CITY COUNCIL ACTION FORM

Department	Presented by	Date
Public Works	David Lady - Public Works Director	March 16, 2021
Community Dev.	Bill Almquist – Comm. Dev. Dir.	

ITEM

Approval of Resolution 2021-007
Adopting the US-50 and CO 291 Intersection Control Evaluation

BACKGROUND

The City of Salida and Colorado Department of Transportation entered into an Inter-Governmental Agreement (IGA) in 2018 with the goal of evaluating the future transportation needs along CO 291 (Oak Street) from N. Walnut St. down to and including the intersection with US-50. Growth within the southeast portion of Salida is expected to increase substantially in the coming years. Future improvements along CO-291 such as pedestrian and biking facilities, aesthetic improvements, gateway improvements, and intersection design changes are anticipated along this corridor.

Stolfus and Associates provided planning and engineering consulting services for the project which included traffic analyses, preliminary design concepts, community survey documents, and a compiled final report.

Design alternatives developed through the planning process were provided to the public in August and September 2020 through online "storymaps" that were advertised in numerous locations including the City of Salida website, Facebook, The Mountain Mail, CDOT website, and other locations and the results of public input and preferred alternatives were presented to Council on February 1, 2021.

The final report with appendices available at https://stolfusandassociates.sharefile.com/d-s1e1f252b8f544cbe86caacc555dc9df7 is intended to provide a roadmap for future decision making related to streetscape improvements and intersection planning. Upon adoption of this report, a final copy will be available through the City of Salida Community Development webpage under Long-Range Planning.

Following adoption of this plan, staff will approach CDOT with conversations regarding the implementation of recommendations. It is anticipated that implementation would likely involve streetscape improvements along CO-291 separate from US-50 intersection improvements due to scale and funding. Additional planning details such as final road geometry, parkway impacts, lighting improvements, and other potential facilities would need to be evaluated with potential future discussion with City Council as part of the engineering design process.

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FISCAL NOTE

The Salida City Council approved Resolution 2018-14, which authorized the IGA between the City of Salida and the Colorado Department of Transportation. This agreement included a 50/50 match between the City and State with the City portion being $67,000. The majority of these expenses occurred during budget year 2020.

STAFF RECOMMENDATION

Staff is recommending approval of Resolution 2021-07 adopting the US-50 and CO-291 Intersection Control Evaluation Study prepared in partnership with the Colorado Department of Transportation and City of Salida."

SUGGESTED MOTION

A Council member should make the motion to "Approve Resolution 2021-07 adopting the US-50 and CO291 Intersection Control Evaluation Study prepared in partnership with the Colorado Department of Transportation and City of Salida."

CITY OF SALIDA, COLORADO
RESOLUTION NO. 07
(Series 2021)

A RESOLUTION OF THE CITY COUNCIL FOR THE CITY OF SALIDA, COLORADO ADOPTING THE US-50 AND CO-291 INTERSECTION CONTROL EVALUATION STUDY PREPARED IN PARTNERSHIP WITH THE COLORADO DEPARTMENT OF TRANSPORTATION AND THE CITY OF SALIDA.

WHEREAS, CO-291 and US-50 are state highways under the jurisdiction of the Colorado Department of Transportation (CDOT) with segments located within the municipal boundary of Salida; and

WHEREAS, the City of Salida desires to collaboratively work with CDOT to provide for future planning along these corridors which may include access, intersection, multi-modal streetscape, and gateway improvements; and

WHEREAS, the City of Salida approved Resolution 2018-14 which authorized the IGA between the City of Salida and the State of Colorado for completion of the Study; and

WHEREAS, design alternatives and preferred options identified during the planning process were presented to the public and elected officials; and

WHEREAS, the Final Report prepared by Stolfus and Associates, dated February 2021, has been reviewed by City and State staff with findings presented to City Council on February 1, 2021, and the City Council now desires to approve and adopt such Report.

NOW, THEREFORE, BE IT RESOLVED by the City Council for the City of Salida that:

Section 1. The Salida City Council incorporates the foregoing recitals as its conclusions, facts, determinations and findings.

Section 2. The Salida City Council hereby approves and adopts the Final Report entitled US-50 and CO-291 Intersection Control Evaluation Study, dated February 2021, and attached hereto as "Exhibit A."

RESOLVED, APPROVED AND ADOPTED on this 16th day of MARCH, 2021.

CITY OF SALIDA, COLORADO

_____
Mayor P.T. Wood

(SEAL)

ATTEST:

_____
City Clerk

US 50 AND CO 291 INTERSECTION CONTROL EVALUATION STUDY

Colorado Department of Transportation and the City of Salida

February 2021

Prepared For
CDOT Region 5
Traffic and Safety Engineering Division
3803 N Main Ave Ste 100, Durango, CO 81301

City of Salida
Public Works Department
340 W Hwy 291, Salida, CO 81201

Prepared By
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Executive Summary

The Colorado Department of Transportation and the City of Salida recognized the need for a more functional and vibrant gateway to the city along CO 291 (Oak St) beginning from the intersection with US 50 (Rainbow Blvd), continuing towards downtown Salida, ending at the intersection with C St.

Currently, Oak St is stop controlled at the Rainbow Blvd intersection. Nearby development and continued growth are predicted to cause this intersection to experience significant traffic delays in the future. Furthermore, the current Oak St corridor into downtown Salida does not comply with State Highway Access Code requirements and is ill-suited for multimodal and aesthetically inviting travel.

This study evaluated various intersection and corridor design configurations which would meet particular goals set by the City. The preferred intersection configuration was a 5-legged roundabout. The preferred Oak St corridor design contained bike lanes on both sides of the road, sidewalk on the west side, and additional amenities like shade trees, park benches, and dark sky compliant street lighting.

Contents

Appendices

Appendix A – Traffic Figures and Analysis

Appendix B – Safety Assessment Report

Appendix C – Concept Designs

Appendix D – Alternative Evaluation Matrix

Appendix E – Preferred Alternatives Updated Concepts

Appendix F – Public Feedback and Advertisement Materials

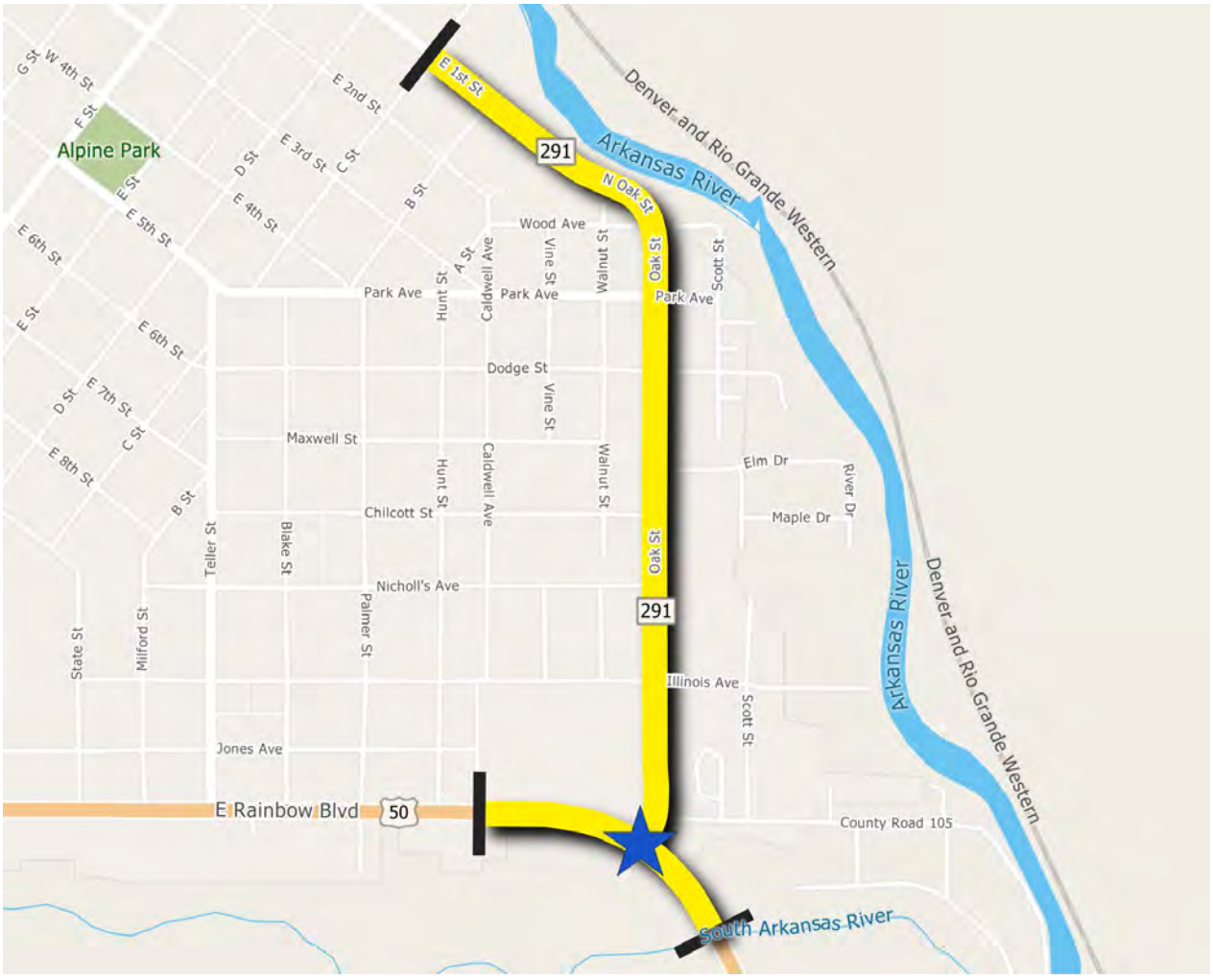
Appendix G – Similar Example Locations

Appendix H – Conceptual Opinions of Probable Cost

Introduction

The Colorado Department of Transportation (CDOT) and the City of Salida have partnered to plan for a safe, vibrant, and multi-modal gateway along Oak Street (CO 291) from the intersection with Rainbow Boulevard (US 50) to downtown Salida at the intersection with C Street. The community recognizes that Salida, much like a lot of Colorado, is experiencing growth. Consequently, a vision was needed to help in planning for this future growth in a thoughtful, data and community driven method which would allow the City to maintain its character and charm.

This study evaluates several alternatives for the Oak Street corridor as well as the intersection of Oak Street and Rainbow Boulevard. These alternatives will be safe, functional, and accessible to pedestrian and bicyclists while also being aesthetically pleasing and maintaining what makes Salida unique. This study continues to build upon the effort of "Future 50" in which many Salidans voiced their opinion on the overall vision for US 50 (Rainbow Blvd) through Salida.



What's there now?

HIGHWAY CHARACTERISTICS

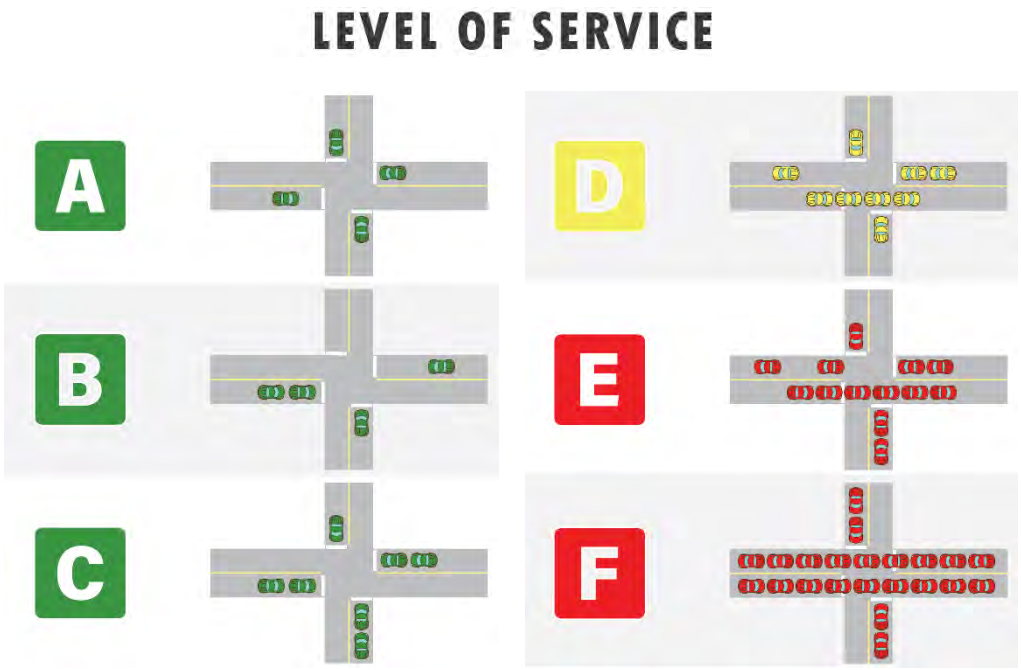
Rainbow Blvd near the intersection with Oak St is a four lane, undivided highway with an average daily traffic volume of approximately 8,600 vehicles per day, consisting of approximately 7% trucks. The posted speed limit ranges from 40 to 45 miles per hour.

Oak St from Rainbow Blvd to C St is a two-lane undivided highway with an average daily traffic volume of approximately 4,900 vehicles per day, consisting of approximately 4.5% trucks. The posted speed limit ranges from 25 to 35 miles per hour. There are 91 unsignalized full movement access points, shown below with orange arrows, in this 0.87 mile stretch of roadway.

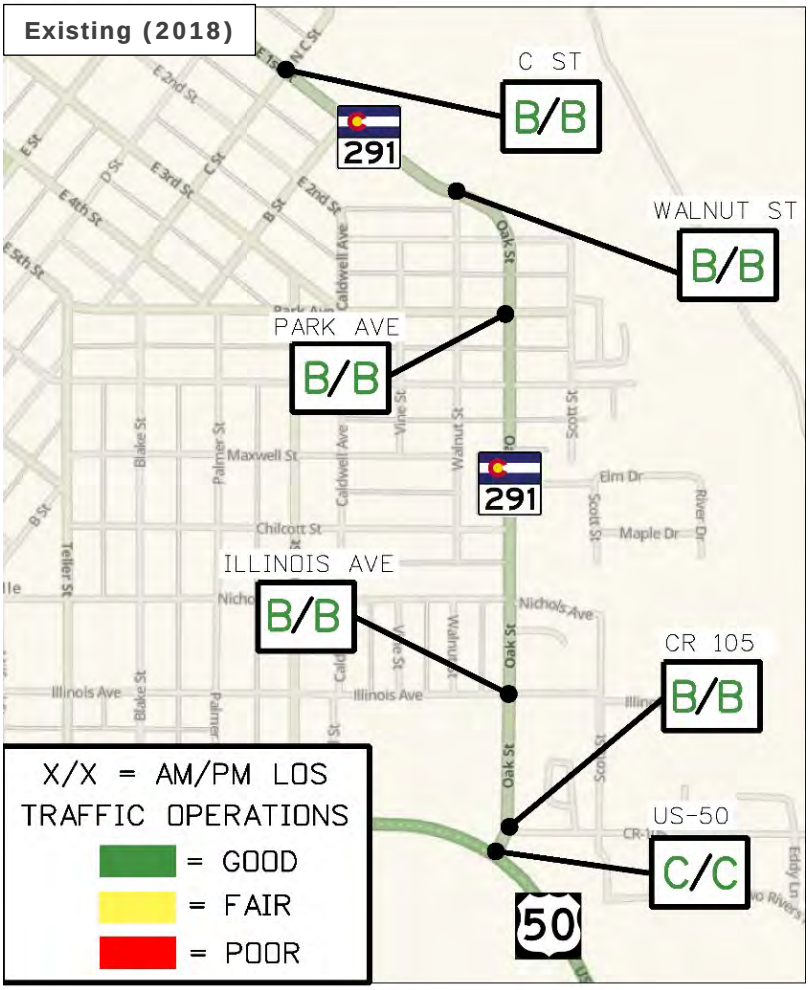
EXISTING TRAFFIC

To aid in painting an accurate picture of the existing traffic in the area, turning movement counts were taken during the morning and evening peak hours at ten intersections along Oak St and Rainbow Blvd on August 16 and 21, 2018. Three 24-hour continuous vehicle classification counts were also taken along Oak St on August 21, 2018 to compare current daily traffic counts and classifications to historical trends to verify the data was not anomalous. The traffic counts and volume figures can be found in Appendix A.

Using the data collected, a Level-of-Service (LOS) was then calculated for each intersection in accordance with procedures outlined in the Highway Capacity Manual. LOS is a measure of the quality of traffic flow and ranges from LOS A (nearly ideal traffic conditions with very little delay for motorists) to LOS F (poor traffic conditions with long motorist delays). LOS C is typically considered a "good" traffic condition. The figure below illustrates examples of LOS.

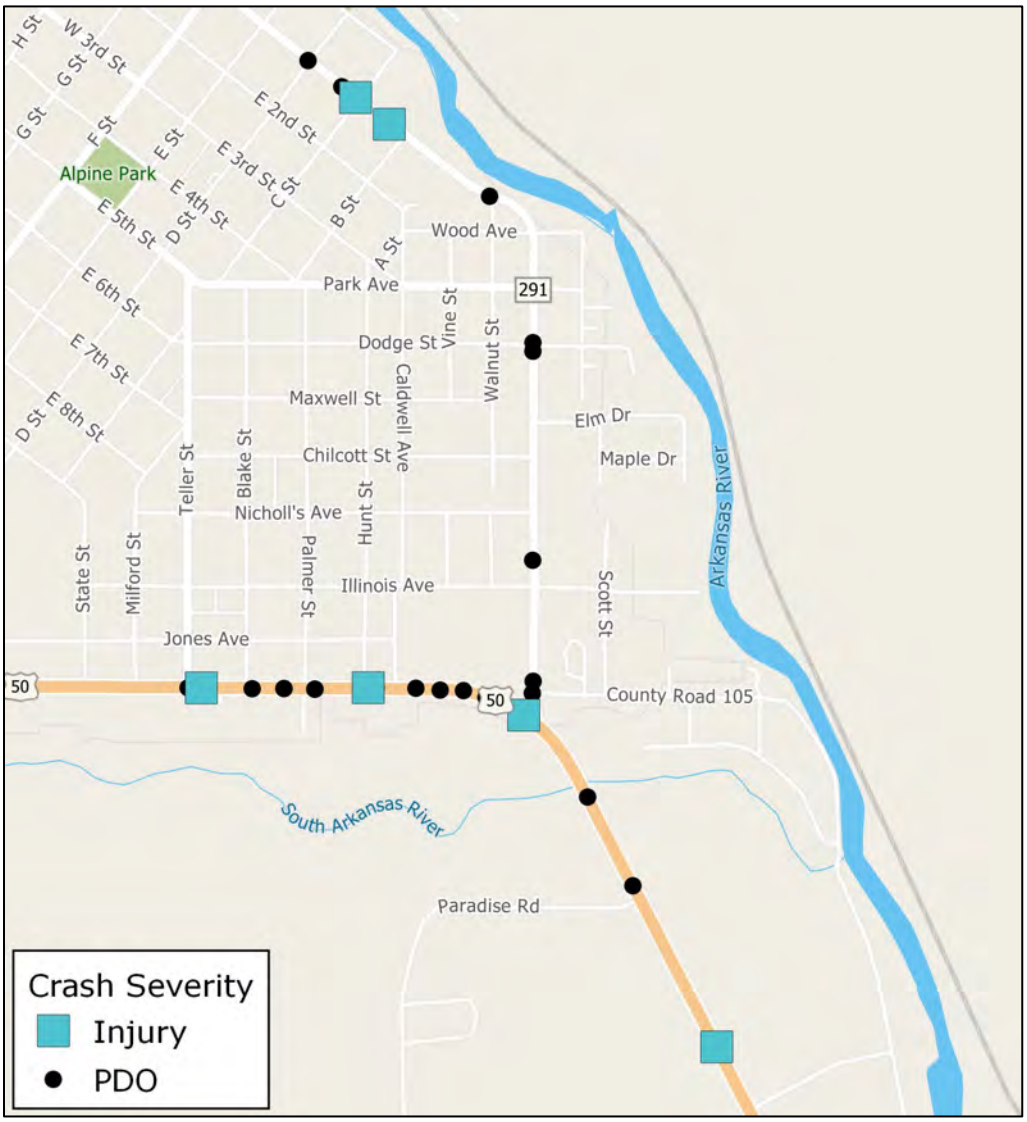


The existing traffic operations are shown in the figure below. All of the intersections operate at LOS C or better, with no operational concerns. In particular, this analysis also demonstrates that a traffic signal is not yet warranted at the intersection of Rainbow Blvd and Oak St.



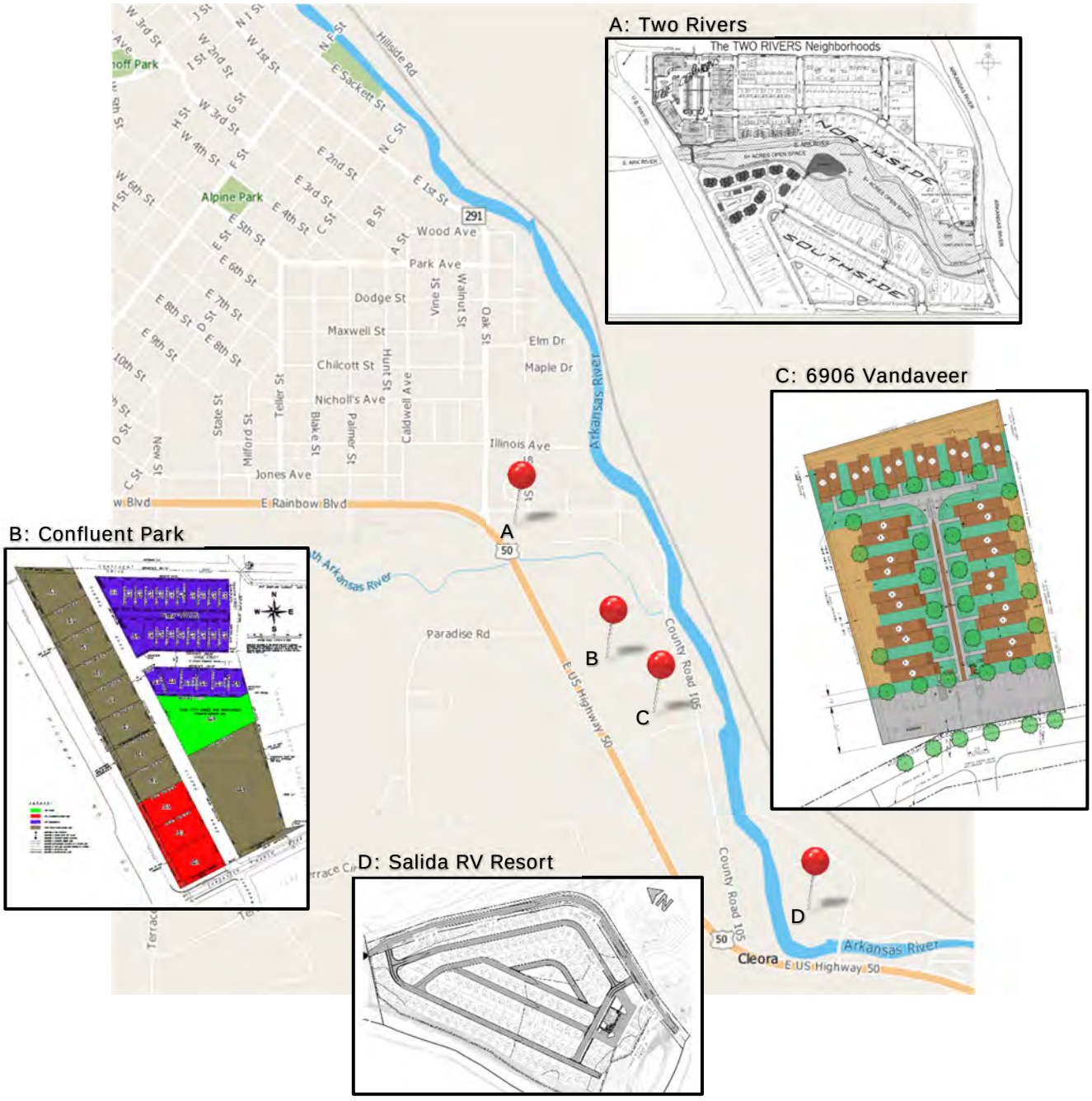
EXISTING SAFETY

Crash data from January 1, 2014 to December 31, 2018 on Oak St from Rainbow Blvd to D St and on Rainbow Blvd from Teller St to Vandaveer Rd was examined to identify any existing safety concerns. During this five-year period, 34 crashes were reported. Among these, there were 6 crashes which resulted in an injury and no fatal crashes. A detailed safety assessment report can be found in Appendix B. In short, the report concluded with no particular recommendations to improve highway safety and found that these highways currently perform better overall when compared to other highways with similar characteristics in Colorado. However, it is possible that the intersection of Oak St and Rainbow Blvd may become a more pressing safety concern as traffic volumes in the area continue to grow.



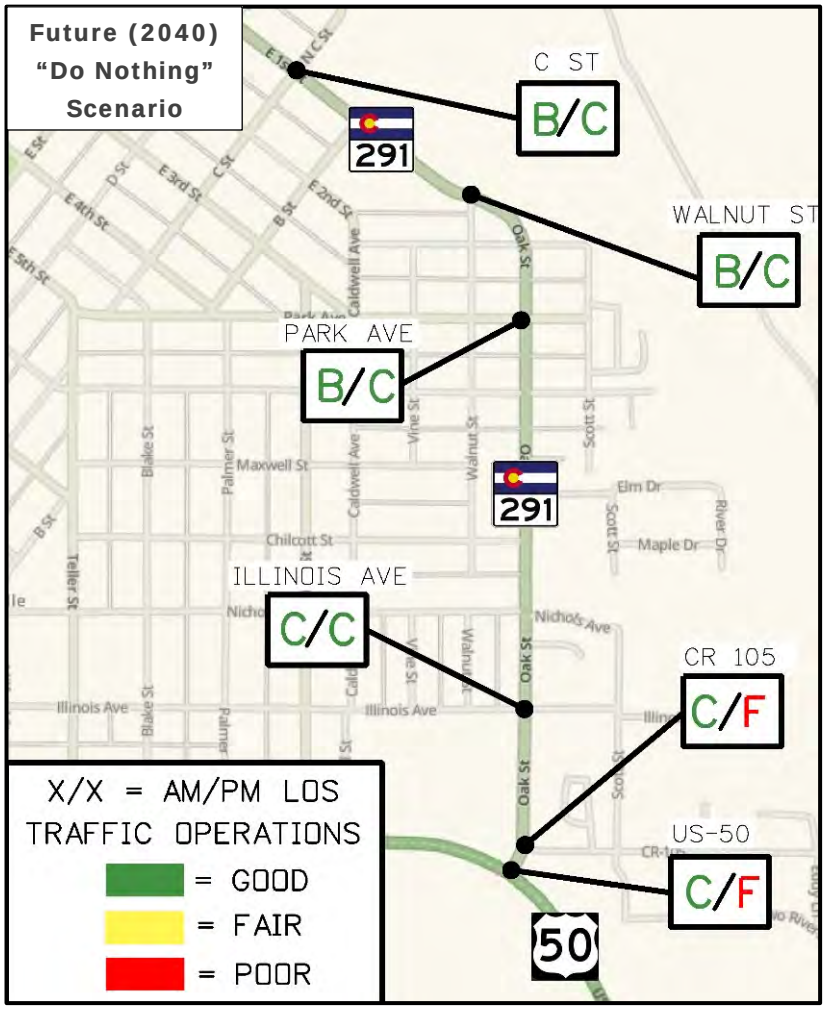
What would happen if we did nothing?

Salida, much like the rest of Colorado, is continuing to grow and develop. New developments like Two Rivers, Confluent Park, 6906 Vandaveer, and the Salida RV Resort allow the city to expand its array of amenities, especially towards the eastern side of the city. However, these developments, along with growth that is typical for the area, also mean that traffic is likely to continue increasing. Additionally, Salida and the surrounding areas tend to experience seasonal fluctuation in traffic due to nearby recreation.



At the time data was collected for this study, traffic impacts from some of this growth was known. Traffic forecasts for the year 2040 in this study accounted for the Two Rivers development, River View at Cleora (which is now Salida RV Resort), typical growth for the area and seasonal traffic fluctuations. These forecasts were then used in a "do nothing" traffic analysis in which no changes were made to the existing roadway network, but the traffic volumes were increased as projected. In this scenario, traffic operations are expected to fail during the evening peak hour at the intersections of Oak St and Rainbow Blvd and Oak St and CR 105, with almost a four-minute delay for vehicles turning left from Oak St onto Rainbow Blvd. The figure below shows the levels of service for this future "do nothing" scenario.

The key takeaway from this future "do nothing" analysis is that if the projections hold true and the current developments are completed as scheduled, improvements will need to be made to alleviate these long traffic delays. Meanwhile, although no operational concerns are present north of CR 105, this "do nothing" scenario does not address the desire many Salidans have expressed for an attractive, functional, and multimodal gateway along Oak St towards downtown. See Appendix A for a more in-depth analysis of this scenario.



How can we fix it?

Develop Evaluation Goals and Criteria

Identify Alternatives

Evaluate Alternatives

DEVELOP EVALUATION GOALS AND CRITERIA

Evaluation goals and criteria help to distinguish important differences of the pros and cons of each alternative. These goals and criteria were established by the Project Team, including CDOT and City of Salida staff, and were intended to accurately represent the community's values. The goals included:

- **Goal: Identify long-term improvements at the intersection of Oak St & Rainbow Blvd that provide safe, effective and efficient operations.**
  Criteria:
  - Roadway geometrics
  - Physical constraints
  - Intersection Level of Service

- **Goal: Provide access and circulation to support the functionality of the Oak St corridor and the local transportation system.**
  Criteria:
  - Local Route Connectivity
  - Function of Local Transportation System
  - Out of Direction Travel Distance
  - Highway Segment Level of Service
  - Functional Intersection Area

- **Goal: Support the development of alternative modes, including transit, pedestrian, and bicycle routes.**
  Criteria:
  - Access for Multi-modal Users (Cyclists, Pedestrians, Transit)
  - Compatibility with established/future pedestrian routes
  - Compatibility with established/future bicycle routes
  - Bicycle Level of Service
  - Compatibility with existing/future transit routes

- **Goal: Improve the safety for all modes on Oak St.**
  Criteria:
  - Intersection conflict points
  - Intersection sight distance
  - Roadway Template

- **Goal: Provide a plan that is supported by all entities and is compatible with state & local planning.**
  Criteria:
  - Compatibility with Local Planning
  - Conformance with State Highway Access Code Auxiliary Lane Requirements
  - Local Support

- **Goal: Support the economic viability of the project area.**
  Criteria:
  - Business Market Area
  - Serviceability to Properties and Developments within the Study Area

- **Goal: Develop a welcoming streetscape.**
  Criteria:
  - Gateway Enhancements
  - Wayfinding Presence

- **Goal: Elevate improvements that can be implemented in phases and reduce long-term maintenance needs along the Oak St corridor.**
  Criteria:
  - Construction Cost
  - Project Clearances
  - Phasing Opportunities
  - Long-term Maintenance

IDENTIFY ALTERNATIVES

Everything is on the table at this point. This study came up with several alternative configurations for the Oak St and Rainbow Blvd intersection and multiple corridor design alternatives along Oak St. Some alternatives were more applicable than others given this area's particular characteristics. After taking that into consideration, the alternatives were narrowed down to 3 intersection configuration alternatives and 3 corridor design alternatives for Oak St. The concepts that follow can be seen in larger format in Appendix C in addition to particular landscaping alternatives.

Oak St and Rainbow Blvd Intersection Configuration Alternatives

Alternative #1 – Traffic Signal

Alternative #2 – 5-Legged Roundabout

Alternative #3 – 4-Legged Roundabout
(not shown – option with roundabout at Illinois Ave)

Oak St Corridor Design Alternatives

(views looking north)

Alternative #1 – Multiuse Path

Alternative #2 – Bike Lanes with Sidewalk

Alternative #3 – Multiuse Path with Sidewalk

EVALUATE ALTERNATIVES

Each of the three Oak St and Rainbow Blvd intersection configurations and Oak St corridor design alternatives were evaluated by assessing whether there was a positive, neutral, or negative impact to the various criteria associated with each goal. For example, a positive impact to the *Business Market Area* criteria would mean the business market area expands for the majority of the businesses on the corridor, a neutral impact would mean current business market area is maintained, and a negative impact would mean a reduction in business market area. This type of evaluation was carried forward for all criteria. A detailed summary of how all evaluations were recorded can be found in Appendix D.

What would the alternatives do?

This study took a closer look at what might happen in the future from a traffic perspective if any of the Oak St and Rainbow Blvd intersection configuration alternatives came to fruition. Each option operates well, either at LOS A or B. However, the signal and 4-legged roundabout will likely cause queues to extend past CR 105, making left turns into or out of CR 105 a potential safety and operational concern. To mitigate these concerns, CR 105 at Oak St will have to be limited to right-in, right-out (RIRO) for both of these options. A RIRO access would mean that left turns from Oak St onto CR 105 and lefts turn from CR 105 onto Oak St would be restricted. These left turns would likely reroute to Illinois Ave, increasing delays at that intersection and adding traffic volume to the local streets. The 5-legged roundabout option, however, would not need these same left turn restrictions and could remain as a full movement intersection. The figure below shows the intersection LOS results for Rainbow Blvd and Oak St, and Oak St and Illinois Ave for each of the three scenarios.

If CR 105 is limited to RIRO, the rerouted trips will increase the delay at the intersection of Illinois Ave and Oak St, requiring the need for intersection improvements such as a roundabout or acceleration lanes. Meanwhile, the 5-legged roundabout would allow CR 105 to remain a full movement intersection, eliminate out of direction travel through the local roadway network, and would result in significantly better traffic operations at Illinois Ave.

To remain consistent with the goals set in the evaluation, this study also developed an access management plan for Oak St from Rainbow Blvd to C St. The plan is not meant to be implemented all at once. Rather, this plan aims to be a guiding document should redevelopment occur along Oak St.

CO 291 Access Management Plan

What is the bottom line?

After all factors were considered, the preferred Oak St and Rainbow Blvd intersection configuration alternative is a ***5-legged roundabout*** and the preferred Oak St corridor design alternative is ***bike lanes with sidewalk on the west side, shade trees, and dark sky compliant street lighting.*** Conceptual drawings of this configuration can be found in Appendix E.

Preferred Oak St and Rainbow Blvd Intersection Concept

Preferred Oak St Corridor Concept

JUST A LITTLE MORE DETAIL

As previously mentioned, each alternative had its pros and cons. For example, the traffic signal option would likely require the fewest amount of project clearances. However, it is CDOT policy not to install a traffic signal until intersection traffic volume exceeds thresholds defined by the Federal Highway Administration. These traffic signal warrants are not projected to be satisfied in the near term. Meanwhile, roundabouts do not have these same requirements for installation and could be constructed as soon as funding is available.

The 5-legged roundabout stood out in particular because it could allow the CR 105 intersection to remain full movement, which means any strain placed on the local street system would be minimal and there would be little need for out of direction travel. This alternative would also greatly reduce the severity of potential traffic conflicts as speeds would also be reduced and T-bone type crashes would be very unlikely. Furthermore, this was the preferred alternative when the pubic was asked to weigh in on which configuration they think would be best suited. Public feedback material including responses received as well as public advertisements can be found in Appendix F.

Similarly, the public voiced strong support for the Oak St corridor design alternative with bike lanes and sidewalk. This alternative also was a clear front runner through the evaluation as it has the potential to impact the least amount of right of way, would improve the bicycle level of service, and could readily accommodate future transit stops.

It's important to remember, however, that this is all still conceptual level planning.

When sketching the concept of the 5-legged roundabout, a WB-67 was chosen as the design vehicle. Preliminary sketches were also prepared which demonstrate that the turning path of a WB-67 is accommodated by the roundabout as sketched. This is important since the public expressed a particular concern of large vehicles being able to maneuver through the intersections. However, all roundabout design elements should be examined in further detail if this alternative were to begin a formal design process. Locations and photos of successfully designed and constructed roundabouts in Colorado can be found in Appendix G.

COST

When evaluating alternative Oak St and Rainbow Blvd intersection configurations, the cost to implement any of the alternatives was considered at a very high level. For planning purposes, conceptual opinions of probable costs were drafted for the design and construction of both the traffic signal and the 5-legged roundabout intersection configuration and can be found in Appendix H. It's important to remember that these costs are for **planning purposes only**. More detailed cost estimates will be drafted during a preliminary design phase.

$3,000,000

Alternative #1 – Traffic Signal

$4,400,000

Alternative #2 – 5-Legged Roundabout

Final Thoughts

This study set out to plan for a safe, vibrant, and multi-modal gateway along Oak Street (CO 291) from the intersection with Rainbow Boulevard (US 50). Traffic analysis showed that if development continues as planned, congestion and traffic delay concerns may arise in the future at Oak St and Rainbow Blvd and at Oak St and CR 105. Various alternatives were evaluated to mitigate these concerns, along with providing a welcoming and functional corridor design along Oak St into downtown Salida. Ultimately, the community as well as the evaluation conducted in this study expressed the most support for a 5-legged roundabout intersection configuration at Oak St and Rainbow Blvd and a roadway with bike lanes, sidewalk on the west side, shade trees, and dark sky compliant street lighting along the Oak St corridor.

The next steps forward in seeing this conceptual vision become reality involve the following items:

- **Funding**
  There are several ways that a vision like the one outlined in this study could be funded. Public dollars, private dollars, or a combination of both sources could be utilized. A publicly funded project would likely be a collaborative effort between the City of Salida and CDOT, working in tandem and sharing resources when possible. Private funding of this vision would likely occur in a piecewise fashion when redevelopment occurs in the area, for instance by dedicating the needed right of way to accommodate the Oak St corridor design alternative with bike lanes and sidewalk.

- **Detailed Design**
  As previously mentioned, the drawings shown in this study accounted for conceptual details such as large vehicle turning radii and approximated right of way impacts. The preferred designs will go through several more standard criteria check lists which will work out more intricate detail of environmental and stormwater impacts, phasing, and construction.