

Spokane Traffic Calming Master Plan

District: 1
Neighborhood: Minnehaha
Project Extent: Euclid Avenue / Frederick Avenue Corridor
 Estimate: \$1,048,000

Problem Statement:

Residents of the Minnehaha neighborhood raised concerns over pedestrian network connectivity, bicycle network connectivity, and pedestrian crossing safety on the Frederick Avenue corridor from Freya Street to Havana Street (0.5 miles). Frederick Avenue in the project area is classified as a minor arterial with a 30 mph speed limit.

Traffic Analysis:

The table below shows estimated 2022 daily traffic volumes and 85th percentile speeds on Frederick Avenue. As shown in the table, there are around 10,000 vehicles per day on Frederick Avenue, with an 85th percentile speed of 37 mph (7 mph higher than the posted speed limit).

2022 Daily Traffic and 85th Percentile Speeds on Frederick Avenue (East of Julia Street)

Direction	# Lanes	2022 Estimated Daily Traffic (Vehicles per day) ^a	85 th Percentile Speed (mph)	Posted Speed (mph)
Both Dir.	2	10,011	37	30

^a Traffic data collected on March 21, 2019. Traffic volumes were grown at a 1.0% annual growth rate, to estimate 2022 traffic conditions. 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.

The table below shows the severity and types of crashes occurring on Frederick Avenue between Freya Street and Havana Street over the last five years. There were a total of 13 crashes, with seven injury crashes. Turning-related crashes were the most common, representing 46% of all crashes.

Crashes on Frederick Avenue between Freya Street and Havana Street (2017 to 2021)

Crash Type	Crash Severity					Total
	Fatal	Major Injury	Minor Injury	Property Damage Only	Unknown	
Rear End	-	-	3	1	-	4
Turning	-	-	2	4	-	6
Fixed Object	-	-	1	1	-	2
Sideswipe	-	-	1	-	-	1
Total	0	0	7	6	0	13

The City of Spokane Bicycle Master Plan shows that bike lanes are planned on Frederick Avenue in the future. Sidewalks are currently provided on both the north and south side of Frederick Avenue for most of the project extents (with the exception of the eastern-most block from Cuba Street to Havana Street). However, most of the intersections do not have curb ramps and do not meet ADA standards.

Spokane Traffic Calming Master Plan

Spokane Transit Authority is planning on adding a new bus route that will run along Euclid Avenue and Frederick Avenue. The new route 38 is expected to be added in 2024 and will likely include the installation of new bus stops in the project area.

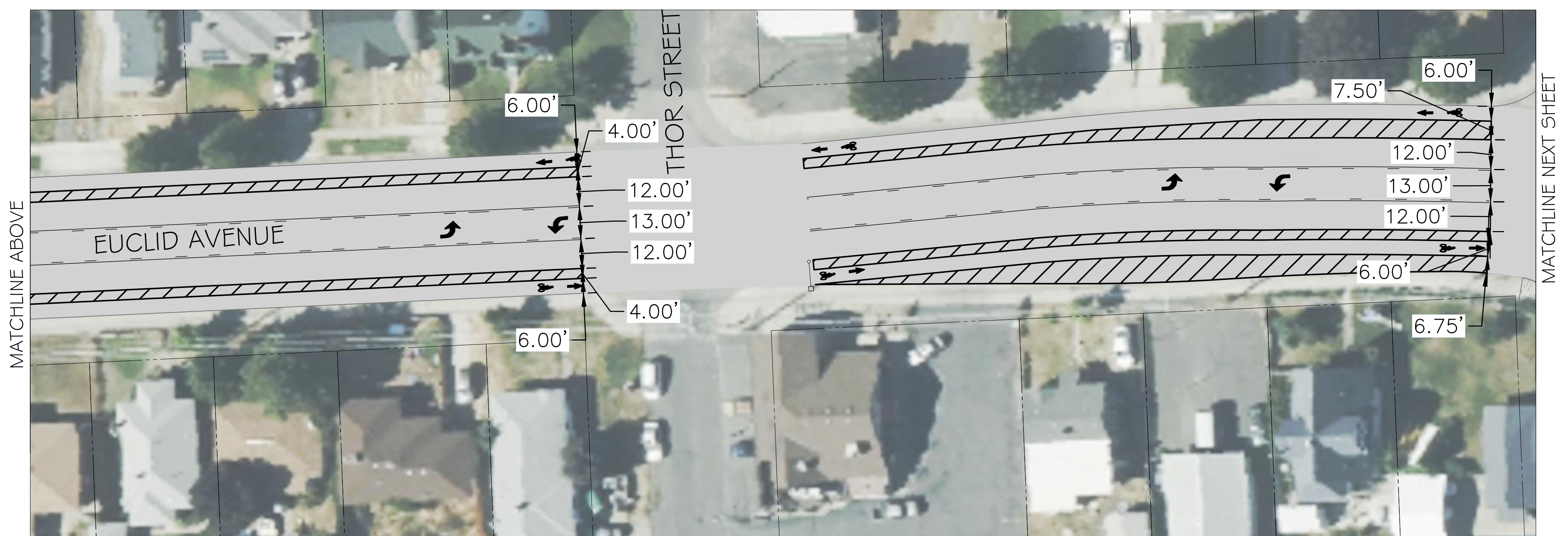
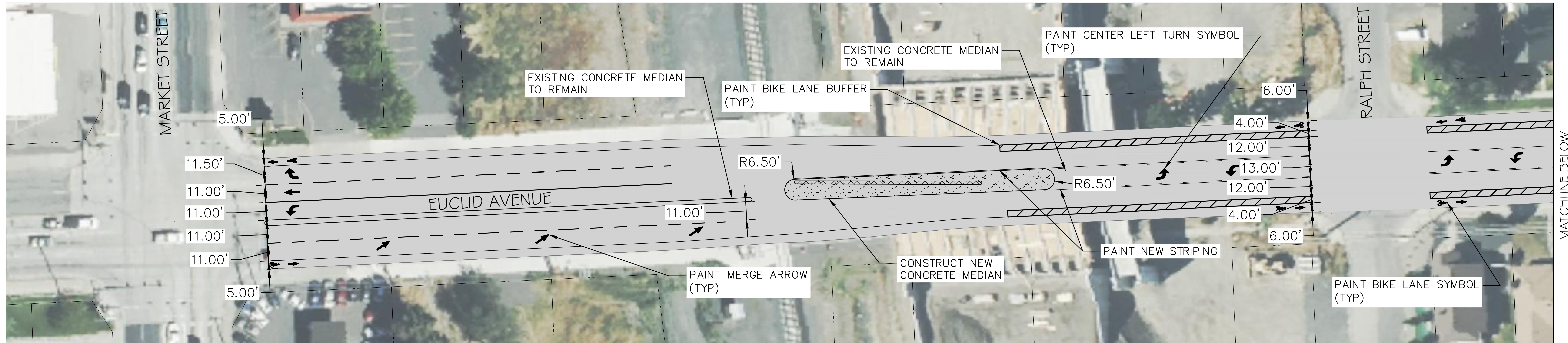
A road diet is being considered on Euclid Avenue (just west of the Euclid Avenue/Frederick Avenue/Freya Street intersection), as part of the Bemiss and Logan neighborhood traffic calming projects. The proposed road diet would extend 2.6 miles from North Foothills Drive and Division Street (at the west end) to Euclid Avenue and Freya Street (at the east end). West of Freya Street, Euclid Avenue has a four-lane cross section with 12,100 vehicles per day; therefore, a three-lane cross section expected to accommodate the existing daily traffic volumes on Euclid Avenue. 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).¹

If implemented, the road diet on Euclid Avenue would provide a three-lane cross section with a center turn-lane and bike lanes. Therefore, if bike lanes were added to this section of Frederick Avenue, there would be further bike lane connectivity to the west (with the Euclid Avenue road diet).

Recommended Solution:

It is recommended that a road diet be considered on Euclid Avenue from Market Street to Freya Street in conjunction with the North Foothills Drive road diet from the Bemiss and Logan neighborhood traffic calming projects. East of Euclid Avenue, it is recommended that Frederick Avenue be re-stripped to provide bike lanes between Freya Street and Havana Street, to extend bike lane connectivity on the corridor. Lastly, it is recommended that sidewalk be added on the on the eastern-most block of Frederick Avenue (from Cuba Street to Havana Street).

¹ *Highway Capacity Manual 6th Edition: A Guide for Multimodal Mobility Analysis*. Page 16-30, Exhibit 16-16. Washington, DC: The National Academies Press.



LEGEND

	PROPERTY LINE		INSTALL 2-WAY LEFT TURN LANE MARKING
	EXISTING CURB		INSTALL CONCRETE MEDIAN
	REMOVE EXISTING CONCRETE ISLAND		INSTALL CROSSWALK PER COS STD PLAN G-61
	EXISTING ASPHALT PAVEMENT		

NOTE:

- PROJECT WILL BE UPDATED BASED ON STA NEW BUS ROUTES IN BOTH DIRECTIONS THROUGH THIS CORRIDOR. NEW BUS STOP LOCATIONS ARE EXPECTED TO IMPACT THIS CONCEPT.

**PRELIMINARY
NOT FOR CONSTRUCTION**

Plotted On: May 14, 2023 - 7:18pm

NAVD88 = (OLD CBM ELEV.) - (1.313) AS OF JANUARY, 2000 USE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88)									
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CBM NO.: None Given					VERTICAL PROFILE ONLY: N/A				
NAVD88 DATUM					SCALE				
AS BUILT					GRADE ORDINANCE LIST				
REVISIONS					COUNCIL ACCEPT DATE				

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

PROJECT NAME: SPOKANE TRAFFIC CALMING MASTER PLAN

SEGMENT LIMITS: EUCLID AVENUE AND FREDERICK AVENUE
MARKET STREET TO HAVANA STREET

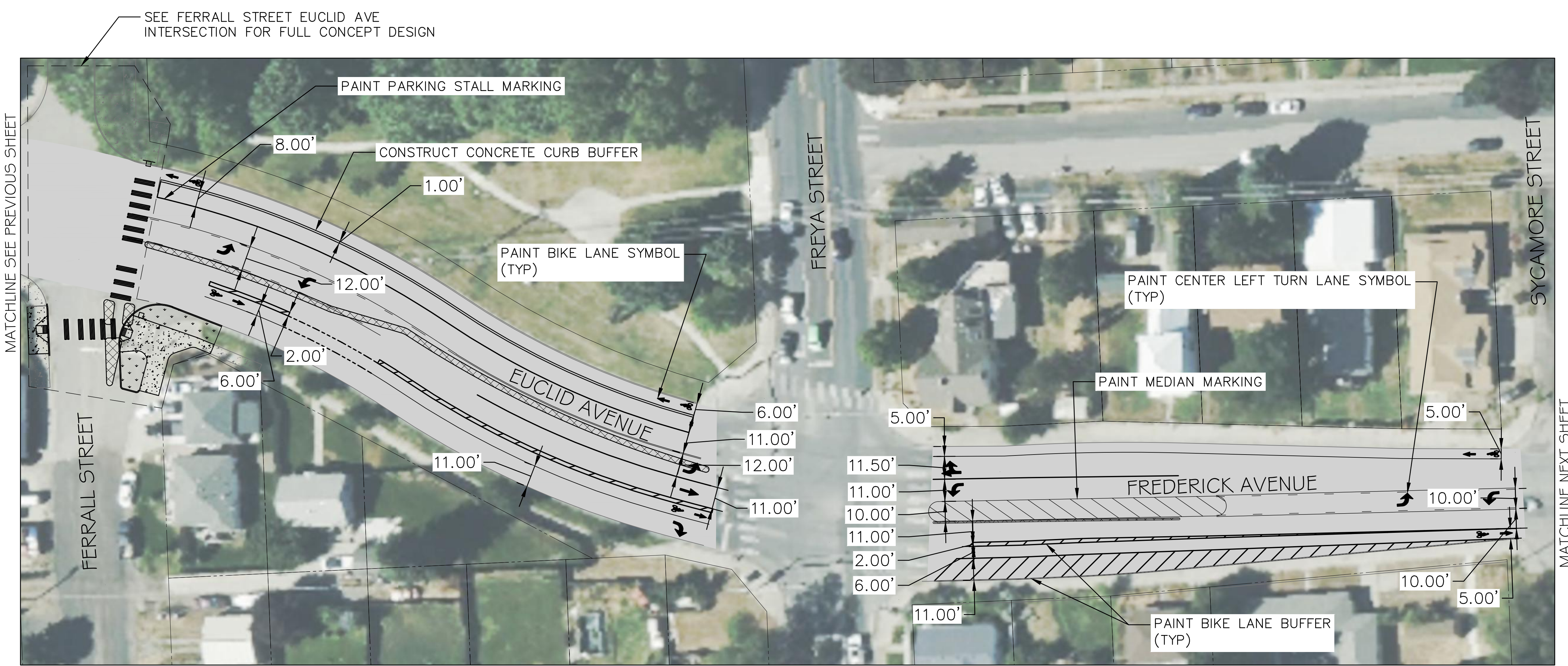
PROJECT LIMITS: MINNEHAHA NEIGHBORHOOD

TYPE OF IMPROVEMENT: TRAFFIC

CITY PROJECT NUMBER: _____ CITY PLAN NUMBER: _____

DATE: TRAFFIC DESIGN

CALL BEFORE YOU DIG 1-800-424-5555



LEGEND

	PROPERTY LINE		INSTALL 2-WAY LEFT TURN LANE MARKING
	EXISTING CONCRETE SIDEWALK		
	EXISTING CURB		
	REMOVE EXISTING CONCRETE ISLAND		
	EXISTING ASPHALT PAVEMENT		

**PRELIMINARY
NOT FOR CONSTRUCTION**



2
2 of 9

Plotted On: May 14, 2023 - 7:20pm

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CALL BEFORE YOU DIG 1-800-424-5555



LEGEND

	PROPERTY LINE
	EXISTING CONCRETE SIDEWALK
	EXISTING CURB
	INSTALL BIKE LANE MARKING

CONSTRUCTION NOTES

1 SEE FREDERICK AVENUE AND MYRTLE STREET CONCEPT DESIGN

**PRELIMINARY
NOT FOR CONTRUCTION**



3
3 of 9

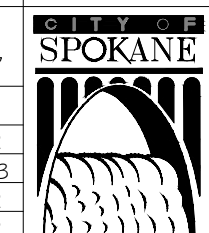
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BENCH MARK LOCATION	None Given

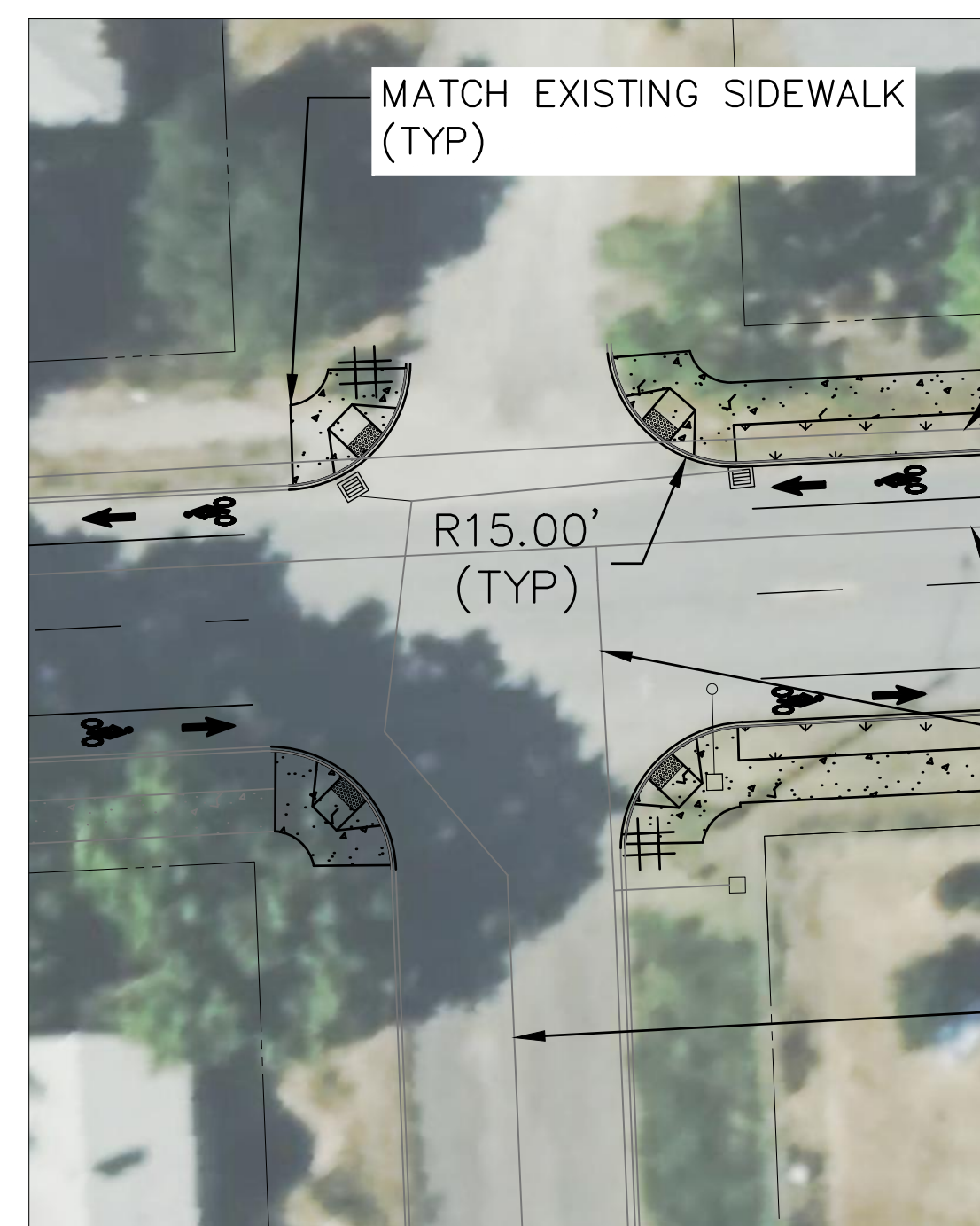
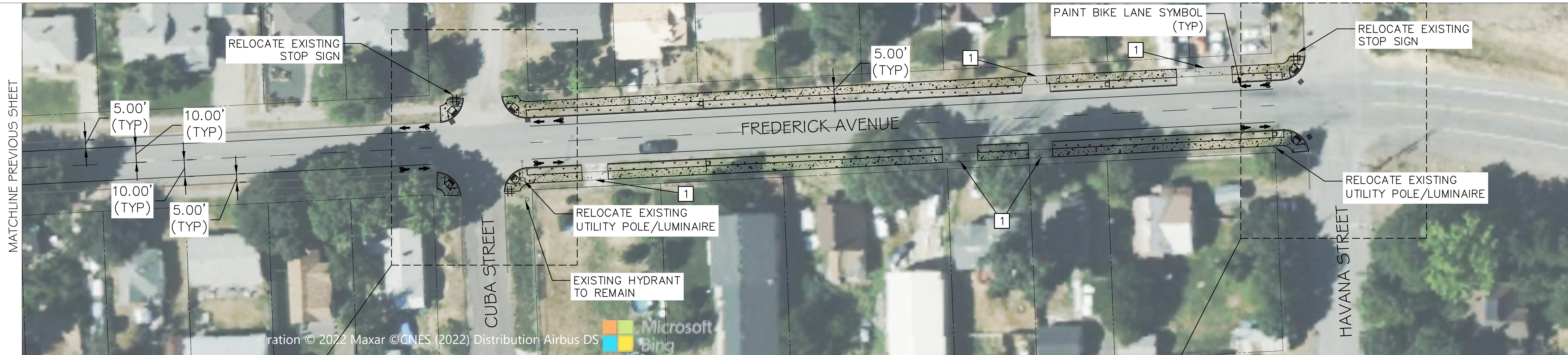
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BY	DATE
DRW: DRV	1/2/2022
REVISED: DRV	05/2023
CHECKED: JS	1/2/2022
APPROVED: AM	1/2/2022



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

PROJECT NAME:	SPOKANE TRAFFIC CALMING MASTER PLAN	
SEGMENT LIMITS:	EUCLID AVENUE AND FREDERICK AVENUE MARKET STREET TO HAVANA STREET	
PROJECT LIMITS:	MINNEHAHA NEIGHBORHOOD	TYPE OF IMPROVEMENT: TRAFFIC
		CITY PROJECT NUMBER: CITY PLAN NUMBER:

CALL BEFORE YOU DIG 1-800-424-5555



SCALE: 1' = 20'



SCALE: 1' = 20'

LEGEND

	PROPERTY LINE		INSTALL NEW CONCRETE SIDEWALK PER COS STD PLAN F-102B
	EXISTING CONCRETE SIDEWALK		INSTALL NEW CURB PER COS STD PLAN F-106B
	EXISTING CURB		INSTALL CURB RAMP PER COS STD PLAN F-105
	EXISTING SIGN TO REMAIN		INSTALL BIKE LANE MARKING
			INSTALL LANDSCAPING STRIP

CONSTRUCTION NOTES

- 1 INSTALL CONCRETE DRIVEWAY TYPE 2 PER COS STD PLAN F-103A

**PRELIMINARY
NOT FOR CONSTRUCTION**

Plotted On: May 14, 2023 - 7:21 pm

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Spokane Traffic Calming Master Plan

District: 1
Neighborhood: Minnehaha
Project Extent: Freya Street Corridor
 from Euclid Avenue to Bridgeport Avenue
 Estimate: \$331,000

Problem Statement:

Residents of the Minnehaha neighborhood raised concerns over school zone speeds, pedestrian crossing safety, and heavy vehicle speeds on Freya Street near Cooper Elementary. Freya Street is classified as a minor arterial with a speed limit of 30 mph (20 mph speed limit on Freya Street during school hours). Within the project extents (from Euclid Avenue to Bridgeport Avenue, length of 0.14 miles) there are two existing east-west crosswalks at Liberty Avenue and Bridgeport Avenue. An east-west crossing also exists at the traffic signal at Freya Street and Euclid Avenue.

Traffic Analysis:

The table below shows estimated 2022 daily traffic volumes and 85th percentile speeds on Freya Street (north of Euclid Avenue). As shown in the table, there are around 9,000 vehicles per day on Freya Street with an 85th percentile speed of 32 mph (2 mph higher than the posted speed limit or 12 mph higher than the school speed zone). Of note, new tube counts will be collected on Freya Street near Cooper Elementary in early 2023; this analysis will be updated to report the most recent speed and volume data on Freya Street, when available.

2022 Daily Traffic and 85th Percentile Speeds on Freya Street (North of Euclid Avenue)

Direction	# Lanes	2022 Estimated Daily Traffic (Vehicles per day) ^a	85 th Percentile Speed (mph)	Posted Speed (mph)
Both Dir.	2	9,043	32	30

^a Traffic data collected on March 21, 2019. Traffic volumes were grown at a 1.0% annual growth rate, to estimate 2022 traffic conditions. 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.

The table below shows the severity and types of crashes occurring on Freya Street between Euclid Avenue and Bridgeport Avenue over the last five years. There were a total of four crashes, with three injury crashes. Rear end crashes were the most common crash type.

Crashes on Freya Street between Euclid Avenue and Bridgeport Avenue (2017 to 2021)

Crash Type	Crash Severity					Total
	Fatal	Major Injury	Minor Injury	Property Damage Only	Unknown	
Rear End	-	-	3	-	-	3
Fixed Object	-	-	-	1	-	1
Total	0	0	3	1	0	4

Spokane Traffic Calming Master Plan

The need for enhanced pedestrian crossing treatments (across Freya Street) 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, a signed and striped crosswalk would be recommended across Freya Street if there are 20 or more pedestrian crossings during the peak hour.

Recommended Solution:

There are two existing east-west crosswalks with pedestrian crossing warning signs on Freya Street near Cooper Elementary (at Liberty Avenue and Bridgeport Avenue). Based on speed and traffic count data from 2014, the existing signed and marked crosswalks provide adequate crossing treatments for pedestrians. However, it is recommended that these crossings be upgraded to provide curb extensions, which narrow the roadway width and shorten the pedestrian crossing distance. Curb extensions are expected to reduce the 85th percentile speed by 3 mph on Freya Street.²

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>

² *Engineering Speed Management Countermeasures: A Desktop Reference of Potential Effectiveness in Reducing Speed*. Federal Highway Administration. July 2014.



LEGEND

	PROPERTY LINE
	EXISTING CONCRETE SIDEWALK
	EXISTING CURB
	EXISTING INLET
	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-61

CONSTRUCTION NOTES

- 1 INSTALL NEW CATCH BASIN TYPE 1.

**PRELIMINARY
NOT FOR CONSTRUCTION**

Plotted On: May 14, 2023 - 7:23pm

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LEGEND	
	PROPERTY LINE
	EXISTING CONCRETE SIDEWALK
	EXISTING CURB
	EXISTING INLET
	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-61

CONSTRUCTION NOTES

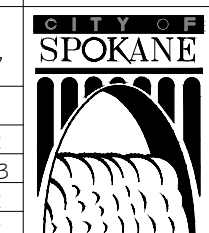
1 INSTALL NEW CATCH BASIN TYPE 1 AND 8" DIAM. PIPE.

**PRELIMINARY
NOT FOR CONSTRUCTION**

6
6 of 9

Plotted On: May 14, 2023 - 7:24pm

<table border="1"> <thead> <tr> <th>DATE</th> <th>BY</th> <th>PROJ.</th> <th>DESCRIPTION</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>										DATE	BY	PROJ.	DESCRIPTION					<table border="1"> <thead> <tr> <th>FROM</th> <th>TO</th> <th>ORD. NO.</th> <th>DATE</th> <th>FILE NO.</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>										FROM	TO	ORD. NO.	DATE	FILE NO.						<table border="1"> <thead> <tr> <th>DATE</th> <th>BY</th> <th>DATE</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>										DATE	BY	DATE				<table border="1"> <thead> <tr> <th>DATE</th> <th>BY</th> <th>DATE</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>										DATE	BY	DATE				<table border="1"> <thead> <tr> <th>DATE</th> <th>BY</th> <th>DATE</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>										DATE	BY	DATE			
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CITY OF SPOKANE, WASHINGTON
DEPARTMENT OF ENGINEERING SERVICES
808 WEST SPOKANE FALLS BLVD.
SPOKANE, WASHINGTON 99201-3343
(509) 625-6700

PROJECT NAME: SPOKANE TRAFFIC CALMING MASTER PLAN	
SEGMENT LIMITS: FREYA STREET LIBERTY AVENUE TO BRIDGEPORT AVENUE	TYPE OF IMPROVEMENT: TRAFFIC
PROJECT LIMITS: MINNEHAHA NEIGHBORHOOD	CITY PROJECT NUMBER: _____ CITY PLAN NUMBER: _____

CALL BEFORE YOU DIG 1-800-424-5555

Spokane Traffic Calming Master Plan

District: 1
Neighborhood: Minnehaha
Project Extent: Marietta Avenue and Freya Street Intersection
Estimate: \$262,000

Problem Statement:

Residents of the Minnehaha neighborhood raised concerns over the pedestrian crossings at the Marietta Avenue and Freya Street intersection. Freya Street in the project area is classified as a collector with a 30 mph speed limit. At this intersection, Marietta Avenue is a local road with a 25 mph speed limit. The intersection is stop controlled on the east and west legs, with free-flowing traffic on Freya Street.



Marietta Avenue and Freya Street Intersection

Traffic Analysis:

The table below shows estimated 2022 daily traffic volumes and 85th percentile speeds on Freya Street (north of Marietta Avenue). As shown in the table, there are around 5,700 vehicles per day on Freya Street with an 85th percentile speed of 34 mph (4 mph higher than the posted speed limit).

2022 Daily Traffic and 85th Percentile Speeds on Freya Street (North of Marietta Avenue)

Direction	# Lanes	2022 Estimated Daily Traffic (Vehicles per day) ^a	85 th Percentile Speed (mph)	Posted Speed (mph)
Both Dir.	2	5,677	34	30

^a Traffic data collected on March 21, 2019. Traffic volumes were grown at a 1.0% annual growth rate, to estimate 2022 traffic conditions. 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.

Pedestrian counts were collected on November 1, 2022; the number of pedestrian crossings was highest on the west leg (with seven crossings on the west leg and two to four crossings on all other legs during their respective peak hours). However, it's worth noting that pedestrian traffic is likely higher during the warmer summer months.

Spokane Traffic Calming Master Plan

The table below shows the severity and types of crashes occurring at the Freya Street and Marietta Avenue intersection over the last five years. There were a total of four crashes, with one major injury crash involving a pedestrian.

Crashes at the Freya Street and Marietta Avenue Intersection (2017 to 2021)

Crash Type	Crash Severity					Total
	Fatal	Major Injury	Minor Injury	Property Damage Only	Unknown	
Angle	-	-	1	-	-	3
Fixed Object	-	-	-	2	-	2
Pedestrian	-	1	-	-	-	1
Total	0	1	1	2	0	4

The need for enhanced pedestrian crossing treatments (across Freya 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.

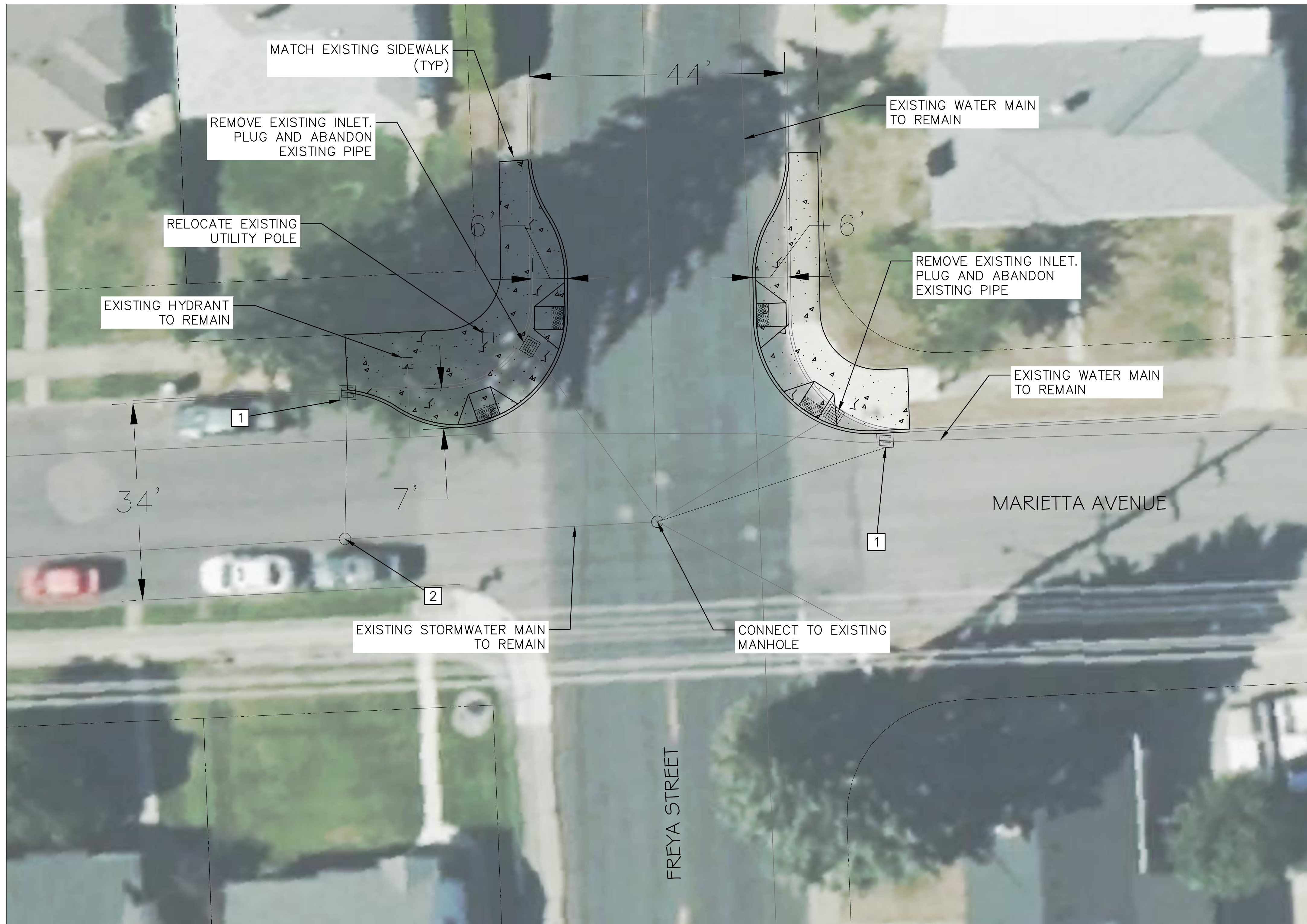
Based on NCHRP 562, a signed and striped crosswalk would be recommended across Freya Street if there are 20 or more pedestrian crossings during the peak hour. Based on the November 2022 traffic count, the existing pedestrian volumes would not warrant a marked crosswalk on Freya Street. However, curb extensions could be considered on the north leg reduce the pedestrian crossing distance and reduce travel speeds on Freya Street. It is recommended that the curb extension on the northwest corner be extended onto Marietta Avenue as well to better align crosswalk and curb lines. Curb extensions are expected to reduce the 85th percentile speed by 3 mph.²

Recommended Solution:

It is recommended that the curb ramp on the northwest corner be upgraded to meet ADA standards at the Freya Street and Marietta Avenue intersection (this upgrade may require relocating the utility pole at this corner). No crosswalks are recommended at this time; however, curb extensions are recommended on the north leg of the intersection to reduce the pedestrian crossing distance and reduce travel speeds on Freya Street. It is also recommended that pedestrian volumes be re-counted during warmer summer months to better understand peak pedestrian crossing volumes.

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>

² *Engineering Speed Management Countermeasures: A Desktop Reference of Potential Effectiveness in Reducing Speed*. Federal Highway Administration. July 2014.

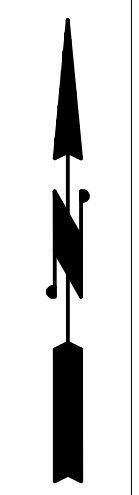


LEGEND

	PROPERTY LINE
	EXISTING CONCRETE SIDEWALK
	EXISTING CURB
	EXISTING INLET
	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

- CONSTRUCTION NOTES**
- 1 INSTALL NEW CATCH BASIN TYPE 1 AND 8" DIAM. PIPE.
 - 2 INSTALL NEW MANHOLE

**PRELIMINARY
NOT FOR CONSTRUCTION**



7
7 of 9

Plotted On: May 14, 2023 - 7:24pm

NAVD88 = (OLD CBM ELEV.) - (1.313) AS OF JANUARY, 2000 USE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88)									
BENCHMARK LOCATION: None Given					CURRENT C.O.S. DESIGN STANDARDS ADOPTED FEB. 2007				
NAVD88 ELEV.: None Given					BY: DATES:				
CBM NO.: None Given					DRAWN: DRV 1/2/2022				
HORIZONTAL PLAN/PROFILE: 1" = 10'					REVISION: DRV 05/2023				
VERTICAL PROFILE ONLY: N/A					CHECKED: JS 1/2/2022				
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY					APPROVED: AM 1/2/2022				
CITY OF SPOKANE, WASHINGTON DEPARTMENT OF ENGINEERING SERVICES 808 WEST SPOKANE FALLS BLVD. SPOKANE, WASHINGTON 99201-3343 (509) 625-6700									
PROJECT NAME: SPOKANE TRAFFIC CALMING MASTER PLAN									
SEGMENT LIMITS: MARIETTA AVENUE AND FREYA STREET									
PROJECT LIMITS: MINNEHAHA NEIGHBORHOOD									
TYPE OF IMPROVEMENT: TRAFFIC									
CITY PROJECT NUMBER: CITY PLAN NUMBER:									
DTN: TRAFFIC DESIGN									

DATE	BY	PROJ.	DESCRIPTION	DATE	BY	PROJ.	E.F.N. - U.S.N.	FROM	TO	COUNCIL ACCEPT DATE	FROM	TO	ORD. NO.	DATE	FILE NO.
AS BUILT															
GRADE ORDINANCE LIST															
NAVD88 DATUM															

CALL BEFORE YOU DIG 1-800-424-5555

Spokane Traffic Calming Master Plan

District: 1
Neighborhood: Minnehaha
Project Extent: Frederick Avenue and Myrtle Street Intersection
Estimate: \$16,000

Problem Statement: Residents of the Minnehaha neighborhood raised concerns over the pedestrian crossings at the Frederick Avenue and Myrtle Street Intersection. Frederick Avenue in the project area is classified as a minor arterial with a 30 mph speed limit. Myrtle Street is a local road with a 25 mph speed limit. The intersection is stop controlled on the north and south legs, with free-flowing traffic on Frederick Avenue. A signed and striped crosswalk is provided on the east leg of the intersection.



Frederick Avenue and Myrtle Street Intersection

Traffic Analysis:

The table below shows estimated 2022 daily traffic volumes and 85th percentile speeds on Frederick Avenue (east of Julia Street). As shown in the table, there are around 10,000 vehicles per day on Frederick Avenue, with an 85th percentile speed of 37 mph (7 mph higher than the posted speed limit).

2022 Daily Traffic and 85th Percentile Speeds on Frederick Avenue (East of Julia Street)

Direction	# Lanes	2022 Estimated Daily Traffic (Vehicles per day) ^a	85 th Percentile Speed (mph)	Posted Speed (mph)
Both Dir.	2	10,011	37	30

^a Traffic data collected on March 21, 2019. Traffic volumes were grown at a 1.0% annual growth rate, to estimate 2022 traffic conditions. 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.

Pedestrian counts were collected on November 1, 2022, showing that there were two crossings of Frederick Avenue and two crossings of Myrtle Street during the pedestrian peak hour. However, it's worth noting that pedestrian traffic is likely higher during the warmer summer months.

Spokane Traffic Calming Master Plan

The table below shows the severity and types of crashes occurring at the Frederick Avenue and Myrtle Street intersection over the last five years. There were a total of three crashes at the intersection.

Crashes at the Frederick Avenue and Myrtle Street Intersection (2017 to 2021)

Crash Type	Crash Severity					Total
	Fatal	Major Injury	Minor Injury	Property Damage Only	Unknown	
Angle	-	-	-	1	-	1
Rear End	-	-	2	-	-	2
Total	0	0	2	1	0	3

The need for enhanced pedestrian crossing treatments (across Frederick 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.

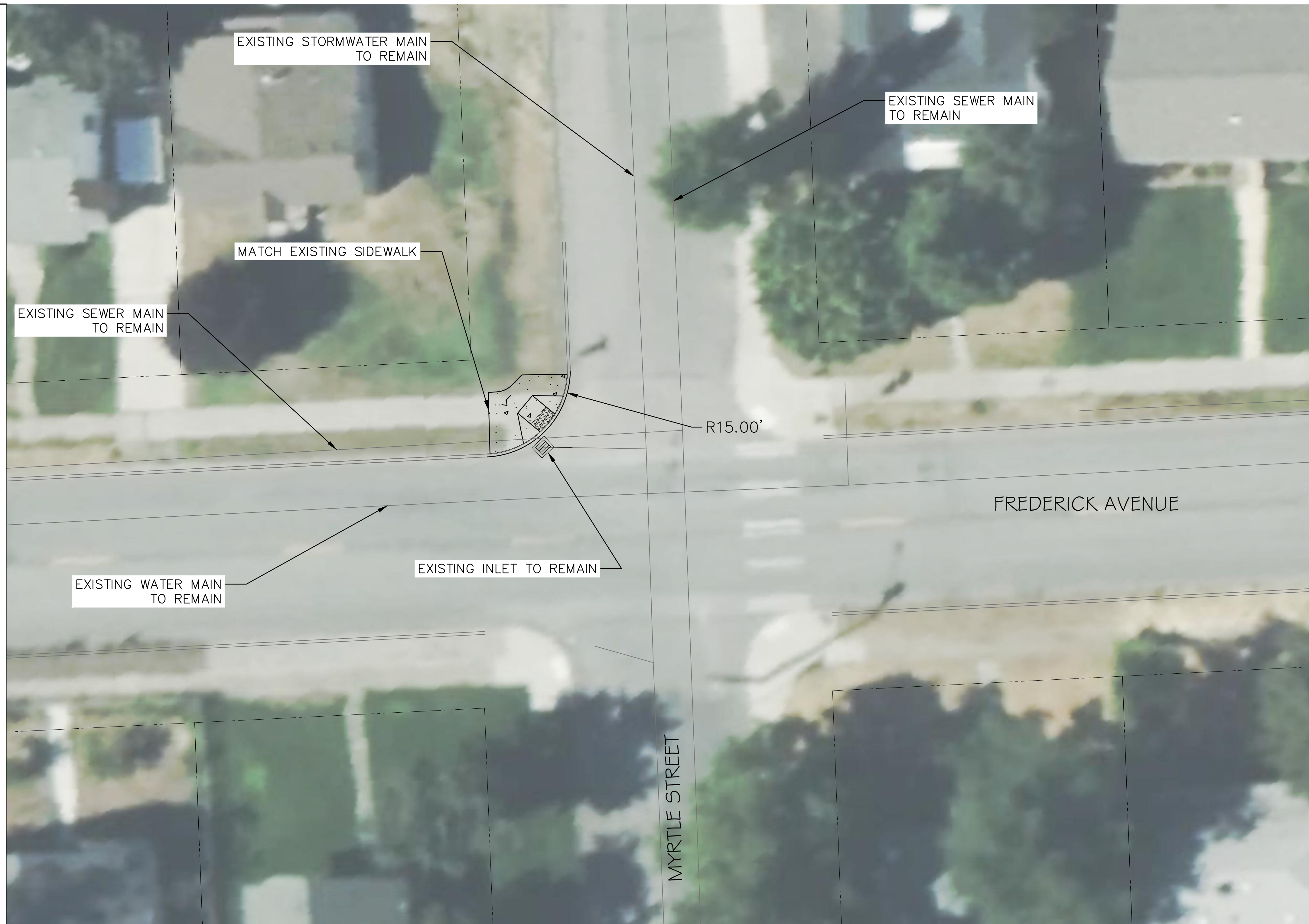
Based on NCHRP 562, no crosswalk is needed at this intersection with the observed pedestrian volumes. However, an active or enhanced crosswalk would be recommended (e.g., rectangular rapid flashing beacon) if there are 14 or more pedestrian crossings during the peak hour.

Recommended Solution:

It is recommended that the ramp in the northwest corner be upgraded to meet ADA standards at the Frederick Avenue and Myrtle Street intersection. No additional pedestrian crossing treatments are recommended at this time; however, it is recommended that pedestrian volumes be re-counted during warmer summer months to better understand peak pedestrian crossing volumes.

Of note, bike lanes are being considered on Frederick Avenue between Freya Street and Havana Street (as part of the Euclid Avenue and Frederick Avenue Corridor traffic calming project within the Minnehaha neighborhood). Adding bike lanes narrows the travel lanes on Frederick Avenue and is expected to reduce corridor travel speeds, improving safety at this north-south crossing.

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>



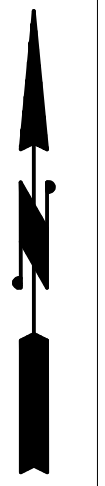
LEGEND

	PROPERTY LINE
	EXISTING CONCRETE SIDEWALK
	EXISTING CURB
	EXISTING INLET
	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

NOTE:

- SEE EUCLID AVENUE/FREDERICK AVENUE FROM MARKET STREET TO HAVANA STREET CONCEPT DESIGN FOR ROADWAY CHANNELIZATION REVISIONS

**PRELIMINARY
NOT FOR CONTRUCTION**



8
8 of 9

Plotted On: May 14, 2023 - 7:25pm

DATE	BY	PROJ.	DESCRIPTION	DATE	BY	PROJ.	E.F.N. - U.S.N.	FROM	TO	COUNCIL ACCEPT DATE	FROM	TO	ORD. NO.	DATE	FILE NO.
AS BUILT															
GRADE ORDINANCE LIST															
NAVD88 DATUM															

PROJECT NAME:	SPOKANE TRAFFIC CALMING MASTER PLAN		
SEGMENT LIMITS:	FREDERICK AVENUE AND MYRTLE STREET		TRAFFIC
PROJECT LIMITS:	MINNEHAHA NEIGHBORHOOD		CITY PROJECT NUMBER
			CITY PLAN NUMBER

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

CALL BEFORE YOU DIG 1-800-424-5555

Spokane Traffic Calming Master Plan

District: 1
Neighborhood: Minnehaha
Project Extent: Euclid Avenue and Ferrall Street Intersection
 Estimate: \$101,000

Problem Statement: Residents of the Minnehaha neighborhood raised concerns over the pedestrian crossings at the Euclid Avenue and Ferrall Street Intersection. Euclid Avenue in the project area is classified as a minor arterial with a 30 mph speed limit. Ferrall Street is classified as a local road with a 25 mph speed limit. The intersection is stop-controlled on the north and south legs, with free-flowing traffic on Euclid Avenue. Crosswalks are provided on the south and east legs of the intersection. Of note, Euclid Avenue has a four-lane cross section at Ferrall Street but reduces to a two-lane cross section two blocks east of this intersection. The nearest traffic signal is located one block to the east at Freya Street.



Euclid Avenue and Ferrall Street Intersection

Traffic Analysis:

The table below shows estimated 2022 daily traffic volumes and 85th percentile speeds on Euclid Avenue (east of Ralph Street). As shown in the table, there are around 12,100 vehicles per day on Euclid Avenue, with an 85th percentile speed of 38 mph (8 mph higher than the posted speed limit).

2022 Daily Traffic and 85th Percentile Speeds on Euclid Avenue (East of Ralph Street)

Direction	# Lanes	2022 Estimated Daily Traffic (Vehicles per day) ^a	85 th Percentile Speed (mph)	Posted Speed (mph)
Both Dir.	4	12,114	38	30

^a Traffic data collected on March 21, 2019. Traffic volumes were grown at a 1.0% annual growth rate, to estimate 2022 traffic conditions. 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.

Spokane Traffic Calming Master Plan

Pedestrian counts were collected at the intersection on November 1, 2022. These counts show that there was one crossing on the east leg and one crossing on the south leg during the pedestrian peak hour. However, it's worth noting that pedestrian traffic is likely higher during the warmer summer months.

The table below shows the severity and types of crashes occurring at the Euclid Avenue and Ferrall Street intersection over the last five years. There were a total of three crashes at the intersection.

Crashes at the Euclid Avenue and Ferrall Street Intersection (2017 to 2021)

Crash Type	Crash Severity					Total
	Fatal	Major Injury	Minor Injury	Property Damage Only	Unknown	
Angle	-	-	1	-	-	1
Fixed Object	-	-	-	1	1	2
Total	0	0	1	2	0	3

Through discussions with the City of Spokane and local school district representatives, the school prefers that students use the north-south pedestrian crossing at Freya Street over the crossing at Ferrall Street due to the curve in alignment and longer crossing distance. It is recommended that this crosswalk be moved one block west to cross the east leg of the Thor Street intersection where the crossing can be more tangent and with a shorter crossing distance. The east leg of this intersection was selected as there is a popular food mart and a Spokane Transit Authority bus stop on this side.

Recommended Solution:

It is recommended that the existing north-south crosswalk be removed and marked as closed at Euclid Avenue and Ferrall Street. With this crosswalk removal, the south leg of the intersection can be re-designed to remove the median island and right-turn bay. Additionally, a new crosswalk is recommended at the Thor Street intersection to provide a shorter pedestrian crossing and improved sight distance.



LEGEND

	PROPERTY LINE		INSTALL NEW CONCRETE SIDEWALK PER COS STD PLAN F-102B
	EXISTING CONCRETE SIDEWALK		INSTALL NEW CURB PER COS STD PLAN F-106B
	EXISTING CURB		INSTALL CURB RAMP PER COS STD PLAN F-105
	REMOVE EXISTING CONCRETE ISLAND		INSTALL LANDSCAPING STRIP
	INSTALL SIGN (SEE PROPOSED)		

CONSTRUCTION NOTES

- 1 INSTALL PROPOSED SIGN 1
- 2 INSTALL PROPOSED SIGN 2

NOTE:

1. SEE EUCLID AVENUE/FREDERICK AVENUE FROM MARKET STREET TO HAVANA STREET CONCEPT DESIGN FOR ROADWAY CHANNELIZATION REVISIONS



PROPOSED SIGNAGE AT NOTE 1



PROPOSED SIGNAGE AT NOTE 2

Plotted On: May 14, 2023 - 7:25pm

DATE	BY	PROJ.	DESCRIPTION
			AS BUILT

NAVD88 = (OLD CBM ELEV.) - (1.3.13)	AS OF JANUARY, 2000 USE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88)
BENCH MARK LOCATION	None Given
NAVD88 ELEV.	None Given
CBM NO.	None Given
SCALE	HORIZONTAL PLAN/PROFILE: 1" = 30' VERTICAL PROFILE ONLY: N/A



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

PRELIMINARY
NOT FOR CONSTRUCTION

PROJECT NAME:	SPOKANE TRAFFIC CALMING MASTER PLAN	
SEGMENT LIMITS:	EUCLID AVENUE AND FERRALL STREET	
PROJECT LIMITS:	MINNEHAHA NEIGHBORHOOD	TRAFFIC