## Spokane Traffic Calming Master Plan

## District: 2 <br> Neighborhood: Grandview - Thorpe Project Extent: Estimate: $\$ 1,888,000$

Problem Statement: Residents of the Grandview - Thorpe neighborhood raised concerns over street completeness with dedicated pedestrian and bicycle facilities on $16^{\text {th }}$ Avenue from Milton Street up the hill to $17^{\text {th }}$ Avenue. Figure below presents the study intersection.

$16^{\text {th }}$ Avenue between Milton Street and $17^{\text {th }}$ Avenue

## Traffic Analysis

$16^{\text {th }}$ Avenue is classified as the collector route from Grandview down to US-195. The route is 2 lanes with posted speed limit of 25 miles per hour. Sidewalks only exist on the east leg and northbound on north leg of the study intersection and no crosswalks and bicycle facilities are provided. The south leg of the intersection is a potential future connection to the Trolley Trail. The $16^{\text {th }}$ Avenue/Milton Street intersection is controlled by multi-way stop, which contains stop signs on the south and east legs, and a yield sign on the north leg.

The table below shows the 2022 daily traffic volumes and $85^{\text {th }}$ percentile speeds on $16^{\text {th }}$ Avenue between Milton Street and $17^{\text {th }}$ Avenue. The highest daily volume on $16^{\text {th }}$ Avenue was 1,059 vehicles west of study intersection. The highest $85^{\text {th }}$ percentile speed was 40 miles per hour ( 15 miles per hour greater than the posted speed limit). The data indicates there is a significant speeding concern.

2022 Daily Traffic and $85^{\text {th }}$ Percentile Speeds on $16^{\text {th }}$ Avenue

| Direction | \# Lanes | $\mathbf{2 0 2 2}$ <br> $($ Estimated Daily Traffic <br> $($ Vehicles per day) | $\mathbf{8 5}^{\text {th }}$ Percentile Speed <br> $(\mathbf{m p h})$ | Posted Speed <br> $(\mathbf{m p h})$ |
| :---: | :---: | :---: | :---: | :---: |
| $16^{\text {th }}$ Avenue between Milton Street and $17^{\text {th }}$ Avenue |  |  |  |  |
| EB | 1 | 616 | 40 | 25 |
| WB | 1 | 443 | 39 | 39 |
| Both Dir. | 2 | 1,059 |  |  |

[^0]One crash related is recorded over the last five years (from 2017 to 2021). The crash was related to stationary object or car and caused the crash severity of property damage only.

The figure below shows the existing PM peak hour traffic volumes at the study intersection, based on a traffic count from March 16, 2021, factored up to 2022. The eastbound left and southbound right are the highest volume movements.


## PM Peak Hour Traffic at $16^{\text {th }}$ Avenue and Milton Street

The $85^{\text {th }}$ percentile speed of 39 mph indicates a shared bike facility is not the preferred treatment. Either dedicated bike lanes or a separated path would be recommended to provide bicycle facilities. The available right-of-way on $16^{\text {th }}$ Avenue west of Milton Street is approximately 60 feet wide. The addition of a multi-modal shared use path would provide facilities for walking and biking. The north side of $16^{\text {th }}$ Avenue has no intersections or driveways and could provide a pathway with no vehicle conflicts.

The pavement on $16^{\text {th }}$ Avenue is approximately 26 -feet wide and has no lane markings. Striping the center lane and shoulder area and providing narrow vehicle lanes could result in lower travel speeds.

Nearby future development will be required to construct urban improvements at the $16^{\text {th }}$ Avenue $/ 17^{\text {th }}$ Avenue/H Street intersection that will address safety concerns.

## Recommended Solution:

The construction of a multi-use path is recommended on the south side of $16^{\text {th }}$ Avenue between Milton Street and $17^{\text {th }}$ Avenue. The south side was selected to provide a direct connection to the future Trolley Trail via Milton Street to the south and to avoid utility conflicts on the north side. The roadway should be upgraded by adding a centerline and shoulder edge pavement markings with 11 -foot-wide lanes.

Modifications to the $16^{\text {th }}$ Avenue/Milton Street intersection are recommended to reduce the radius of the northwest corner to slow the speeds of southbound right turning vehicles.



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## Spokane Traffic Calming Master Plan

## District: 2 <br> Neighborhood: Grandview - Thorpe <br> Project Extent: <br> $17^{\text {th }}$ Avenue and D Street Intersection

Problem Statement: Residents of the Grandview - Thorpe neighborhood raised concerns over intersection safety and traffic volume at the $17^{\text {th }}$ Avenue and $D$ Street intersection.

$17^{\text {th }}$ Avenue and D Street

## Traffic Analysis

$17^{\text {th }}$ Avenue and D Street within the study area are classified as local street with posted speed limit of 25 miles per hour. All approaches provide two lanes with on-street parking. Sidewalks are provided along the southwest corner and east leg of the intersection. Residents from the neighborhood stated they do not want a complete sidewalk network at the intersection. The south leg of the intersection contains faded crosswalk, and no bicycle facilities are provided. The study intersection is uncontrolled.

The table below shows the estimated 2022 daily traffic volumes and $85^{\text {th }}$ percentile speeds on $17^{\text {th }}$ Avenue and D Street. The highest daily volume around the study intersection was 1,194 vehicles west of D Street on $17^{\text {th }}$ Avenue. The highest $85^{\text {th }}$ percentile speed was 29 miles per hour ( 4 miles per hour greater than the posted speed limit), indicating a moderate speeding issue.

## Spokane Traffic Calming Master Plan

2022 Estimated Daily Traffic and $85^{\text {th }}$ Percentile Speeds on $17^{\text {th }}$ Avenue and D Street

| Direction | \# Lanes | $\mathbf{2 0 2 2}$ Estimated Daily Traffic <br> (Vehicles per day) | $\mathbf{8 5}^{\text {th }}$ Percentile Speed <br> $(\mathbf{m p h})$ | Posted Speed <br> $(\mathbf{m p h})$ |
| :---: | :---: | :---: | :---: | :---: |
| D Street south of $17^{\text {th }}$ Avenue |  |  |  |  |
| NB | 1 | 482 | 24 | 25 |
| SB | 1 | 485 | 24 |  |
| Both Dir. | 2 | 967 | 24 |  |
| $7^{\text {th }}$ Avenue west of D Street |  |  |  |  |
| EB | 1 | 612 | 28 | 25 |
| WB | 1 | 582 | 29 |  |
| Both Dir. | 2 | 1,194 | 29 |  |

${ }^{\text {a }}$ Traffic data collected in November 2022.

No crashes were recorded from 2017 to 2021 at the study intersection.
The need for enhanced pedestrian crossing treatments at the study intersection was analyzed based on NCHRP Report 562. Based on the findings, crosswalk is the preferred treatment if there are 20 or more pedestrian crossings during the peak hour. Based on the surrounding neighborhood, it was estimated the pedestrian volume threshold is not met.

Warrants to add stop signs on a local street intersection were assessed below per the MUTCD guidelines. At least one of the conditions must be true to consider the use of stop or yield signs. None of the conditions are met at the study intersection.

## Local Road Single or Two-Way Stop Warrants

| MUTCD | Description | Status? |  |
| :---: | :--- | :---: | :---: |
| 2B.04(04)A | Combined (vehicle, bicycle, ped) volume entering the <br> intersection from all approaches averages more than <br> 2,000 units per day | 1,094 vehicles per <br> day, N |  |
| 2B.04(04)B | Ability to see conflicting traffic on an approach is not <br> sufficient to allow a road user to stop/yield in compliance <br> with the normal right-of-way rule if such stopping/yielding <br> is necessary. | N |  |
|  | Crash records indicate that five or more crashes that <br> involve failure to yield ROW at the intersection under the <br> normal ROW rule have been reported within a 3-yr period <br> or >= 3 have been reported within a 2-yr period. | 2017 | 0 |
|  |  | 2018 | 0 |
|  |  | 2020 | 0 |

## Recommended Solution:

To increase safety at the intersection and slow driver speeds on $17^{\text {th }}$ Avenue, the installation of a traffic circle is recommended. In addition, speed bumps should be installed on $16^{\text {th }}$ Avenue to reduce driver speeds.

## Spokane Traffic Calming Master Plan

## District: 2 <br> Neighborhood: Grandview - Thorpe <br> Project Extent: Trolley Trail and Fish Lake Trail Estimate: \$24,000

Problem Statement: Residents of the Grandview - Thorpe neighborhood raised concerns over connectivity between Trolley trail and Fish Lake trail.


Connectivity of Trolley Trail and Fish Lake Trail

## Traffic Analysis

Trolley Trail is 1.91 miles long and located south of US Route $2 / I-90$. Fish Lake Trail is 10 miles long and located west of US 195 and east of an active rail line. The trail can be accessed from the south end from the area of Cheney Spokane Road and Myers Park Road intersection. The figure shows the location of both trails, where Fish Lake Trail extends further south and is not showing on the figure. As shown, the two trails can potentially be connected from the north end of Trolley Trail to approximately 0.47 mile south from the north end of Fish Lake Trail.

## Recommended Solution:

The connectivity of the two trails is constrained by local neighborhood area and an active rail line in between. Several options of connection could be chosen to connect two trails. The recommended option is shown in the below figure, showing an extension from the north end of Trolley Trail to $14^{\text {th }}$

## Spokane Traffic Calming Master Plan

Avenue to the north, turning right to Fish Lake Trail (approximately 0.3 miles). This is because $14^{\text {th }}$ Avenue provides at-grade rail crossing and can separate people using the trails from the rail traffic.

The connection required improvements on Milton Street and $14^{\text {th }}$ Avenue to provide a safer environment for people using the trails. The roadway width for Milton Street and $14^{\text {th }}$ Avenue along the connection are around 30 feet. A marked shared use path on the is recommended to provide a safe path connection. Also, marked crosswalks should be provided on the east and west legs of $16^{\text {th }}$ Avenue and Milton Street intersection ${ }^{1}$ and north and south legs of $14^{\text {th }}$ Avenue and Lindeke Street intersection to ensure safe crossing. The connection also requires a paved road segment of around 100 feet to connect from the east end of $14^{\text {th }}$ Street to Fish Lake Trail. Warning signs should be installed to alert motorists of people walking and biking on roadway.


Proposed Connection Recommendation

[^1]

District 2, Grandview-Thorpe: 14th Avenue at Trolley Trail and Fish Lake Trail



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## Spokane Traffic Calming Master Plan

## District: 2 <br> Neighborhood: Project Extent: <br> Grandview - Thorpe <br> $21^{\text {st }}$ Avenue and D Street Intersection Estimate: \$10,000 <br> Problem Statement: Residents of the Grandview - Thorpe neighborhood raised concerns over visibility, steep grade, lack of signage and intersection control at the intersection of $21^{\text {st }}$ Avenue and $D$ Street.


$21^{\text {st }}$ Avenue and D Street Intersection

## Traffic Analysis

$21^{\text {st }}$ Avenue and D Street within the study area are classified as local street with posted speed limit of 25 miles per hour. D Street intersects with $21^{\text {st }}$ Avenue at two locations. All approaches at both intersections provide two lanes with on-street parking. As shown in figure, three intersections (D Street east, D Street west and Scenic Boulevard) are located closely (less than 150 feet). $21^{\text {st }}$ Avenue has a steep grade towards west (uphill) and the geometry limited users sight distance for turning movement from side street. Also, the turning movement at the south leg on D Street is obstructed by a tree which is further affecting visibility. Sidewalks are mostly provided, except the east leg of the intersection. Crosswalk and bike facilities are not provided in the study area. The only intersection control is a yield sign on the eastbound approach of $21^{\text {st }}$ Avenue to D Street west.

No crashes were recorded from 2017 to 2021 at the study intersection.

The figures below show the existing AM and PM peak hour traffic volumes at the study intersection, based on traffic counts from November 1, 2022. As shown in the figures, the volumes travelling through the $21^{\text {st }}$ Avenue/D Street west intersection are low.

## Spokane Traffic Calming Master Plan



## AM (Left) and PM (Right) Peak Hour Traffic at $21^{\text {st }}$ Avenue and D Street

The need for enhanced pedestrian crossing treatments across $21^{\text {st }}$ Avenue was analyzed based on NCHRP Report 562, using collected traffic data. Based on the findings, crosswalk is the preferred treatment if there are 20 or more pedestrian crossings during the peak hour. Pedestrian data indicates there would be less than the required demand.

Warrants to add stop signs on a local street intersection were assessed below per the MUTCD guidelines. At least one of the conditions must be true to consider the use of stop or yield signs. The sight distance condition is met due to the roadway geometry and steep grade.

## Local Road Single or Two-Way Stop Warrants

| MUTCD | Description | Status? |  |
| :---: | :--- | :---: | :---: |
| 2B.04(04)A | Combined (vehicle, bicycle, ped) volume entering the <br> intersection from all approaches averages more than 2,000 <br> units per day | 710 vehicles per <br> day, N |  |
| 2B.04(04)B | Ability to see conflicting traffic on an approach is not sufficient <br> to allow a road user to stop/yield in compliance with the <br> normal right-of-way rule if such stopping/yielding is necessary. | Y |  |
| 2B.04(04)C | Crash records indicate that five or more crashes that involve <br> failure to yield ROW at the intersection under the normal <br> ROW rule have been reported within a 3-yr period or >=3 <br> have been reported within a 2-yr period. | 2017 | 0 |
|  | 2018 | 2019 | 0 |
|  | 2020 | 0 |  |
|  | 2021 | 0 |  |

## Spokane Traffic Calming Master Plan

## Recommended Solution:

To reduce driver confusion and increase safety, intersection signage at the $21^{\text {st }}$ Avenue/D Street west intersection should be modified as follows.

- The intersection configuration indicates $21^{\text {st }}$ Avenue is the through street and D Street is the side street approach. The installation of a stop sign and stop bar on the D Street southbound approach is recommended. This approach also has the most impaired visibility at the intersection. Adding a stop sign would give drivers on D Street the ability to come to a stop and verify there are no conflicts before entering the intersection.
- The existing yield sign on the west approach should be removed.



[^0]:    ${ }^{\text {a }}$ Traffic data collected in May 2022.

[^1]:    ${ }^{1}$ This can be done in conjunction with the improvement plans at the $16^{\text {th }}$ Avenue and Milton Street intersection (discussed above).

