drop-off and pick-up times. Intersections were considered candidates for DNBTB signing and pavement marking if intersection blocking occurred during any of the peak time periods. At which time it was decided that our recommendation was to perform a trial of installing DNBTB signing and striping at 3 intersections on a trial basis, the field reviews were suspended. The field reviews can be completed once the results of the trial have been reviewed. The intersections determined to be candidates for DNBTB from field reviews conducted thus far were as follows:

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- Point St. @ Eddy St.
- Point St. @ Chestnut St.
- Dave Gavitt Way @ Washington St.
- Dave Gavitt Way @ Broadway
- Dave Gavitt Way @ Atwells Ave.
- John J. Partington Way @ Friendship St.
- Fountain St. @ Dorrance St. (RIDOT Francis St. Construction project may have effect on traffic operations)
- Memorial Blvd. @ Steeple St.
- Memorial Blvd. @ Exchange St.
- South Main St. @ College Road
- Cranston St. @ Potters Ave.
- Cranston St. @ Huntington Ave.
- Cranston St. @ Niantic Ave.
- Broad St. @ Pearl St.
- Broad St. @ Fricker St.
- Eddy St. @ Allens Ave.
- Smith St. @ Gaspee St.
- Orms St. @ Park St.
- Westminster St. @ Cranston St.
- Westminster St. @ Cahir St.
- Westminster St. @ Barton St.
- Westminster St. @ Valley St.
- Westminster St. @ Manton Ave.

PROPOSED DO NOT BLOCK THE BOX SIGNING AND STRIPING

Traffic Engineering has reviewed available options for installation of signs and pavement markings to indicate DNBTB intersections. The pavement markings are limited by the requirements of the DNBTB state legislation which indicates the markings shall include one foot wide diagonal striping in the intersection box. Traffic Engineering's preferred pavement markings will include the diagonal striping required by the legislation with the addition of "DO NOT BLOCK" markings in the middle of the intersection box. The preferred sign is indicated in the photo below with some revisions indicating the diagonal striping in the box and the appropriate fine amount.

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The estimated cost for the signing and pavement markings is approximately \$3,000 per intersection which will vary by intersection.

RECOMMENDATIONS

Traffic Engineering is recommending a DNBTB campaign on a trial basis at three intersections. This was decided based on allowing a manageable number of intersections to enforce consistently and also allow the general public some time to be educated on DNBTB conformance. Based on the information gathered on the effectiveness of previous DNTB campaigns, it was clear that enforcement was an important aspect of the success of the campaign. In discussion with the Providence Police Department it was determined that a consistent DNBTB enforcement effort could be performed at 3 intersections.

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The three recommended intersections to be included in the trial campaign are the following:

- Dave Gavitt Way at Washington St.
- John J. Partington Way at Friendship St.
- Cranston St. at Huntington Ave.

These intersections were selected because blocking occurred regularly at the intersection and the layout of the intersection allowed for enforcement to be performed.

The DNBTB campaign is proposed to consist of the following:

1. Perform studies at the three trial intersections to quantify the occurrence of blocking prior to placing DNBTB signs and pavement markings
2. Place DNBTB signs and pavement markings at the 3 trial intersections
3. Public Outreach To Educate and Inform the public on DNBTB for one month
4. After the Public Outreach period begin enforcement at the three intersections three to 4 times per week for one month.
5. Perform studies to quantify the occurrence of blocking at the intersections during the enforcement period and one month after the enforcement period.

Once the before and after studies are performed as part of the trial campaign, assess the next steps to improve DNBTB conformance. This may include signing and striping additional intersections for DNBTB, increase efforts to relieve congestion along roadways with intersection blocking and investigate further DNBTB auto enforcement (cameras) at intersections.

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