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).

<table>
<thead>
<tr>
<th>Direction</th>
<th># Lanes</th>
<th>2022 Estimated Daily Traffic (Vehicles per day)</th>
<th>85th Percentile Speed (mph)</th>
<th>Posted Speed (mph)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Both Dir.</td>
<td>2</td>
<td>10,011</td>
<td>37</td>
<td>30</td>
</tr>
</tbody>
</table>

*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.

<table>
<thead>
<tr>
<th>Crash Type</th>
<th>Fatal</th>
<th>Major Injury</th>
<th>Minor Injury</th>
<th>Property Damage Only</th>
<th>Unknown</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rear End</td>
<td>-</td>
<td>-</td>
<td>3</td>
<td>1</td>
<td>-</td>
<td>4</td>
</tr>
<tr>
<td>Turning</td>
<td>-</td>
<td>-</td>
<td>2</td>
<td>4</td>
<td>-</td>
<td>6</td>
</tr>
<tr>
<td>Fixed Object</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>1</td>
<td>-</td>
<td>2</td>
</tr>
<tr>
<td>Sideswipe</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>0</td>
<td>0</td>
<td>7</td>
<td>6</td>
<td>0</td>
<td>13</td>
</tr>
</tbody>
</table>

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 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-striped 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).

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)

<table>
<thead>
<tr>
<th>Direction</th>
<th># Lanes</th>
<th>2022 Estimated Daily Traffic (Vehicles per day)</th>
<th>85th Percentile Speed (mph)</th>
<th>Posted Speed (mph)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Both Dir.</td>
<td>2</td>
<td>9,043</td>
<td>32</td>
<td>30</td>
</tr>
</tbody>
</table>

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)

<table>
<thead>
<tr>
<th>Crash Type</th>
<th>Fatal</th>
<th>Major Injury</th>
<th>Minor Injury</th>
<th>Property Damage Only</th>
<th>Unknown</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rear End</td>
<td>-</td>
<td>-</td>
<td>3</td>
<td>-</td>
<td>-</td>
<td>3</td>
</tr>
<tr>
<td>Fixed Object</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>4</td>
</tr>
</tbody>
</table>
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

RELOCATE EXISTING LUMINARE TO BE APPROXIMATELY 30 FT FROM FREYA STREET AND LIBERTY AVENUE INTERSECTION.

MATCH EXISTING SEWER (TOP)

RELOCATE EXISTING UTILITY POLE

EXISTING WATER MAIN TO REMAIN

REPAINT CROSSWALK

ABANDON EXISTING "SEWER" INLET

EXISTING SIGN TO REMAIN

NOT FOR CONSTRUCTION

PUBLIC WORKS

SPOKANE TRAFFIC CALMING MASTER PLAN

FREYA STREET

LIBERTY AVENUE TO BRIDGEPORT AVENUE

MINNEHAHA NEIGHBORHOOD

CITY OF SPOKANE, WASHINGTON

DEPARTMENT OF ENGINEERING SERVICES

808 WEST SPOKANE FALLS BLVD.

SPOKANE, WASHINGTON 99201-3343

SCALE

PRELIMINARY

NOT FOR CONSTRUCTION

LOCATION

None Given

None Given

None Given

FREYA STREET

LIBERTY AVENUE

INSTALL CURB RAMP PER COS STD PLAN F-105

INSTALL NEW CURB PER COS STD PLAN F-106 A

INSTALL CURB RAMP PER COS STD PLAN F-106 B

INSTALL CURB RAMP PER COS STD PLAN F-105 B

INSTALL CATCH BASIN TYPE 1.
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).

<table>
<thead>
<tr>
<th>Direction</th>
<th># Lanes</th>
<th>2022 Estimated Daily Traffic (Vehicles per day)</th>
<th>85th Percentile Speed (mph)</th>
<th>Posted Speed (mph)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Both Dir.</td>
<td>2</td>
<td>5,677</td>
<td>34</td>
<td>30</td>
</tr>
</tbody>
</table>

* 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)

<table>
<thead>
<tr>
<th>Crash Type</th>
<th>Crash Severity</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Fatal</td>
<td>Major Injury</td>
</tr>
<tr>
<td>Angle</td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>Fixed Object</td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>Pedestrian</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>

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 to 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 85\(^{th}\) 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.

---


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.

Traffic Analysis:

The table below shows estimated 2022 daily traffic volumes and 85\textsuperscript{th} 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 85\textsuperscript{th} percentile speed of 37 mph (7 mph higher than the posted speed limit).

<table>
<thead>
<tr>
<th>Direction</th>
<th># Lanes</th>
<th>2022 Estimated Daily Traffic (Vehicles per day) \textsuperscript{a}</th>
<th>85\textsuperscript{th} Percentile Speed (mph)</th>
<th>Posted Speed (mph)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Both Dir.</td>
<td>2</td>
<td>10,011</td>
<td>37</td>
<td>30</td>
</tr>
</tbody>
</table>

\textsuperscript{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.
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.

<table>
<thead>
<tr>
<th>Crash Type</th>
<th>Crash Severity</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Fatal</td>
<td>Major Injury</td>
</tr>
<tr>
<td>Angle</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Rear End</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Total</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

The need for enhanced pedestrian crossing treatments (across Frederick Avenue) was analyzed based on the National Cooperative Highway Research Program (NCHRP) Report 562. 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.

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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.

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).

<table>
<thead>
<tr>
<th>Direction</th>
<th># Lanes</th>
<th>2022 Estimated Daily Traffic (Vehicles per day)</th>
<th>85th Percentile Speed (mph)</th>
<th>Posted Speed (mph)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Both Dir.</td>
<td>4</td>
<td>12,114</td>
<td>38</td>
<td>30</td>
</tr>
</tbody>
</table>

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 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.

<table>
<thead>
<tr>
<th>Crash Type</th>
<th>Crash Severity</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Fatal</td>
<td>Major Injury</td>
</tr>
<tr>
<td>Angle</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Fixed Object</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Total</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

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.
North-South Crosswalk

Legend:
- Property Line
- Existing Concrete Sidewalk
- Existing Curb
- Remove Existing Concrete Island
- Install Curb Ramp per COS STD Plan F-105
- Install Curb Ramp per COS STD Plan F-106B
- Install New Concrete Sidewalk per COS STD Plan F-102B
- Install Landscaping Strip
- Install Sign (See Proposed)
- Proposed Signage at Note 1
- Proposed Signage at Note 2

Construction Notes:
- Note: See Euclid Avenue/Fredrick Avenue from Market Street to Havana Street Concept Design for Roadway Channelization

Proposed Signage at Note 1
- No Pedestrian Crossing
- Use Crosswalk

Proposed Signage at Note 2
- No Pedestrian Crossing
- Use Crosswalk

Note:
1. See Euclid Avenue/Fredrick Avenue from Market Street to Havana Street Concept Design for Roadway Channelization Revisions.

Preliminary Not for Construction

City of Spokane, Washington

Department of Engineering Services

Euclid Avenue and Ferrall Street

Minnehaha Neighborhood

SPOKANE TRAFFIC CALMING MASTER PLAN

Not For Construction