

TRAFFIC IMPACT STUDY FOR PLUMAS REDEVELOPMENT

October 18, 2024

PREPARED FOR:
Wood Rodgers, Inc.

PREPARED BY:



Marissa
Harned

Digitally signed
by Marissa
Harned
Date: 2024.10.18
16:17:27 -07'00'

YOUR QUESTIONS ANSWERED QUICKLY

Why did you perform this study?

This Traffic Impact Study evaluates the potential traffic impacts associated with the proposed Plumas Redevelopment project in Reno, Nevada. This study of potential transportation impacts was undertaken for planning purposes and to assist in determining what traffic controls or mitigations may be needed to reduce potential impacts, if any are found.

What does the project consist of?

The project consists of 273 multifamily housing units, located south of S. McCarran Boulevard, west of Lakeside Drive, and east of Plumas Street.

How much traffic will the project generate?

The project is anticipated to generate approximately 1,840 Daily, 109 AM peak hour, and 139 PM peak hour trips to the external roadway network. The project site also includes a 9,000 square foot dog park that is an ancillary use and intended for residents only.

How will project traffic affect the roadway network?

Opening Year Plus Project Conditions

Under Opening Year and Opening Year Plus Project conditions (with or without the project), the S. McCarran Boulevard/Plumas Street intersection is expected to operate at LOS F during the AM peak hour. The addition of project traffic is estimated to increase the average delay for the overall intersection by less than 1 second. The S. McCarran Boulevard/Lakeside Drive intersection is expected to operate at LOS E with 56 seconds of delay during the AM peak hour. The increase in delay compared to the Opening Year (no project) condition is 2 seconds. These changes are negligible and do not present any significant impacts. No mitigations or improvements are justified.

Under Opening Year and Opening Year Plus Project conditions, the Plumas Street/Project Access and Lakeside Drive/Project Access intersections are expected to operate at LOS B/C conditions.

Future Year Plus Project Conditions

The 2050 RTP lists the widening of S. McCarran Boulevard from four (4) lanes to six (6) lanes between Lakeside Drive and Manzanita Lane as a regional improvement project in the 2031 to 2050 timeframe. This improvement was included in the Future Year analysis.



Under Future Year and Future Year Plus Project conditions, the study intersections are expected to operate within policy level of service (at LOS D or better) during the AM and PM peak hours.

Are any improvements recommended?

It is recommended that the project install sidewalk on the south side of S. McCarran Boulevard between Plumas Street and Lakeside Drive along the project frontage.

The project will pay standard Regional Road Impact Fees (RRIF) based on the final number of multifamily dwelling units (less any credit for eligible prior uses) as mitigation for its impacts on the regional roadway network.



TABLE OF CONTENTS

Introduction 1

Analysis Methodology..... 5

Existing Conditions 6

Opening Year Conditions 11

Project Conditions..... 14

Opening Year Plus Project Conditions 15

Future Year Conditions 19

Future Year Plus Project Conditions 22

Conclusions 24



LIST OF FIGURES

1. Project Area
2. Study Intersections
3. Preliminary Site Plan
4. Existing Traffic Volumes, Lane Configurations, and Controls
5. Opening Year Traffic Volumes, Lane Configurations, and Controls
6. Project Trip Distribution and Assignment
7. Opening Year Plus Project Traffic Volumes, Lane Configurations, and Controls
8. Future Year Traffic Volumes, Lane Configurations, and Controls
9. Future Year Plus Project Traffic Volumes, Lane Configurations, and Controls

LIST OF APPENDICES

- A. Crash Data
- B. Traffic Count Data Sheets
- C. Existing LOS Calculations
- D. Growth Rate Calculations
- E. Opening Year LOS Calculations
- F. Opening Year Plus Project LOS Calculations
- G. Future Year LOS Calculations
- H. Future Year Plus Project LOS Calculations



INTRODUCTION

This report presents the findings of a Traffic Impact Study completed to assess the potential traffic impacts on local intersections associated with the Plumas Redevelopment project in Reno, Nevada. This traffic impact study has been prepared to document existing traffic conditions, quantify traffic volumes generated by the proposed project, identify potential impacts, document findings, and make recommendations to mitigate impacts, if any are found. The location of the project is shown on **Figures 1 and 2**, and the project site plan is shown on **Figure 3**.

Study Area and Evaluated Scenarios

The project consists of 273 multifamily residential units and a 9,000 square foot dog park that is an ancillary use to the multifamily units and intended for residents only. The project is located south of S. McCarran Boulevard, west of Lakeside Drive, and east of Plumas Street, and will have access to Plumas Street and Lakeside Drive. Direct access to S. McCarran Boulevard will not be provided. The study intersections were identified as those most likely to be impacted by project traffic and are shown on **Figure 2**. The following intersections are included in this study:

1. S. McCarran Boulevard/Plumas Street
2. S. McCarran Boulevard/Lakeside Drive
3. Plumas Street/Project Access (plus project only)
4. Lakeside Drive/Project Access (plus project only)

This study includes analysis of both the weekday AM and PM peak hours as these are the periods of time in which peak traffic is anticipated to occur. The evaluated development scenarios are:

- ▶ Existing Conditions
- ▶ Opening Year Conditions (2027)
- ▶ Opening Year Plus Project Conditions
- ▶ Future Year Conditions (2047) – 20 years after Opening Year
- ▶ Future Year Plus Project Conditions





Moana Ln

Plumas St

Lakeside Dr

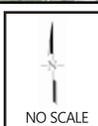
S McCarran Blvd

Kietzke Ln

I-580

Study Intersections

- 1 S. McCarran Blvd / Plumas St
- 2 S. McCarran Blvd / Lakeside Dr
- 3 Plumas St / Project Dwy
- 4 Lakeside Dr / Project Dwy



- Study Intersection
■ - Project Site

Figure 2
Plumas Redevelopment
Traffic Impact Study
Study Intersections

PRELIMINARY SITE LAYOUT
6000 PLUMAS REDEVELOPMENT

THOMPSON THRIFT C/O LYON LIVING

RENO NEVADA

OCTOBER, 2024

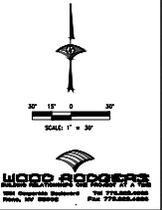
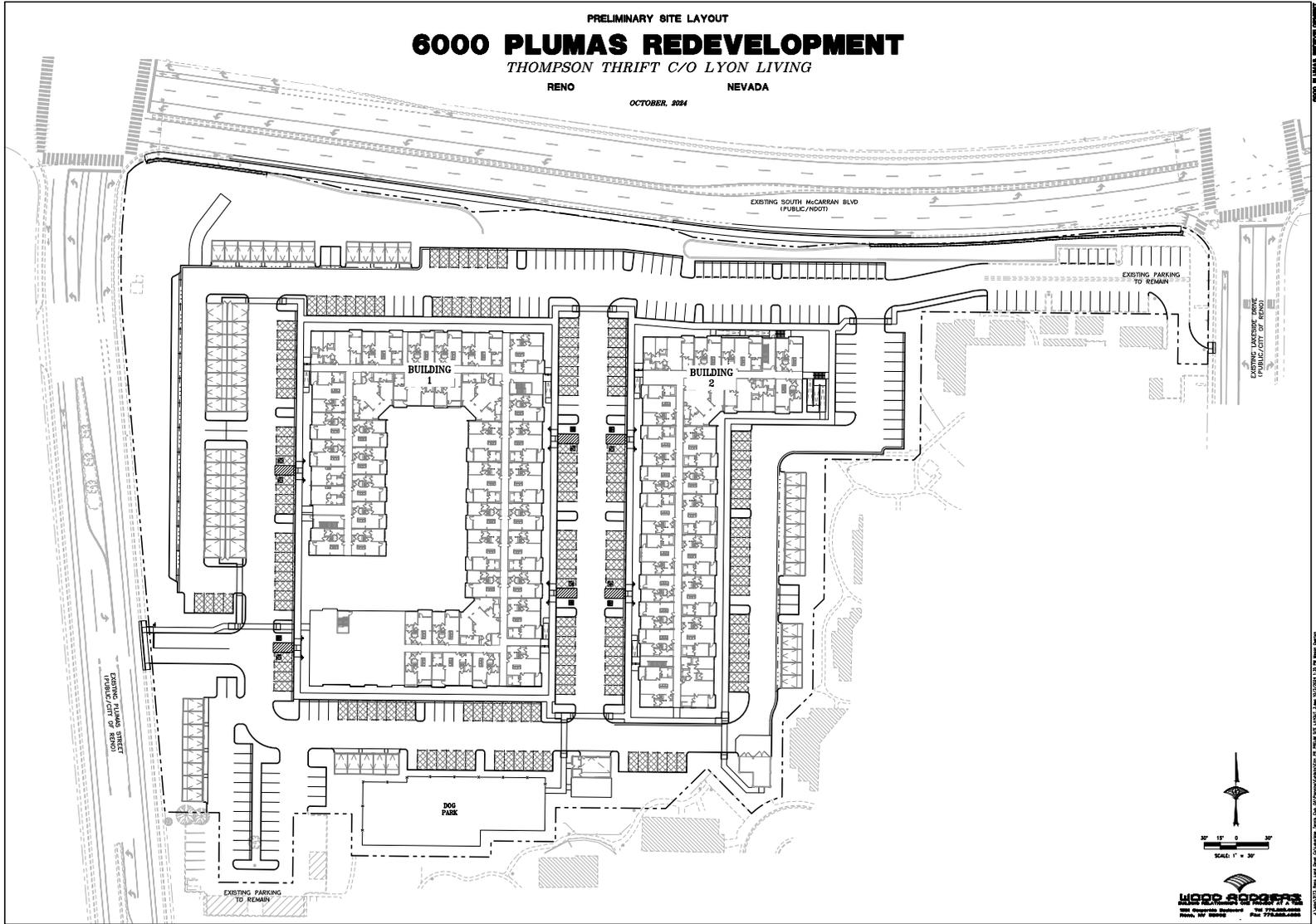


Figure 3
Plumas Redevelopment
Traffic Impact Study
Preliminary Site Plan

ANALYSIS METHODOLOGY

Level of service (LOS) is a term commonly used by transportation practitioners to measure and describe the operational characteristics of intersections, roadway segments, and other facilities. This term equates seconds of delay per vehicle at intersections to letter grades “A” through “F” with “A” representing optimum conditions and “F” representing breakdown or over capacity flows.

Intersections

The complete methodology for intersection level of service analysis is established in *the Highway Capacity Manual (HCM), 6th Edition* published by the Transportation Research Board (TRB). **Table 1** presents the delay thresholds for each level of service grade at signalized and unsignalized intersections.

Table 1: Level of Service Definition for Intersections

Level of Service	Brief Description	Average Delay (seconds per vehicle)	
		Signalized Intersections	Unsignalized Intersections
A	Free flow conditions.	< 10	< 10
B	Stable conditions with some affect from other vehicles.	10 to 20	10 to 15
C	Stable conditions with significant affect from other vehicles.	20 to 35	15 to 25
D	High density traffic conditions still with stable flow.	35 to 55	25 to 35
E	At or near capacity flows.	55 to 80	35 to 50
F	Over capacity conditions.	> 80	> 50

Source: *Highway Capacity Manual, 6th Edition*

Level of service calculations were performed for the study intersections using the Synchro 11 software package with analysis and results reported in accordance with *HCM* methodology.

Level of Service Policy

City of Reno

The Regional Transportation Commission’s (RTC) *2050 Regional Transportation Plan (RTP)* establishes level of service criteria for regional roadway facilities in the City of Reno, City of Sparks, and Washoe County. The current Level of Service policy is:

“All regional roadway facilities projected to carry less than 27,000 ADT at the latest RTP horizon – LOS D or better.”



“All regional roadway facilities projected to carry 27,000 or more ADT at the latest RTP horizon – LOS E or better.”

“All intersections shall be designed to provide a level of service consistent with maintaining the policy level of service of the intersecting corridors”.

S. McCarran Boulevard within the study area is projected to carry more than 27,000 ADT at the latest RTP horizon.

Nevada Department of Transportation

The Nevada Department of Transportation (NDOT) *Traffic Impact Study Requirements* publication states:

Level of service “C” will be the design objective for capacity and under no circumstances will less than level of service “D” be accepted for site and non-site traffic

S. McCarran Boulevard is an NDOT owned facility that is classified as an Other Principal Arterial. The NDOT level of service policy is LOS D. NDOT may or may not defer to City/RTC policy on S. McCarran Boulevard for identifying acceptable operations. Regardless of the NDOT policy, developments/redevelopments cannot be held responsible for resolving existing operational issues.

Where intersections are already experiencing level of service beyond the thresholds, conditions should not be exacerbated. In practice, this is commonly interpreted as not increasing average delay per vehicle by more than 5 seconds.

EXISTING CONDITIONS

Roadway Facilities

A brief description of the key roadways in the study area is provided below.

S. McCarran Boulevard is part of the McCarran Loop, a ring road in the Reno/Sparks region. In the project area, S. McCarran Boulevard runs in an east-west direction. West of Lakeside Drive, S. McCarran Boulevard is a four-lane divided roadway. East of Lakeside Drive, the roadway has six lanes divided by a raised median. The *2050 RTP* classifies McCarran Boulevard as a High Access Control (HAC) Arterial and NDOT classifies McCarran Boulevard as an Other Principal Arterial. The posted speed limit on S. McCarran Boulevard at Lakeside Drive and Plumas Street is 45 mph. Just west of Plumas Street the speed limit increases to 50 mph.



Plumas Street in the project area is generally a north-south roadway with three lanes (one lane in each direction with a two-way left-turn lane). The *2050 RTP* classifies *Plumas Street* as a Moderate Access Control (MAC) Arterial. The posted speed limit is 30 mph.

Lakeside Drive is a north-south roadway with four lanes (two lanes in each direction) north of S. McCarran Boulevard and three lanes (one lane in each direction with a two-way left-turn lane) south of S. McCarran Boulevard. The *2050 RTP* classifies *Lakeside Drive* in the project area as a Moderate Access Control (MAC) Arterial. The posted speed limit is 35 mph.

Bicycle & Pedestrian Facilities

S. McCarran Boulevard and *Plumas Street* have bicycle lanes on both sides of the roadways in the project area. *Lakeside Drive* has bicycle lanes on both sides of the street south of S. McCarran Boulevard. The RTC plans to add bicycle lanes on *Lakeside Drive* north of S. McCarran Boulevard in the 2031 to 2050 timeframe, per the *2050 RTP*.

Sidewalk exists on both sides of *Plumas Street* and *Lakeside Drive* north and south of S. McCarran Boulevard. S. McCarran Boulevard has sidewalk on the north side of the roadway east of *Plumas Street* and on the south side of the roadway east of *Lakeside Drive*. There is currently no sidewalk on the south side of S. McCarran Boulevard along the project frontage (between *Plumas Street* and *Lakeside Drive*).

The S. McCarran Boulevard/*Plumas Street* and S. McCarran Boulevard/*Lakeside Drive* intersections have signalized crosswalks on all four legs of the intersections.

Transit Facilities

The RTC provides fixed route bus service (RIDE) and FlexRide service throughout the Reno/Sparks area, however there are not any fixed routes or FlexRide service areas in the immediate project area. Route 9 is the closest fixed route and provides service on S. McCarran Boulevard and Kietzke Lane approximately 0.8 miles east of the project site.

Crash History

Vehicle crash data was obtained from NDOT and includes information from 2016 to 2020 (the most current five-year period available on the NDOT Crash Data website) and 2021 to 2022 (a supplemental data request). A total of 51 crashes occurred at study intersections from 2016 to 2022. Of these crashes, 24 resulted in property damage only (PDO) and 27 resulted in injury. Angle and rear-end crashes were the most commonly reported crash types with 21 angle crashes and 20 rear-end crashes during the 7-year period. There does not appear to be any apparent trends in the crash data. Detailed crash data is provided in **Appendix A**.



Traffic Volumes

AM (7:00 AM to 9:00 AM) and PM (4:00 PM to 6:00 PM) peak hour traffic volumes were collected at the study intersections on September 17 and October 1, 2024 with Washoe County School District (WCSD) schools in regular session. A review of NDOT's Annual Traffic Reports including the *2023 Seasonal Growth Factors* report (the most recent available) shows that traffic volumes in September and October tend to be higher than the annual average, therefore, a seasonal factor was not applied to the existing traffic count data. Volumes were balanced up between intersections as needed. The traffic count data sheets are provided in **Appendix B**. **Figure 4** shows the existing traffic volumes at the study intersections.

Intersection Level of Service Analysis

Existing weekday AM and PM peak hour intersection level of service analysis was performed for the study intersections using Synchro 11 analysis software. The existing intersection lane configurations and controls are shown on **Figure 4**. **Table 2** shows the existing conditions level of service results and the technical calculations are provided in **Appendix C**.



Table 2: Existing Intersection Level of Service

Int. ID	Intersection	Control	AM		PM	
			Delay ¹	LOS	Delay ¹	LOS
1	S. McCarran Blvd/Plumas St	Signal				
	Overall		75	E	28	C
	Northbound Approach		58	E	65	E
	Southbound Approach		56	E	51	D
	Eastbound Approach		115	F	40	D
	Westbound Approach		14	B	12	B
2	S. McCarran Blvd/Lakeside Dr	Signal				
	Overall		52	D	49	D
	Northbound Approach		61	E	64	E
	Southbound Approach		76	E	63	E
	Eastbound Approach		59	E	56	E
	Westbound Approach		30	C	42	D
3	Plumas St/Project Access	Side Street Stop				
	Westbound Approach		11	B	11	B
	Southbound Left		8	A	8	A
4	Lakeside Dr/Project Access	Side Street Stop				
	Eastbound Approach		13	B	17	C
	Northbound Left		8	A	9	A

Notes: 1. Delay is reported in seconds per vehicle for the overall intersection for signalized intersections, and for the worst approach/movement for side street stop controlled intersections.

Source: Headway Transportation, 2024

As shown in the table, the S. McCarran Boulevard/Plumas Street intersection currently operates at LOS E with the eastbound approach operating at LOS F during the AM peak hour. The other study intersections currently operate at overall LOS D or better during the AM and PM peak hours.



