District:	1
Neighborhood:	Chief Garry
Project Extent:	Mission Avenue and Magnolia Street Intersection
	Estimate: \$555,000

Problem Statement: Residents of the Chief Garry neighborhood raised concerns related to pedestrian crossing safety at the Mission Avenue and Magnolia Street intersection. Mission Avenue is classified as a principal arterial. The speed limit on Mission Avenue (at Magnolia Street) is 30 mph, with a 20-mph speed limit during school hours. The intersection is currently stop-controlled on Magnolia Street, with free-flowing traffic on Mission Avenue. The crosswalk of concern crosses Mission Avenue on the east leg of the intersection. This crosswalk is located just east of the Stevens Elementary School. The nearest traffic signal is located on Mission Avenue at Napa Street (300 feet east of the pedestrian crossing).



Mission Avenue and Magnolia Street Intersection

Traffic Analysis

The table below shows estimated 2022 daily traffic volumes and 85th percentile speeds on Mission Avenue (west of Marshall Avenue). As shown in the table, there are about 19,200 vehicles per day on Mission Avenue with an 85th percentile speed of 34 mph (4 mph over the speed limit).

Direction	# Lanes	Estimated 2022 Daily Traffic (vehicles per day) ^a	85 th Percentile Speed (mph)	Posted Speed (mph)		
EB	2	9,704	34	30		
WB	2	9,469	34	30		
Both Dir.	4	19,173				

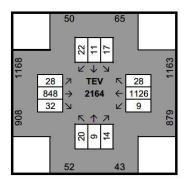
^a Traffic data collected on April 10, 2019. Traffic volumes were grown at a 1.0% annual growth rate, to estimate 2022 traffic conditions. A seasonal adjustment factor of 0.98 was applied to the traffic count, based on historical traffic data from the city to estimate average daily traffic.

The table below shows crashes at the Mission Avenue and Magnolia Street intersection over the last five years. One pedestrian crash occurred in the last five years. It's worth noting that the existing crosswalk is lacking ADA compliant curb ramps at the north and south ends of the crosswalk.

Grach Turne	Crash Severity						
Crash Type	Fatal	Major Injury	ry Minor Injury Property Damage Only				
Rear End	-	-	-	1	1		
Turning	-	-	1	-	1		
Pedestrian	-	-	1	-	1		
Fixed Object	-	-	-	1	1		
Total	-	-	2	2	4		

Crashes at Mission Avenue and Magnolia Street Intersection (2017 to 2021)

The figure below shows PM peak hour traffic counts at the Mission Avenue and Magnolia Street intersection. There were only four pedestrians observed on the east leg during the PM peak hour; however, the number of pedestrian crossings peaked during school release (3:00 to 4:00 PM), with 59 pedestrians on the east leg.



PM Peak Hour Traffic at Mission Avenue and Magnolia Street

The need for enhanced pedestrian crossing treatments (across Mission Avenue) was analyzed based on the National Cooperative Highway Research Program (NCHRP) Report 562.¹ 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.

Based on NCHRP 562, with the existing traffic volumes, a signalized pedestrian crossing is recommended if there are 20 or more pedestrian crossings during the peak hour. High Intensity Activated Crosswalk (HAWK) beacons could be considered; however, a HAWK is not recommended at Magnolia Street, as a traffic signal is provided on Mission Avenue and Napa Street, located just 300 feet east of the crosswalk.

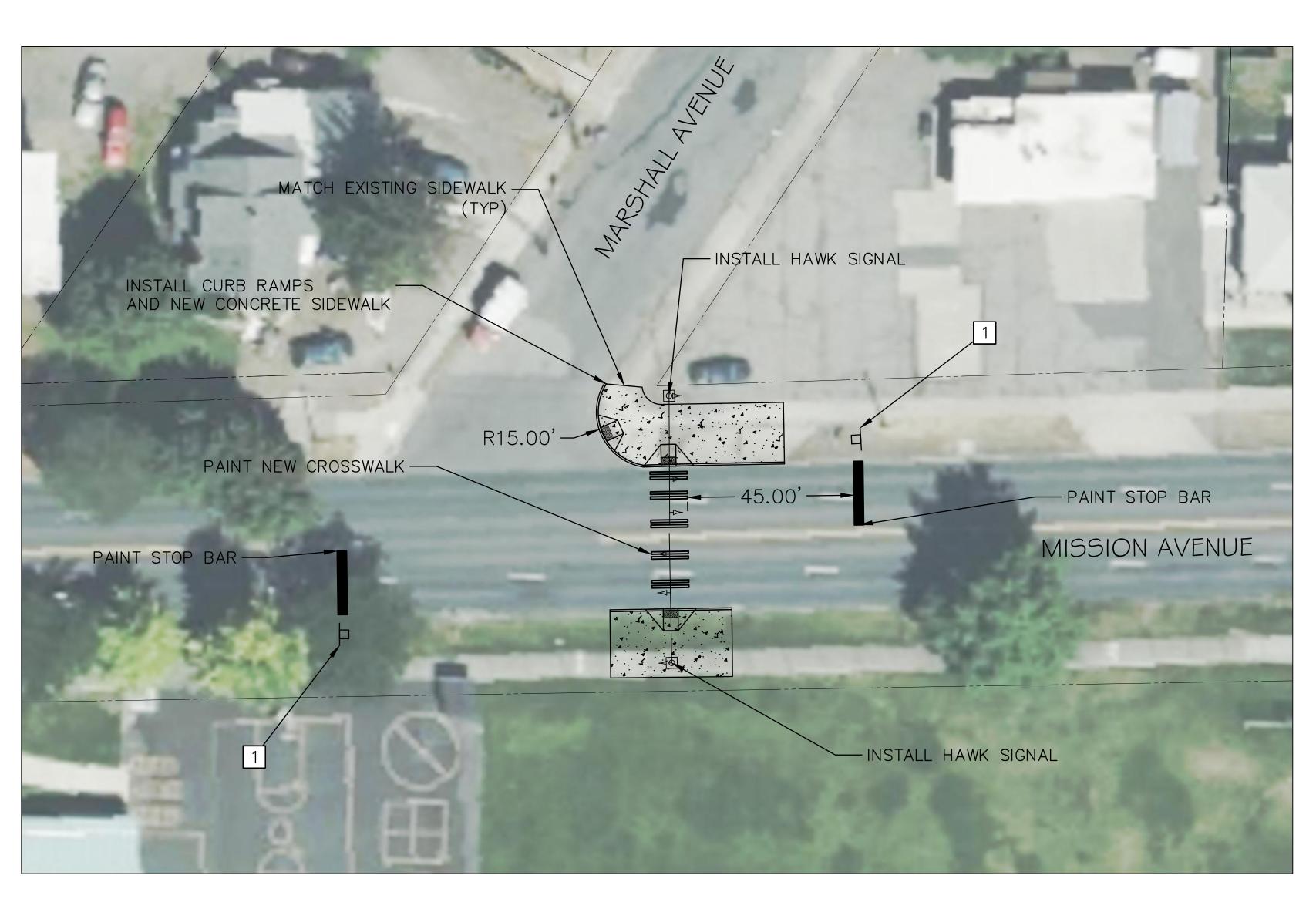
¹ NCHRP Report 562: Improving Pedestrian Safety and Unsignalized Crossings. National Cooperative Highway Research Program, 2006. https://nacto.org/wp-content/uploads/2010/08/NCHRP-562-Improving-Pedestrian-Safety-at-Unsignalized-Crossings.pdf

If a HAWK is desired, it is recommended that the pedestrian crossing be moved further west (to the east leg of Marshall Avenue), allowing for 600 feet of separation from the Napa Street signal. The crosswalk at Magnolia Street should be removed if a crosswalk is added at Marshall Avenue.

The City of Spokane has active applications to the State to receive safe routes to school funding for this project. The pedestrian hybrid beacon will likely receive this funding and will move towards design and construction with state funds.

Recommended Solution:

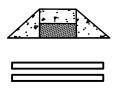
The Magnolia Street crosswalk is located just east of the Stevens Elementary School. A HAWK is not recommended at the Magnolia Street intersection, due to its close proximity to the Napa Street signal. If a HAWK is desired for this school crossing, it is recommended that the crosswalk be moved to the east leg of Marshall Avenue (600 feet west of the Napa Street signal). The crosswalk at Magnolia Street should be removed if a crosswalk is added at Marshall Avenue. A crossing guard is also recommended to facilitate safer crossings during school start and release times, along with ADA compliant curb ramps.



LEGEND









PROPERTY LINE

EXISTING CONCRETE SIDEWALK

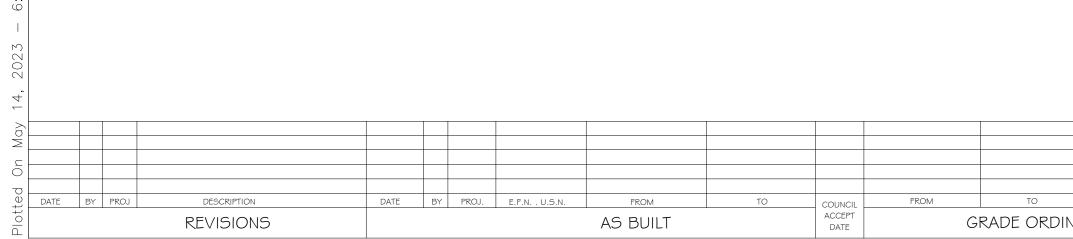
EXISTING CURB INSTALL NEW CONCRETE SIDEWALK PER COS STD PLAN F-102B

INSTALL NEW CURB PER COS STD PLAN F-106B

INSTALL CURB RAMP PER COS STD PLAN F-105

INSTALL CROSSWALK PER COS STD PLAN G-6 I

INSTALL SIGN (SEE PROPOSED)



CONSTRUCTION NOTES

1 INSTALL PROPOSED HAWK STOP BAR SIGN



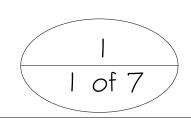
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CITY OF SPOKANE, WASHINGTON DEPARTMENT OF ENGINEERING SERVICES 808 WEST SPOKANE FALLS BLVD. SPOKANE, WASHINGTON 99201-3343 (509) 625-6700

R10-6



PROPOSED HAWK STOP BAR SIGNAGE



TRAFFIC

PROJECT NAME:

SEGMENT LIMITS:

MISSION AVENUE AND MARSHALL AVENUE

SPOKANE TRAFFIC CALMING MASTER PLAN

TYPE OF IMPROVEMENT:

CITY PROJECT NUMBER CITY PLAN NUMBER

PROJECT LIMITS: CHIEF GARRY PARK NEIGHBORHOOD

EFN: TRAFFIC DESIGN CALL BEFORE YOU DIG 1-800-424-5555

District:	1
Neighborhood:	Chief Garry
Project Extent:	Marshall Avenue from Mission Avenue to Regal Street
	Estimate: \$317,000

Problem Statement: Residents of the Chief Garry neighborhood raised concerns over speeding along Marshall Avenue between Mission Avenue and Regal Street (0.9 miles). Marshall Avenue is classified as a local street with a 25-mph speed limit.

Traffic Analysis

The table below shows estimated 2022 daily traffic volumes and 85th percentile speeds on Marshall Avenue (west of Crestline Street). As shown in the table, there are about 500 vehicles per day on Marshall Avenue with an 85th percentile speed of 29 mph (4 mph 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	329		
WB	1	207		
Both Dir.	2	536	29	25

2022 Daily Traffic and 85th Percentile Speeds on Marshall Avenue (West of Crestline Street)

^a Traffic data collected on November 16, 2022. A seasonal adjustment factor of 1.01 was applied to the traffic count, based on historical traffic data from the city to estimate average daily traffic.

The table below shows crashes on Marshall Avenue over the last five years. Fixed object collisions, specifically with parked cars, are the most common crash type on this roadway.

Cuesh Turne	Crash Severity						
Crash Type	Fatal	Major Injury	Property Damage Only	Total			
Rear End	-	-	-	1	1		
Turning	-	-	-	2	2		
Parked Car	-	-	1	3	4		
Fixed Object	-	-	1	-	1		
Other	-	-	1	-	1		
Total	-	-	3	6	9		

Crashes on Marshall Avenue from Mission Avenue to Regal Street (2017 to 2021)

Curb extensions could be considered as a means to lower travel speeds on Marshall Avenue. These features narrow the roadway width, resulting in lower speeds and shorter pedestrian crossings. Curb extensions are estimated to reduce the 85th percentile speeds by 3 mph.¹

¹ Engineering Speed Management Countermeasures: A Desktop Reference of Potential Effectiveness in Reducing Speed. Federal Highway Administration. July 2014.

Recommended Solution:

It is recommended that curb extensions be considered on Marshall Avenue at Zappone Place (at the west end of the corridor). Curb extensions are recommended on the west end, as it represents the gateway to the neighborhood and vehicle volumes are higher on this end. Curb extensions will narrow the roadway width and are expected to reduce travel speeds on Marshall Avenue.



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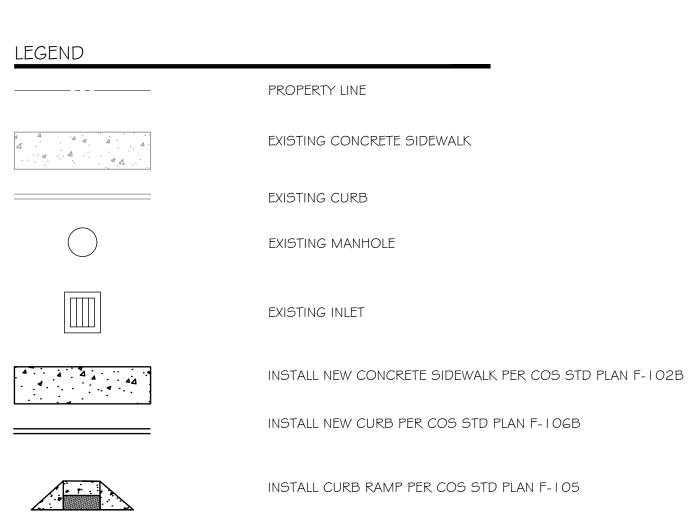
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SEGMENT LIMITS:	MARSHALL AVENUE ZAPPONE PLACE	TYPE OF IMPROVEMENT:	CITY PLAN NUMBER
PROJECT LIMITS:	CHIEF GARRY PARK NEIGHBORHOOD CALL BEFORE YOL	EFN: TRAFFIC DESIGN DIG 1-800-424-5	555

3 EXISTING MANHOLE TO BE RELOCATED

4 EXISTING INLET TO BE RELOCATED

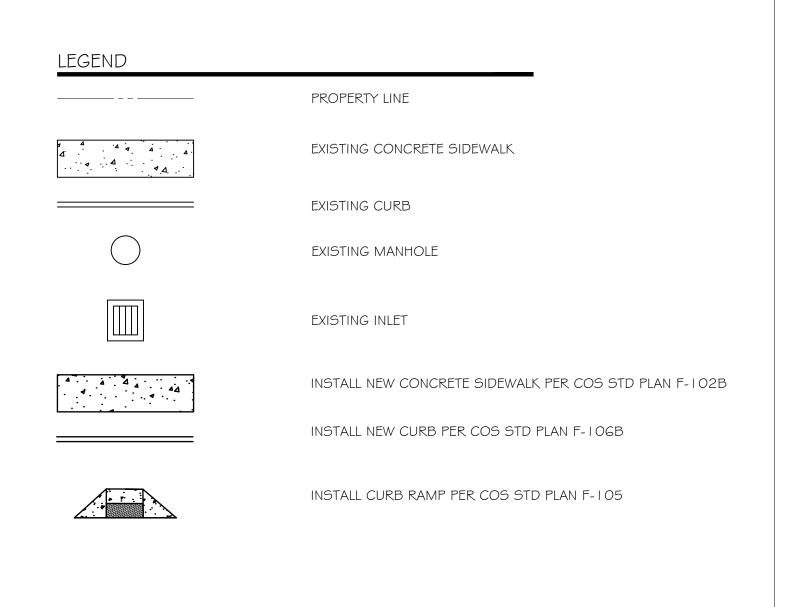
CONSTRUCTION NOTES
1 EXISTING UTILITY POLE TO BE RELOCATED
2 EXISTING UTILITY POLE WITH LUMINAIRE TO BE RELOCATED

5 LOCATION WHERE SIDEWALK INTERSECTS DRIVEWAY. MATCH EXISTING ELEVATIONS AT DRIVEWAY LIMITS

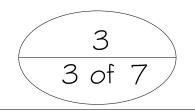




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PRELIMINARY NOT FOR CONTRUCTION



TRAFFIC

CITY PLAN NUMBER

PROJECT NAME:

SPOKANE TRAFFIC CALMING MASTER PLAN

MARSHALL AVENUE

TYPE OF IMPROVEMENT: CITY PROJECT NUMBER

SEGMENT LIMITS:

ZAPPONE PLACE

PROJECT LIMITS: CHIEF GARRY PARK NEIGHBORHOOD

EFN: TRAFFIC DESIGN CALL BEFORE YOU DIG 1-800-424-5555

District:	1
Neighborhood:	Chief Garry
Project Extent:	Mission Avenue at Crestline Street and Chief Garry Park
	Estimate: \$93,000

Problem Statement: Residents of the Chief Garry neighborhood raised concerns regarding vehicle speeds and visibility of speed limit signs on Mission Avenue near Chief Garry Park and Crestline Street. Mission Avenue is classified as a principal arterial. At Crestline Street, the speed limit on Mission Avenue is posted at 30 mph; the speed limit reduces to 20 mph in front of Chief Garry Park.

Traffic Analysis

The table below shows historical speed data and volume data on Mission Avenue. Based on a March 2022 traffic count, there are about 12,100 vehicles per day on Mission Avenue (east of Cook Street). Prior to 2020, Mission Avenue was signed as a 20-mph speed zone in front of Chief Garry Park only during the summer months. In 2020, the speed limit changed to 20-mph year round in front of the park. At the west end of the park, the 85th percentile travel speed on Mission Avenue was 37 mph in March 2022 (17 mph over the posted speed limit). However, historical speed data shows a 25 mph 85th percentile speed in August 2019. This shows that drivers are willing to travel at lower speeds when park activity is high. However, when the park activity is low, drivers tend to have higher travel speeds.

Location	Month/Year	Posted Speed	WB 85 th Percentile Speed (mph)	EB 85 th Percentile Speed (mph)	Combined 85 th Percentile Speed (mph)	2022 Estimated Daily Traffic (Vehicles per day) ^a
Mission Ave,	March 2016	30	-	-	37	-
east of Cook Street (west end	August 2019	20	-	25	-	-
of park)	March 2022	20	37	37	-	12,134
Mission Ave,	April 2019	30	-	34	-	-
east of Marshall Avenue	August 2019	30	34	-	-	-

2022 Daily Traffic and 85th Percentile Speeds on Mission Avenue

^a A seasonal adjustment factor of 1.02 was applied to the traffic count, based on historical traffic data from the city to estimate average daily traffic.

Adding advanced speed limit warning signs may help warn drivers of the speed limit reduction. In addition, speed feedback signs would help alert drivers to the reduced speed limit. Speed feedback signs are shown to reduce the average travel speed by 2 mph and reduce the 85th percentile speed by 4 mph.¹ This follows the guidance laid out in the Revised Code of Washington (Section 46.61.440) that states school and playground zones can be installed up to 300' away from active schools or playgrounds.² Additionally, if speeding continues to be an issue it would be recommended that a speed ticketing sign

¹ Engineering Speed Management Countermeasures: A Desktop Reference of Potential Effectiveness in Reducing Speed. Federal Highway Administration. July 2014.

² Revised Code of Washington Section 46.61.440. <u>https://app.leg.wa.gov/rcw/default.aspx?cite=46.61.440</u>

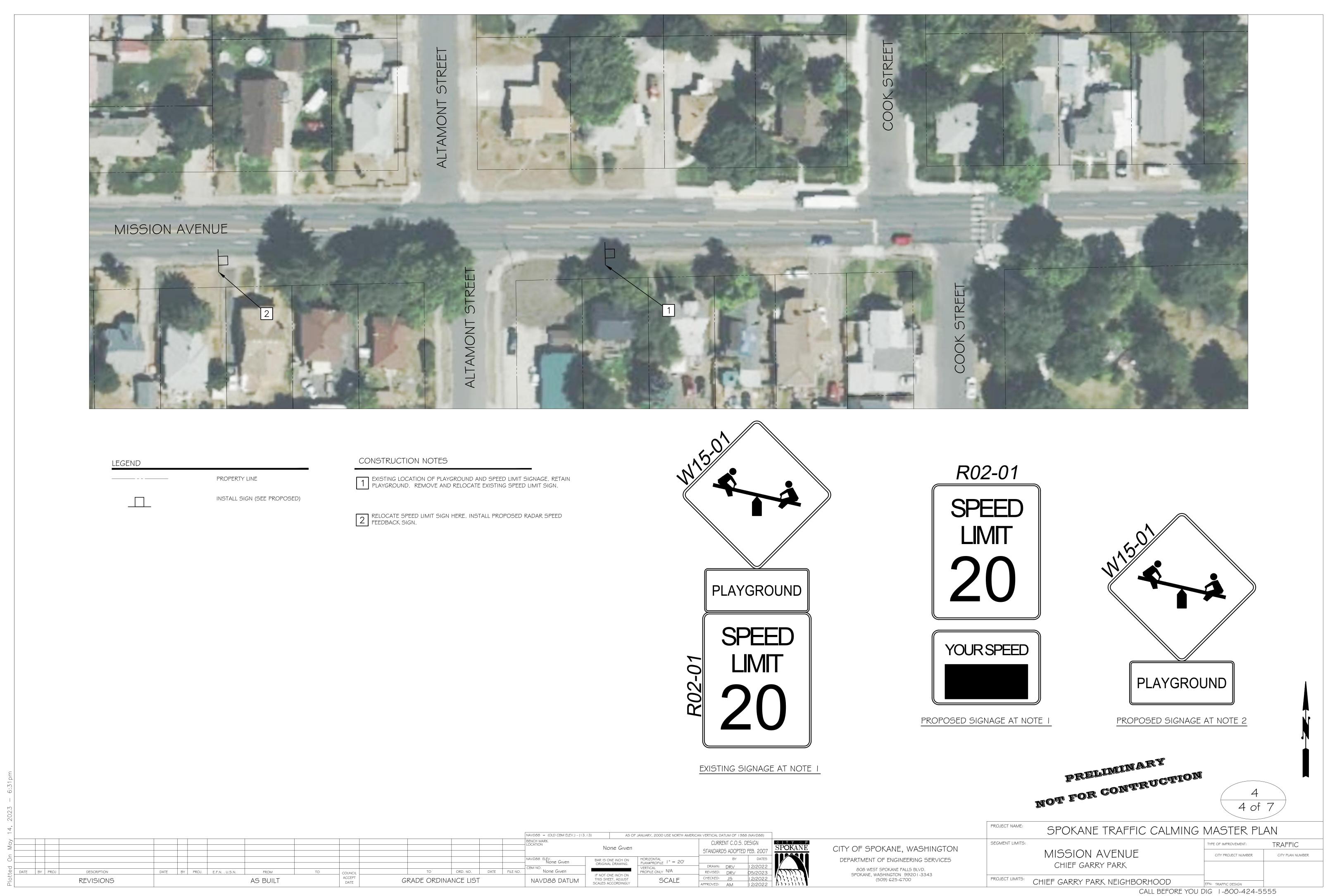
be implemented near Lacey Street for both directions to further enforce high speeds near Chief Garry Park. A road diet could be considered on Mission Avenue, given the existing daily traffic volumes are about 12,100 vehicles per day (at Cook Street). As a point of reference, the planning level capacity of a two-lane urban arterial is 18,300 vehicles per day (assuming left-turn lanes are provided on the mainline at signalized intersections).³ However, a road diet is not recommended at this time, given traffic volumes are higher to the west (19,200 vehicles per day west of Marshall Avenue) and operational issues may arise with the existing transit service on the corridor.

Recommended Solution:

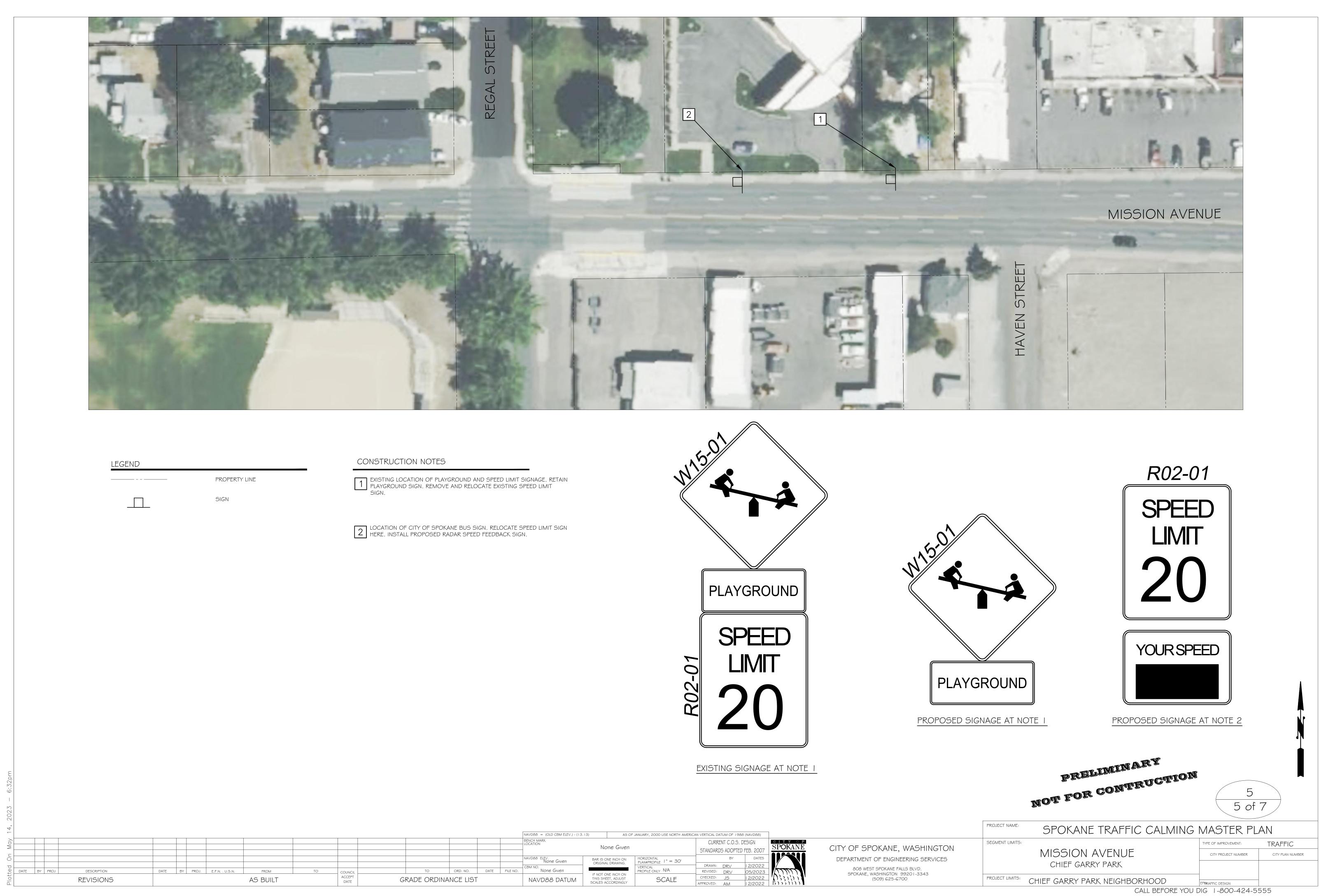
The speed limit on Mission Avenue reduces to 20 mph in front of Chief Garry Park. It is recommended that speed feedback signs be added east and west of the park to alert drivers to the reduced speed limit. The speed feedback signs are recommended at the following locations:

- Eastbound Mission Avenue (west of Cook Street) west end of park
- Westbound Mission Avenue (east of Regal Street) east end of park

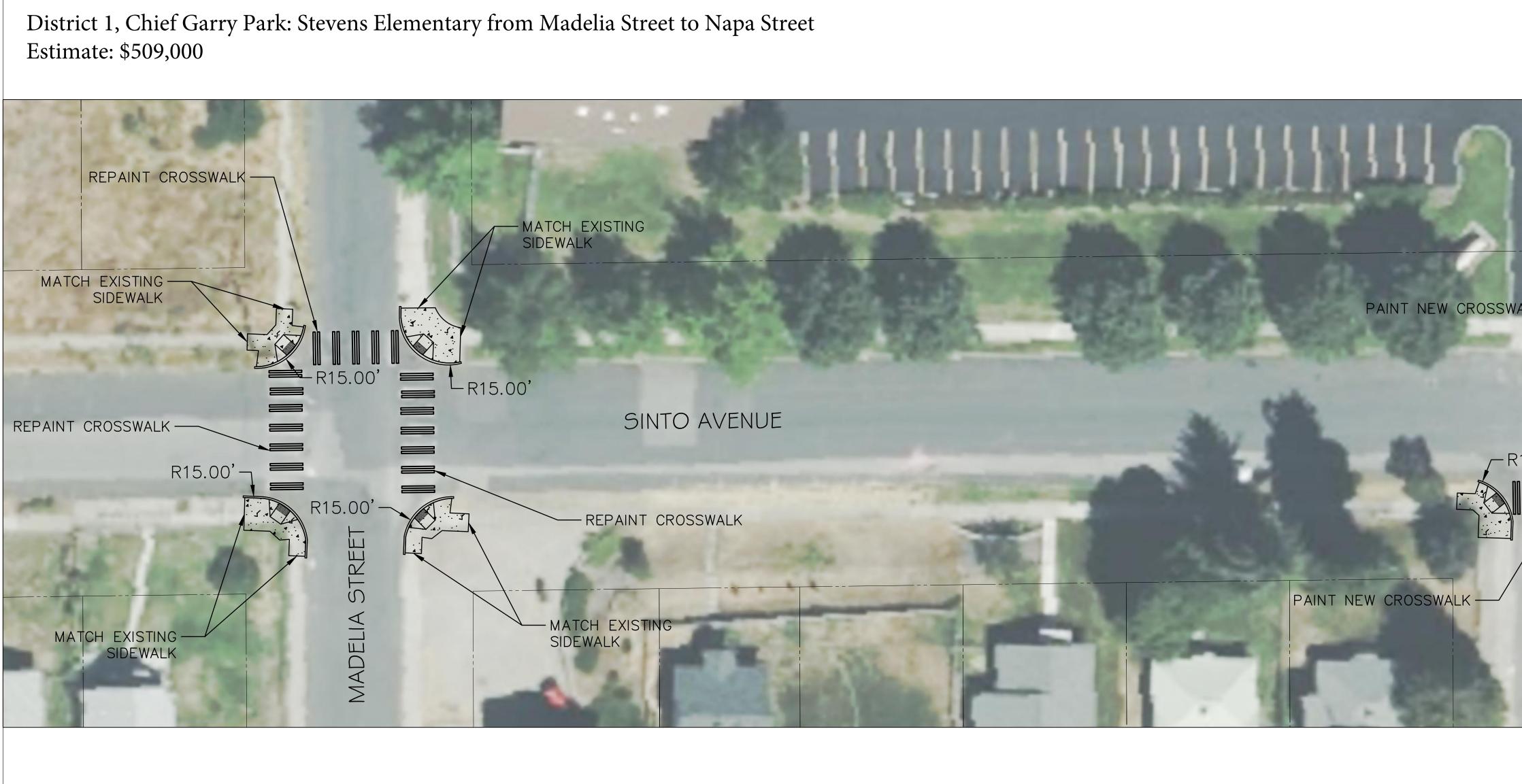
³ *Highway Capacity Manual 6th Edition: A Guide for Multimodal Mobility Analysis.* Page 16-30, Exhibit 16-16. Washington, DC: The National Academies Press.

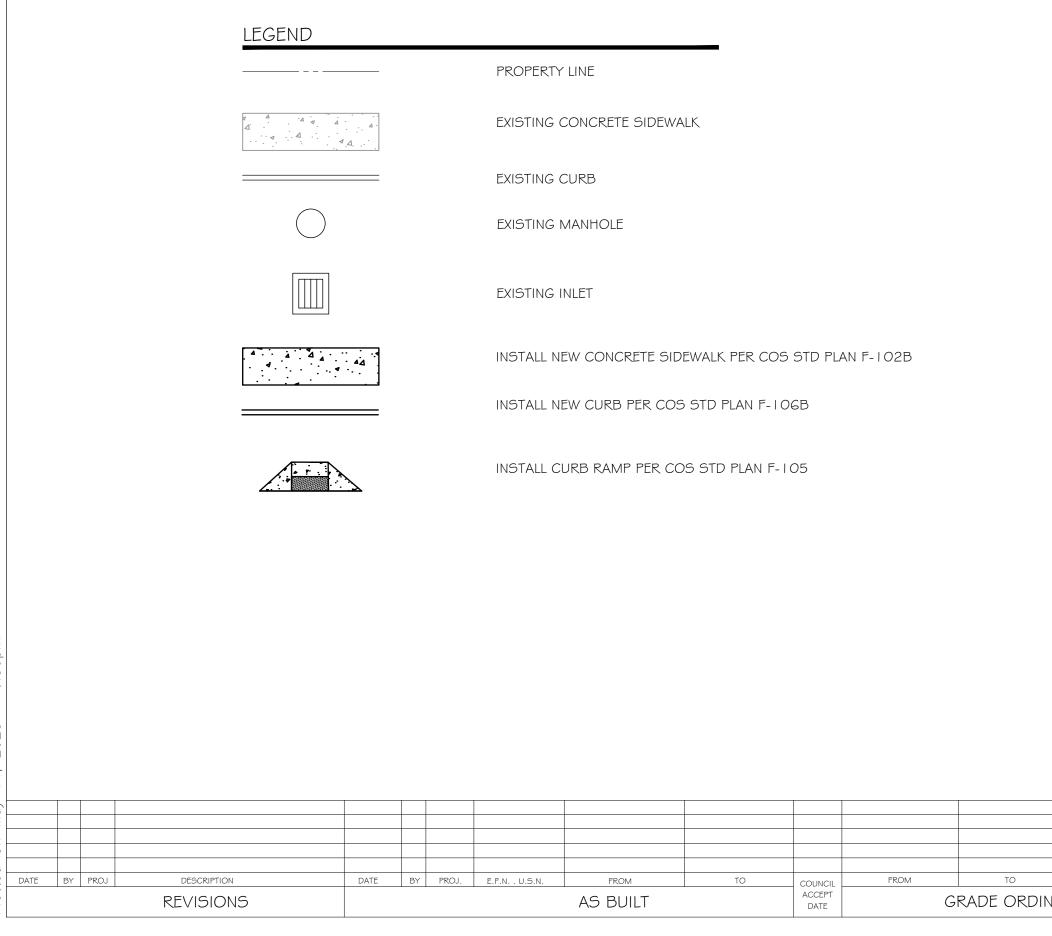


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CONSTRUCTION NOTES

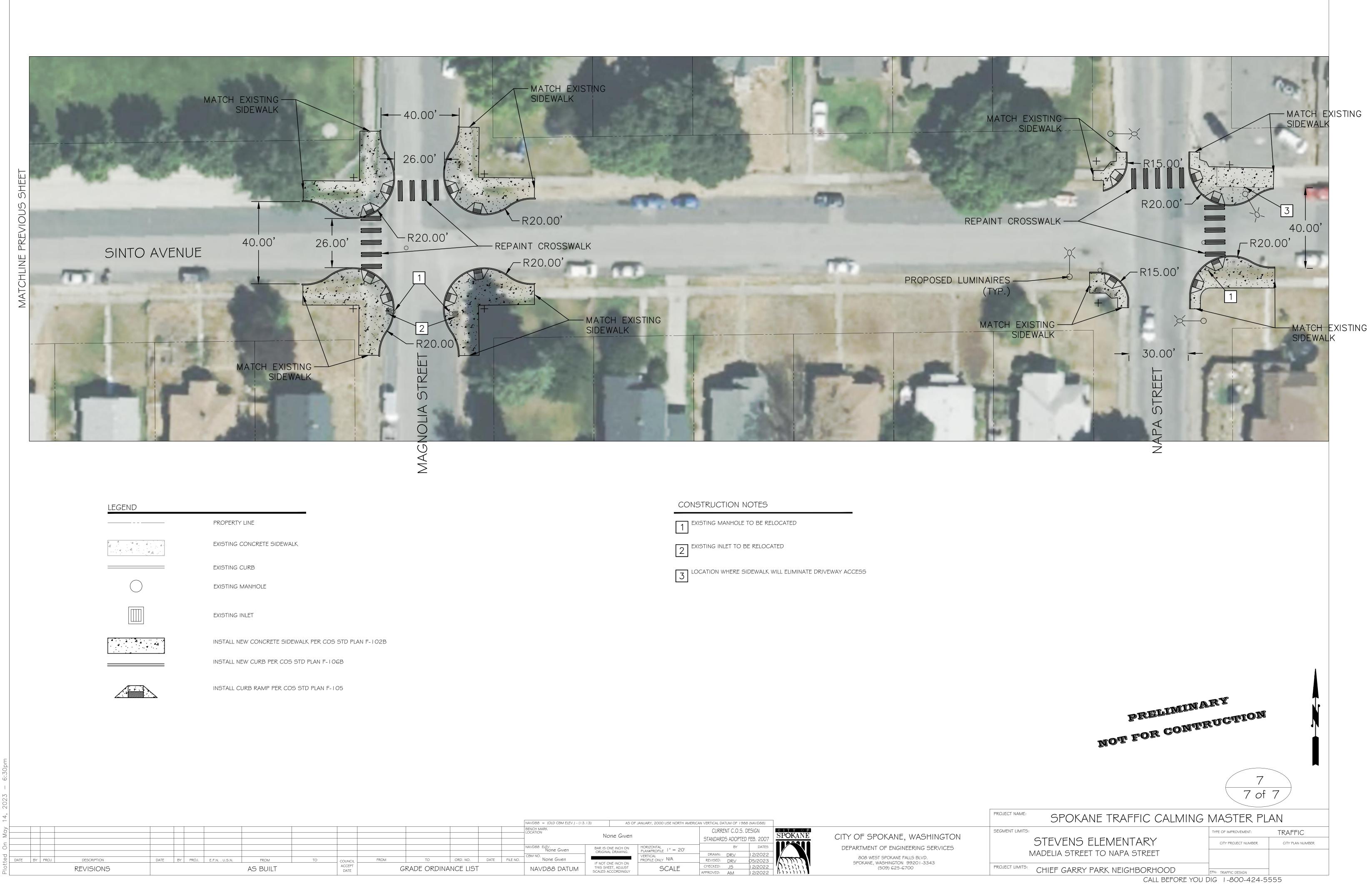
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