District:	3
Neighborhood:	Emerson-Garfield
Project Extent:	Buckeye Avenue between Post Street and Division Street
	Estimate: \$494.000

Problem Statement: Residents of Emerson-Garfield neighborhood raised concerns over speeding and the need for pedestrian crossing improvements on Buckeye Avenue from Post Street to Division Street (approximately 0.6 miles). Buckeye Avenue within the study area is classified as a minor arterial with a speed limit of 30 miles per hour. Along the study corridor, Post Street, Washington Street, and Division Street are intersections controlled with a traffic signal and provides protected crossings. Normandie Street intersection is unsignalized with a marked school crosswalk and 20 MPH When Flashing speed zone on the east leg and adjacent transit stops. The remaining unsignalized intersections do not provide marked crosswalks.

Traffic Analysis

The table below shows the estimated 2022 daily traffic volumes and 85th percentile speeds on Buckeye Avenue at several locations along the study corridor. As shown in the table, there are approximately 12,190 vehicles per day on Buckeye Ave with an 85th percentile speed of 35 miles per hour (5 miles per hour higher than the posted speed limit).

Direction	# Lanes	2022 Estimated Daily Traffic (Vehicles per day) ^a	85 th Percentile Speed (mph)	Posted Speed (mph)
West of Howar	d Street			
EB	1	4,621		
WB	1	6,942	34	30
Both Dir.	3	11,563		
West of Steven	s Street			
EB	1	5,137		
WB	1	6,920	34	30
Both Dir.	3	12,057		
West of Atlanti	c Street			
EB	1	6,911		
WB	1	6,041	36	30
Both Dir.	3	12,952		
Average		12,190	35	30

2022 Daily Traffic and 85th Percentile Speeds on Buckeye Avenue

^a Traffic data collected on May 3, 2017. Traffic volumes were grown at a 1.0% annual growth rate, to estimate 2022 traffic conditions.

The table below shows the severity and types of crashes occurring on Buckeye Avenue between Post Street and Division Street over the last five years (excluding intersection crashes at the east and west ends). As shown in the table, there were a total of 38 crashes, including 15 injury crashes. Turning collisions were the most common crash type (representing 32% of all crashes), with 11 left turn related and 1 right turn related.

			Crash Sev	erity		Total	
Crash Type	Fatal	Major Injury	Minor Injury	Possible Injury	Property Damage Only		
Rear End	-	-	-	4	4	8	
Angle	-	-	-	5	6	11	
Turning	-	-	1	2	9	12	
Sideswipe	-	-	-	1	1	2	
Stationary Object or Car	-	-	-	2	3	5	
Total	0	0	1	14	23	38	

Crashes on Buckeye Avenue, between Post Street and Division Street (2017 to 2021)

The need for enhanced pedestrian crossing treatments was analyzed based on the National Cooperative Highway Research Program (NCHRP) Report 562¹ at Howard Street, Stevens Street, and Atlantic Street due to the availability of count data. This report uses four main criteria to identify appropriate crossing treatment: peak hour pedestrian volumes, conflicting vehicle volumes, conflicting vehicle speed, and crossing distance/number of travel lanes to be crossed. No pedestrian crossings were recorded during the May 3, 2017 counts. Based on NCHRP 562, active or enhanced treatment (such as a rapid flashing rectangular beacon) would be recommended if there are 20 or more pedestrian crossings during the peak hour. Similar locations along the corridor would be expected to have similar recommendations depending on pedestrian volumes.

Buckeye Avenue has a three-lane cross-section with bike lanes and curb tight sidewalks. The curb-tocurb width is approximately 44-feet wide. The vehicle and center turn lanes could be narrowed to encourage lower vehicle speeds and provide additional space for cyclists.

Recommended Solution:

Given the location of bus stops at Normandie Street, pedestrian activity is assumed to be higher at this location. Therefore, the installation of an enhanced crossing with a rectangular rapid flashing beacon (RRFB) is recommended to upgrade the existing crossing location. Based on the spacing of existing crossings, the installation of an enhanced crossing with a RRFB is also recommended at Howard Street midway between the Post Street and Washington Street signals. This will make the average distance between enhanced pedestrian crossings no more than approximately 750 feet. This will provide

¹ NCHRP Report 562: Improving Pedestrian Safety and Unsignalized Crossings. National Cooperative Highway Research Program, 2006. https://nacto.org/wp-content/uploads/2010/08/NCHRP-562-Improving-Pedestrian-Safety-at-Unsignalized-Crossings.pdf

increased safety and comfort for pedestrian and bicyclist crossings and will help slow vehicles down with more frequent locations where they will need to stop or yield.

The existing roadway width on Buckeye Avenue would allow the corridor to be restriped to manage vehicle speeds. The following cross-section is recommended:

- Provide 11-foot-wide vehicle lanes
- Provide a 11-foot-wide center turn lane
- Provide 5.5-foot-wide bike lanes



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District:	3
Neighborhood:	Emerson Garfield
Project Extent:	Buckeye Avenue and Washington Street Intersection
	Estimate: \$592.000

Problem Statement: Residents of the Emerson Garfield neighborhood raised concerns over vehicle and the need for pedestrian safety at the Buckeye Avenue and Washington Street Intersection. The main intersection concern was related to driver yielding, where drivers do not yield properly for the right of way due to the lane alignment. The north and south legs of the intersection are offset by 30 feet. The intersection is currently signal controlled with overhead signal on the eastbound approach and pole mounted traffic signals on the other approaches. Buckeye Avenue is a two-lane facility with a two-way-left-turn lane and is classified as a minor arterial with speed limit of 30 miles per hour. Washington Street south of Buckeye Avenue is a four-lane facility and is classified as a major arterial with a speed limit of 30 miles per hour. Washington Street north of Buckeye Avenue is a two-lane facility and classified as local street with speed limit of 25 miles per hour.



Buckeye Avenue and Washington Street Intersection

Traffic Analysis

The table below shows the estimated 2022 daily traffic volumes and 85th percentile speeds on Buckeye Avenue west of Washington Street. As shown in the table, there are about 11,482 per day passing through the intersection with an 85th percentile speed of 34 miles per hour (4 miles per hour higher than the posted speed limit).

Direction	# Lanes	2022 Estimated Daily Traffic (Vehicles per day) ^a	85 th Percentile Speed (mph)	Posted Speed (mph)
EB	1	4,892		
WB	1	6,590	34	30
Both Dir.	3	11,482		

2022 Dail	y Traffic and 85 th Percentile S	Speeds on Buckeye Avenu	e (west of Washington Street)
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^a Traffic data collected on May 3, 2017. Traffic volumes were grown at a 1.0% annual growth rate, to estimate 2022 traffic conditions.

The table below shows the severity and types of crashes occurring at Buckeye Avenue and Washington Street intersection from 2017 through 2021. There was a total of 17 crashes, including 8 injury crashes. Turning collisions were the most common crash type (representing 59% of all crashes), with all of them related to left turn.

Crash Severity Crash Type Total **Possible Injury** Fatal **Major Injury Minor Injury Property Damage Only** 2 Rear End 2 _ _ _ Angle -1 1 -_ _ 2 Turning -_ 1 7 10 -1 -Sideswipe 1 --Stationary Object or Car 2 1 3 7 Total 0 0 9 17 1

Crashes at Buckeye Avenue and Washington Street Intersection (2017 to 2021)

The figure below shows the existing PM peak hour traffic volumes at the Buckeye Avenue and Washington Street intersection, based on a traffic count from May 25, 2017, factored up to 2022.



PM Peak Hour Traffic at Buckeye Avenue and Washington Street

The intersection currently has fairly low demand from the offset north leg. The highest left turn volume is northbound left. This signal would likely benefit from improved signal timing and upgraded signal heads to be clearer and more visible to drivers. Left turn phasing or split phasing would help with conflict management at the intersection, especially for the northbound left vehicle and northbound pedestrian conflicts.

Recommended Solution:

Several improvements are recommended to improve safety at the intersection:

- Restripe the crosswalks at the intersection for increased pedestrian visibility.
- Close north leg of the intersection to reduce conflicts and improve safety.
- Install a curb extension on the southwest corner to shorter the pedestrian crossing distance.
- Upgrade signal heads to modern overhead configuration for better visibility and accompanying signage.
- Upgrade signal timing to include split phasing for the northbound and southbound movements to reduce potential conflicts.



LEGEND



PROPERTY LINE

EXISTING CURB

INSTALL NEW CONCRETE SIDEWALK PER COS STD PLAN F-102B

INSTALL NEW CURB PER COS STD PLAN F-106B

INSTALL CROSSWALK PER COS STD PLAN G-G I

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INSTALL LANDSCAPING STRIP

INSTALL CURB RAMP PER COS STD PLAN F-105

CONSTRUCTION NOTES

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4 INSTALL NEW CATCH BASIN TYPE | AND 8" DIAM. PIPE AS NECESSARY. CONNECT TO EXISTING MANHOLE WHERE SHOWN.

> CITY OF SPOKANE, WASHING DEPARTMENT OF ENGINEERING SERV 808 WEST SPOKANE FALLS BLVD. SPOKANE, WASHINGTON 99201-3343 (509) 625-6300

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	PROJECT LIMITS:	EMERSON-GARFIELD NEIGHBORHOOD	EFN: TRAFFIC DESIGN	
		CALL BE	FORE YOU DIG 1-	800-424-5555







District 3, Emerson-Garfield: Corbin Park Estimate: \$424,000



CALL BEFORE YOU DIG 1-800-424-5555

THIS SHEET, ADJUST SCALES ACCORDINGLY SCALE NAVD88 DATUM APPROVED: AM



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INSTALL LANDSCAPING STRIP

INSTALL CURB RAMP PER COS STD PLAN F-105

CONSTRUCTION NOTES





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PROJECT LIMITS: EMERSON-GARFIELD NEIGHBORHOOD D EFN: TRAFFIC DESIGN CALL BEFORE YOU DIG I -800-424-5555

District 3, Emerson-Garfield: Audubon Elementary Estimate: \$349,000





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