

Lake Street/4th Street/Central Avenue Intersection Improvement Project

Why this Project?

The purpose of this project is to identify viable improvement alternatives to mitigate anticipated traffic congestions due to growth.

- Traffic volumes and intersection delay are forecasted to increase by approximately 150% over the next 20-years due to planned development within the City as shown in the following table.

Peak Hours	Year 2017	Year 2040	% Increase
	Entering Vehicles	Entering Vehicles	
AM	955	2,393	151%
PM	1,188	2,928	146%

- This will result in increased vehicle delays and worsening intersection operations and level of service (LOS) as shown in the following table. As shown in the table, by 2040 vehicle delays will be approximately 3-times longer and the LOS will be at “E” during the PM peak hour.

Current (2017) and Year 2040 Intersection Peak Hour Operations Comparison				
	AM Peak Hour		PM Peak Hour	
	Delay (sec/veh)	Level of Service	Delay (sec/veh)	Level of Service
Current	10.2	B	14.8	B
2040	23.0	C	43.4	E

- LOS is a qualitative measure of traffic conditions whereby a letter grade “A” through “F” is assigned representing progressively worsening traffic conditions. At this intersection, the City seeks to maintain LOS “D” or better

The project will improve traffic circulation, access, and safety. It will also reduce delay and enhance mobility for all travel modes.

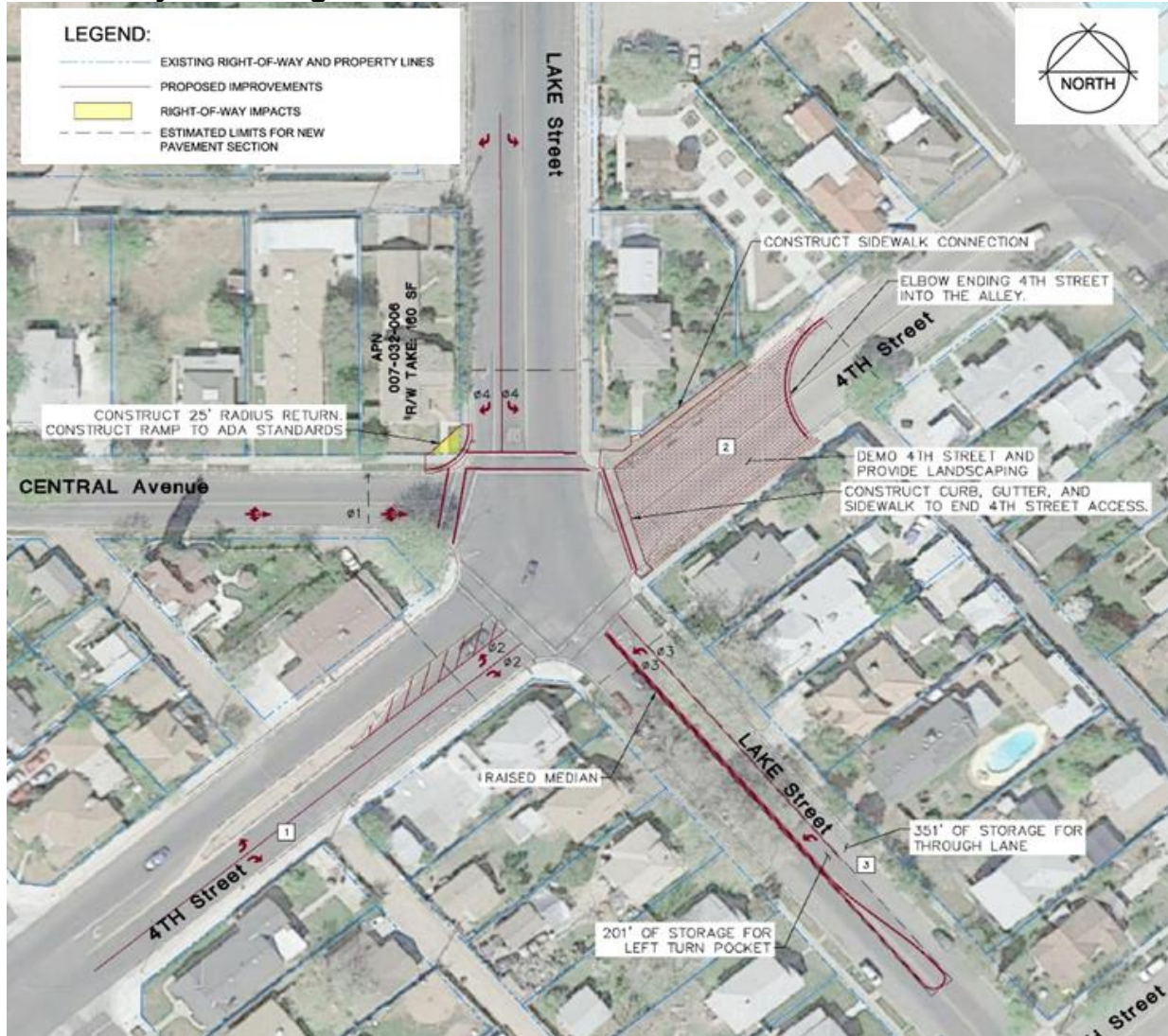
Funding for the project is available through City transportation funding as well as through the Congestion Mitigation and Air Quality grant funding.

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What are the Solutions?

Two improvement options have been developed, a Traffic Signal Alternative and a Roundabout Alternative.

Preliminary Traffic Signal Alternative



- Terminate the northeast leg of 4th Street at the alley with it no longer being part of the intersection.
- Reconstruct northwest curb return to provide ADA compliant pedestrian ramp.
- Provide sidewalk connection between Lake Street and the existing sidewalk on 4th Street.

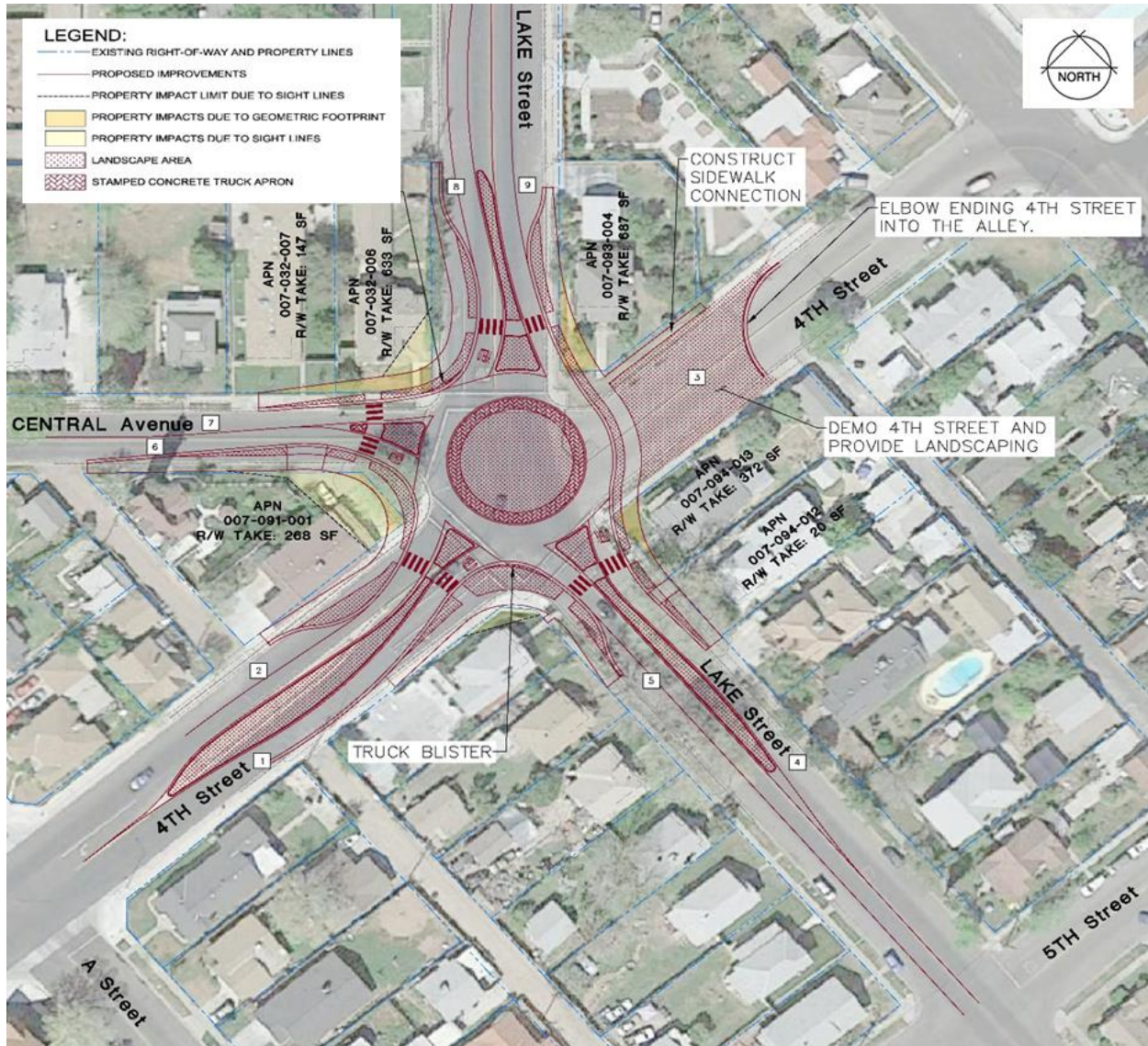
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- Improvements encroach into the adjacent property at the northwest corner of the intersection. (160 SF estimated to be required from APN 007-032-006.
- Approximately 34 on-street parking spaces would potentially be eliminated to accommodate proposed improvements as shown below.

POTENTIAL ON-STREET PARKING IMPACTS (APPROX. 34 PARKING SPACES ELIMINATED)

- | | |
|---|---|
| 1 | ±10 PARKING SPACES BETWEEN A Street AND LAKE Street |
| 2 | ±11 PARKING SPACES BETWEEN LAKE Street AND FLUME Street |
| 3 | ±13 PARKING SPACES BETWEEN 5TH Street AND 4TH Street |

Roundabout Alternative



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- Terminate the northeast leg of 4th Street at the alley with it no longer being part of the intersection.
- Provide sidewalk connection between Lake Street and the existing sidewalk on 4th Street.
- Provide shared-use paths (10' wide) with landscape buffers on each corner of the intersection.
- Improvements encroach into the following properties.

Preliminary Property Impacts	
Property / APN	Square Feet (SF)
NW Corner of Lake Street and Central Avenue / 007-032-006	633
North Side of Central Avenue West of Lake Street / 007-032-007	147
SW Corner of Central Avenue and 4 th Street / 007-091-001	268
NE Corner of 4 th Street and Lake Street / 007-093-004	687
SE Corner of 4 th Street and Lake Street / 007-094-013	372
East Side of Lake Street South of 4 th Street / 007-094-012	20

- Approximately 62 on-street parking spaces would potentially be eliminated to accommodate proposed improvements as shown below.

POTENTIAL ON-STREET PARKING IMPACTS (APPROX. 62 PARKING SPACES ELIMINATED)

- 1 ±10 PARKING SPACES BETWEEN A Street AND LAKE Street
- 2 ±5 PARKING SPACES BETWEEN LAKE Street AND A Street
- 3 ±11 PARKING SPACES BETWEEN LAKE Street AND FLUME Street
- 4 ±10 PARKING SPACES BETWEEN 5TH Street AND 4TH Street
- 5 ±3 PARKING SPACES BETWEEN 4TH Street AND 5TH Street
- 6 ±4 PARKING SPACES BETWEEN A Street AND LAKE Street
- 7 ±7 PARKING SPACES BETWEEN LAKE Street AND A Street
- 8 ±8 PARKING SPACES WEST SIDE NORTH OF CENTRAL Avenue
- 9 ±4 PARKING SPACES EAST SIDE NORTH OF CENTRAL Avenue

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How do the Alternatives Compare?

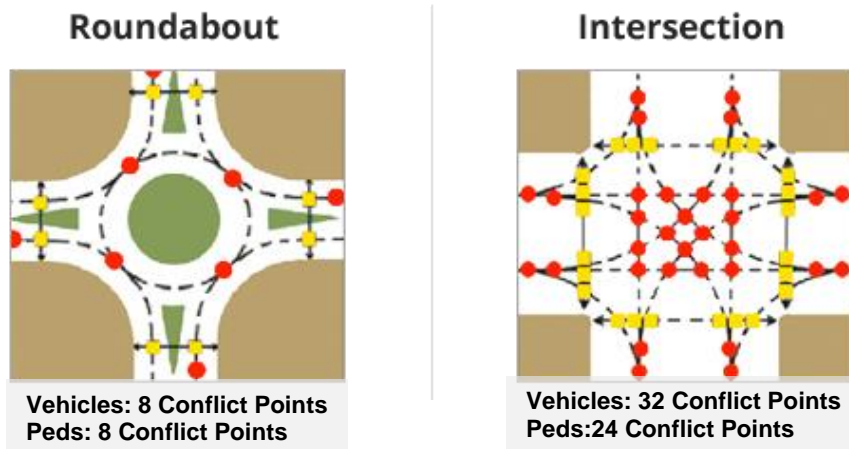
Both project alternatives are projected to reduce intersection delays and congestion and improve traffic circulation and LOS through the intersection compared to no project as shown in the following table.

Year 2040 Intersection Peak Hour Operations Alternatives Comparison				
Alternative	AM Peak Hour		PM Peak Hour	
	Delay (sec/veh)	Level of Service	Delay (sec/veh)	Level of Service
No Project	23.0	C	43.4	E
Traffic Signal	25.7	C	26.4	C
Roundabout	10.5	B	10.3	B

Both project alternatives vary though in overall intersection safety.

- As shown in the below exhibit, a modern roundabout as proposed with this project has only 8 vehicle and 8 vehicle-pedestrian conflict points. A standard 4-way intersection as proposed with this project has 32 vehicle and 24 vehicle-pedestrian conflict points.

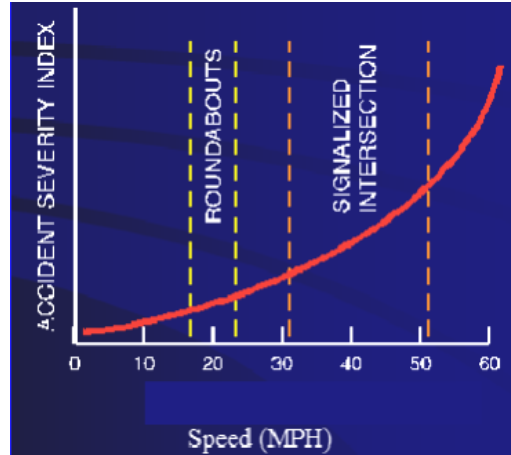
Conflict points on a regular 4-way intersection compared to a modern roundabout intersection



- Vehicles move at lower speeds through a roundabout than through a signalized intersection resulting in less severe types of collisions as illustrated in the following exhibit.

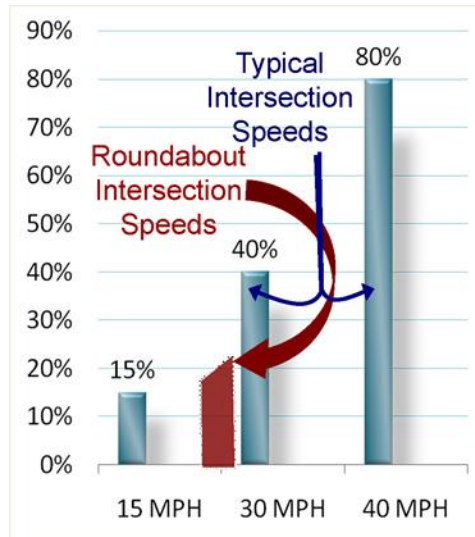
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Collision Severity Relating to Travel Speeds



- Pedestrians are generally safer crossing the street within a roundabout than at a typical intersection as illustrated in the following exhibit.

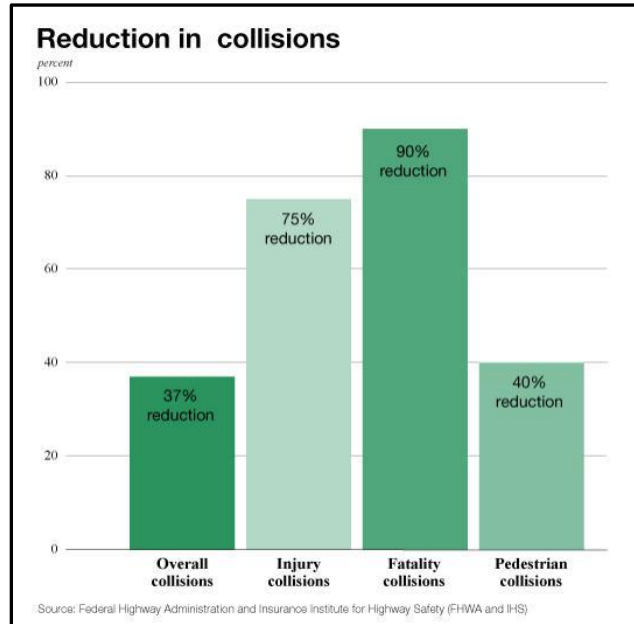
Pedestrian's Chance of Death if Hit by a Motor Vehicle



- Roundabouts generally improve overall intersection safety as shown in the following exhibit.

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Roundabouts Improve Overall Intersection Safety



How will this Project be Funded?

Funding for the project is available through City transportation funding as well as through the Congestion Mitigation and Air Quality grant fund.

What are the Next Steps?

The next project steps include:

- Compile Comments from this Meeting.
- Present Recommendation for Traffic Signal or Roundabout to City Council at the February 5th or February 19th City Council Meeting.
- Begin Design Based on City Council Direction (Roundabout is subject to identifying funding)