

NE MARINE DRIVE HIGH CRASH CORRIDOR SAFETY PLAN



**MARCH 2013
CITY OF PORTLAND
BUREAU OF TRANSPORTATION**

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Special Thanks to Our Partners



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HIGH CRASH CORRIDOR PROGRAM INTRODUCTION

High Crash Corridors are streets in Portland with a high concentration of crashes. The High Crash Corridor program uses relatively inexpensive education, enforcement and engineering solutions to address crash problems in a short period of time. There are ten corridors and PBOT focuses on three each year; NE Marine Drive was a focus in 2012.

KEY FINDINGS: NE MARINE DRIVE

Fatality Rate: The fatality rate on NE Marine Drive is substantially higher than the citywide rate. Citywide 3 out of 1000 crashes result in a fatality; on Marine Drive, 28 out of 1000 crashes result in a fatality.

Lane Departure Crashes: The percentage of crashes that occur when a vehicle goes outside of its travel lane (e.g. head-on crashes, sideswipes, roll-overs, hitting fixed objects) along Marine Drive is three times higher than the citywide percentage (19% versus 5.5%).

(Open stretches of roadway, clear sight lines and few intersections are all characteristics that may contribute to the high percentage of lane departure crashes.)

DUII Crash Rate: The incidence of crashes involving DUII is slightly higher than the citywide average.

Speeding: About 7% of drivers are driving 10 mph or more over the posted speed limit.

Truck Traffic: Marine Drive is not a designated truck route, yet trucks make up 16-22% of traffic. In comparison, nearby NE Columbia Blvd is a Priority Truck Street and carries 17-18% truck traffic.

SUMMARY OF CORRIDOR CRASH DATA

Corridor Data Overview	
Average daily traffic volume	Ranges from 9,500 to 11,000
Roadway configuration curb-to-curb	<ul style="list-style-type: none">• Two travel lanes with occasional center turn lane• Bike lanes west of NE 6th Avenue• Shoulders east of NE 6th Avenue
Total roadway width	Varies from 24 to 34 feet
Total length of corridor	10.75 miles, from I-5 interchange to NE 185 th Avenue (City limits)
Posted speed	<ul style="list-style-type: none">• West of NE 33rd Ave = 40 mph• East of NE 33rd Ave = 45 mph

Trucks as percent of all traffic	16% to 22%		
Travel speeds	Location	% Exceeding posted speed	% Exceeding posted speed by ≥ 10 MPH
	East of N Gantenbein St:	50%	2%
	West of NE 33 rd Ave:	82%	8%
	West of NE 112 th Ave:	85%	12%
	West of NE 122 nd Ave:	90%	18%
	East of NE 122 nd Ave:	72%	5%

Crash Summary Data, 2001-2010	
Injuries and Fatalities	Crashes by Top 3 Location Types
398 Total Reported Crashes from 2001-2010	182 Straight roadway crashes (46%)
13 Fatalities	151 Intersection crashes (38%)
18 Injuries of type A severity (incapacitating)	48 Driveway related crashes (12%)
61 Injuries of type B severity (non-incapacitating)	
109 Injuries of type C severity (pain)	Crashes by Top Collision Types
207 Property damage only crashes	143 Rear-end (36%)
	128 Turning (32%)
1 Crash involving pedestrians	39 Fixed Object (10%)
7 Crashes involving bicyclists	31 Sideswipe – passing (8%)
	17 Head-on (4%)

EXISTING CRASH DATA

Lane Departure Crashes

Lane departure crashes include fixed object, head-on, sideswipe (passing and opposing) and non-collision (roll-over) crashes.

These crashes are three times higher on NE Marine Drive than the Citywide percentage, 19% versus 5.5%.

- There is no pattern of where drivers are leaving the roadway or in which direction they are leaving the roadway.
- Head-on crashes are twice as likely to result in a fatality than other lane departure crashes.

- To address head-on crashes and other lane departure crashes, centerline rumble strips have been installed from 33rd Avenue to 4000 feet east. The City has a contract to add rumble strips from 33rd to the residential area to the west (approximately 2500 feet) in 2013. The City recommends installing centerline rumble strips from 4000 feet east of NE 33rd Ave to NE 185th Ave.
- To address run-off road crashes, shoulder delineation should be employed – this treatment should accommodate bicycle traffic on the shoulder of Marine Drive.

Pedestrian and Bicycle Crashes

- One pedestrian crash was reported from 2001 to 2010 and occurred near NE 6th Avenue.
- Eight bicycle crashes were reported from 2001 to 2010; all but one occurred at intersections and involved three left-turning vehicles and one right turning vehicle. One occurred at the Gleason Boat Ramp trail crossing.

Intersection Crashes

122nd: 45 crashes are coded to this intersection, 29 turning related crashes and 16 rearend crashes.

- A traffic signal would address the turning crashes here but may result in more rearend crashes. However, rearend crashes are typically less severe than turning crashes.
- A signal is recommended as a long-term solution and will require special design elements since it is on top of the levee. In the interim, a lane narrowing project is planned in 2013 at this intersection that includes rumble strips. This type of treatment has been effective in reducing crashes and lowering speeds at intersections.

33rd: 20 crashes are coded to this intersection, 11 turning and 7 rearend crashes.

- A traffic signal would address the turning crashes (traffic volumes also warrant a traffic signal here.) However, rearend crashes are typically less severe than turning crashes.
- A signal is recommended as a long-term solution and will require special design elements since it is on top of the levee. In the interim, a lane narrowing project is planned at this intersection that includes rumble strips. This type of treatment has been effective in reducing crashes and lowering speeds at intersections.

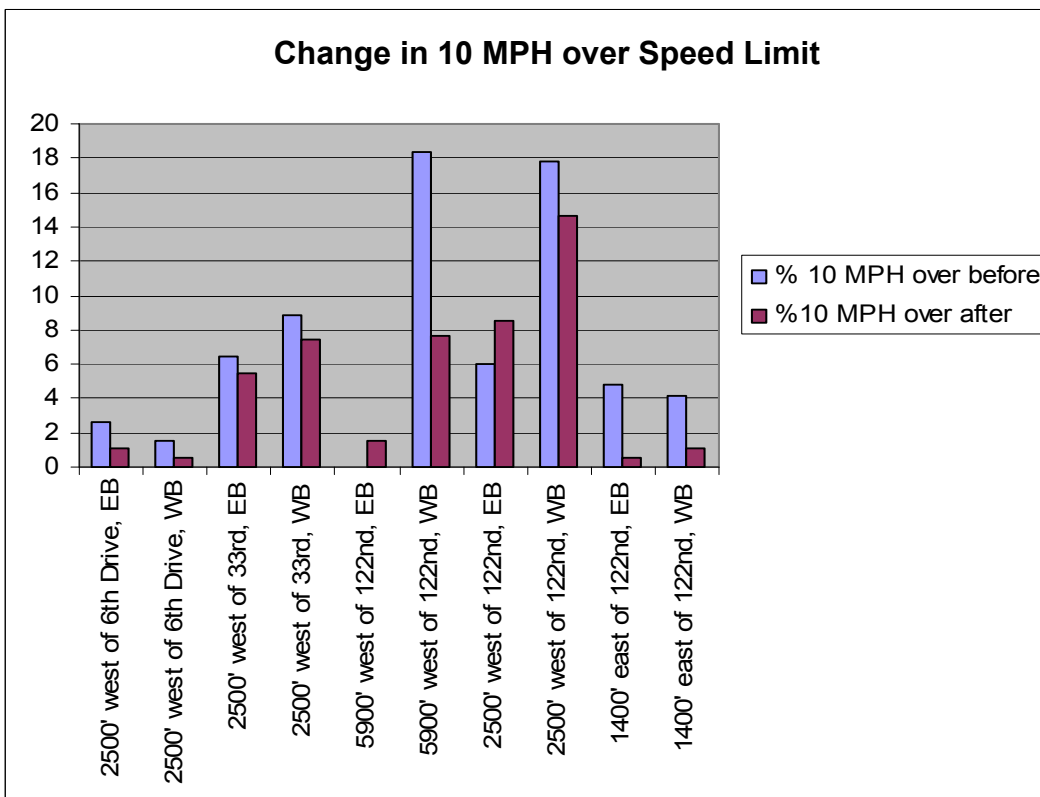
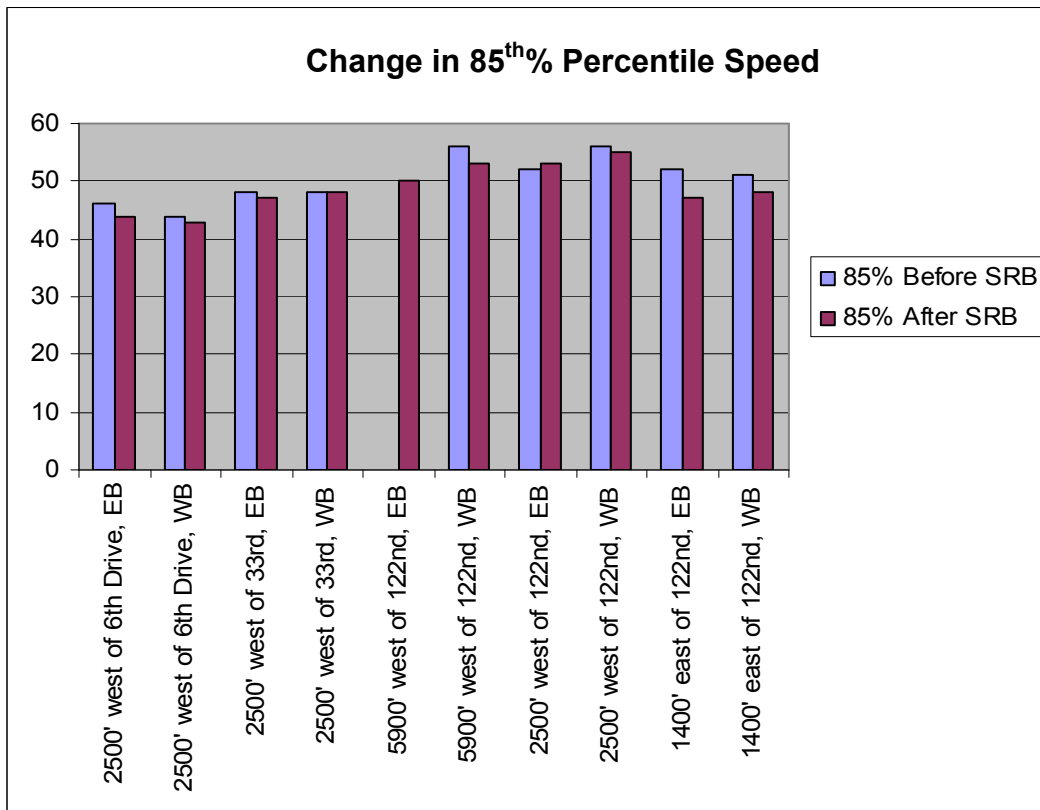
138th: 13 crashes are coded to this intersection, 6 turning and 6 rearend. 1 turning crash every other year does not warrant a traffic signal, nor do current traffic volumes.

- An experimental lane narrowing striping treatment has been employed here. Studies have shown that lane narrowing can result in slower speeds and more awareness at intersections. We will monitor this to see if driver behavior is changed.

SPEED DATA

Traffic speed data was taken at several points along Marine Drive in January 2012 at the beginning of the High Crash Corridor evaluation. At that time, about 50% of drivers were driving faster than the posted speed. Additionally, 5% of drivers were driving 50 MPH or faster in the 40 MPH zone (west of 33rd Avenue) and 10% were driving 55 MPH or faster in the 45 MPH zone (east of 33rd Avenue.) One strategy of the High Crash Corridor program was to reduce driving speeds on Marine Drive through education. In July 2012, seven (7) speed reader boards were installed on Marine Drive to make drivers aware of the posted speed and their travel speed. In January 2013, six months after installation of the speed reader boards, travel speeds have decreased slightly (on average 2 MPH.) Most notable, is that, drivers driving 55 MPH or faster have decreased from 10% to 5% east of 33rd Avenue.

The City of Portland is encouraged by these results and plans to take additional speed counts on Marine Drive in 2014 to determine the long-term effectiveness. If effectiveness is lasting, the City will likely leave several speed reader boards on Marine Drive.



PUBLIC INVOLVEMENT PROCESS

The public involvement process included meetings of the Technical Advisory Committee, public open houses and a presentation at a joint neighborhood association meeting.

January 10, 2012 – Joint neighborhood association meeting with East Columbia and Bridgeton

- Joint neighborhood association meeting to understand challenges residents identify on Marine Drive and discuss possible solutions.

February 15, 2012 – Public Open House for Marine Drive High Crash Corridor

- Initial public open house to share crash trends on Marine Drive and collect public feedback.

May 9, May 30, & June 27, 2012 – Technical Advisory Committee meetings

- TAC members included representatives from:
 - Residents
 - Port of Portland
 - Columbia Business Association
 - Freight Advisory Committee
 - Portland Police
 - Multnomah County Drainage District
- Representatives identified safety concerns and discussed some solutions.
- Safety solutions discussed in detail included:
 - Identification of rumble strip locations
 - Identification of No Parking posting sites
 - Identification of 'pull-outs' for enforcement
 - 3-way stop analysis at 33rd, 122nd, 138th
 - Crosswalk treatment/evaluation at 138th
- Funding update – PBOT as set aside \$40,000 for capital improvements on Marine Dr to include closing gravel parking lot at Gleason Boat Ramp and add centerline rumble strips.

February 15, 2012 – Public Open House for Marine Drive High Crash Corridor

- Final public open house to share safety recommendations and implementation timeline.

Public comment from the open houses is at www.portlandoregon.gov/transportation/59283. Additional outreach and education events are detailed in the attached matrix.

RECOMMENDATIONS & SAFETY ACTION PLAN MATRIX

The TAC was instrumental in identifying proposed projects and priorities for Marine Drive.

The following safety action plan matrix details the “Three E” approach to be implemented in the next 2 years to reduce traffic crashes and crash-related injuries and fatalities for all modes of transportation. The “Three E’s” include engineering, education and enforcement solutions. In addition, the matrix includes funding status, cost estimates, and safety concerns addressed by each tool.

Long-term Improvements:

While the matrix details short-term (1-2 year) improvements, the following long-term and more expensive engineering solution should be considered but is outside of the scope of this project.

- Traffic signals (pending feasibility study) at NE 33rd Ave and NE 122nd Ave

Other long-term improvements may be identified in the following planning documents adopted by the City of Portland:

- Marine Drive Safety Corridor
- HEP Funding Request (2008)
- Bridgeton/Marine Drive Transportation Study (1998)
- Marine Drive Safety Task Force Recommendations (1990's)
- East Portland in Motion Recommendations
- East Portland Action Plan Recommendations
- Columbia River Crossing (CRC) Study/Project

Engineering Actions		Funding Status	Cost Estimates	Safety Issue Addressed		
				Driver Safety	Ped Safety & Access	Bicycle Safety
<i>See improvements detailed on attached safety map.</i>						
Corridor-wide improvements:						
	Centerline rumble strips: 1900 Block to NE 33 rd Ave	Funded (PBOT) Winter 2013/14 anticipated construction	\$4,000	X		
	Centerline rumble strips: NE 33 rd Ave to 4,000' east	Complete (PBOT)	\$50,000	X		
	Centerline rumble strips: 4,000' east of NE 33 rd Ave to NE 185 th Ave	Unfunded (PBOT)	\$75,000	X		
	Shoulder rumble strips from near the Airport Fire Station access road (east of the Gleason Boat Ramp) to NE 185 th Ave	Unfunded (PBOT)	\$40,000	X		X
	Street repaving: NE 33 rd Ave to NE 122 nd Ave	Complete (PBOT)		X		X
	Guardrail upgrades (or removal where deemed a hazard)	Complete (PBOT)		X		X
	Upgrade/repair existing signage & striping 2012/13	Complete (PBOT)	\$43,000	X	X	X
Pedestrian and Bicycle Improvements:						
	Bikeway enhancements on Bridgeton Road	Complete (PBOT)	\$5,000	X		X
	Sidewalk infill and bike lane on the south side from east of NE 6 th Ave to Bridgeton	Complete (Private development)			X	X
	RRFB's at the Port of Portland parking lot trail crossing	Complete (PBOT)	\$50,000	X	X	X
	Signalized crossings at the new trail crossing west of NE 122 nd Ave and at the existing trail crossing east of NE 138 th Ave	Funded (Portland Parks & Metro) 2015 anticipated construction		X	X	X

Construct remaining portions of the multi-use path that parallels Marine Drive	Funded (Portland Parks & Metro) 2015 anticipated construction			X	X
Lane narrowing with rumble treatment at NE 33 rd Ave and NE 122 nd Ave	Funded (PBOT) Winter 2013	\$12,000	X		X
Lane narrowing with striping at NE 138 th Ave	Complete (PBOT)	\$4,000	X	X	X
Gleason Boat Ramp upgrade	Complete (Metro)				
Close gravel parking area near Gleason Boat Ramp to limit cars exiting and entering Marine Drive. Prohibit pedestrians from crossing Marine Drive at unmarked and unprotected crossing to limit damage to the levee.	Complete (PBOT)	\$16,000	X	X	

Education Actions	Funding Status	Safety Issue Addressed		
		Driver Safety	Pedestrian Safety & Access	Bicycle Safety
Installed banner with rotating safety messages near 2 nd Ave	Complete (PBOT)	X		
Installed 7 speed reader boards from NE 13 th Ave to NE 138 th Ave (4 westbound, 3 eastbound)	Complete (PBOT)	X	X	X
Provided multi-modal safety material at the Graphic Packaging Health Fair on November 7 and 8, 2012	Funded (PBOT)	X	X	X
Encourage traffic law violators to attend "Share The Road" safety classes	Funded (Legacy Emanuel Hospital, MultCo Courts, PPB)	X		X
"Portland Walks Be Safe" training and "Every Corner is a Crosswalk" training with translation as necessary	Funded (PBOT)	X	X	
Mail residents fliers on how to use RRFB's within 1/4 -mile of new installation locations	Funded (PBOT)	X	X	
Conduct Young Driver Improvement / Graduated Drivers Licensing classes for young drivers and their parents	Funded (Legacy Emanuel Hospital)	X	X	X
Provide transportation safety materials for distribution at two public open houses	Funded (PBOT)	X	X	X
PedPro units available for community and private events	Funded (PBOT)		X	

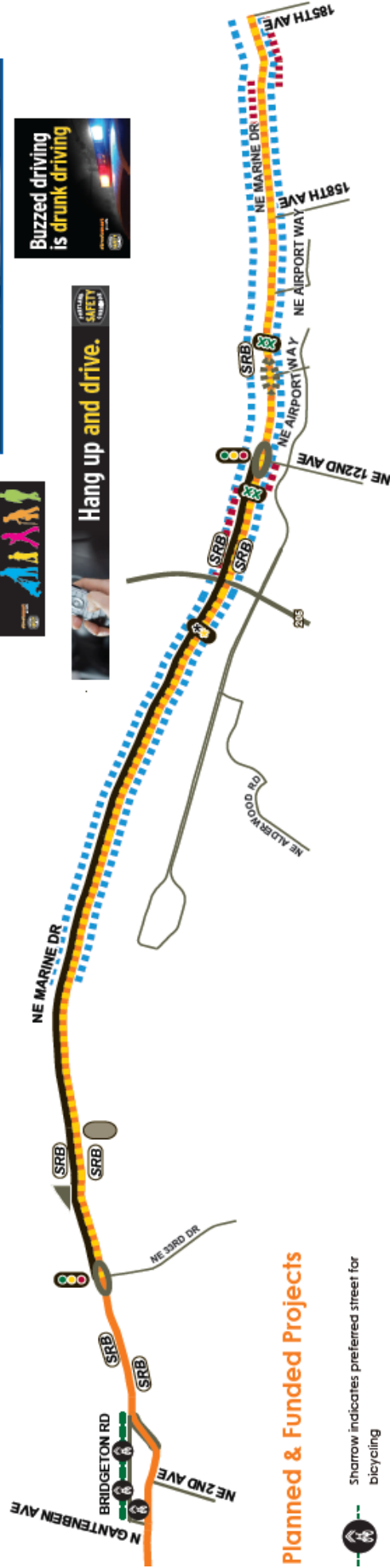
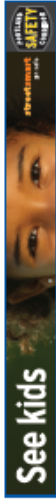
Enforcement Actions	Funding Status	Safety Issue Addressed		
		Driver Safety	Pedestrian Safety & Access	Bicycle Safety
Work with Multnomah County Drainage District (MCDD) to identify locations and funding to install parking pads to allow for effective enforcement	Unfunded (PBOT, MCDD, PPB)	X		
Utilize photo radar	Funded (PPB)	X		
Enforcement of aggressive driving (speed, lack of attention, DUII)	Funded (PPB)	X		
Conducted focused enforcement mission on Marine Drive and the I-5 northbound ramp on 8-22-2013 that resulted in 68 citations	Funded (PPB)	X		

Key Findings on Marine Drive

- Fatality rate on Marine Dr. is substantially higher than citywide. One (1) out of 350 crashes result in a fatality citywide. More than 10 out of 350 crashes result in a fatality on Marine Dr.
- The percentage of lane departure crashes along Marine Dr. is more than 3 times higher than citywide over the last 10 years: 17% versus 5.5%.
- Truck traffic on Marine Dr., classified as a "Local Truck Street" adjacent to a freight district, is 16-22% of the daily traffic. NE Columbia Blvd is classified as a "priority Truck Street," and carries 17-18% truck traffic.

Enforcement & Education Activities

- Seven (7) speed reader boards (SRB) along Marine Dr.
- Portland Police are committed to safety enforcement in High Crash Corridors.
- Rotating safety banners and education messaging.



Planned & Funded Projects

- Narrow indicates preferred street for bicycling
- Signalized trail crossing (Metro and Parks & Recreation project)
- Multi-use path infill (Metro and Parks & Recreation project)
- Lane narrowing with rumble treatment
- Geason Boat Ramp upgrade (Metro project)
- Parking lot closure related to boat ramp upgrade

Unfunded Projects

- Traffic signal (pending feasibility study)
- Centerline rumble strips (4,000 feet has been completed from 33rd to the east)
- Shoulder rumble strips

Completed Projects

- Speed Reader Board (2 will be installed by end of 2012)
- Rapid Flash Beacons
- Lane narrowing with striping
- Street grinding & paving

Map Legend

- Marine Drive roadway
- New sidewalk (private development)