

STAFF REPORT FOR THE PLANNING COMMISSION MEETING OF DECEMBER 19, 2023

FILE NO: LU-2023-0384

AGENDA ITEM: 6.B

STAFF CONTACT: Heather Manzo, Associate Planner

AGENDA TITLE:

For Possible Action: Discussion and possible action regarding an application for a special use permit (“SUP”) to allow for the construction of a structure exceeding 45 feet in height on property zoned Retail Commercial (“RC”), located at 4011 North Carson Street, Assessor’s Parcel Number (“APN”) 002-761-03. (Heather Manzo, hmanzo@carson.org)

Staff Summary: Jaswinder S. Dhama (“Applicant”) is proposing the construction of a new hotel building that will have a maximum building height of 54 feet. Carson City Municipal Code (“CCMC”) 18.04.195 allows structures in the RC zoning district to exceed the 45-foot maximum height with the approval of an SUP. The Planning Commission has the authority to approve the SUP.

RECOMMENDED MOTION:

I move to approve Special Use Permit LU-2023-0384 based on the ability to make the required findings and subject to the conditions of approval.

VICINITY MAP:



RECOMMENDED CONDITIONS OF APPROVAL:

1. All development shall be substantially in accordance with the plans presented to the Planning Commission.
2. All on and off-site improvements shall conform to city standards and requirements.
3. The use for which this permit is approved shall commence within 12 months of the date of final approval. A single, one year extension of time must be requested in writing to the Planning Division of the Community Development Department ("Planning Division") 30 days prior to the one year expiration date. Should this permit not be initiated within one year and no extension granted, the permit shall become null and void.
4. The Applicant must sign and return the notice of decision for conditions of approval within 10 days of receipt of notification. If the notice of decision is not signed and returned within 10 days, then the item will be rescheduled for the next planning commission meeting for further considerations.
5. The building shall be limited to a maximum of 54 feet tall.
6. Prior to the issuance of a building permit, the Applicant must enter into a pro-rata share agreement and pay its pro-rata share of \$38,785.00, for the upgrade of 1,400 linear feet of overcapacity sewer main in College Parkway.
7. Prior to the issuance of a site improvement permit, the Applicant must enter into a pro-rata share agreement and pay its pro-rata share cost for improvements to the intersection of Silver Oak Drive and North Carson Street. The improvements will be a traffic signal or other improvements as approved by the Transportation Division of the Carson City Public Works Department ("Transportation Division") and the City Engineer. If signalization is the identified solution, the estimated cost of the signal improvements is approximately \$1,459,800. The project's share is estimated to be 6.9%, with a pro-rata share not to exceed \$100,700.
8. Prior to the issuance of a building permit, the Applicant must demonstrate that necessary right-of-way along the project frontages has been offered for dedication and that the application for dedication has been accepted by the Public Works Department.
9. Prior to the issuance of a building permit, the Applicant must demonstrate that the project has received a Determination of No Hazard to Air Navigation from the Federal Aviation Administration ("FAA").

LEGAL REQUIREMENTS: CCMC 18.02.050 (Review); CCMC 18.02.080 (Special Use Permit); and CCMC 18.04.130 (Retail Commercial)

MASTER PLAN DESIGNATION: Mixed-Use Commercial

ZONING DISTRICT: RC

KEY ISSUES: Will the request for additional height meet the required SUP findings?

SURROUNDING ZONING AND LAND USE INFORMATION

NORTH: RC / hotel
SOUTH: RC / commercial
WEST: RC / vacant land
EAST: RC-PUD / vacant land

ENVIRONMENTAL INFORMATION:

FLOOD ZONE: Zone X shaded
SLOPE/DRAINAGE: Generally flat
EARTHQUAKE POTENTIAL/FAULT: Zone II Moderate Severity/Beyond 500 feet

SITE DEVELOPMENT INFORMATION:

SUBJECT SITE AREA: 2.047 acres
EXISTING LAND USE: vacant

DISCUSSION:

The subject property is located on the northeast corner of the intersection of North Carson Street and Silver Oak Drive. The Applicant has plans to construct a 91 room hotel which is an allowed use in the RC zoning district. The Applicant is proposing a maximum building height of approximately 54 feet tall. CCMC 18.04.195 states that a project may exceed the allowable maximum height of 45 feet with the approval of a SUP. The Planning Commission is authorized to approve the SUP.

PUBLIC COMMENTS: Public notices were mailed on December 8, 2023 to 37 property owners within 1050 feet of the subject site pursuant to the provisions of NRS and CCMC for the application. As of the completion of this staff report, no public comments have been received. Any written comments that are received after this report is completed will be submitted prior to or at the Planning Commission meeting on December 19, 2023 depending upon their submittal date to the Planning Division.

OTHER CITY DEPARTMENT OR OUTSIDE AGENCY COMMENTS: The following comments were received from City departments. Comments have been incorporated into the recommended conditions of approval, where applicable.

Development Engineering:

The Carson City Public Works Department, Development Engineering Division (“Development Engineering”) has reviewed the application within our areas of purview relative to adopted standards and practices and to the provisions of CCMC 18.02.080, Conditional Uses.

Development Engineering has no preference or objection to the special use request provided that the following conditions are met:

- Prior to a building permit being issued, the project must enter into a pro-rata share agreement and pay its pro-rata share cost of \$38,785.00, for the upgrade of 1,400 linear feet of overcapacity sewer main in College Parkway.
- Prior to the issuance of a site improvement permit, the Applicant must enter into a pro-rata share agreement and pay its pro-rata share cost for improvements to the

intersection of Silver Oak Drive and North Carson Street. The improvements will be a traffic signal or other improvements as approved by the Transportation Division and the City Engineer. If signalization is the identified solution, the estimated cost of the signal improvements is approximately \$1,459,800. The project's share is estimated to be 6.9%, with a maximum pro-rata share contribution of \$100,700.

- Prior to a building permit being issued, the project must provide documentation of an access easement for the outgoing lane of the North Carson Street entrance/exit, or the building permit plans must demonstrate ingress only functionality at this location.
- Prior to a building permit being issued right-of-way must be granted along the frontages where necessary for public improvements to fit within City right-of-way.

Development Engineering offers the following discussion as it relates to the SUP findings:

CCMC 18.02.080(5)(a) - Master Plan

The request is not in conflict with any Engineering Master Plans.

CCMC 18.02.080(5)(b) – Use, Peaceful Enjoyment, Economic Value, Compatibility

Development Engineering has no comment on this finding.

CCMC 18.02.080(5)(c) - Traffic/Pedestrians

Local intersections: The intersection of Silver Oak Drive and North Carson Street is shown to have a failing level of service in the year 2050 without the project, and worse delays with the project. The proposed conditions of approval require a pro-rata share payment to contribute to the ultimate traffic solution at this location. Other intersections are shown to operate at acceptable levels of service with the addition of the project.

Parking and internal circulation: The proposed drive isles are both two-way and are dependent on reciprocal access easements. Recorded maps show reciprocal access easements exist to facilitate access as proposed.

Adjacent Streets and On-Street Parking: Parking is provided with the proposed parking lot. On-street parking on North Carson Street and Silver Oak Drive is prohibited.

CCMC 18.02.080(5)(d) - Public Services

Sanitary Sewer: The sewer mains downstream of the project have been analyzed. The mains adjacent to the project and immediately downstream have sufficient capacity to serve the project. There is approximately 1,400 feet of sewer main downstream in College Parkway that is at capacity. A condition is recommended to require the developer to provide a pro-rata share payment for cost to upgrade the sewer main to accommodate the additional flow from this project.

Water: The water main analysis confirms that there is sufficient pressure and flow to meet the water demands of the project.

Storm Drain: Additional runoff is proposed to be mitigated through the installation of a subterranean infiltration basin (pipe). This will be designed per the Carson City Drainage Manual.

CCMC 18.02.080(5)(e) – Title 18 Standards

The project must meet all Carson City Development Standards and Standard Details including but not limited to the following:

- a. With the building permit an analysis must be provided confirming that the project conforms with FAA regulations related to the airport approach.
- b. The building permit plans must indicate that any curb ramps and driveway aprons on the frontage that do not meet current Americans with Disabilities Act (“ADA”) standards are being removed and replaced to meet current standards.
- c. With the building permit, the traffic impact study must be updated to clarify when signal optimization was applied. Signal optimization may not be applied to the existing or existing plus project conditions. In addition, the study must indicate what specific optimization timing revisions are proposed.

CCMC 18.02.080(5)(f) – Public health, Safety, Convenience, and Welfare

The project will meet engineering standards for health and safety. The property is located in the Federal Emergency Management Agency (“FEMA”) flood zone Shaded Zone X so no special flood mitigation is required. The closest fault is over 500 feet away. No improvements are required.

CCMC 18.02.080(5)(g) – Material Damage or Prejudice to Other Property

Development Engineering has no comment on this finding.

CCMC 18.02.080(5)(h) – Adequate Information

The plans and reports provided were adequate for this analysis.

Fire Department

1. Class III standpipes are required per the International Fire Code (IFC), section 905. Fire flow requirements shall include the standpipe flow requirements.

Carson Airport

1. CCMC Title 16, Chapter 16.02 requires that all construction be compliant with Code of Federal Regulations (CFR) Title 14 Part 77. According to the FAA Notice Criteria Tool, the proposed development exceeds the FAA Notice Criteria. A Determination of No Hazard to Air Navigation following an Airspace Analysis from the FAA is required to demonstrate compliance with CCMC Chapter 16.02.

Building Division

1. Building permit plans must specifically identify each of the respective adopted 2018 Code Series and Northern Nevada Amendments (Building and Fire) that govern the design, construction and inspection of the proposed facility.

2. All plan submittals must comply with *The Blue Book, A Reference Guide for the Nevada Design and Construction Industry*.
3. Apply at Carson City permit center digitally at permitcenter.carson.org
4. A conformed set of plans shall be submitted for Building permit plan review. Plan set must include all MEPs, Structural, Architectural, Entitlements, Energy, Special Inspections, and Civil pages, etc.

SPECIAL USE PERMIT FINDINGS: Staff recommends approval of the SUP based on the findings below and the information contained in the attached reports and documents, pursuant to CCMC 18.02.080.5 (Findings), subject to the recommended conditions of approval, and further substantiated by the applicant’s written justification. In making findings for approval, the Planning Commission must consider:

1. *Will be consistent with the objectives of the Master Plan elements.*

The requested development is consistent with the concept of a Compact and Efficient Pattern of Growth (Guiding Principle 1). Carson City is committed to a compact pattern that makes efficient use of land area and water resources available for urban growth, and that fosters the provisions of infrastructure and services in a cost-effective manner. The project is in an area currently served by existing infrastructure and where upgrades to infrastructure are needed, conditions are recommended for the proposed project to contribute toward those improvements.

Guiding Principle 7 discusses compact, mixed use activity centers, stating “Carson City will encourage the creation of compact, mixed-use activity centers in easily accessible and highly visible locations of the community. The activity centers will promote the efficient use of available commercial lands and concentrate retail services in pedestrian and transit-oriented development nodes that may be easily accessed from and serve surrounding neighborhoods. Activity centers will vary in size and composition depending upon their location, context, and level of priority.” The proposed hotel will be located on North Carson Street with close proximity to the Carson Tahoe hospital, the community college, the Carson Airport and will have convenient access to commercial opportunities and Interstate 580. Staff finds that the proposed development is consistent with the concepts of compact development, placing people near economic centers to encourage mixed use activity centers.

2. *Will not be detrimental to the use, peaceful enjoyment, economic value, or development of surrounding properties or the general neighborhood; and is compatible with and preserves the character and integrity of adjacent development and neighborhoods or includes improvements or modifications either on-site or within the public right-of-way to mitigate development related to adverse impacts such as noise, vibrations, fumes, odors, dust, glare or physical activity;*

The subject property is adjacent to an existing hotel to the north, a commercial use to the south, and vacant land to the east and west. The RC zoning district establishes zero foot setbacks at all property lines that adjoin non-residential zoning districts. The project

proposes a ±56 foot setback from the north property line and approximately 100 feet from the closest portion of the adjacent hotel structure. The project proposes a ±38.4 foot setback to the east, ±84.67 foot setback to the south, and a ±89.6 foot setback to the west. A majority of the building is designed to have a parapet height of less than 47 feet. The portion of the building that is designed to be approximately 54 feet tall is located on the southwest corner of the building and is designed to be the primary architectural feature as viewed from the intersection of North Carson Street and Silver Oak Drive. The proposed increase in height from 45 feet to 54 feet at the tallest point of the building will not be detrimental to the use, peaceful enjoyment, economic value or development of surrounding properties or the general neighborhood. Staff finds the project as conditioned will not be detrimental to the surrounding properties or general neighborhood. The increased height will not result in adverse noise, vibration, fumes, odors, dust, glare or physical activity.

3. *Will have little or no detrimental effect on vehicular or pedestrian traffic;*

The Applicant submitted a traffic impact study dated November 2023. The study shows that the intersection of Silver Oak Drive and North Carson Street will have a failing level of service in the year 2050 without the project, and will have worse delays with the project. A condition of approval is recommended to require a pro-rata share payment to contribute to the ultimate traffic solution at this location to mitigate the impacts of the proposal on the roadway network. Other intersections are shown to operate at acceptable levels of service with the addition of the project.

4. *Will not overburden existing public services and facilities, including schools, police and fire protection, water, sanitary sewer, public roads, storm drainage and other public improvements;*

The project will not overburden existing public services and facilities.

5. *Meets the definition and specific standards set forth elsewhere in this Title for such particular use and meets the purpose statement of that district;*

The proposal consists of a hotel that will exceed the allowable 45-foot height limit unless otherwise approved by SUP. The Applicant has proposed a project that complies with CCMC, including sufficient parking, landscaping and building articulation. The Applicant is requesting a SUP to allow for a building that has a maximum parapet height of 54 feet tall.

6. *Will not be detrimental to the public health, safety, convenience and welfare; and*

Due to its convenient location to the Interstate, hospital and other services and shopping opportunities, the North Carson Street area is a popular choice for hotels to locate. This use is similar to other established uses and the request for increased building height will not be detrimental to public health, safety, convenience or welfare.

7. *Will not result in material damage or prejudice to other property in the vicinity, as a result of proposed mitigation measures.*

As conditioned, the proposed project will not result in material damage or prejudice to other property in the vicinity.

Attachments

Application LU-2023-0384

Carson City Planning Division
108 E. Proctor Street · Carson City NV 89701
Phone: (775) 887-2180 • E-mail: planning@carson.org

FOR OFFICE USE ONLY:

CCMC 18.02.080

SPECIAL USE PERMIT

FILE

FEE*: **\$2,450.00 MAJOR**
\$2,200.00 MINOR (Residential zoning districts)

+ noticing fee

*Due after application is deemed complete by staff

APPLICANT PHONE #
JASWINDER S DHAMI 775-790-2177

MAILING ADDRESS, CITY, STATE, ZIP
2551 MANHATTAN DRIVE, CARSON CITY NV 89703

EMAIL ADDRESS
RENOAIRPORTHOTEL@YAHOO.COM

PROPERTY OWNER PHONE #
CARSON CITY HOTEL, LLC

MAILING ADDRESS, CITY, STATE, ZIP
2551 MANHATTAN DRIVE, CARSON CITY NV 89703

EMAIL ADDRESS
RENOAIRPORTHOTEL@YAHOO.COM

APPLICANT AGENT/REPRESENTATIVE PHONE #
REBECCA BERNIER 775-338-2348

MAILING ADDRESS, CITY STATE, ZIP
220 S. ROCK BLVD, STE 12; RENO, NV 89502

EMAIL ADDRESS
REBECCA@WESTEXCONSULTING.COM

SUBMITTAL PACKET – 4 Complete Packets (1 Unbound Original and 3 Copies) including:

- Application Form
- Detailed Written Project Description
- Site Plan
- Building Elevation Drawings and Floor Plans
- Special Use Permit Findings
- Master Plan Policy Checklist
- Applicant's Acknowledgment Statement
- Documentation of Taxes Paid-to-Date
- Project Impact Reports (Engineering)

CD or USB DRIVE with complete application in PDF

Application Received and Reviewed By: _____

Submittal Deadline: Planning Commission application submittal schedule.

Note: Submittals must be of sufficient clarity and detail for all departments to adequately review the request. Additional information may be required.

Project's Assessor Parcel Number(s):
002-761-03

Street Address
4011 N CARSON STREET

Project's Master Plan Designation
MIXED-USE COMMERCIAL

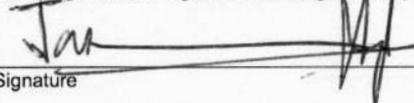
Project's Current Zoning
RETAIL COMMERCIAL

Nearest Major Cross Street(s)
N CARSON ST / SILVER OAK DR

Please provide a brief description of your proposed project and/or proposed use below. Provide additional pages to describe your request in more detail.
This project is the development of vacant site to be a 91 Room Hilton Home 2 Suites. The hotel will consist of one 60,000 SF (4) Story Building. Parking and Landscaping meet min. requirements.

PROPERTY OWNER'S AFFIDAVIT

I, Jaswinder S Dhami, being duly deposed, do hereby affirm that I am the record owner of the subject property, and that I have knowledge of, and I agree to, the filing of this application.


Signature

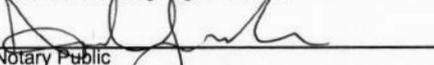
2551 Manhattan Dr, CC, NV
Address

10/11/2023
Date

Use additional page(s) if necessary for additional owners.

STATE OF NEVADA)
COUNTY)

On Oct 11, 2023, Jaswinder S Dhami, personally appeared before me, a notary public, personally known (or proved) to me to be the person whose name is subscribed to the foregoing document and who acknowledged to me that he/she executed the foregoing document.


Notary Public



AMANDA JACOBSON
NOTARY PUBLIC
STATE OF NEVADA
My Commission Expires: 05-26-25
Certificate No: 17-9257-5

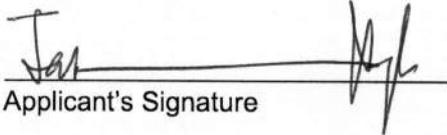
NOTE: If your project is located within the Historic District or airport area, it may need to be scheduled before the Historic Resources Commission or the Airport Authority in addition to being scheduled for review by the Planning Commission. Planning staff can help you make this determination.

If there is any additional information that would provide a clearer picture of your proposal that you would like to add for presentation to the Planning Commission, please be sure to include it in your detailed description.

Please type and sign the statement on the following page at the end of your findings response.

ACKNOWLEDGMENT OF APPLICANT

I certify that the forgoing statements are true and correct to the best of my knowledge and belief. I agree to fully comply with all conditions as established by the Planning Commission. I am aware that this permit becomes null and void if the use is not initiated within one-year of the date of the Planning Commission's approval; and I understand that this permit may be revoked for violation of any of the conditions of approval. I further understand that approval of this application does not exempt me from all City code requirements.


Applicant's Signature

JASWINDERSDHAMI
Print Name

10/11/23
Date

October 12, 2023

Carson City Community Development
108 E Proctor Street
Carson City, Nevada 89701

**Subject: Special Use Permit Application
4011 N. Carson Street – APN 002-761-03
Home 2 Suites**

Please accept this application for a Special Use Permit for the subject property. This application follows the MPR application MPR-2023-0322. Below are the project description and finding summary as required.

Project Description:

The proposed project is for the construction of a new Home 2 Suites facility. This 91-room hotel will consist of one 60,000+/- sf 4-story building with associated landscaping and parking. This application for a Special Use Permit was determined to be required during the Major Project Review because of the proposed height of the building.

The provided parking meets the minimum requirement of 1 space per room plus 10% and 1 space per employee. Of these 106 spaces, 5 of them are ADA compliant.

Included with this submittal are the conceptual site plan, concept architectural elevations and floorplan, landscaping plan, trip generation letter, conceptual drainage report, and geotechnical investigation.

This hotel does not have a full kitchen, rather a place to heat and serve food.

The proposed building height does exceed the threshold outlined in Carson City's Development Code and therefore a Special Use Permit is required.

Findings:

Will be consistent with the objectives of the Master Plan elements.

Yes, this project is consistent with the Master Plan elements. Please see the master plan checklist included with the application.

Will not be detrimental to the use, peaceful enjoyment, economic value, or development of surrounding properties or the general neighborhood; and is compatible with and preserves the

character and integrity of adjacent development and neighborhoods or includes improvements or modifications either on-site or within the public right-of-way to mitigate development related to adverse impacts such as noise, vibrations, fumes, odors, dust, glare or physical activity.

As this project is adjacent to a hotel, there are no negative impacts on the surrounding properties.

Will have little or no detrimental effect on vehicular or pedestrian traffic.

The proposed site plan utilities existing driveway access from Carson Street and Silver Oak Drive. While these driveways will need to be replaced to meet current codes, their location will not change.

Will not overburden existing public services and facilities, including schools, police and fire protection, water, sanitary sewer, public roads, storm drainage and other public improvements.

This project is not expected to significantly impact the surrounding infrastructure. This project is located just south of another hotel type project and will connect to existing infrastructure.

Meets the definition and specific standards set forth elsewhere in this Title for such particular use and meets the purpose statement of that district.

This project meets all the requirements for this type of development, with the exception of the building height. The proposed building height is just under 54 feet.

Will not be detrimental to the public health, safety, convenience and welfare.

This project will not be detrimental to the public health. As stated, the adjacent site has been developed with a hotel.

Will not result in material damage or prejudice to other property in the vicinity, as a result of proposed mitigation measures.

This project will not materially change the site or the surrounding development.

Please reach out to us if you have any questions or need additional information.

Sincerely,
WESTEX Consulting Engineers, LLC



Rebecca C. Bernier, P.E.
Civil Department Manager

Master Plan Policy Checklist

Special Use Permits & Major Project Reviews & Administrative Permits

PURPOSE

The purpose of a development checklist is to provide a list of questions that address whether a development proposal is in conformance with the goals and objectives of the 2006 Carson City Master Plan that are related to non-residential and multi-family residential development. This checklist is designed for developers, staff, and decision-makers and is intended to be used as a guide only.

Development Name: _____

Reviewed By: _____

Date of Review: _____

DEVELOPMENT CHECKLIST

The following five themes are those themes that appear in the Carson City Master Plan and which reflect the community's vision at a broad policy level. Each theme looks at how a proposed development can help achieve the goals of the Carson City Master Plan. A check mark indicates that the proposed development meets the applicable Master Plan policy. The Policy Number is indicated at the end of each policy statement summary. Refer to the Comprehensive Master Plan for complete policy language.

CHAPTER 3: A BALANCED LAND USE PATTERN



The Carson City Master Plan seeks to establish a balance of land uses within the community by providing employment opportunities, a diverse choice of housing, recreational opportunities, and retail services.

Is or does the proposed development:

- Meet the provisions of the Growth Management Ordinance (1.1d, Municipal Code 18.12)?
- Use sustainable building materials and construction techniques to promote water and energy conservation (1.1e, f)?
- Located in a priority infill development area (1.2a)?
- Provide pathway connections and easements consistent with the adopted Unified Pathways Master Plan and maintain access to adjacent public lands (1.4a)?

- Protect existing site features, as appropriate, including mature trees or other character-defining features (1.4c)?
- At adjacent county boundaries or adjacent to public lands, coordinated with the applicable agency with regards to compatibility, access and amenities (1.5a, b)?
- In identified Mixed-Use areas, promote mixed-use development patterns as appropriate for the surrounding context consistent with the land use descriptions of the applicable Mixed-Use designation, and meet the intent of the Mixed-Use Evaluation Criteria (2.1b, 2.2b, 2.3b, Land Use Districts, Appendix C)?
- Meet adopted standards (e.g. setbacks) for transitions between non-residential and residential zoning districts (2.1d)?
- Protect environmentally sensitive areas through proper setbacks, dedication, or other mechanisms (3.1b)?
- Sited outside the primary floodplain and away from geologic hazard areas or follows the required setbacks or other mitigation measures (3.3d, e)?
- Provide for levels of services (i.e. water, sewer, road improvements, sidewalks, etc.) consistent with the Land Use designation and adequate for the proposed development (Land Use table descriptions)?
- If located within an identified Specific Plan Area (SPA), meet the applicable policies of that SPA (Land Use Map, Chapter 8)?

CHAPTER 4: EQUITABLE DISTRIBUTION OF RECREATIONAL OPPORTUNITIES



The Carson City Master Plan seeks to continue providing a diverse range of park and recreational opportunities to include facilities and programming for all ages and varying interests to serve both existing and future neighborhoods.

Is or does the proposed development:

- Provide park facilities commensurate with the demand created and consistent with the City's adopted standards (4.1b)?
- Consistent with the Open Space Master Plan and Carson River Master Plan (4.3a)?

CHAPTER 5: ECONOMIC VITALITY



The Carson City Master Plan seeks to maintain its strong diversified economic base by promoting principles which focus on retaining and enhancing the strong employment base, include a broader range of retail services in targeted areas, and include the roles of technology, tourism, recreational amenities, and other economic strengths vital to a successful community.

Is or does the proposed development:

- Encourage a citywide housing mix consistent with the labor force and non-labor force populations (5.1j)
- Encourage the development of regional retail centers (5.2a)
- Encourage reuse or redevelopment of underused retail spaces (5.2b)?
- Support heritage tourism activities, particularly those associated with historic resources, cultural institutions and the State Capitol (5.4a)?
- Promote revitalization of the Downtown core (5.6a)?
- Incorporate additional housing in and around Downtown, including lofts, condominiums, duplexes, live-work units (5.6c)?

CHAPTER 6: LIVABLE NEIGHBORHOODS AND ACTIVITY CENTERS



The Carson City Master Plan seeks to promote safe, attractive and diverse neighborhoods, compact mixed-use activity centers, and a vibrant, pedestrian-friendly Downtown.

Is or does the proposed development:

- Use durable, long-lasting building materials (6.1a)?
- Promote variety and visual interest through the incorporation of varied building styles and colors, garage orientation and other features (6.1b)?
- Provide variety and visual interest through the incorporation of well-articulated building facades, clearly identified entrances and pedestrian connections, landscaping and other features consistent with the Development Standards (6.1c)?
- Provide appropriate height, density and setback transitions and connectivity to surrounding development to ensure compatibility with surrounding development for infill projects or adjacent to existing rural neighborhoods (6.2a, 9.3b 9.4a)?
- If located in an identified Mixed-Use Activity Center area, contain the appropriate mix, size and density of land uses consistent with the Mixed-Use district policies (7.1a, b)?
- If located Downtown:
 - Integrate an appropriate mix and density of uses (8.1a, e)?
 - Include buildings at the appropriate scale for the applicable Downtown Character Area (8.1b)?
 - Incorporate appropriate public spaces, plazas and other amenities (8.1d)?
- Incorporate a mix of housing models and densities appropriate for the project location and size (9.1a)?

CHAPTER 7: A CONNECTED CITY



The Carson City Master Plan seeks promote a sense of community by linking its many neighborhoods, employment areas, activity centers, parks, recreational



Special Use Permit, Major Project Review, & Administrative Permit Development Checklist

amenities and schools with an extensive system of interconnected roadways, multi-use pathways, bicycle facilities, and sidewalks.

Is or does the proposed development:

- Promote transit-supportive development patterns (e.g. mixed-use, pedestrian-oriented, higher density) along major travel corridors to facilitate future transit (11.2b)?
- Maintain and enhance roadway connections and networks consistent with the Transportation Master Plan (11.2c)?
- Provide appropriate pathways through the development and to surrounding lands, including parks and public lands, consistent with the Unified Pathways Master Plan (12.1a, c)?

GEOTECHNICAL INVESTIGATION REPORT

HOME 2 SUITES

APN: 002-761-03

CARSON CITY, NEVADA

Prepared For

Mr. Jaskirat Dhani
jazdhamiva@gmail.com

Prepared By



We Strive for Excellence

220 South Rock Blvd. Suite 12, Reno, Nevada 89502
Blake@westexconsulting.com (775) 384-2898

File No.: 23210.001-A
September 28, 2023

September 28, 2023

Mr. Jaskirat Dhani
jazdhamiva@gmail.com

Subject: Geotechnical Investigation Report
Home 2 Suites
APN: 002-761-03
Carson City, Nevada 89703
File No.: 23210.001-A

Dear Mr. Dhani,

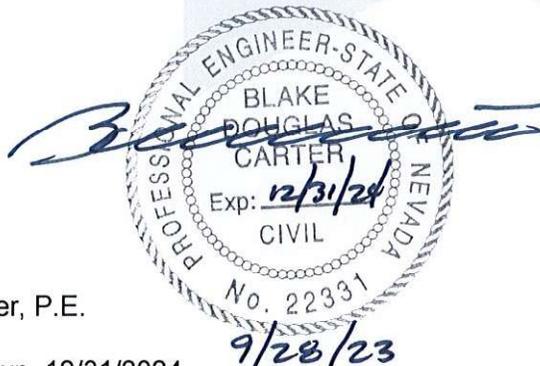
WESTEX Consulting Engineers, LLC (Westex) is pleased to present this report containing the results of our geotechnical investigation performed at the referenced property.

As presented in the attached report, based on the results of our investigation, knowledge of the project area, and understanding of the project, we conclude that from a geotechnical standpoint the site is suitable for the intended use. The primary geotechnical concerns include:

- Proper moisture conditioning and compaction of foundation and subgrade soils.
- Proper seismic design of structural building components.

We appreciate your selecting WESTEX Consulting Engineers to perform this investigation and trust that the results will fulfill project design requirements. If you, any design consultants, or plan reviewers have any questions, please contact me directly at (775) 384-2898 or blake@westexconsulting.com.

Respectfully submitted,
WESTEX Consulting Engineers, LLC



Blake D. Carter, P.E.
President
P.E. 22331, Exp. 12/31/2024
ICC 8077939, Exp. 03/06/2026

Mikela Dzwir

Mikela Dzwir
Geotechnical Coordinator

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I INTRODUCTION

This report presents the results of our geotechnical investigation performed for the proposed four-story suite to be located at the corner of North Carson Street and Silver Oak Drive, Carson City, Nevada. The site location is shown on the attached *Site Vicinity Map*, Plate 1. This investigation was conducted in general accordance with our August 4, 2023 proposal and work order, authorized on August 7, 2023.

The conclusions and recommendations contained in this report are founded on selected points of exploration, an engineering analysis of the data acquired during our investigation, and our experience with similar site characteristics. If during grading and construction, site conditions or project plans are found to vary from those described in this report, we should be contacted immediately to verify that the recommendations contained herein remain applicable to the final project design. Accordingly, this report may be revised at any time. To provide project continuity and observe that the provided geotechnical recommendations are followed, we recommend retaining Westex for construction testing and inspection services.

A. Purpose and Scope of Services

The purpose of this geotechnical engineering investigation is to characterize the site subsurface soil and groundwater conditions and provide appropriate and economic design-level engineering conclusions and recommendations pertaining to these conditions. Our scope of services included:

1. Field reconnaissance of the site,
2. Review of published geologic information,
3. Exploration of the subsurface conditions by excavating, logging, and sampling within two (2) test pits,
4. Geophysical measurements of shear wave velocity to a depth of 100-feet to determine seismic Site Classification,
5. Laboratory testing on select samples acquired from the exploratory test pits,
6. Engineering evaluation and preparation of this geotechnical engineering report addressing current project design and construction recommendations.

Included in this report are conclusions and recommendations regarding:

1. Local soil and groundwater conditions,
2. Potential geologic hazards,
3. Earthquake site response,
4. Site grading and structural design,
5. Fill placement and compaction specifications,
6. Soil properties for drainage,
7. Trench excavation, utility line bedding, and trench backfilling,
8. Foundation and slab-on-grade support,
9. Lateral resistance and loads,
10. Exterior concrete flatwork,
11. Pavement section recommendations,
12. Additional geotechnical engineering services.

This report is geotechnical in nature and not intended to identify other site constraints such as environmental hazards, wetlands determinations and/or the potential presence of buried utilities. Recommendations included in this report are specific to development within the limits of the property and are not intended for off-site development. Proposed development outside the limits of our investigation or any conceptual changes to site development, such as the use of alternative foundations or grade changes, could require additional subsurface exploration, laboratory tests and engineering analyses.

B. Site Location and Description

Our site description is based on our site visits conducted in August 2023 and Carson City Assessor mapping information.

The project site is located on the west side of I-580 in Carson City, Nevada and occupies Assessor parcel number (APN) 002-761-03. According to the Public Land Survey System (PLSS), the project site is located in a portion of the N ½, Section 6, Township 15 North, Range 20 East, Mt. Diablo Meridian.

The roughly two-acre property is currently undeveloped ground coverage of vegetation and bare dirt. Access to the site is along both Silver Oak Drive and North Carson Street. The property is bordered by North Carson Street to the west, Silver Oak Drive to the south, undeveloped land to the east and the Holiday Inn Express and Suites to the north. The site appears to be relatively undisturbed from a grading perspective.

Based on published topographic information, the maximum site elevation is approximately 4,742 feet above mean sea level (MSL, NAVD88 vertical datum), to the west of the site boundary. The minimum elevation is approximately 4,736 MSL, for a maximum relief of about 6 feet. The property slopes down slightly toward the east, at approximately 2 percent, draining towards undeveloped land to the east.

C. Proposed Development

Project information is based on conversations with the client and the referenced site plan. The current conceptual plan consists of constructing a four-story hotel suite with 91 guestrooms and 106 parking stalls. Structural loads are anticipated to be light-to-moderate, typical for the anticipated wood-framed construction. Site grading is anticipated to produce a near-balanced site and could include minor cuts and fills on the order of five vertical feet.

Additionally, we assume that foundations will bottom at least 24 inches below the lowest adjacent exterior ground surface and that structural design will be in accordance with the 2018 edition of the International Building Code and Northern Nevada Code Amendments. Off-site civil improvements shall be constructed in accordance with the latest edition of the Standard Specifications for Public Works Construction "Orange Book" as required by Carson City.

II FIELD EXPLORATION AND LABORATORY TESTING

A. Field Exploration

Exploratory Test Pits

Subsurface soil conditions were explored in August 2022 by excavating two (2) exploratory test pits to a maximum depth of 9 feet below the existing ground surface (BEG). The test pits were excavated with a KX 033-4 backhoe.

The test pits were located in the field based on the referenced site plan, knowledge of the project, existing underground and above-ground utility locations, and accessibility, and are depicted on Plate 2, *Geotechnical Exploration Map*. Our field engineer recorded the location of each test pit using a hand-held Global Positioning System (GPS) receiver. All locations are approximate and considered accurate to within ± 15 feet. No greater accuracy is inferred.

Bulk soil samples were collected from the exploratory test pits from specific soil layers. The soils were visually classified and logged by our engineer in the field in accordance with the Unified Soil Classification System (USCS) and ASTM D2488. Logs of the exploratory test pits are presented in Plate 6 and Plate 7.

Test pits encountered medium dense soils and were backfilled with native soils to the extent possible with the excavator bucket, but not to compaction levels specified for improvements. During grading the test pits shall be located, excavated and re-compacted to limit disturbance to newly constructed improvements.

Field Infiltration Testing

Field infiltration testing was performed within test pit TP-1 and TP-2 to provide a general indication of soil infiltration rates. Field tests were performed in accordance with NAC 444 and the Carson City Drainage Manual. The measured infiltration rates below can be used as a design aid in underground stormwater storage chambers:

<u>Location</u>	<u>Depth</u>	<u>Measured Infiltration Rate</u>
TP-1	5' BEG	3.00 inches per hour
TP-2	4' BEG	3.00 inches per hour

The tested rates represent the field conditions when and where tested. Periodic inspection and sufficient maintenance of the underground stormwater storage chamber shall be supported to ensure the desired level of performance is sustained.

Geophysical Survey

The approximate locations of the geophysical alignment is included on Plate 2, *Geotechnical Exploration Map*. Seismic refraction microtremor (ReMi®) measurements were performed in accordance with ASTM D5777, Standard Guide for Using the Seismic Refraction Method for Subsurface Investigation, and result in a one-dimensional shear wave velocity profile. A multi-channel seismograph using 12 geophones was spaced at 27-feet to develop a line creating a total geophone spread of 300-feet.

Shear wave velocity, which was also measured, is typically reserved for soil stiffness but design codes present those velocities in excess of 1,200 (fps) indicate very dense soil and soft rock; rock is indicated at a velocity of 2,500 fps. Shear wave velocities presented on Plate 12 do not typically begin to significantly exceed 1,200 feet per second (fps) until depths on the order of 40 feet.

Results from geophysical measurements are included in Plate 12.

B. Laboratory Testing

Bulk representative samples from the exploratory test pits were selected for laboratory testing. Index tests were performed which were in turn correlated with typical engineering design parameters for similar soils. The following tests were performed:

- Particle size analysis (ASTM D422)
- Atterberg Limits (ASTM D4318)

III SUBSURFACE SOILS AND GROUNDWATER CONDITIONS

A. Soils

According to mapping by the U. S. Department of Agriculture, Soil Conservation Service (*Web Soil Survey of Carson City Area, Nevada*), the site is underlain by the following soil units to a depth of 60 inches:

- Bishop loam, saline (4): composed of loam (CL) and stratified sandy loam to clay loam (SC-SM, CL, ML): fines content between 45 to 70 percent; plasticity index (PI) ranging from 6 to 19.
- Dalzell fin sandy loam, deep water table (12): composed of fine sandy loam (SM), clay loam, loam (CL), stratified fine sandy loam to sandy clay loam (SC) and cemented material; fines content between 35 to 80 percent; PI ranging from 2 to 25.
- Vamp fine sandy loam, drained (73): composed of fine sandy loam (SM), stratified fine sandy loam to silt loam (ML,SM), cemented material and stratified loamy sand to silt loam (ML,SM); fines content between 35 to 65 percent; PI ranging from 6 to 12.

We anticipate that soils within the expected depths of grading will be excavatable with conventional grading equipment; however deeper utility excavations could experience difficult trenching due to medium dense soils.

B. Groundwater

At the time of our exploration, groundwater was not encountered in either of the two (2) test pits to the maximum explored depth of 7 feet BEG. Based on a query of water wells in the area, an average depth to reported static water levels is approximately 38 feet and depending on topography could be deep as 110 feet. Groundwater is unlikely to affect construction at this site.

Depths to groundwater may vary significantly over time due to seasonal precipitation and snow fall/melt that may significantly affect surface and near-surface water seepage. Provisions should be made during construction to manage surface and subsurface water flows.

IV GEOLOGIC AND SEISMIC CONSIDERATIONS

To delineate possible faulting and to evaluate any other geological hazards on the site, our investigation included a review of available geological literature.

A. Geology

Regional Geology

The property is situated in Carson City in Eagle Valley. The primary geologic deposit beneath the site is composed of younger alluvial-plain deposits.

Based on the *Geologic Map of the Carson City 30 X 60 Minute Quadrangle, Nevada*, Nevada Bureau of Mines and Geology (NBMG, 1999), prepared by Stewart, the materials underlain the site are primarily composed of the following Quaternary Deposits:

Younger alluvial-fan deposits (Qfy) – “Poorly sorted gravel, sand, and silt deposited during intermittent stream and sheetflow. Forms fan-shaped constructional deposits along mountain fronts. Clast size generally decreases and sorting increases downfan toward distal margins of fans. Widely exposed in Quadrangle.”

B. Faulting, Seismicity, and Slope Stability

Faulting

The United States Geological Survey (USGS) publishes a Quaternary fault and fold database for use with Google Earth. This database allows the user to view possible faults at or near a location. The database shows a spread of the Kings Canyon fault zone trending in a roughly northeast to southwest direction approximately 0.25 miles north and not trending through the project site. This fault zone is of Holocene age and its traces are considered active due to the age since last movement. Based on provisions of the 2018 IBC and Northern Nevada Amendments, it is our opinion that this fault zone requires no further investigation for consideration of building development on this property. Structures should generally maintain a minimum 100-foot setback from any Holocene-active or younger mapped faults, which are mapped 0.25 miles north of the site and not trending through the site.

Seismicity

Active faults capable of generating large magnitude earthquakes have been identified within the region. Strong ground shaking associated with earthquakes should be expected to occur during the life of the project.

Literature prepared by A. Ryall and B. M. Douglas (NBMG, *Regional Seismicity*, 1976) indicates that earthquake recurrence curves predict a return period of 70 to 80 years for an earthquake of Magnitude 7.0 or greater within this region. They also calculate that, on average, an earthquake of Magnitude 5.3 to 5.4 would be expected to occur regionally approximately once in 30 years, would have a maximum bedrock acceleration of 0.12 to 0.19g, and would involve about 6 seconds of strong shaking. The expected return period of rock accelerations greater than 0.5g at an average site in western Nevada associated with an earthquake of magnitude greater than 7.0 is on the order of 2,000 years.

Slope Stability

Based on the existing and planned topography on-site, slope stability is not a concern that would effect grading or development of the site. Any planned slopes shall be constructed to a 3H:1V inclination per Carson City standard details.

C. Seismically-induced Liquefaction

Liquefaction, a loss of soil shear strength, is a phenomenon associated with loose, relatively clean, saturated granular soils (poorly graded sands and silty sands) subjected to earthquake shaking. Liquefaction can result in differential settlements of foundations and other structural elements supported by susceptible soils. Based on the density of native soils, soil types and depth to groundwater, post-seismic settlement is not calculated. Based on the increasing density with depth, it is our opinion that the potential effects of liquefaction at this site are very low, and that no further analysis or mitigation measures are required for the planned development.

D. Tsunami or Seiche

A tsunami, or a seiche, is a great wave produced by an earthquake or by volcanic activity. A seiche is an oscillating tsunami that develops in enclosed bodies of water, like lakes or bays. The oscillation is typically triggered by variations in atmospheric pressure, wind, tidal currents, earthquakes, or a combination of these factors. Depending on the geometry of the basin, the oscillation continues for some time after the triggering event has ended. There are no large bodies of water near the project site; therefore, the potential for tsunamis or seiches to impact the site is considered nil.

E. Radon

Radon, a colorless, odorless, radioactive gas derived from the natural decay of uranium, is found in nearly all rocks and soils. The Environmental Protection Agency (EPA) suggests that remedial action be taken to reduce radon in any structure with average indoor radon level of 4.0 pCi/L or more. Based on studies completed by the Nevada Bureau of Mines and Geology in cooperation with the Nevada Division of Health and the U.S. Environmental Protection Agency (*Radon In Nevada*, Nevada Bureau of Mines and Geology, Bulletin 108, 1994), the project site is considered within an area where average indoor radon concentrations could exceed 4.0 pCi/L. We recommend testing the site for radon upon completion of rough grade. Our office can be of assistance if radon testing is desired.

F. Flooding

Based on studies completed by the Federal Emergency Management Agency (FEMA), Community Panel Number 3200010084F, effective February 19, 2014, the project site is within Flood Hazard Zone X (shaded). *These are areas with reduced flood risk due to levee.*

V CONCLUSIONS

Based on the results of our investigation, experience in the project area, and understanding of the proposed project, it is our opinion that the subject site is suitable for development provided the recommendations presented in this report and any subsequent reports are followed during the design and construction phases of the project. The primary identified geotechnical concerns are:

- Proper moisture conditioning and compaction of foundation and subgrade soils.
- Proper seismic design of structural building components.

Following are our conclusions.

1. Site soils consist predominately of a soil matrix composed of silty sands, various blends of sands with varying degrees of fine and coarse gravel, some cobbles are expected.
2. On-site soils are loose to medium dense, and any thin surface fills appear well compacted. No major ground disturbances were noted.
3. Based on the one-dimensional seismic (Shear-Wave) velocity profile measured at the site, a V_{s100} of 1,392 feet per second was calculated. A seismic Site Class C "Very Dense Soil and Soft Rock" is appropriate for structural design per ASCE 7-16.
4. The project site is within Flood Hazard Zone X (shaded), which is classified as areas with reduced flood risk due to levee.
5. There are no apparent geologic hazards that would place unusual constraints on the project; however, strong ground shaking associated with earthquakes should be expected to occur during the life of the project.

VI RECOMMENDATIONS

The following recommendations are based on present information; structural design was not available at the time of writing. When available, structural plans should be reviewed by Westex to evaluate whether or not the recommendations in this report remain valid, and to provide any supplemental recommendations as necessary.

A. Site Preparation and Grading

Areas to be developed should be cleared of any existing and pre-existing improvements, debris, and vegetation. Soils should be scarified a minimum of 12-inches, moisture conditioned to within two percent of optimum moisture content and compacted to a minimum of 90% relative compaction per ASTM D1557.

We recommend supporting all structural elements and flatwork as follows:

- Continuous Spread Footings: the existing native soil should be recompacted a minimum 12 inches below the proposed bottom-of-footing elevation.

- Interior concrete slabs-on-grade: interior concrete slabs should be underlain by a minimum 12 inches of properly compacted non-expansive native soils and capped with a minimum of 4 inches of crushed aggregate base.
- Exterior Concrete Flatwork or Driveways: underlain by a minimum 12 inches of properly compacted non-expansive native soil.
- **Over-excavation depths do not include aggregate base sections.**

Over-excavation and re-compaction may be excavated in a neat line (vertical) manner during foundation excavation and preparation for reinforced concrete.

The foundation elevation should be observed by a representative of Westex to document that the conditions are as anticipated and that no objectionable materials are present prior to concrete placement.

Scarification and moisture conditioning may be waived by the Geotechnical Engineer (or their representative) if it is determined that the exposed materials exist at a suitable moisture content for attaining compaction or contain oversized material which will inhibit compaction procedures and result in a lesser density state. Surfaces should be "proof-rolled" under the observation of the Geotechnical Engineer (or their representative) to ensure that adequate compaction has been attained. The Earthwork Contractor is responsible for obtaining approval for each prepared surface prior to proceeding with placement of structural components or fills.

B. Fill Placement and Compaction

To provide quality control where fill material is proposed to attain grades, structural zones are defined as the area three feet below and laterally away from foundations, 12 inches below pavements, 12 inches below slabs-on-grade, exterior flatwork and driveway sections. Mass zones are defined as all areas outside the structural zones. Only approved, select material may be utilized within structural zones; however, materials which do not meet the requirements for structural fill may, in general, be used within mass zones with the prior approval of the Geotechnical Engineer (or representative in the field).

Mass grading and structural fill shall be tested for conformance with specifications and minimum compaction at a minimum rate of one compaction test per 1,000 cubic yards of fill placed.

Suitability of On-site Soils

The native granular soils are considered suitable for use as properly compacted structural fill, provided any deleterious material, debris, vegetation, and/or oversized material are removed from the appropriate layers. In general, any large boulders would be suitable for use in deeper fills, providing the contractor can prove effective means and methods to obtain compaction without 'nesting' of the large boulders. The upper one-foot should include an 8-inch maximum particle rock size and should have a sufficient amount of soil to limit any void spaces within the fill.

Fill Material Specifications

Import soils used as structural fill should be free of organic matter and in general conform to the following requirements:

TABLE 1 IMPORT STRUCTURAL FILL SOIL REQUIREMENTS	
Sieve Size	% Passing (by dry weight)
6-inch	100
3/4-inch	70 – 100
No. 4	50 – 100
No. 200	15 – 40

Liquid Limit = 40 maximum
Plasticity Index = 15 maximum
R-Value = 30 minimum
Non-deleterious to concrete (low sulfate)

The Earthwork Contractor shall ensure that all proposed fill materials are approved by the Geotechnical Engineer prior to use. Representative imported material samples shall be made available for testing one week prior to hauling to allow for material quality tests.

The recommendations for structural fill are intended as a guideline and define a readily attainable, acceptable material. Adjustments to the specified limits to address the use of other potentially acceptable materials, such as those containing oversize rock or which deviate from the classification requirements, can be made provided: 1) the Earthwork Contractor can demonstrate their ability to place and compact the material in substantial conformance with industry standards to achieve an equivalent finished product as that specified; 2) the Geotechnical Engineer gives their written approval; 3) the Geotechnical Engineer (or their representative) directly observes and approves the placement method; and 4) all parties understand that the Standard ASTM Compaction Test procedures may be invalid for certain material containing oversize aggregate. Compaction approval would only be achieved based on other criteria, such as a performance specification with on-site observation of compaction activity.

Fill Placement

All properly compacted structural fill shall be uniformly moisture conditioned to near optimum and compacted to at least 90 percent relative compaction based on the maximum dry density determined by ASTM D1557. Lift thickness shall be restricted to 8 inches (maximum loose lift) and individually tested unless the Earthwork Contractor can demonstrate their ability to uniformly achieve the required compaction for the entire placed layer.

C. Site Surface Drainage

Adequate drainage for surfaces adjacent to foundations and slopes should be provided to restrict water from infiltrating into the supporting soils. To allow water to drain away from the structure and prevent ponding against perimeter foundations, the ground surface should be permanently sloped at least one-half percent for concrete, one percent for asphalt pavement, and two percent for soil. Landscape adjacent to structural areas should be limited and consist of native vegetation utilizing drip-type irrigation.

D. Foundation Support

Spread Footings

Conventional spread foundations can gain adequate support on the approved, compacted, structural fill material composed of granular native soils. As previously mentioned, to control the potential for settlement, the supporting materials within spread footings should consist of a uniform 12-inch layer of moisture-conditioned, compacted soils. Monolithic slab-on-grade is another option with thickened edges and thickened foundation at load bearing walls and or columns.

In preparation for foundation construction, the earthwork contractor shall ensure that the Geotechnical Engineer has certified the foundation elevation and that field density tests have been performed to document the relative compaction of the upper 12 inches of exposed materials, and shall be responsible for maintaining the recommended moisture content during construction. Preparation of these materials shall be documented prior to placement of structural components.

For adequate confinement and frost protection, footings should be bottomed at least 24 inches below lowest adjacent exterior grade. **Footings supported in accordance with our recommendations can be designed for a net allowable bearing capacity of 2,500 pounds per square foot (psf).** This pressure can be increased by one-third when considering total design loads, including wind or seismic forces.

Estimated total settlement for footings designed for these bearing capacities should be less than $\frac{3}{4}$ inch and differential settlement is anticipated to approach half this value. A factor of safety of 3.0 has been utilized in comparison to ultimate soil capacities for the given settlement. Bearing capacity calculations are included in Plate 13.

Drilled Piers

Any covered storage structures or accessory buildings may be supported on relatively short PCC drilled pier foundations. We recommend a minimum four-foot depth for the drilled pier foundations regardless of the diameter. The axial load analysis of the drilled pier foundations may use an allowable tip and side resistance values of 3,000 pounds per square foot (psf) of the end area and 250 psf of the pier side area, respectively. Side resistance/friction should be neglected within the upper 1.5 feet of the pier. In general, relatively short drilled piers may be designed using the IBC method to support the lateral load. The method using limit equilibrium analysis and allowable lateral soil resistance. For the site soils, an allowable lateral soil resistance of 150 psf per foot of depth of the pier may be utilized. We recommend lateral resistance provided by the upper 1.5 feet of the soils be neglected due to frost. The lateral soil resistance should not be increased below a depth of eight feet from finish grade.

Seismic Design Parameters

We obtained the site seismic design parameters using the *ATC Hazards by Location* application. The web-based application can be found at:

<https://hazards.atcouncil.org>

The mapping database is used for determining seismic design values according to ASCE 7-16 and the 2018 International Building Code. Design parameters are presented in Table 2:

**TABLE 2
 2018 IBC SEISMIC DESIGN PARAMETERS (ASCE 7-16)**

Description	Value
Latitude	39.19456550143545 deg
Longitude	-119.77466994282227 deg
Site Class	C – “Very Dense Soil & Soft Rock”
Risk Category	II
Short-Period (0.2 sec) Spectral Response, S_S	2.238 g
Long-Period (1.0 sec) Spectral Response, S_1	0.819 g
Short-Period (0.2 sec) Site Coefficient, F_A	1.2
Long-Period (1.0 sec) Site Coefficient, F_V	1.4
Short (0.2 sec) MCE Spectral Response, S_{MS}	2.686 g
Long (1.0 sec) MCE Spectral Response, S_{M1}	1.147 g
Short (0.2 sec) Design Spectral Response, S_{DS}	1.791 g
Long (1.0 sec) Design Spectral Response, S_{D1}	0.765 g
PGA _M Site Modified Peak Ground Acceleration	1.156 g
Seismic Design Category, IBC	D

*null values shall be determined by the Structural Engineer in accordance with Section 11.4.8.

Site Classification

Based on our field exploration, knowledge of the site geology, and resulting Shear Wave Velocity ranging from 1,392 feet per second weighted-average to 100 feet, a Site Classification of C “Very Dense Soil and Soft Rock” is appropriate used for design.

E. Soil Parameters, Lateral Resistance and Loads

Soil Parameters

Representative native soils can be characterized with the following parameters:

- Soil Unit Weight, 125 pcf
- Internal Friction Angle, 32 degrees

Lateral Resistance

Resistance to lateral loads can be obtained from passive earth pressures and soil friction against the bottom of concrete foundation elements. For design, based on native soil types, we recommend the use of a coefficient of friction of 0.45 with a passive pressure of 400 pounds per cubic foot (equivalent fluid method) per foot of depth.

Lateral Loads

The granular native soils are considered suitable for use as retaining wall, foundation wall, or deep excavation backfill, provided all deleterious material and material larger than six-inch diameter are removed. All backfill materials should meet the requirements of Table 1 *Import Structural Fill Requirements* and be limited to granular soils for native backfill soils. Accordingly, for level backfill using select granular materials, the recommended design active and passive pressures for level backfill, seismic design, restrained retaining walls are summarized in Table 3.

TABLE 3 ACTIVE AND PASSIVE DESIGN PRESSURES	
Pressure	Design Pressure Value (pcf)
Active Pressure (Ka)	35
Active Earth Pressure (Kae)	85
Passive Pressure (Kp)	400
Passive Earth Pressure (Kpe)	275
At-Rest Pressure (Ko)	55

F. Concrete Slab-On-Grade

In preparation for flatwork construction, the Earthwork Contractor shall ensure that soils have been prepared as recommended and that field density tests have been performed to document that the relative compaction of the slab subgrade is at least 95 percent relative compaction, based on the maximum dry density determined by ASTM D1557. Preparation of the native soils shall be documented prior to placement of structural fill, aggregate base or structural components.

Interior Concrete Slabs-on-Grade

Interior concrete slabs-on-grade should be supported on properly compacted structural fill meeting the requirements of Table 1, *Import Structural Fill Soil Requirements*. Structural slab design is the responsibility of the project structural engineer; however, we recommend a minimum thickness of 4-inches of aggregate base (virgin, not recycled materials) to provide a uniform base course.

For slab-on-grade design, a Modulus of Subgrade Reaction (k) of 175 pounds per square inch per inch (psi/in, or pci) may be used for materials meeting the requirement for structural fill.

Due to the potential for seasonal surface water and lateral vapor migration to occur, associated with seasonal moisture change and differences between the building interior and exterior ambient conditions, a vapor inhibitor should be considered if moisture sensitive floor coverings are proposed. Vapor barriers should be designed in accordance with current American Concrete Institute (ACI) guidelines, and placed in accordance with ACI 302.1R-15 Fig. 5.2.3.2.

Exterior Concrete Slabs-on-Grade

All dedicated exterior flatwork should conform to standards provided by the governing agency including section composition, supporting material thicknesses and any requirements for reinforcing steel, air entrainment, and fiber reinforcement.

Exterior concrete flatwork should be supported on properly compacted structural fill meeting the requirements of Table 1, *Import Structural Fill Soil Requirements*. Lightly loaded exterior flatwork, such as walkways, should consist of at least 4 inches of Type II Portland cement concrete with a minimum 28-day compressive strength of 4,000 pounds per square inch (psi) with entrained air, underlain by at least 6 inches of compacted (95 percent relative compaction) aggregate base material.

Concrete mix proportions and construction techniques, including the addition of water and improper curing, can adversely affect the finished quality of the concrete and result in cracking and spalling of the slabs. We recommend that all placement and curing be performed in

accordance with procedures outlined by the American Concrete Institute and Portland Cement Association. Special considerations should be given to concrete placed and cured during hot or cold weather conditions. Proper control joints and reinforcing should be provided to minimize any damage resulting from shrinkage.

G. Permanent Cut-and-Fill Slopes

Permanent slopes are not anticipated for final site design.

Temporary (during construction) and permanent (after construction) erosion control will be required for all disturbed areas. The contractor shall prevent dust from being generated during construction in compliance with all applicable city, county, state and federal regulations. The project specifications should include an indemnification by the contractor of the owner and engineer for any dust generation during the construction period. The owner will be responsible for mitigation of dust after his acceptance of the project.

H. Corrosion

The native soils in the area are mapped and have been tested at SGS Silver State Analytical Laboratories. Native soils have a low corrosion potential to concrete and steel and were tested with a sulfate value of "non-detect" (ND) up to the practical quantitation limit (PQD) used by the EPA 9056A method. The native soils are not expected to be considered detrimental to normally formulated concrete per ACI guidelines.

I. Utilities, Trench Excavation, and Backfilling

The Earthwork Contractor must comply with the "Safety and Health Regulations for Construction" as directed by the Occupational Safety and Health Act (OSHA Standards, Volume III, Part 1926, Subpart P) while excavating and backfilling. The Earthwork Contractor is also responsible for providing a competent person, as defined by OSHA standards, to ensure excavation safety.

Pipe bedding and trench backfill materials should be moisture conditioned to slightly over optimum and compacted to 90 percent relative compaction, or local requirements, based on the maximum dry density determined by ASTM D1557. The upper 24 inches of trench backfill within asphalt or concrete paved areas should be compacted to a minimum 95 percent relative compaction as determined by ASTM D1557. The thickness of all lifts will be restricted to a maximum of 8 inches (loose) and individually tested unless the Earthwork Contractor can demonstrate their ability to uniformly achieve the required compaction for the entire layer of material placed.

For corrosion protection, where steel and/or metal pipes are proposed, the Contractor shall follow the pipe manufacturer's recommendation regarding corrosion protection.

J. Pavement Sections

Based on the soil conditions expected at subgrade elevation, very good relative quality of roadbed soil, we recommend the minimum sections noted in Table 4, which have typically gained satisfactory performance within the region.

TABLE 4 MINIMUM SURFACE AND PAVEMENT SECTIONS		
Pavement Designation	Asphalt Concrete (inches)	Aggregate Base (inches)
Gravel (AB) Surface	---	6
Asphalt Pavement (Parking)	3	6
Asphalt Heavy Section*	4 to 5	6 to 8
Concrete Apron	6	6

*Can be confirmed based on anticipated truck and axle weights.

The Earthwork Contractor shall ensure that field density tests have been performed to document the relative compaction of at least the upper 12 inches of subgrade soils prior to placing subsequent lifts. Preparation of the native soils shall be documented prior to placement of structural fill or aggregate base. All subgrade shall be compacted to a smooth non-yielding surface and proof-rolled with no pumping or limited deflections before placement of aggregate base.

Driveways can be composed of typical minimum thickness for the selected products. If pavers are selected, a higher degree of maintenance shall be expected to correct minor settlements. Product manufacturer's recommendations should be followed for installation, including setting pavers in concrete, as applicable to the local soil conditions. Any off-site roadway construction shall be in accordance with the Standard Specifications for Public Works Construction.

To provide uniform pavement section support, native subgrade soils shall be scarified, moisture conditioned to within two percent of optimum moisture content, and compacted to at least 90 percent relative compaction per ASTM D1557. Areas of fine-grained or clay soil should be expected to be encountered and should be segregated from the upper 12 inches of pavement sections for better subgrade response and less settlement areas.

Pavement Longevity Recommendations

Flexible pavement sections should be supported on a minimum 12 inches of properly compacted subgrade or native fill soils that qualify as structural fill as previously specified. Recommended 20-year pavement sections have been calculated using AASHTO 93 "Low Volume Road" design methodology with ESAL assumptions and supporting calculations listed in Plate 14.

The performance and longevity of the pavements can be enhanced by minimizing excess moisture reaching the subgrade soils and pavement surface. The following recommendations should be followed, where possible:

- A polymer-modified asphalt oil, such as PG64-28NV, can be considered. The primary benefit of this oil type is improved rutting resistance, and, secondarily, less thermal (cold temperature) cracking, and overall improved mixture durability. Additionally, some modified binders provide improved stripping (moisture drainage) resistance. The higher the degree of Recycled Asphalt Pavement (RAP) in the asphalt mix, 30% max, a slurry seal or other seal coat should be considered on new pavement, and also a higher degree of maintenance should be expected to achieve the full life cycle of this material.
- Proper drainage of the paved areas should be provided to increase the pavement life. The site should be graded a minimum of 2% away from the pavements.

- Compaction of any utility trenches for landscaped areas should be to the same criteria as the pavement subgrade.
- Consideration should be given to using "desert" landscaping and/or minimizing watering to help prevent surface runoff.
- Periodic seal coating, crack sealing, and/or patching of the pavement may be required.

K. Additional Engineering & Inspection Services

This report is geotechnical in nature and not intended to identify other site constraints such as environmental hazards, wetlands determinations and/or the potential presence of buried utilities. We can assist in evaluating these considerations should further information be requested. Moreover, this office should be retained to provide grading observation and testing as well as associated special inspection during all phases of construction.

All plans and specifications for projects should be reviewed for conformance with this geotechnical report and approved by the Geotechnical Engineer.

The recommendations presented in this report are based on the assumption that sufficient field inspection and construction review will be provided during all phases of construction. A pre-construction conference should be scheduled to include, but not be limited to, the Owner, Architect, Civil Engineer, General Contractor, Earthwork and Materials Sub-Contractors, Building Official and Geotechnical Engineer. The recommendations presented in this report should be reviewed by all parties to discuss applicable specifications and testing requirements. At this time, any applicable material quality and mix design reports should be submitted for approval by the Geotechnical Engineer.

WESTEX Consulting Engineers, LLC has prepared this report based on certain assumptions concerning subsurface conditions at the Property. WESTEX Consulting Engineers, LLC should also provide on-site observations and testing during site preparations, grading, excavation, fill placement, foundation installation, and paving. These observations will allow us to document that the soil conditions are as anticipated, and that the contractor's work is in conformance with the intent of our recommendations and the approved plans and specifications. Our conclusions and recommendations may be invalidated, partially or in whole, by changes outside our control and by subsequent acts occurring on the site after field reconnaissance. This report may be subject to review and revision at any time. Opinions about the condition of the Property do not constitute a warranty of any kind, either express or implied.

VII DISTRIBUTION

One electronic-stamped copy via email to addressee:

Mr. Jaskirat Dhami
jazdhamiva@gmail.com

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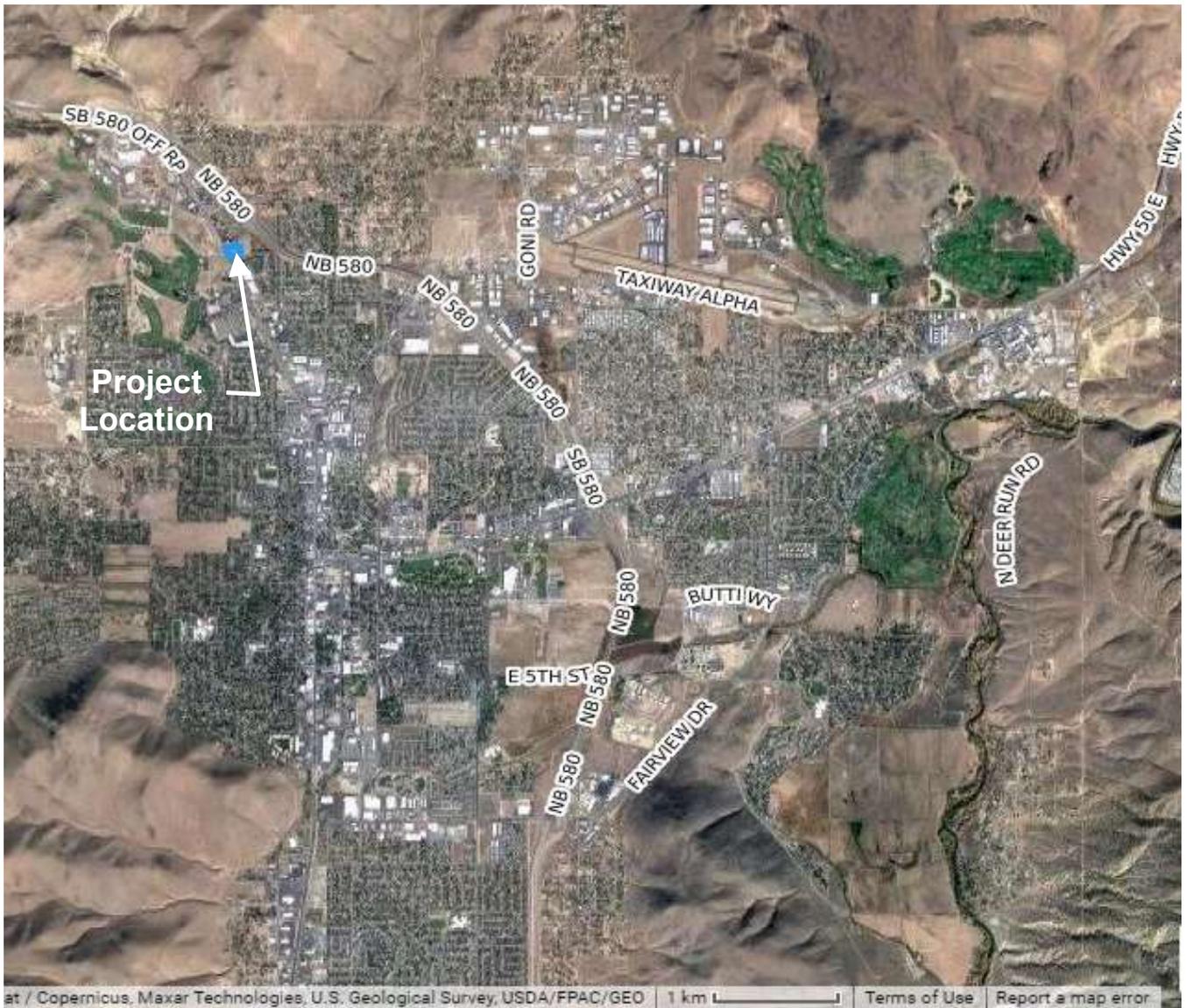
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APPENDIX D: EXPLORATION PHOTOS

APPENDIX A
GEOTECHNICAL FIGURES





Ref: Carson City Assessors Map, Imagery Hybrid, accessed September 2023.



Property Information	
Parcel ID	002-761-03
Acreage	2.0
Land Use	RC



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Phone: (775) 384-2898

**SITE
VICINITY
MAP**

**Geotechnical Investigation
Home 2 Suites
APN: 002-761-03
Carson City, Nevada**

File No.: 23210.001-A
Date: 9/8/2023

**PLATE
1**



Ref: Carson City Assessors Map, Imagery Hybrid, accessed September 2023.



TP-1

Approximate Test Pit Location



L-1

Geophysical Alignment



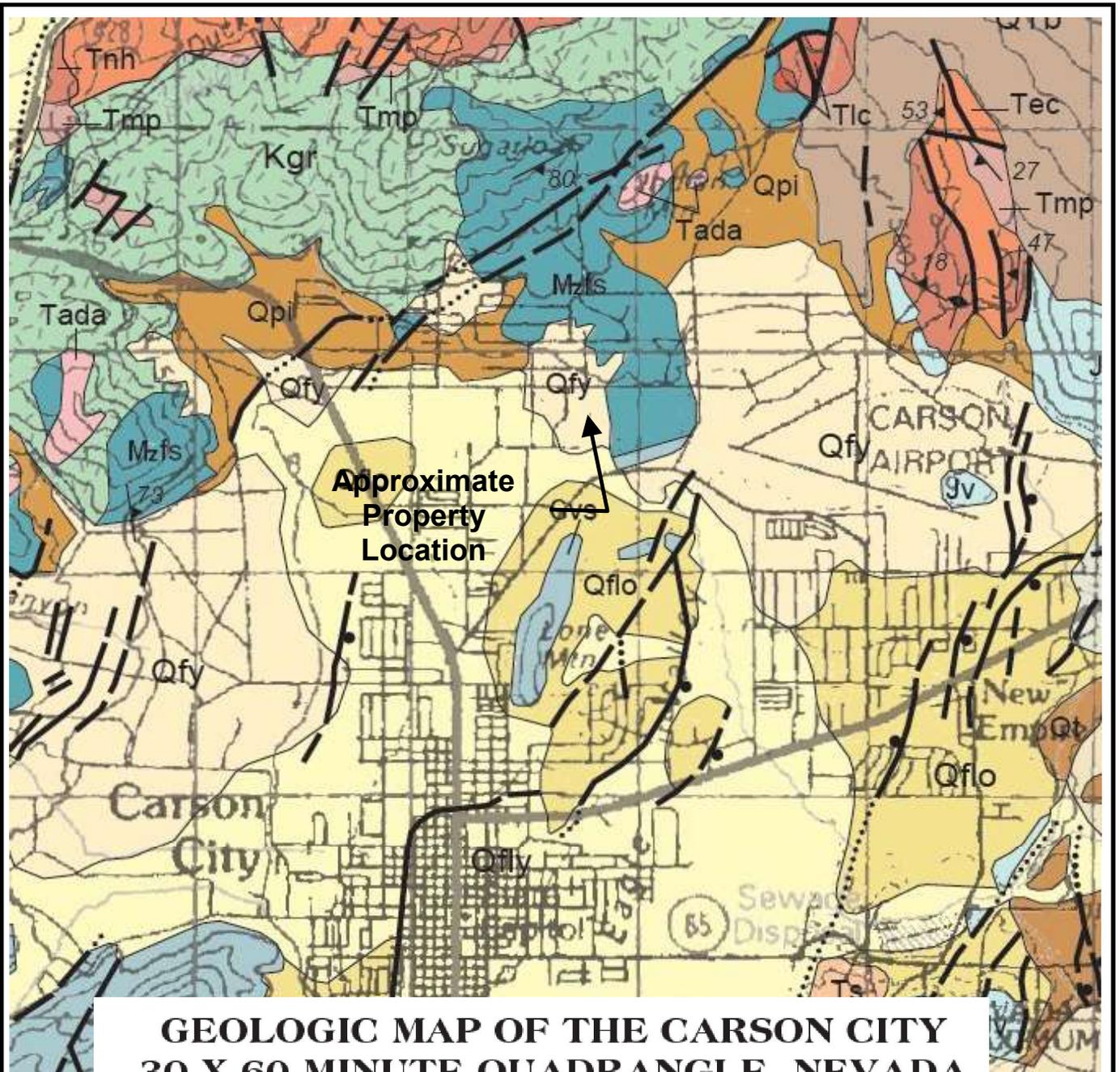
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**GEOTECHNICAL
EXPLORATION
MAP**

**Geotechnical Investigation
Home 2 Suites
APN: 002-761-03
Carson City, Nevada**

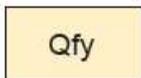
File No.: 23210.001-A
Date: 9/8/2023

PLATE
2



**GEOLOGIC MAP OF THE CARSON CITY
30 X 60 MINUTE QUADRANGLE, NEVADA**

**JOHN H. STEWART
1999**



Qfy

Younger alluvial-fan deposits



Nevada Bureau of Mines and Geology
University of Nevada, Mail Stop 178
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(775) 784-6691, ext. 2
info@nbmg.unr.edu; www.nbmg.unr.edu



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**GEOLOGIC
MAP**

**Geotechnical Investigation
Home 2 Suites
APN: 002-761-03
Carson City, Nevada**

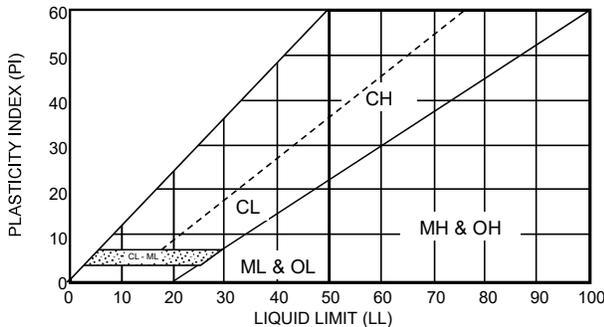
File No.: 23210.001-A

Date: 9/8/2023

PLATE

3

MAJOR DIVISION					TYPICAL NAMES
COARSED-GRAINED SOILS MORE THAN HALF IS COARSER THAN NO. 200 SIEVE	GRAVEL MORE THAN HALF COARSE FRACTION IS LARGER THAN NO. 4 SIEVE	CLEAN SANDS WITH LITTLE OR NO FINES	○○○ ○○	GW	WELL GRADED GRAVELS WITH OR WITHOUT SAND, LITTLE OR NO FINES
		GRAVELS WITH OVER 12% FINES	●●●	GP	POORLY GRADED GRAVELS WITH OR WITHOUT SAND, LITTLE OR NO FINES
			●●● 	GM	SILTY GRAVELS, SILTY GRAVELS WITH SAND
			●●● 	GC	CLAYEY GRAVELS, CLAYEY GRAVELS WITH SAND
	SAND MORE THAN HALF COARSE FRACTION IS SMALLER THAN NO. 4 SIEVE	CLEAN SANDS WITH LITTLE OR NO FINES	○○○ ○○	SW	WELL GRADED SANDS WITH OR WITHOUT GRAVEL, LITTLE OR NO FINES
		SANDS WITH OVER 12% FINES	●●●	SP	POORLY GRADED SAND WITH OR WITHOUT GRAVEL, LITTLE OR NO FINES
			●●● 	SM	SILTY SANDS WITH OR WITHOUT GRAVEL
			●●● 	SC	CLAYEY SANDS WITH OR WITHOUT GRAVEL
			●●● 		
		FINE-GRAINED SOILS MORE THAN HALF IS FINER THAN NO. 200 SIEVE	SILT AND CLAY LIQUID LIMIT 50% OR LESS		
SILT AND CLAY LIQUID LIMIT GREATER THAN 50%				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY CLAYS WITH SANDS AND GRAVELS, LEAN CLAYS
				OL	ORGANIC SILTS OR CLAYS OF LOW PLASTICITY
				MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOLID, ELASTIC SILTS
SILT AND CLAY LIQUID LIMIT GREATER THAN 50%				CH	INORGANIC CLAYS OR HIGH PLASTICITY, FAT CLAYS
				OH	ORGANIC SILTS OR CLAYS MEDIUM TO HIGH PLASTICITY
HIGHLY ORGANIC SOILS				Pt	PEAT AND OTHER HIGHLY ORGANIC SOILS



CONSISTENCY		RELATIVE DENSITY	
SILTS & CLAYS	SPT BLOW* COUNTS (N)	SANDS & GRAVELS	SPT BLOW* COUNTS (N)
VERY SOFT	0 - 2	VERY LOOSE	0 - 4
SOFT	3 - 4	LOOSE	5 - 10
MEDIUM STIFF	5 - 8	MEDIUM DENSE	11 - 30
STIFF	9 - 15	DENSE	31 - 50
VERY STIFF	16 - 30	VERY DENSE	50 +
HARD	30 +		

* The Standard Penetration Resistance (N) In blows per foot is obtained by the ASTM D1585 procedure using 2" O.D., 1 3/8" I.D. samplers.

DESCRIPTION OF ESTIMATED PERCENTAGES OF GRAVEL, SAND, AND FINES	
TRACE	Particles are present but est. < 5%
FEW	5% - 10%
LITTLE	15% - 20%
SOME	30% - 45%
MOSTLY	50% - 100%

NOTE: Percentages are presented within soil description for soil horizon with laboratory tested soil samples.

DEFINITIONS OF SOIL FRACTIONS	
SOIL COMPONENT	PARTICLE SIZE RANGE
COBBLES	ABOVE 3 INCHES
GRAVEL	3 IN. TO NO. 4 SIEVE
COARSE GRAVEL	3 IN. TO 3/4 IN.
FINE GRAVEL	3/4 IN. TO NO. 4 SIEVE
SAND	NO. 4 TO NO. 200
COARSE SAND	NO. 4 TO NO. 10
MEDIUM SAND	NO. 10 TO NO. 40
FINE SAND	NO. 40 TO NO. 200
FINES (SILT OR CLAY)	MINUS NO. 200 SIEVE

S.6 Rev 2-6-10



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KEY TO SOIL DESCRIPTIONS

Geotechnical Investigation
Home 2 Suites
APN: 002-761-03
Carson City, Nevada

File No.: 23210.001-A
Date: 9/8/2023

PLATE
4

CONSOLIDATION OF SEDIMENTARY ROCKS

Usually

determined from unweathered samples. Largely dependent on cementation.

U = unconsolidated

M = moderately consolidated

P = poorly consolidated

W = well consolidated

BEDDING OF SEDIMENTARY ROCKS

FRACTURING

Splitting Property	Thickness	Stratification	Intensity	Size of Pieces in Feet
Massive	Greater than 4.0 ft.	Very thick-bedded	Very little fractured	Greater than 4.0
Blocky	2.0 to 4.0 ft.	Thick-bedded	Occasionally fractured	1.0 to 4.0
Slabby	0.2 to 2.0 ft.	Thin-bedded	Moderately fractured	0.5 to 1.0
Flaggy	0.05 to 0.2 ft.	Very thin bedded	Closely fractured	0.1 to 0.5
Shaly or platy	0.01 to 0.05 ft.	Laminated	Intensely fractured	0.005 to 0.1
Papery	Less than 0.01 ft.	Thinly laminated	Crushed	Less than 0.005

HARDNESS

1. Soft - Reserved for plastic material alone
2. Moderately soft - can be gouged deeply or carved easily with a knife blade
3. Moderately hard - can be readily scratched by a knife blade; scratch leaves a heavy trace of dust and is readily visible after the powder has been blown away
4. Hard - can be scratched with difficulty; scratch produces little powder and is often faintly visible
5. Very Hard - cannot be scratched with a knife blade; leaves a metallic streak

STRENGTH

1. Plastic - very low strength
2. Friable - crumbles easily by rubbing with fingers
3. Weak - An unfractured specimen of such material will crumble under light hammer blows
4. Moderately Strong - Specimen will withstand a few heavy hammer blows before breaking
5. Strong - Specimen will withstand a few heavy hammer blows, and will yield with difficulty only dust and small flying fragments
6. Very Strong - Specimen will resist heavy ringing hammer blows and will yield with difficulty only dust and small flying fragments

WEATHERING

The physical and chemical disintegration and decomposition of rocks and minerals by natural processes such as oxidation, reduction, hydration, solution, carbonation, freezing, and thawing

- D.** Deep - Moderate to complete mineral decomposition; extensive disintegration; deep and thorough discoloration, many fractures, all extensively coated or filled with oxides, carbonates and/or clay silt
- M.** Moderate - Slight change or partial decomposition of minerals; little disintegration; cementation little to unaffected; Moderate to occasionally intense discoloration; Moderately coated features
- S.** Slightly - No megascopic decomposition of minerals; little or no effect on normal cementation; Slight and intermittent, or localized discoloration; Few stains on fracture surfaces
- F.** Fresh - Unaffected by weathering agents; No disintegration or discoloration; Fractures usually less numerous than joints



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CRITERIA FOR ROCK DESCRIPTIONS

Geotechnical Investigation
Home 2 Suites
APN: 002-761-03
Carson City, Nevada

Project No.: 23210.001-A
Date: 09/08/23

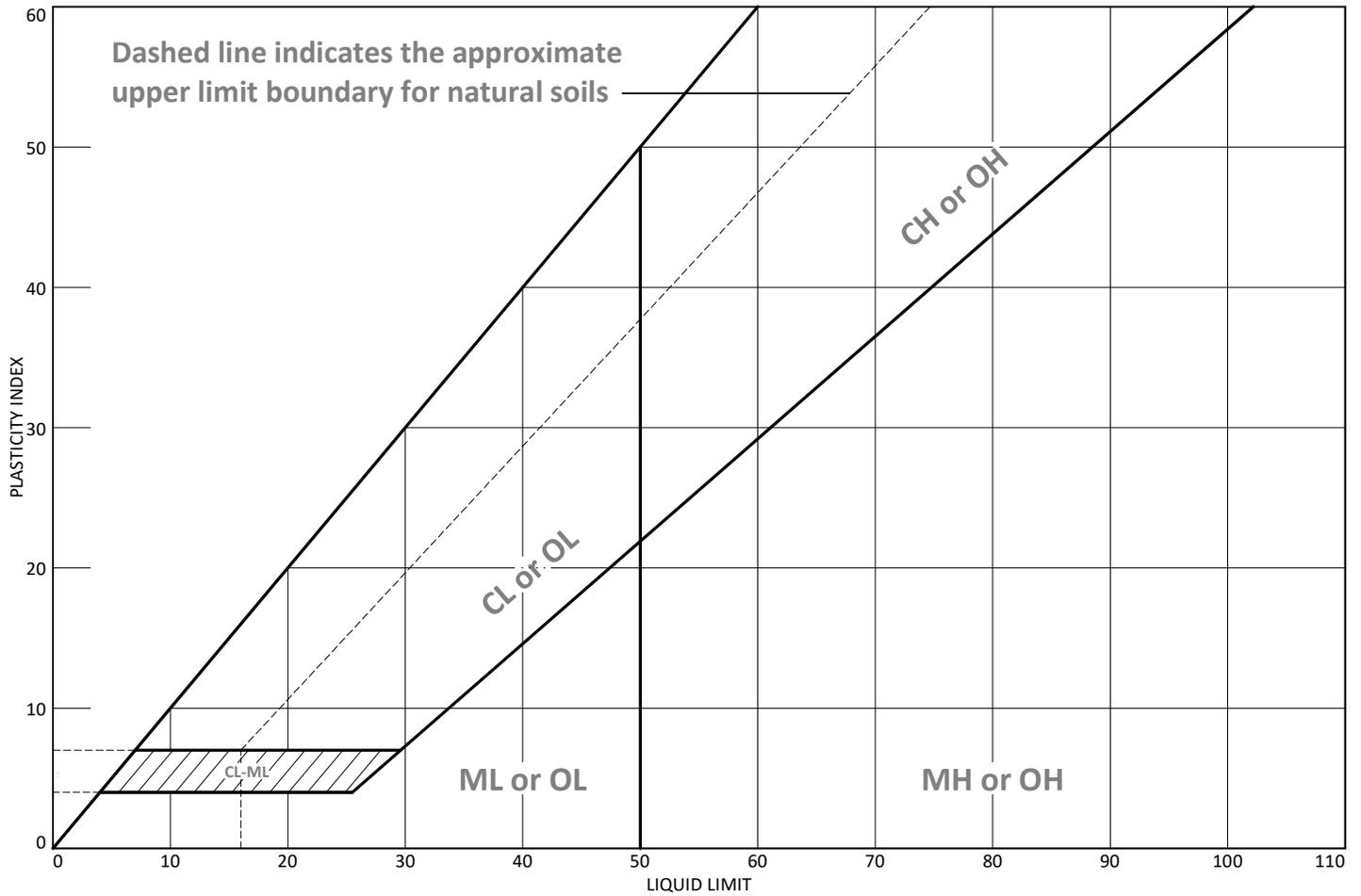
PLATE
5

Test Pit No.: TP-1		Date: Friday, August 25, 2023														
Project: Home 2 Suites		Excav. Method: Backhoe														
File No.: 23210.001-A		Excav. Type: KX 033-4														
Location: Carson City, Nevada		Logged By: PJ														
DEPTH (FEET)	SAMPLE TYPE BULK Grab Drive Tube	Sample ID	Color	PENETROMETER (TSF)	CLAYEY SOILS				MOISTURE				USCS SYMBOL	DESCRIPTION		
					SAND OR GRAVEL				DRY	DAMP	MOIST	WET			SATURATED	
					VERY LOOSE	LOOSE	MED DENSE	DENSE								VERY DENSE
-1-	No Sample	N/A	Light Brown			X						X		SM	Visually classified as Silty Sand (SM).	
						X							X		SM	Silty Sand (SM) with a non-plastic fines content of approximately 29 percent.
-2-		1A				X							X		SM	Visually classified as Silty Sand (SM). Gravels and cobbles approximately 4 inches in diameter increase in amount with depth.
						X							X		SM	Silty Sand (SM) with a non-plastic fines content of approximately 28 percent.
-3-	No Sample	N/A				X							X		SM	Visually classified as Silty Sand (SM).
						X							X		SM	Visually classified as Silty Sand (SM).
-4-		1B				X							X		SM	Visually classified as Silty Sand (SM).
						X							X		SM	Visually classified as Silty Sand (SM).
-5-	No Sample	N/A				X							X		SM	Visually classified as Silty Sand (SM).
						X							X		SM	Visually classified as Silty Sand (SM).
-6-					X							X		SM	Visually classified as Silty Sand (SM).	
					X							X		SM	Visually classified as Silty Sand (SM).	
-7-					X							X		SM	Visually classified as Silty Sand (SM).	
-8-																
-9-																
-10-																
Total Depth: 7.0 feet				Groundwater: NFWE								Plate 6				



Test Pit No.: TP-2		Date: Friday, August 25, 2023																	
Project: Home 2 Suites		Excav. Method: Backhoe																	
File No.: 23210.001-A		Excav. Type: KX 033-4																	
Location: Carson City, Nevada		Logged By: PJ																	
DEPTH (FEET)	SAMPLE TYPE			Sample ID	Color	PENETROMETER (TSF)	CLAYEY SOILS				MOISTURE				USCS SYMBOL	DESCRIPTION			
	BULK	Grab	Drive Tube				SOFT	MED. STIFF	STIFF	VERY STIFF	HARD	DRY	DAMP	MOIST			WET	SATURATED	
																			VERY LOOSE
-1-	No Sample			N/A	Light Brown			X				X			SM	Visually classified as Silty Sand (SM).			
-2-	No Sample			2A				X					X					SM	Silty Sand (SM) with a non-plastic fines content of approximately 30 percent. Gravels and cobbles approximately 5 inches in diameter present.
-3-	No Sample			N/A				X					X						
-4-	No Sample			2B				X					X						
-5-	No Sample							X					X						
-6-	No Sample							X					X						
-7-	No Sample																		
-8-	No Sample																		
-9-	No Sample																		
-10-	No Sample																		
Total Depth: 5.0 feet						Groundwater: NFWE						Plate 7							

LIQUID AND PLASTIC LIMITS TEST REPORT



	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Light brown silty sand	NV	NP	NP	73.2	29.1	SM
■	Light brown silty sand	NV	NP	NP	71.7	28.4	SM

Project No. 23210.001-A **Client:** Jaskirat Dhami
Project: Home 2 Suites
● Source of Sample: Test Pit 1 **Depth:** 1'-2' **Sample Number:** GIR 1A
■ Source of Sample: Test Pit 1 **Depth:** 3'-4' **Sample Number:** GIR 1B

Remarks:
● Could not achieve 1/8" thread.
■ Could not achieve 1/8" thread.

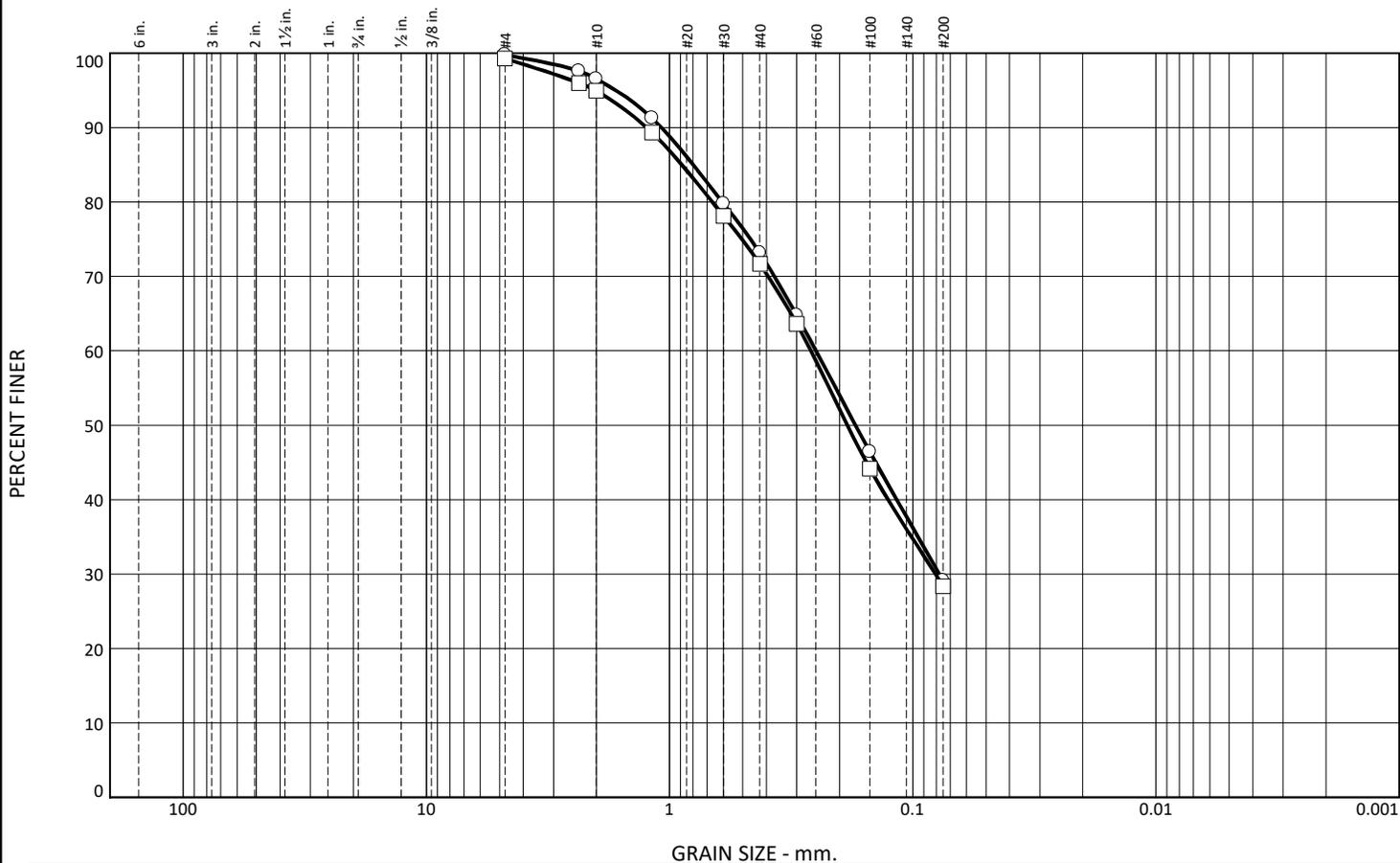


Figure 8

Tested By: AM **Checked By:** CM

Particle Size Distribution Report

ASTM C117 & C136



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
<input type="radio"/>			3.2	23.4	44.1	29.1	
<input type="checkbox"/>			4.4	23.2	43.3	28.4	

	LL	PL	D85	D60	D50	D30	D15	D10	Cc	Cu
<input type="radio"/>	NV	NP	0.7989	0.2498	0.1719	0.0777				
<input type="checkbox"/>	NV	NP	0.8895	0.2620	0.1857	0.0806				

Material Description	Test Date	USCS	NM
<input type="radio"/> Light brown silty sand	8-31-23	SM	
<input type="checkbox"/> Light brown silty sand	8-31-23	SM	

Project No. 23210.001-A **Client:** Jaskirat Dhami
Project: Home 2 Suites
 Source of Sample: Test Pit 1 **Depth:** 1'-2' **Sample Number:** GIR 1A
 Source of Sample: Test Pit 1 **Depth:** 3'-4' **Sample Number:** GIR 1B

Remarks:
 Natural moisture: 1.7%
 Natural moisture: 6.4%

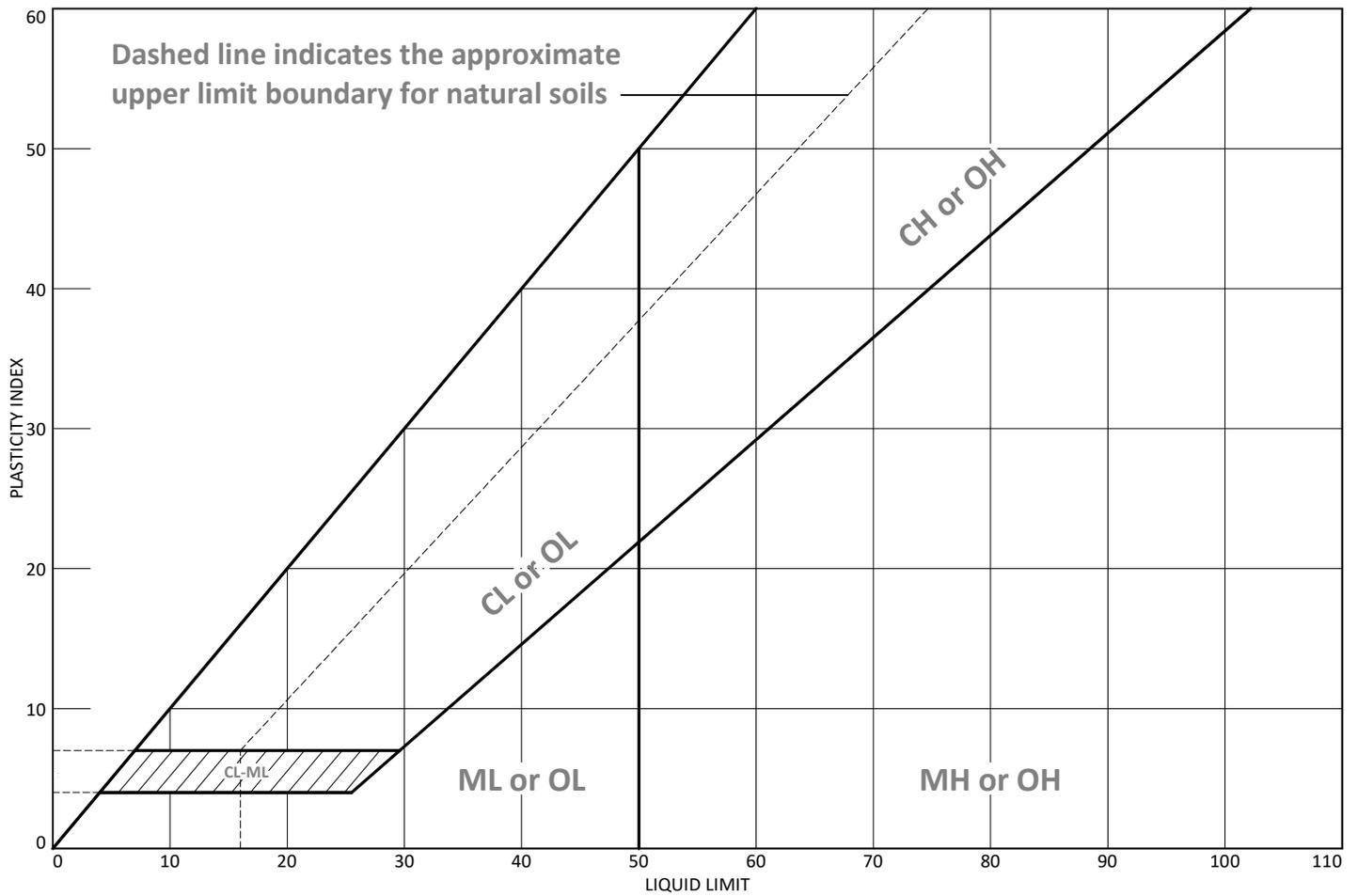


Figure 9

Tested By: Casey Mull

Checked By: AM

LIQUID AND PLASTIC LIMITS TEST REPORT



	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Light brown silty sand	NV	NP	NP	72.4	30.1	SM
■	Light brown silty sand	NV	NP	NP	74.2	30.4	SM

Project No. 23210.001-A **Client:** Jaskirat Dhami
Project: Home 2 Suites
● Source of Sample: Test Pit 2 **Depth:** 2'-3' **Sample Number:** GIR 2A
■ Source of Sample: Test Pit 2 **Depth:** 4'-5' **Sample Number:** GIR 2B

Remarks:
● Could not achieve 1/8" thread.
■ Could not achieve 1/8" thread.

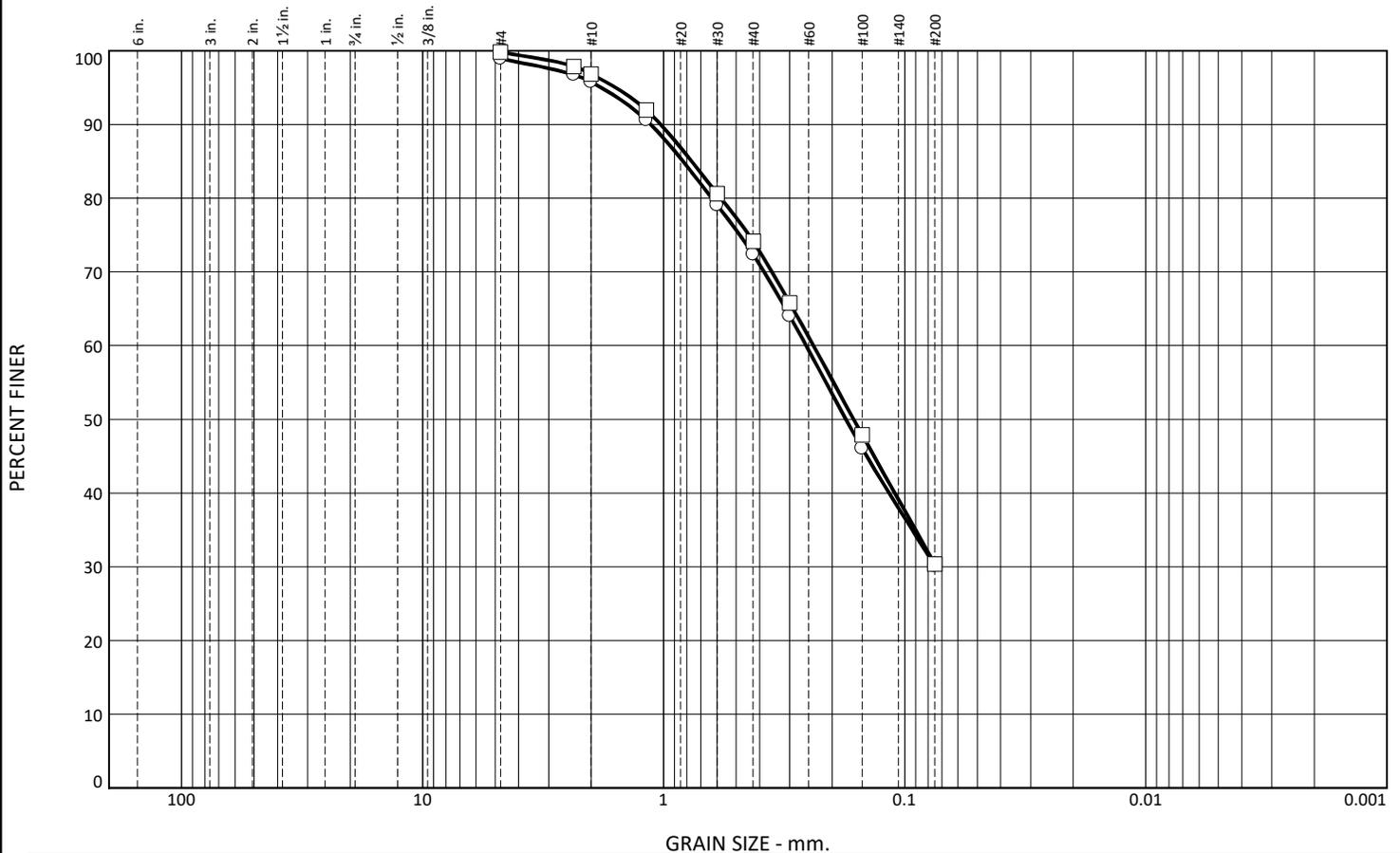


Figure 10

Tested By: AM **Checked By:** CM

Particle Size Distribution Report

ASTM C117 & C136



%	+3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
<input type="radio"/>				3.1	23.4	42.3	30.1	
<input type="checkbox"/>				2.9	22.7	43.8	30.4	

	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
<input type="radio"/>	NV	NP	0.8303	0.2561	0.1753					
<input type="checkbox"/>	NV	NP	0.7647	0.2389	0.1628					

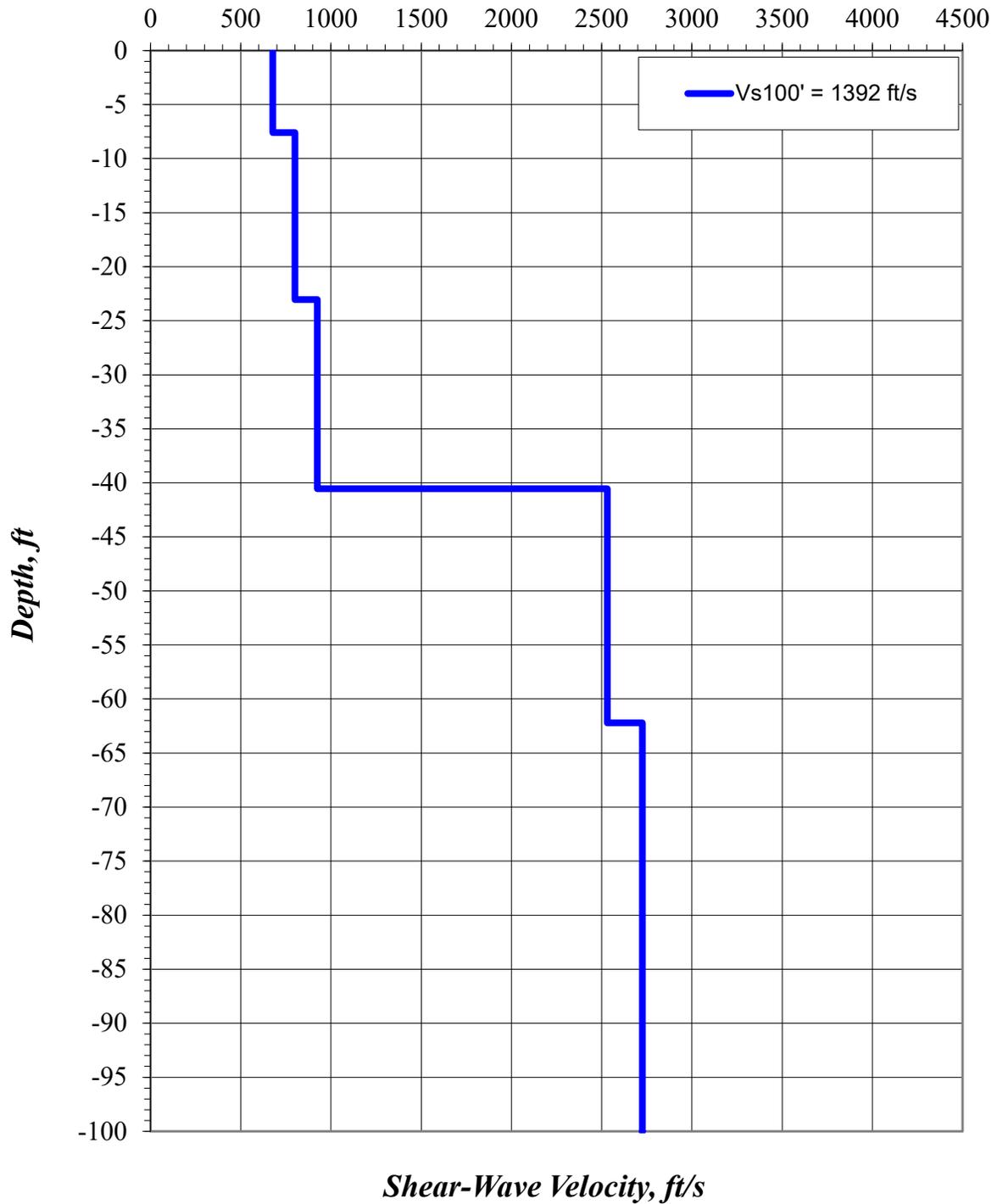
Material Description	Test Date	USCS	NM
<input type="radio"/> Light brown silty sand	8-31-23	SM	
<input type="checkbox"/> Light brown silty sand	8-31-23	SM	

Project No. 23210.001-A Client: Jaskirat Dhami Project: Home 2 Suites	Remarks: <input type="radio"/> Natural moisture: 3.6% <input type="checkbox"/> Natural moisture: 2.1%
<input type="radio"/> Source of Sample: Test Pit 2 Depth: 2'-3' Sample Number: GIR 2A <input type="checkbox"/> Source of Sample: Test Pit 2 Depth: 4'-5' Sample Number: GIR 2B	
	

Figure 11

Tested By: Casey Mull Checked By: AM

Home 2 Suites : Vs Model



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Phone: (775) 384-2898

**LINE 1
ONE-
DIMENSIONAL
SHEARWAVE
VELOCITY**

**Geotechnical Investigation
Home 2 Suites
APN: 002-761-03
Carson City, Nevada**

File No.: 23210.001-A
Date: 9/8/2023

**PLATE
12**

L = 2 Footing Length, Feet
 B or R = 2 Footing Width, Feet
 D = 2 Footing Depth, Feet
 d_o = 100 Depth to Water, d_o > B

c = 0 psf
 φ = 32°
 γ = 125 pcf
 P_o = 250 psf

N_c = 40.8
 N_q = 26.7
 N_γ = 24.2

Footing Type
 Continuous, General
 Square or Rectangular
 Circular

X
X
X

φ, c = 0

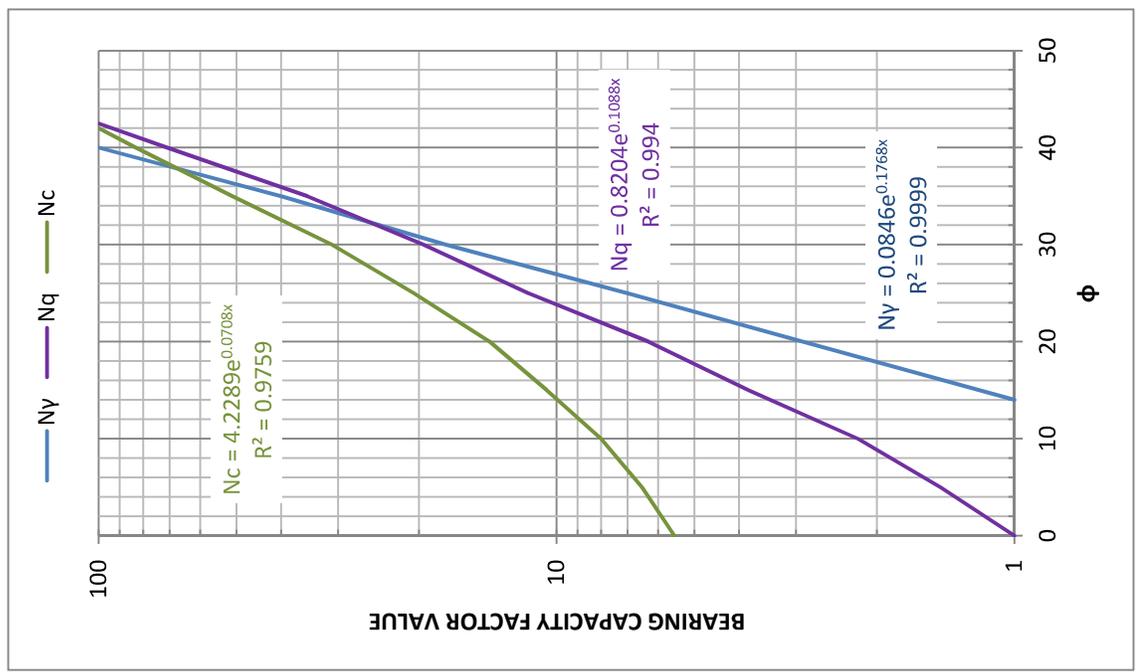
Continuous Footing, General Case	q _{ult} = 9697 psf
q _{all} = 3230 psf	
Square or Rectangular Footing	q _{ult} = 9092 psf
q _{all} = 3030 psf	
Circular Footing, R	q _{ult} = 10303 psf
q _{all} = 3430 psf	

φ - c Soil

Continuous Footing, General Case	q _{ult} = 9697 psf
q _{all} = 3230 psf	
Square or Rectangular Footing	q _{ult} = 9092 psf
q _{all} = 3030 psf	
Circular Footing, R	q _{ult} = 10303 psf
q _{all} = 3430 psf	

c, φ = 0

Continuous Footing, General Case	q _{ult} = 250 psf
q _{all} = 80 psf	
Square or Rectangular Footing	q _{ult} = 250 psf
q _{all} = 80 psf	
Circular Footing, R	q _{ult} = 250 psf
q _{all} = 80 psf	



Geotechnical Investigation
 Home 2 Suites

APN: 002-761-03
 Carson City, Nevada

File No.: 23210.001-A
 Date: 09/08/23

**ALLOWABLE BEARING CAPACITY
 (DM-7.1, NAVFAC)**



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 Phone: (775) 384-2898

ESAL RANGE	
High	700,000 - 1,000,000
Medium	400,000 - 600,000
Low	50,000 - 300,000

ESAL DETERMINATION		
Design Life (yrs)	L	20
Number of Lots	N	91
Average Daily Two Way Trips per Lot	T _d	2
Percent Heavy Trucks	T	25.0
Average Truck Factor	T _f	1.5
Construction Traffic (Trips per Lot)	T _c	50
Construction Truck Factor	T _{cf}	1.0
ESAL ₂₀	253,663	

STRUCTURAL NUMBER (CLIMATE ZONE V)			
Relative Quality of Roadbed Soil	Traffic Level	Reliability	
		50% SN	75% SN
Very Good (R>35)	High	2.4 - 2.6	2.7 - 2.8
	Medium	2.2 - 2.4	2.4 - 2.6
	Low	1.6 - 2.1	1.7 - 2.2
Good (R>15)	High	2.7 - 2.9	3.0 - 3.1
	Medium	2.5 - 2.7	2.6 - 2.9
	Low	1.8 - 2.4	2.0 - 2.5
Fair (R>10)	High	2.9 - 3.1	3.2 - 3.3
	Medium	2.6 - 2.8	2.8 - 3.1
	Low	1.9 - 2.5	2.1 - 2.7
Poor (R>7)	High	3.2 - 3.4	3.5 - 3.6
	Medium	2.9 - 3.2	3.1 - 3.4
	Low	2.2 - 2.8	2.3 - 2.9
Very Poor (R>5)	High	3.4 - 3.6	3.7 - 3.8
	Medium	3.1 - 3.3	3.3 - 3.6
	Low	2.3 - 3.0	2.5 - 3.1

Material Type	Reference	Structural Coefficient	Minimum	Heavy	Thickness (in)	Thickness (in)
			Thickness (in)	Thickness (in)		
Plantmix Surface	AC	0.35	3	4		
Plantmix Base	PB	0.32				
Cement Treated	CTB	0.20				
Type 2 Class B	AB	0.10	6	6		
Structural Fill (R-45)	SF	0.07				
Structural Number for Section			1.7	2.0	0.0	0.0



220 South Rock Blvd. Suite 12., Reno, NV 89502
Phone: (775) 384-2898

**HMA
STRUCTURAL
PAVEMENT
SECTION
DESIGN**
(Low Volume Roads)

**Geotechnical Investigation
Home 2 Suites
APN: 002-761-03
Carson City, Nevada**

File No.: 23210.001-A
Date: 9/8/2023

**PLATE
14**



SGS Silver State Analytical Laboratories
 1135 Financial Blvd
 Reno, NV 89502
 (775) 857-2400
 www.ssalabs.com

Analytical Report

Workorder#: 23090289
 Date Reported: 9/15/2023

Laboratory Accreditation Number: NV930/CA3029

Laboratory ID: 23090289-03
 Client Sample ID: Homcs 2 Sweet

Date/Time Sampled: 09/06/2023 16:00
 Date Received: 9/6/2023

Parameter	Method	Result	Units	PQL	Analyst	Date/Time Analyzed	Data Flag
pH	SW-846 9045D	7.01	pH Units	0	VO	09/14/2023 14:06	H
Resistivity, Minimum	AASHTO T288	5410	Ohms-cm	0.1	LJ	09/12/2023 14:39	
Sulfate	EPA 9056A	ND	mg/Kg	2	JG	09/12/2023 23:50	L



220 South Rock Blvd. Suite 12., Reno, NV 89502
 Phone: (775) 384-2898

SILVER STATE ANALYTICAL LABORATORY TEST RESULTS

Geotechnical Investigation
 Home 2 Suites

APN: 002-761-03
 Carson City, Nevada

File No.: 23210.001-A
 Date: 09/28/23

PLATE
 15

APPENDIX B
USDA WEB SOIL SURVEY REPORTS



Soil Map—Carson City Area, Nevada



Soil Map may not be valid at this scale.

Map Scale: 1:753 if printed on A landscape (11" x 8.5") sheet.

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 11N WGS84

MAP LEGEND

-  Area of Interest (AOI)
-  Area of Interest (AOI)
-  Soil Map Unit Polygons
-  Soil Map Unit Lines
-  Soil Map Unit Points
- Special Point Features**
 -  Blowout
 -  Borrow Pit
 -  Clay Spot
 -  Closed Depression
 -  Gravel Pit
 -  Gravelly Spot
 -  Landfill
 -  Lava Flow
 -  Marsh or swamp
 -  Mine or Quarry
 -  Miscellaneous Water
 -  Perennial Water
 -  Rock Outcrop
 -  Saline Spot
 -  Sandy Spot
 -  Severely Eroded Spot
 -  Sinkhole
 -  Slide or Slip
 -  Sodic Spot
- Water Features**
 -  Streams and Canals
- Transportation**
 -  Rails
 -  Interstate Highways
 -  US Routes
 -  Major Roads
 -  Local Roads
- Background**
 -  Aerial Photography
-  Spoil Area
-  Stony Spot
-  Very Stony Spot
-  Wet Spot
-  Other
-  Special Line Features

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
 Web Soil Survey URL:
 Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Carson City Area, Nevada
 Survey Area Data: Version 17, Sep 8, 2022

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 10, 2022—Jun 14, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
4	Bishop loam, saline	0.0	2.0%
12	Dalzell fine sandy loam, deep water table	0.2	7.7%
73	Vamp fine sandy loam, drained	1.9	90.3%
Totals for Area of Interest		2.1	100.0%

Engineering Properties

This table gives the engineering classifications and the range of engineering properties for the layers of each soil in the survey area.

Hydrologic soil group is a group of soils having similar runoff potential under similar storm and cover conditions. The criteria for determining Hydrologic soil group is found in the National Engineering Handbook, Chapter 7 issued May 2007 (<http://directives.sc.egov.usda.gov/OpenNonWebContent.aspx?content=17757.wba>). Listing HSGs by soil map unit component and not by soil series is a new concept for the engineers. Past engineering references contained lists of HSGs by soil series. Soil series are continually being defined and redefined, and the list of soil series names changes so frequently as to make the task of maintaining a single national list virtually impossible. Therefore, the criteria is now used to calculate the HSG using the component soil properties and no such national series lists will be maintained. All such references are obsolete and their use should be discontinued. Soil properties that influence runoff potential are those that influence the minimum rate of infiltration for a bare soil after prolonged wetting and when not frozen. These properties are depth to a seasonal high water table, saturated hydraulic conductivity after prolonged wetting, and depth to a layer with a very slow water transmission rate. Changes in soil properties caused by land management or climate changes also cause the hydrologic soil group to change. The influence of ground cover is treated independently. There are four hydrologic soil groups, A, B, C, and D, and three dual groups, A/D, B/D, and C/D. In the dual groups, the first letter is for drained areas and the second letter is for undrained areas.

The four hydrologic soil groups are described in the following paragraphs:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

Depth to the upper and lower boundaries of each layer is indicated.

Texture is given in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter. "Loam," for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If the content of particles coarser than sand is 15 percent or more, an appropriate modifier is added, for example, "gravelly."

Classification of the soils is determined according to the Unified soil classification system (ASTM, 2005) and the system adopted by the American Association of State Highway and Transportation Officials (AASHTO, 2004).

The Unified system classifies soils according to properties that affect their use as construction material. Soils are classified according to particle-size distribution of the fraction less than 3 inches in diameter and according to plasticity index, liquid limit, and organic matter content. Sandy and gravelly soils are identified as GW, GP, GM, GC, SW, SP, SM, and SC; silty and clayey soils as ML, CL, OL, MH, CH, and OH; and highly organic soils as PT. Soils exhibiting engineering properties of two groups can have a dual classification, for example, CL-ML.

The AASHTO system classifies soils according to those properties that affect roadway construction and maintenance. In this system, the fraction of a mineral soil that is less than 3 inches in diameter is classified in one of seven groups from A-1 through A-7 on the basis of particle-size distribution, liquid limit, and plasticity index. Soils in group A-1 are coarse grained and low in content of fines (silt and clay). At the other extreme, soils in group A-7 are fine grained. Highly organic soils are classified in group A-8 on the basis of visual inspection.

If laboratory data are available, the A-1, A-2, and A-7 groups are further classified as A-1-a, A-1-b, A-2-4, A-2-5, A-2-6, A-2-7, A-7-5, or A-7-6. As an additional refinement, the suitability of a soil as subgrade material can be indicated by a group index number. Group index numbers range from 0 for the best subgrade material to 20 or higher for the poorest.

Percentage of rock fragments larger than 10 inches in diameter and 3 to 10 inches in diameter are indicated as a percentage of the total soil on a dry-weight basis. The percentages are estimates determined mainly by converting volume percentage in the field to weight percentage. Three values are provided to identify the expected Low (L), Representative Value (R), and High (H).

Percentage (of soil particles) passing designated sieves is the percentage of the soil fraction less than 3 inches in diameter based on an oven-dry weight. The sieves, numbers 4, 10, 40, and 200 (USA Standard Series), have openings of 4.76, 2.00, 0.420, and 0.074 millimeters, respectively. Estimates are based on laboratory tests of soils sampled in the survey area and in nearby areas and on estimates made in the field. Three values are provided to identify the expected Low (L), Representative Value (R), and High (H).

Liquid limit and plasticity index (Atterberg limits) indicate the plasticity characteristics of a soil. The estimates are based on test data from the survey area or from nearby areas and on field examination. Three values are provided to identify the expected Low (L), Representative Value (R), and High (H).

References:

American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.

American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.

Report---Engineering Properties

Absence of an entry indicates that the data were not estimated. The asterisk '*' denotes the representative texture; other possible textures follow the dash. The criteria for determining the hydrologic soil group for individual soil components is found in the National Engineering Handbook, Chapter 7 issued May 2007 (<http://directives.sc.egov.usda.gov/OpenNonWebContent.aspx?content=17757.wba>). Three values are provided to identify the expected Low (L), Representative Value (R), and High (H).

Engineering Properties---Carson City Area, Nevada														
Map unit symbol and soil name	Pct. of map unit	Hydrologic group	Depth	USDA texture	Classification		Pct Fragments		Percentage passing sieve number---				Liquid limit	Plasticity index
					Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
4---Bishop loam, saline			<i>In</i>				L-R-H	L-R-H	L-R-H	L-R-H	L-R-H	L-R-H	L-R-H	L-R-H
Bishop	95	C/D	0-28	Loam	CL	A-6	0-0-0	0-0-0	95-98-100	95-98-100	65-75-85	50-60-70	35-41-47	13-16-19
			28-60	Stratified sandy loam to clay loam	SC-SM, CL, ML	A-4, A-6	0-0-0	0-8-15	95-98-100	85-93-100	60-65-70	45-53-60	23-32-40	6-12-19
12---Dalzell fine sandy loam, deep water table														
Dalzell	100	C	0-3	Fine sandy loam	SM	A-4	0-0-0	0-0-0	100-100	100-100	70-75-80	40-45-50	17-21-24	2-4-6
			3-17	Clay loam, loam	CL	A-6	0-0-0	0-0-0	100-100	100-100	90-95-100	70-75-80	31-39-49	13-18-25
			17-21	Stratified fine sandy loam to sandy clay loam	SC	A-6	0-0-0	0-0-0	100-100	100-100	75-80-85	35-43-50	26-30-33	10-12-14
			21-28	Cemented material	---	---	---	---	---	---	---	---	---	---

Engineering Properties---Carson City Area, Nevada														
Map unit symbol and soil name	Pct. of map unit	Hydrologic group	Depth	USDA texture	Classification		Pct Fragments		Percentage passing sieve number---				Liquid limit	Plasticity index
					Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
73---Vamp fine sandy loam, drained			In					L-R-H	L-R-H	L-R-H	L-R-H	L-R-H	L-R-H	L-R-H
Vamp	100	C	0-3	Fine sandy loam	SM	A-4	0-0-0	0-0-0	95-98-100	85-90-95	65-70-75	35-43-50	22-28-33	6-9-12
			3-36	Stratified fine sandy loam to silt loam	ML, SM	A-4	0-0-0	0-0-0	90-95-100	90-95-100	70-80-90	45-55-65	22-26-30	7-10-12
			36-42	Cemented material	---	---	---	---	---	---	---	---	---	---
			42-60	Stratified loamy sand to silt loam	ML, SM	A-4	0-0-0	0-0-0	90-95-100	85-93-100	60-70-80	35-48-60	20-25-30	6-9-12

Data Source Information

Soil Survey Area: Carson City Area, Nevada
 Survey Area Data: Version 17, Sep 8, 2022



APPENDIX C
ATC HAZARDS BY LOCATION
SEISMIC DESIGN PARAMETERS



⚠ This is a beta release of the new ATC Hazards by Location website. Please [contact us](#) with feedback.

ℹ The ATC Hazards by Location website will not be updated to support ASCE 7-22. [Find out why.](#)

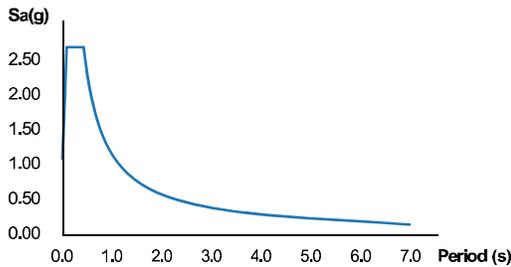
ATC Hazards by Location

Search Information

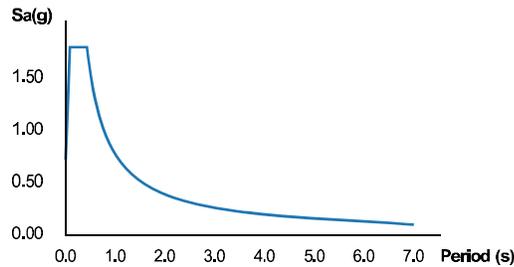
Coordinates: 39.19456550143545, -119.77466994282227
Elevation: 4734 ft
Timestamp: 2023-09-08T15:48:28.095Z
Hazard Type: Seismic
Reference Document: ASCE7-16
Risk Category: II
Site Class: C



MCER Horizontal Response Spectrum



Design Horizontal Response Spectrum



Basic Parameters

Name	Value	Description
S_S	2.238	MCE_R ground motion (period=0.2s)
S_1	0.819	MCE_R ground motion (period=1.0s)
S_{MS}	2.686	Site-modified spectral acceleration value
S_{M1}	1.147	Site-modified spectral acceleration value
S_{DS}	1.791	Numeric seismic design value at 0.2s SA
S_{D1}	0.765	Numeric seismic design value at 1.0s SA

Additional Information

Name	Value	Description
SDC	E	Seismic design category
F_a	1.2	Site amplification factor at 0.2s
F_v	1.4	Site amplification factor at 1.0s
CR_S	0.888	Coefficient of risk (0.2s)
CR_1	0.876	Coefficient of risk (1.0s)
PGA	0.963	MCE_G peak ground acceleration
F_{PGA}	1.2	Site amplification factor at PGA
PGA_M	1.156	Site modified peak ground acceleration
T_L	6	Long-period transition period (s)
$SsRT$	2.238	Probabilistic risk-targeted ground motion (0.2s)
$SsUH$	2.522	Factored uniform-hazard spectral acceleration (2% probability of exceedance in 50 years)
SsD	2.891	Factored deterministic acceleration value (0.2s)
$S1RT$	0.819	Probabilistic risk-targeted ground motion (1.0s)
$S1UH$	0.936	Factored uniform-hazard spectral acceleration (2% probability of exceedance in 50 years)
$S1D$	1.232	Factored deterministic acceleration value (1.0s)

PGA _d	1.183	Factored deterministic acceleration value (PGA)
------------------	-------	---

The results indicated here DO NOT reflect any state or local amendments to the values or any delineation lines made during the building code adoption process. Users should confirm any output obtained from this tool with the local Authority Having Jurisdiction before proceeding with design.

Please note that the ATC Hazards by Location website will not be updated to support ASCE 7-22. [Find out why.](#)

Disclaimer

Hazard loads are provided by the U.S. Geological Survey [Seismic Design Web Services](#).

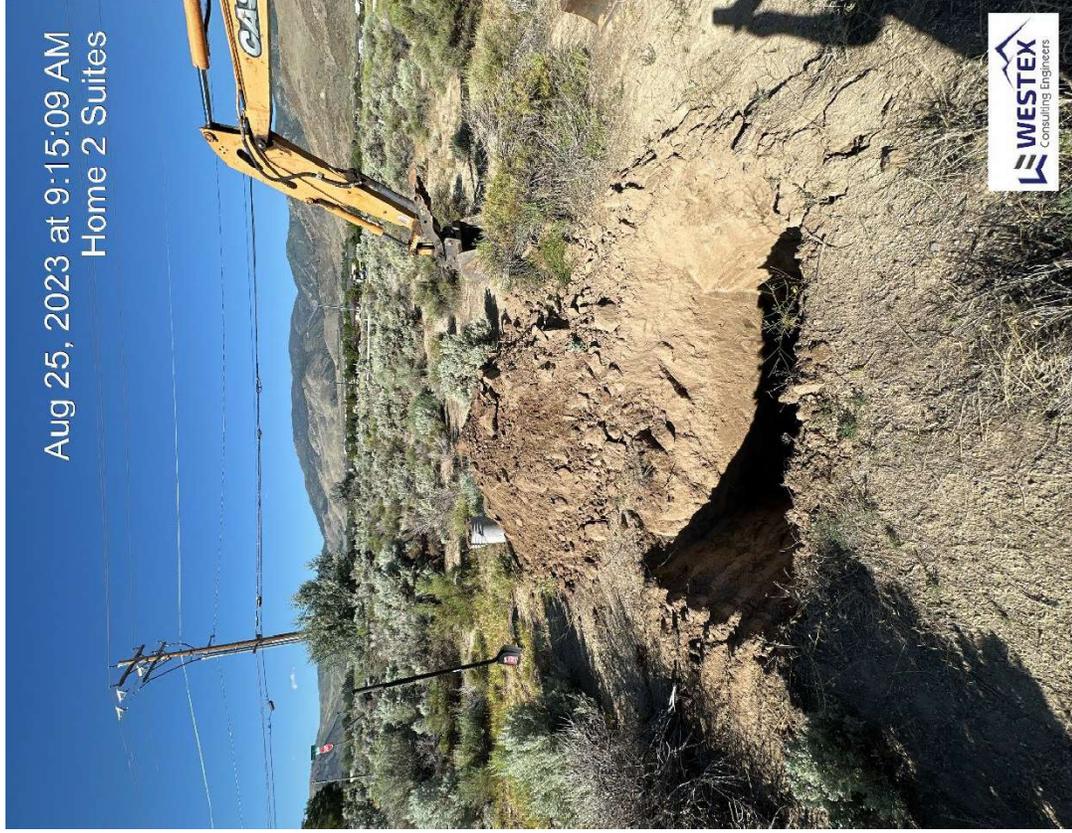
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APPENDIX D
EXPLORATION PHOTOS





Aug 25, 2023 at 9:15:02 AM
Home 2 Suites



Aug 25, 2023 at 9:15:09 AM
Home 2 Suites



220 South Rock Blvd. Suite 12., Reno, NV 89502
Phone: (775) 384-2898

EXPLORATION PHOTOS

Geotechnical Investigation
Home 2 Suites

APN: 002-761-03

Carson City, Nevada

File No.: 23210.001-A

Date: 09/06/23

D-1



CONCEPTUAL DRAINAGE REPORT

HOME 2 SUITES

APN: 002-761-03

CARSON CITY, NEVADA

Prepared For

Mr. Jaskirat Dhani

jazdhamiva@gmail.com

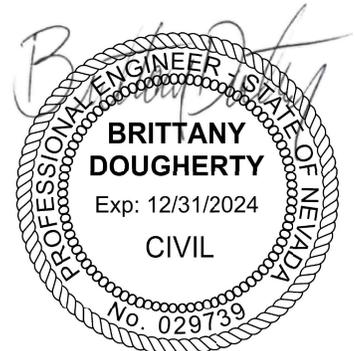
Prepared By



We Strive for Excellence

220 South Rock Blvd. Suite 12, Reno, Nevada 89502
civil@westexconsulting.com (775) 384-2898

File No.: 23210.001-B
October 11, 2023



10/11/2023

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B.	Sub Basin & Site Drainage	2
III	PROPOSED DRAINAGE SYSTEM.....	2
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I INTRODUCTION

This report addresses the existing and proposed drainage conditions at the project site, in conformance with The Carson City Drainage Manual (July 2021).

A. Site Location

This project is located at 4011 N Carson Street, Carson City, Nevada 89703 (APN: 002-76-103). This site is within a portion of Section 06, Township 15 North, Range 20 East, MDM. The project is abutted by Silver Oak Drive to the south and N Carson Street to the west. To the North is a hotel zoned for retail commercial and East of the site is a vacant parcel also zoned retail commercial. To the South there are several developed retail commercial zoned parcels and to the West is an undeveloped parcel zoned rcp. The overall site layout as well as a vicinity map is shown on the exhibit in Appendix A.

B. Site Description

The parcel consists of a total acreage of 2.047 acres, with a Vamp fine sandy loam soil type over the majority of the site (approximately 91%) with a small portion of Dalzell fine sandy loam on the southwest corner (8%) and Bishop loam in the Northwest Corner (1%), per the USDA web soil survey, as shown in Appendix B.

C. Flood Hazard Information

Per the FEMA National Flood Hazard Map panel 3200010084F, the site is in a shaded zone X – Area with reduced flood risk due to levee. The definition of this zone, per Carson City code, is described as “areas of 500-year flood; areas subject to the one hundred-year flood with average depths of less than one (1) foot or with contributing drainage area less than one (1) square mile; and areas protected by levees from the base flood.” Based on this information, it can be determined that the site has a very low risk of flooding. An excerpt of the FIRM panel (“FIRMette”) for the subject area is included in Appendix B.

D. Proposed Project Description

The proposed project consists of a 60,000 square foot hotel with paved parking areas, trash enclosure, and landscaped areas. Excess runoff will be directed via longitudinal valley gutters around the site where it will discharge into a 325 L.F. 54” perforated storm drain pipe located under the proposed parking lot on the south end of the property. Flows in excess of the design storm will bypass the grated manhole lid and will be directed to the existing headwall and storm drain system on the southeast corner of the lot.

E. Prior Drainage Studies

No previous drainage reports or studies, specific to this site, were available for review prior to the completion of this report.

II HISTORIC DRAINAGE STUDY

The site encompasses approximately 2.047 acres and is located at the corner of North Carson Street and Silver Oak Drive. Both streets have existing storm drain catch basins and infrastructure along the curb and gutter. Runoff from the site currently sheet flows where it is collected at the headwall on the southeast corner of the lot and directed into the existing storm drain network within Silver Oak Drive.

A. Major Basins

A separate geotechnical report was prepared along with this application which found that the site soils consist predominately of a soil matrix composed of silty sands, various blends of sands with varying degrees of fine and coarse gravel, some cobbles are expected. On-site soils are loose to medium dense, and any thin surface fills appear well compacted. No major ground disturbances were noted.

B. Sub Basin & Site Drainage

No sub-basin drainages are currently proposed with the project. The proposed site layout consists of approximately 1,000 linear feet of longitudinal valley gutter which directs flows around the building where it is discharged into a 60" grated storm drain manhole and fed into the 325 L.F. 54" perforated storm drain pipe where water will infiltrate into the ground. When runoff exceeds the design storm, flows will bypass the grated manhole lid and flow towards the existing headwall and storm drain infrastructure on the southeast corner of the property. The proposed drainage patterns will approximately match existing drainage patterns.

III PROPOSED DRAINAGE SYSTEM

The majority of the site will be paved. Valley gutters will be utilized within the site to help with flow paths and direct water towards the perforated underground pipe. Drainage will generally sheet flow from northwest to southeast to mimic pre-development flow patterns and will be captured in the underground pipe located on the southeast corner of the site.

A. Criteria

The preliminary hydrologic analysis for this project consists of peak runoff flow and volumetric computations for proposed conditions in accordance with the Carson City Municipal Code and the Carson City Drainage Manual (effective July 2021).

For this preliminary analysis peak flows were developed for storm drain design using the 24-hour duration storm with a recurrence interval for a minor storm event (10-year) and a major storm event (100-year). The 100-year, 24-hour storm event was used to approximate the minimum storage volume required.

The SCS Hydrograph Routing Method was used to analyze the pre-and post-development project flows and volumes for the project. The following criteria and inputs were considered:

- NOAA Atlas 14 Point Precipitation Frequency Estimate website for rainfall intensity and depth of the 10-year 24-hour (minor) and 100-year 24 hour (major) storm events (Appendix B).
- Curve Numbers per the Truckee Meadows Regional Drainage Manual (TMRDM) Table 702
- Time of Concentration length and slope calculated manually using site topography in CAD format.
- Antecedent Moisture Condition (AMC) – Type II (typical for Northern Nevada)
- USDA Web Soil Survey for Hydrologic Soil Group

The time of concentration (t_c) is defined as the time required for water to flow from the hydraulically most distant part of the drainage area to the point of consideration. Usually, the point of consideration is the discharge point of the hydrologic basin or sub-basin. In this case, it will be the location of the retention basin. The final time of concentration is the greater of the calculated t_c or 10 minutes.

B. Runoff

For post-development conditions, the 10-year design storm is projected to generate 4.73 cfs of peak runoff flow and the 100-year major storm is projected to generate 7.75 cfs of runoff flow. The 10-yr, 24-hr runoff volume was calculated as 12,575 cf for the post-developed site. To mitigate the increase in runoff flow and volume between pre-and post-development conditions, a difference in expected runoff volume for the design storm event of approximately 4,046 cf needs to be captured. Hydrology and Volume calculations can be found in Appendix C.

C. Piping

The proposed storm drainage design includes 325 linear feet of 54" perforated storm drain pipe. Featuring evenly spaced perforations, it captures stormwater runoff from the site before gradually infiltrating the soil.

D. Detention

The underground perforated pipe has an outside diameter of 54" and runs approximately 325 linear feet from the inlet. Using the inside diameter and length, the total storage capacity is capable of holding 4,084 cubic feet of water which exceeds the design storm volume increase of 4,046 cubic feet.

IV AREAS WITHIN FLOOD HAZARD ZONES

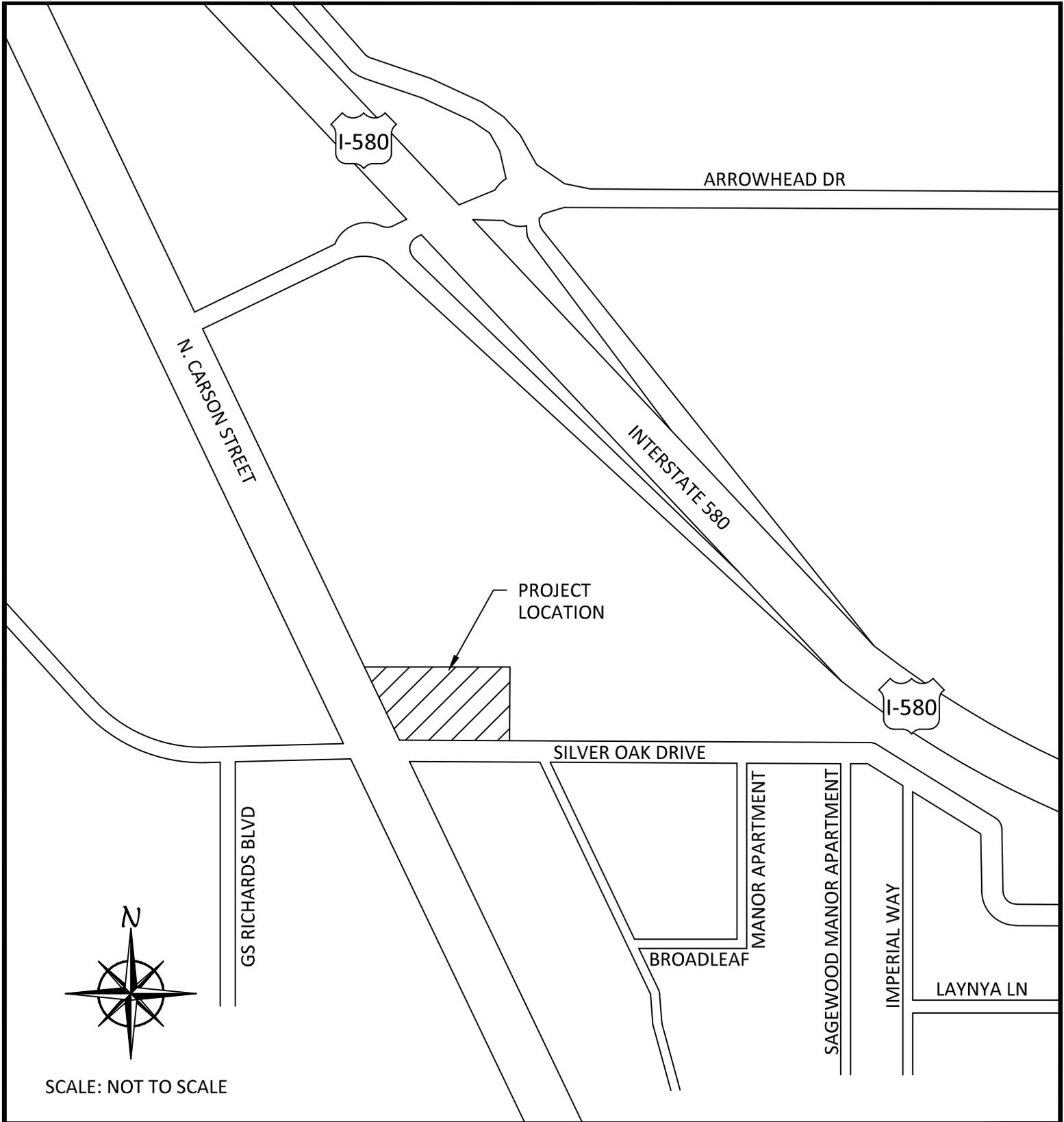
According to the Federal Emergency Management Agency (FEMA) FIRM Panel 3200010084F, the subject site is located in Shaded Zone X, which is defined as areas with reduced flood risk due to levee. Flood insurance is not required for properties within this floodplain designation.

V CONCLUSIONS

The proposed facility and future developments will be designed to collect and retain increased storm flows generated on site. The increased runoff due to the addition of impervious surfaces will be collected and stored in the proposed on-site underground pipe, where it will infiltrate into the underlying soil. Storm water pollution prevention plans will be put in place to mitigate sediment and debris runoff. No negative downstream impacts are anticipated from the development of this project.

APPENDIX A
EXHIBITS





SCALE: NOT TO SCALE



220 S. Rock Blvd, Ste 12; Reno, NV 89502

HOMES 2 SUITES SITE IMPROVEMENTS

VICINITY MAP

APPENDIX B
HYDROLOGIC DATA



National Flood Hazard Layer FIRMette

119°46'47"W 39°11'54"N



Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS

- Without Base Flood Elevation (BFE)
Zone A, V, A99
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*

OTHER AREAS OF FLOOD HAZARD

- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee, See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS

- Area of Minimal Flood Hazard *Zone X*
- Effective LOMRS
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES

- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

Cross Sections with 1% Annual Chance Water Surface Elevation

- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Profile Baseline
- Hydrographic Feature

MAP PANELS

- Digital Data Available
- No Digital Data Available
- Unmapped



The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards.

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on **10/11/2023 at 2:23 PM** and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.



119°46'10"W 39°11'27"N



POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sarah Dietz, Sarah Heim, Lillian Hiner, Kazungu Maitaria, Deborah Martin, Sandra Pavlovic, Ishani Roy, Carl Trypaluk, Dale Unruh, Fenglin Yan, Michael Yekta, Tan Zhao, Geoffrey Bonnin, Daniel Brewer, Li-Chuan Chen, Tye Parzybok, John Yarchoan

NOAA, National Weather Service, Silver Spring, Maryland

[PF tabular](#) | [PF graphical](#) | [Maps & aeriels](#)

PF tabular

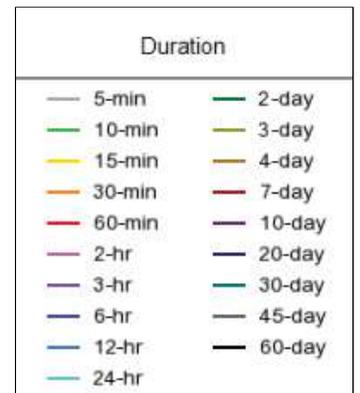
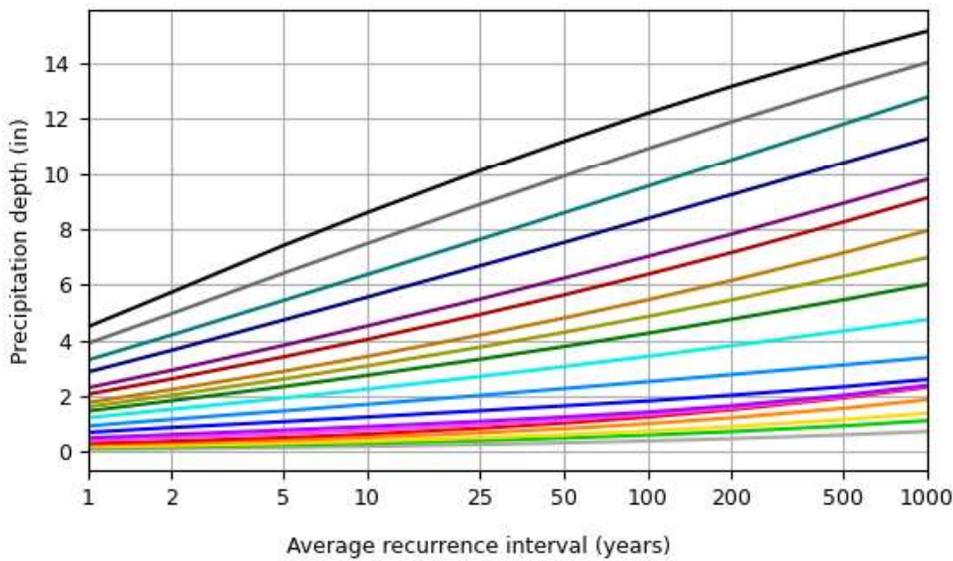
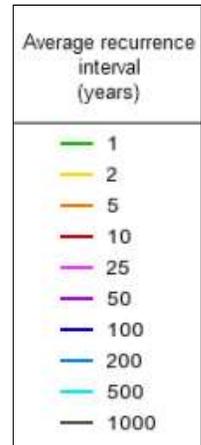
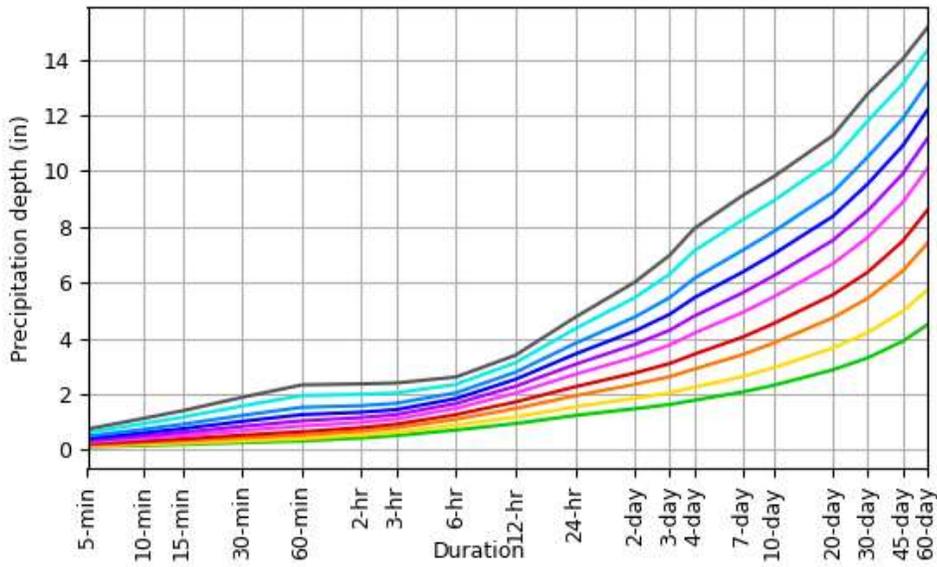
PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)¹										
Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.100 (0.086-0.118)	0.124 (0.108-0.148)	0.166 (0.142-0.197)	0.205 (0.175-0.243)	0.270 (0.223-0.320)	0.329 (0.263-0.393)	0.400 (0.308-0.482)	0.484 (0.358-0.594)	0.618 (0.432-0.775)	0.740 (0.492-0.945)
10-min	0.152 (0.131-0.180)	0.189 (0.164-0.225)	0.252 (0.216-0.299)	0.313 (0.266-0.370)	0.411 (0.339-0.487)	0.501 (0.400-0.598)	0.609 (0.469-0.733)	0.736 (0.546-0.903)	0.940 (0.657-1.18)	1.13 (0.749-1.44)
15-min	0.188 (0.163-0.223)	0.235 (0.203-0.278)	0.313 (0.268-0.371)	0.388 (0.329-0.458)	0.510 (0.420-0.604)	0.621 (0.496-0.741)	0.754 (0.582-0.909)	0.913 (0.676-1.12)	1.16 (0.815-1.46)	1.40 (0.928-1.78)
30-min	0.254 (0.219-0.300)	0.316 (0.274-0.375)	0.421 (0.361-0.499)	0.522 (0.444-0.617)	0.687 (0.566-0.814)	0.837 (0.668-0.998)	1.02 (0.784-1.22)	1.23 (0.911-1.51)	1.57 (1.10-1.97)	1.88 (1.25-2.40)
60-min	0.314 (0.271-0.371)	0.391 (0.339-0.464)	0.521 (0.447-0.618)	0.646 (0.549-0.764)	0.850 (0.700-1.01)	1.04 (0.827-1.24)	1.26 (0.970-1.52)	1.52 (1.13-1.87)	1.94 (1.36-2.44)	2.33 (1.55-2.97)
2-hr	0.421 (0.376-0.483)	0.524 (0.465-0.599)	0.666 (0.587-0.760)	0.793 (0.691-0.904)	0.983 (0.835-1.13)	1.15 (0.957-1.34)	1.35 (1.09-1.58)	1.58 (1.24-1.88)	1.99 (1.48-2.46)	2.36 (1.70-3.00)
3-hr	0.506 (0.454-0.569)	0.630 (0.568-0.711)	0.789 (0.705-0.887)	0.918 (0.814-1.03)	1.10 (0.961-1.24)	1.26 (1.08-1.44)	1.44 (1.21-1.65)	1.66 (1.37-1.95)	2.04 (1.62-2.48)	2.39 (1.86-3.03)
6-hr	0.706 (0.634-0.789)	0.881 (0.792-0.987)	1.09 (0.976-1.22)	1.26 (1.12-1.41)	1.48 (1.30-1.67)	1.66 (1.43-1.88)	1.83 (1.56-2.10)	2.04 (1.70-2.36)	2.34 (1.90-2.76)	2.61 (2.07-3.12)
12-hr	0.937 (0.835-1.05)	1.18 (1.05-1.32)	1.48 (1.31-1.66)	1.71 (1.51-1.92)	2.03 (1.77-2.30)	2.28 (1.96-2.59)	2.52 (2.14-2.90)	2.78 (2.32-3.24)	3.12 (2.53-3.71)	3.39 (2.69-4.09)
24-hr	1.23 (1.11-1.36)	1.54 (1.39-1.71)	1.94 (1.75-2.14)	2.26 (2.04-2.50)	2.71 (2.43-3.00)	3.06 (2.73-3.39)	3.43 (3.03-3.82)	3.81 (3.34-4.26)	4.34 (3.74-4.89)	4.75 (4.04-5.40)
2-day	1.47 (1.32-1.66)	1.84 (1.65-2.08)	2.35 (2.10-2.64)	2.75 (2.45-3.10)	3.32 (2.94-3.76)	3.78 (3.32-4.28)	4.26 (3.71-4.85)	4.76 (4.10-5.46)	5.46 (4.62-6.33)	6.02 (5.02-7.05)
3-day	1.62 (1.45-1.83)	2.04 (1.82-2.31)	2.62 (2.33-2.97)	3.09 (2.74-3.50)	3.76 (3.30-4.26)	4.29 (3.74-4.88)	4.86 (4.20-5.54)	5.46 (4.67-6.26)	6.30 (5.29-7.30)	6.98 (5.77-8.17)
4-day	1.78 (1.58-2.01)	2.24 (1.99-2.54)	2.89 (2.56-3.29)	3.43 (3.03-3.89)	4.19 (3.67-4.76)	4.80 (4.17-5.47)	5.46 (4.70-6.24)	6.15 (5.24-7.06)	7.14 (5.96-8.28)	7.94 (6.53-9.29)
7-day	2.07 (1.84-2.35)	2.63 (2.33-2.98)	3.41 (3.02-3.87)	4.04 (3.57-4.58)	4.92 (4.32-5.60)	5.63 (4.91-6.41)	6.37 (5.50-7.29)	7.16 (6.12-8.22)	8.25 (6.95-9.57)	9.12 (7.57-10.7)
10-day	2.31 (2.04-2.61)	2.94 (2.60-3.33)	3.82 (3.38-4.33)	4.52 (3.98-5.12)	5.48 (4.79-6.21)	6.23 (5.42-7.08)	7.01 (6.05-7.98)	7.82 (6.68-8.94)	8.92 (7.53-10.3)	9.79 (8.16-11.4)
20-day	2.87 (2.56-3.22)	3.65 (3.26-4.10)	4.73 (4.22-5.31)	5.56 (4.94-6.23)	6.67 (5.89-7.47)	7.51 (6.60-8.44)	8.38 (7.31-9.45)	9.24 (8.01-10.5)	10.4 (8.90-11.9)	11.3 (9.55-13.0)
30-day	3.30 (2.95-3.70)	4.20 (3.75-4.70)	5.44 (4.85-6.08)	6.37 (5.67-7.12)	7.62 (6.74-8.52)	8.58 (7.54-9.61)	9.54 (8.33-10.7)	10.5 (9.10-11.9)	11.8 (10.1-13.5)	12.8 (10.8-14.7)
45-day	3.89 (3.49-4.34)	4.97 (4.44-5.52)	6.41 (5.74-7.12)	7.48 (6.68-8.31)	8.88 (7.89-9.86)	9.90 (8.76-11.0)	10.9 (9.61-12.2)	11.9 (10.4-13.3)	13.1 (11.4-14.8)	14.0 (12.1-15.9)
60-day	4.49 (4.00-5.00)	5.74 (5.12-6.40)	7.41 (6.61-8.25)	8.59 (7.66-9.56)	10.1 (8.96-11.2)	11.2 (9.89-12.5)	12.2 (10.8-13.6)	13.2 (11.6-14.8)	14.3 (12.5-16.2)	15.1 (13.2-17.2)

¹ Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS). Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values. Please refer to NOAA Atlas 14 document for more information.

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PF graphical

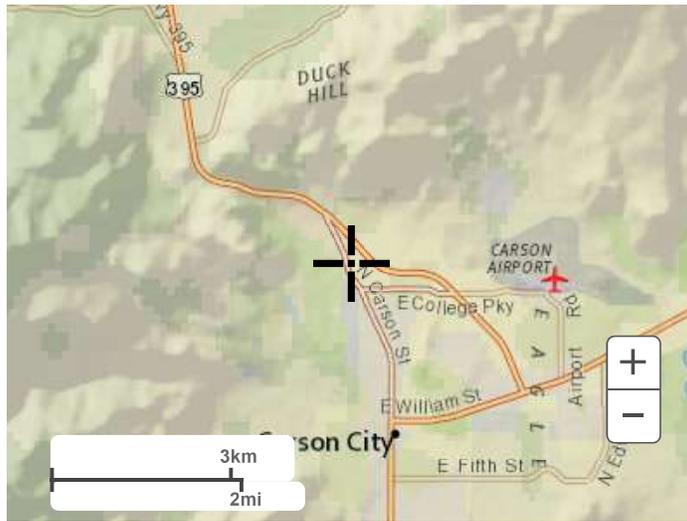
PDS-based depth-duration-frequency (DDF) curves
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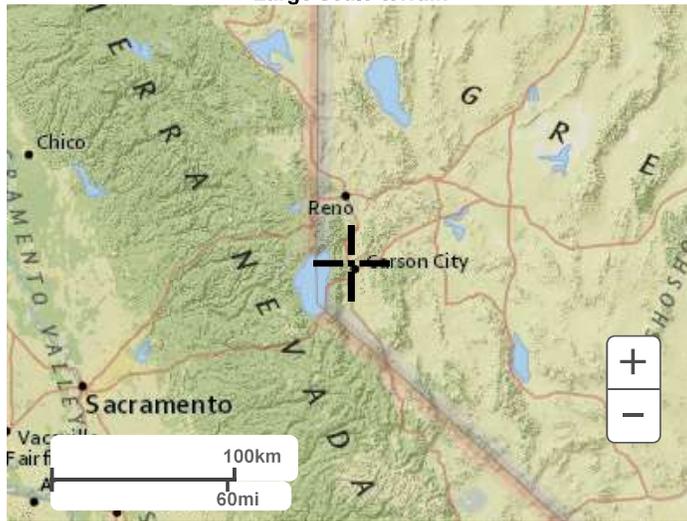
[Back to Top](#)

Maps & aerials

Small scale terrain



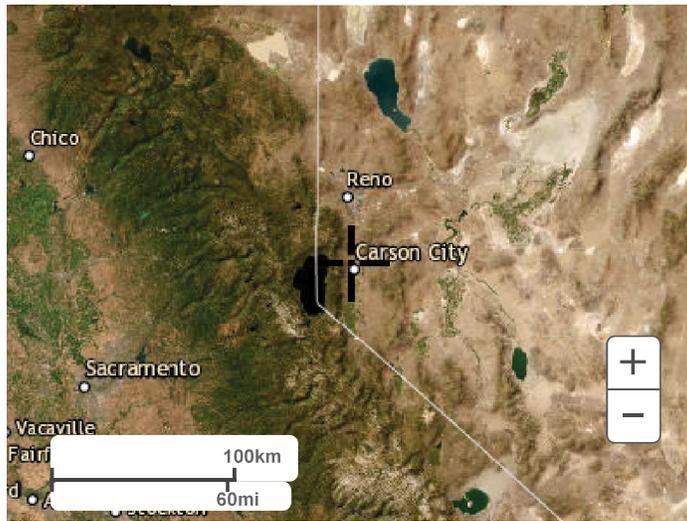
Large scale terrain



Large scale map



Large scale aerial



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[National Water Center](#)
1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

[Disclaimer](#)

Soil Map—Carson City Area, Nevada



Map Scale: 1:678 if printed on A landscape (11" x 8.5") sheet.



Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 11N WGS84



MAP LEGEND

-  Area of Interest (AOI)
-  Area of Interest (AOI)
-  Soil Map Unit Polygons
-  Soil Map Unit Lines
-  Soil Map Unit Points
- Special Point Features**
 -  Blowout
 -  Borrow Pit
 -  Clay Spot
 -  Closed Depression
 -  Gravel Pit
 -  Gravelly Spot
 -  Landfill
 -  Lava Flow
 -  Marsh or swamp
 -  Mine or Quarry
 -  Miscellaneous Water
 -  Perennial Water
 -  Rock Outcrop
 -  Saline Spot
 -  Sandy Spot
 -  Severely Eroded Spot
 -  Sinkhole
 -  Slide or Slip
 -  Sodic Spot
- Water Features**
 -  Streams and Canals
- Transportation**
 -  Rails
 -  Interstate Highways
 -  US Routes
 -  Major Roads
 -  Local Roads
- Background**
 -  Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
 Web Soil Survey URL:
 Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Carson City Area, Nevada
 Survey Area Data: Version 18, Sep 11, 2023

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 10, 2022—Jun 14, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
4	Bishop loam, saline	0.0	1.0%
12	Dalzell fine sandy loam, deep water table	0.1	7.6%
73	Vamp fine sandy loam, drained	1.4	91.4%
Totals for Area of Interest		1.5	100.0%

Hydrologic Soil Group and Surface Runoff

This table gives estimates of various soil water features. The estimates are used in land use planning that involves engineering considerations.

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The four hydrologic soil groups are:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas.

Surface runoff refers to the loss of water from an area by flow over the land surface. Surface runoff classes are based on slope, climate, and vegetative cover. The concept indicates relative runoff for very specific conditions. It is assumed that the surface of the soil is bare and that the retention of surface water resulting from irregularities in the ground surface is minimal. The classes are negligible, very low, low, medium, high, and very high.

Report—Hydrologic Soil Group and Surface Runoff

Absence of an entry indicates that the data were not estimated. The dash indicates no documented presence.

Hydrologic Soil Group and Surface Runoff—Carson City Area, Nevada			
Map symbol and soil name	Pct. of map unit	Surface Runoff	Hydrologic Soil Group
4—Bishop loam, saline			
Bishop	95	High	C/D

Hydrologic Soil Group and Surface Runoff—Carson City Area, Nevada			
Map symbol and soil name	Pct. of map unit	Surface Runoff	Hydrologic Soil Group
12—Dalzell fine sandy loam, deep water table			
Dalzell	100	Medium	C
73—Vamp fine sandy loam, drained			
Vamp	100	Medium	C

Data Source Information

Soil Survey Area: Carson City Area, Nevada

Survey Area Data: Version 18, Sep 11, 2023

RUNOFF CURVE NUMBERS FOR URBAN AREAS¹

Runoff Curve Numbers

Cover Type and Hydrologic Condition	Aver. % Impervious Area ²	Soil Comp A	Soil Comp B	Soil Comp C	Soil Comp D
<i>Fully developed urban area (vegetation established)</i>					
Open space (lawns, parks, golf courses, cemeteries, etc.) ³					
Poor condition (grass cover < 50%)		68	79	86	89
Fair condition (grass cover 50 to 75%)		49	69	79	84
Good condition (grass cover > 75%)		39	61	74	80
Impervious areas:					
Paved parking lots, roofs, driveways, etc. (excluding right-of-way)		98	98	98	98
Streets and roads:					
Paved; curbs and storm sewers (excluding right-of-way)		98	98	98	98
Paved; open ditches (including right-of-way)		83	89	92	93
Gravel (including right-of-way)		76	85	89	91
Dirt (including right-of-way)		72	82	87	89
Western desert urban areas:					
Natural desert landscaping (pervious areas only) ⁴		63	77	85	88
Artificial desert landscaping (impervious weed barrier, desert shrub with 1- to 2-inch sand or gravel mulch and basin borders)		96	96	96	96
Urban districts:					
Commercial and business	85	89	92	94	95
Industrial	72	81	88	91	93
Residential districts by average lot size:					
1/8 acre or less (town houses)	65	77	85	90	92
1/4 acre	38	61	75	83	87
1/3 acre	30	57	72	81	86
1/2 acre	25	54	70	80	85
1 acre	20	51	68	79	84
2 acres	12	46	65	77	82
<i>Developing urban areas</i>					
Newly graded areas (pervious only, no vegetation) ⁵		77	86	91	94
Idle lands (CNs are determined using cover types similar to those Table 702 - 3 of 4)					

¹Average runoff condition, and $I_a = 0.2S$

²The average percent impervious area shown was used to develop the composite CNs. Other assumptions are as follows: impervious areas are directly connected to the drainage system, impervious areas have a CN of 98, and pervious areas are considered equivalent to open space in good hydrologic condition. CNs for other combinations of conditions may be computed using figure 2-3 or 2-4 in TR-55 (SCS, 1986).

³CNs shown are equivalent to those of pasture. Composite CNs may be computed for other combinations of open space cover type.

⁴Composite CNs for natural desert landscaping should be computed using figure 2-3 or 2-4 in TR-55 (SCS, 1986) based on the impervious area percentage (CN = 98) and the pervious area CN. The pervious area CNs are assumed equivalent to desert shrub in poor hydrologic condition.

⁵Composite CNs to use for the design of temporary measures during grading and construction should be computed using figure 2-3 or 2-4 in TR-55 (SCS, 1986) based on the degree of development (impervious area percentage) and the CNs for the newly graded pervious areas.

VERSION: April 30, 2009	REFERENCE:	TABLE
	210-VI-TR-55, Second Edition, June 1986	702
WRC ENGINEERING, INC.		1 of 4

APPENDIX C ANALYSIS



Pre and Post Development Analysis

Homes 2 Suites (Carson City, NV)

EXISTING			
	Qpk (cfs)	Time to Peak (hrs)	Hyd. Volume (CuFt)
10 year 24 hour	3.29	12.00	8,529
100 year 24 hour	6.23	12.00	16,242
PROPOSED			
	Qpk (cfs)	Time to Peak (hrs)	Hyd. Volume (CuFt)
10 year 24 hour	4.73	12.00	12,575
100 year 24 hour	7.75	12.00	21,206
POST DEVELOPMENT INCREASES			
Peak Flow (cfs)		Volume (CuFt)	
10 yr Peak Flow Increase	1.44	10 yr Volume Increase	4,046
100 yr Peak Flow Increase	1.52	100 yr Volume Increase	4,964

COMPOSITE CURVE NUMBER CALCULATION - SCS METHOD

Homes 2 Suites (Carson City, NV)

EXISTING	
Total Acreage:	2.047 acres
Composite CN:	87

Subcatchment	Area (SF)	Area (Ac)	Soil Group	CN
1 Native Ground	-	2.047	C	87
Totals	-	2.047		

PROPOSED	
Total Acreage:	2.047 acres
Composite CN:	94

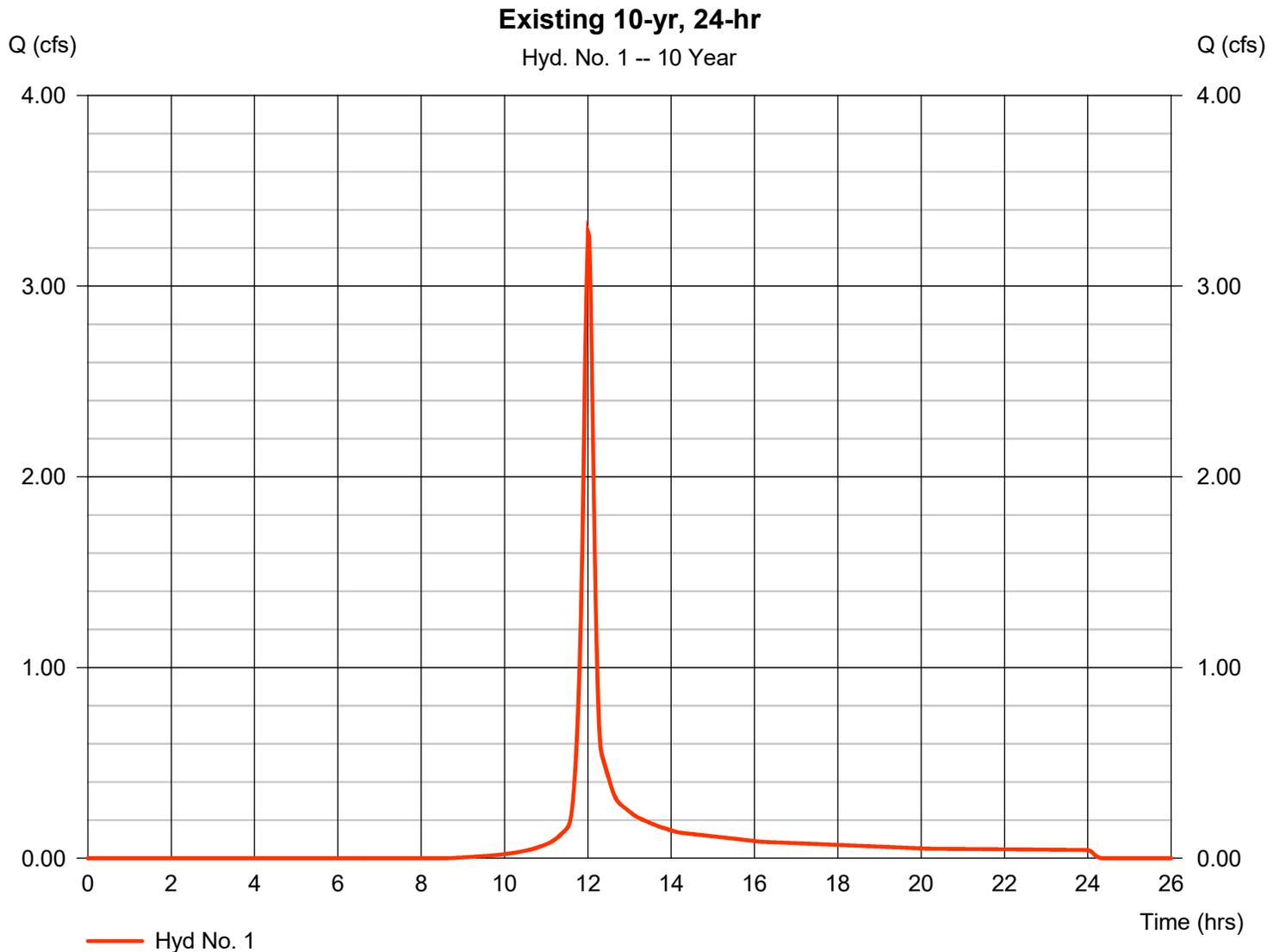
Subcatchment	Area (SF)	Area (Ac)	Soil Group	CN
1 Commercial and Business	-	2.05	C	94
Totals	0.00	2.047		

Hydrograph Report

Hyd. No. 1

Existing 10-yr, 24-hr

Hydrograph type	= SCS Runoff	Peak discharge	= 3.286 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.00 hrs
Time interval	= 2 min	Hyd. volume	= 8,529 cuft
Drainage area	= 2.047 ac	Curve number	= 87
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 2.26 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

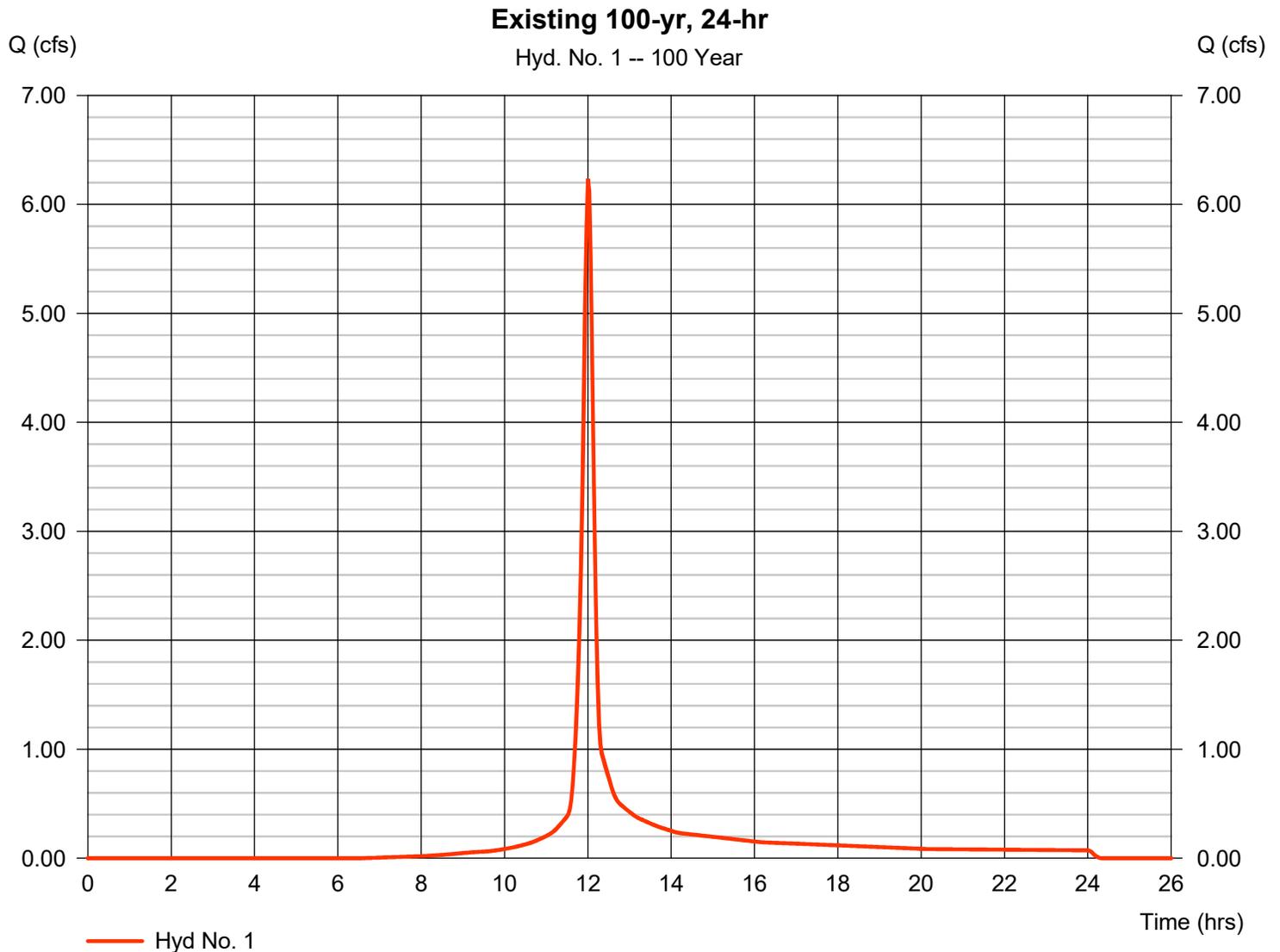


Hydrograph Report

Hyd. No. 1

Existing 100-yr, 24-hr

Hydrograph type	= SCS Runoff	Peak discharge	= 6.234 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.00 hrs
Time interval	= 2 min	Hyd. volume	= 16,242 cuft
Drainage area	= 2.047 ac	Curve number	= 87
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 3.43 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

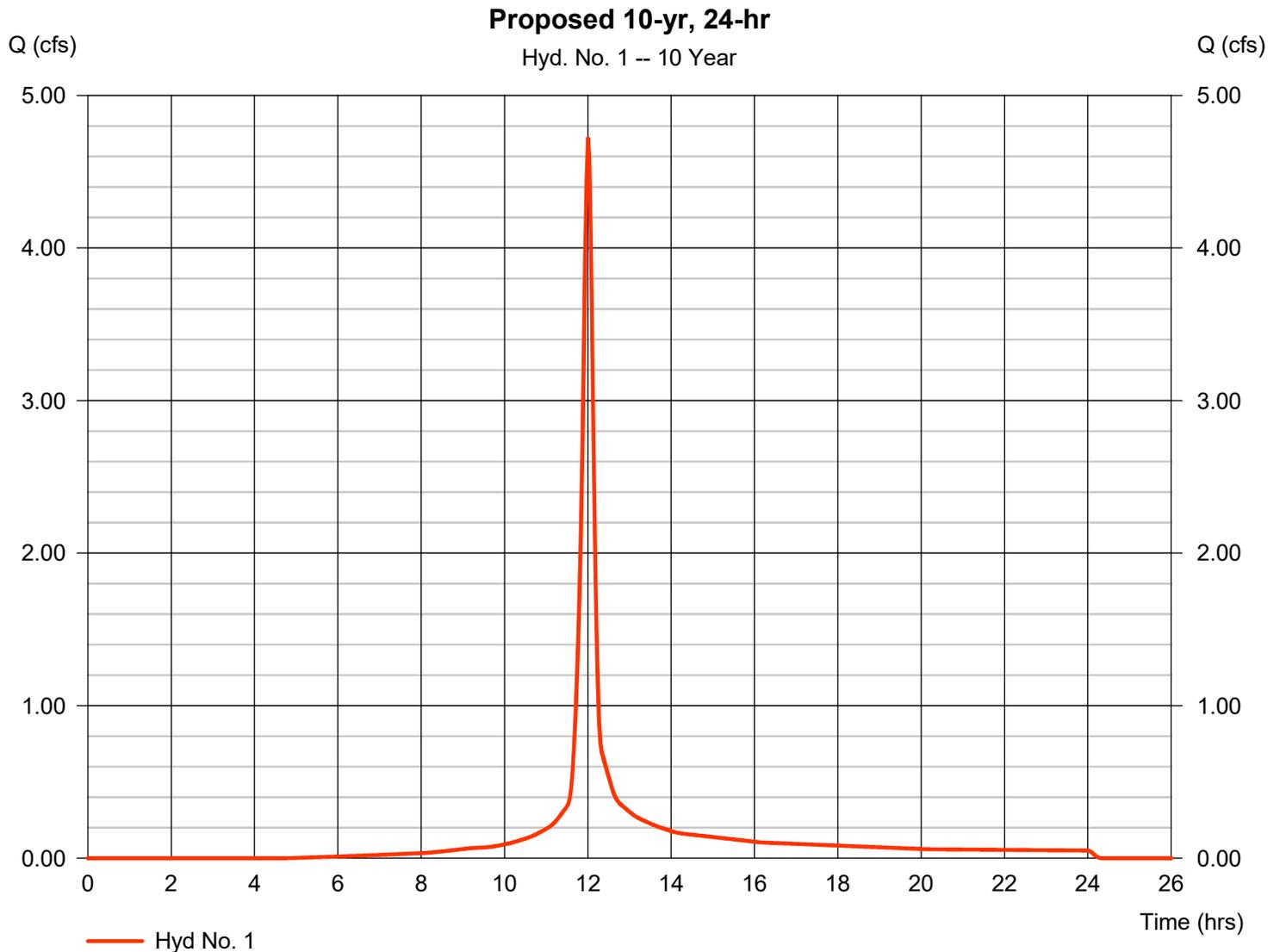


Hydrograph Report

Hyd. No. 1

Proposed 10-yr, 24-hr

Hydrograph type	= SCS Runoff	Peak discharge	= 4.726 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.00 hrs
Time interval	= 2 min	Hyd. volume	= 12,575 cuft
Drainage area	= 2.047 ac	Curve number	= 94
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 2.26 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

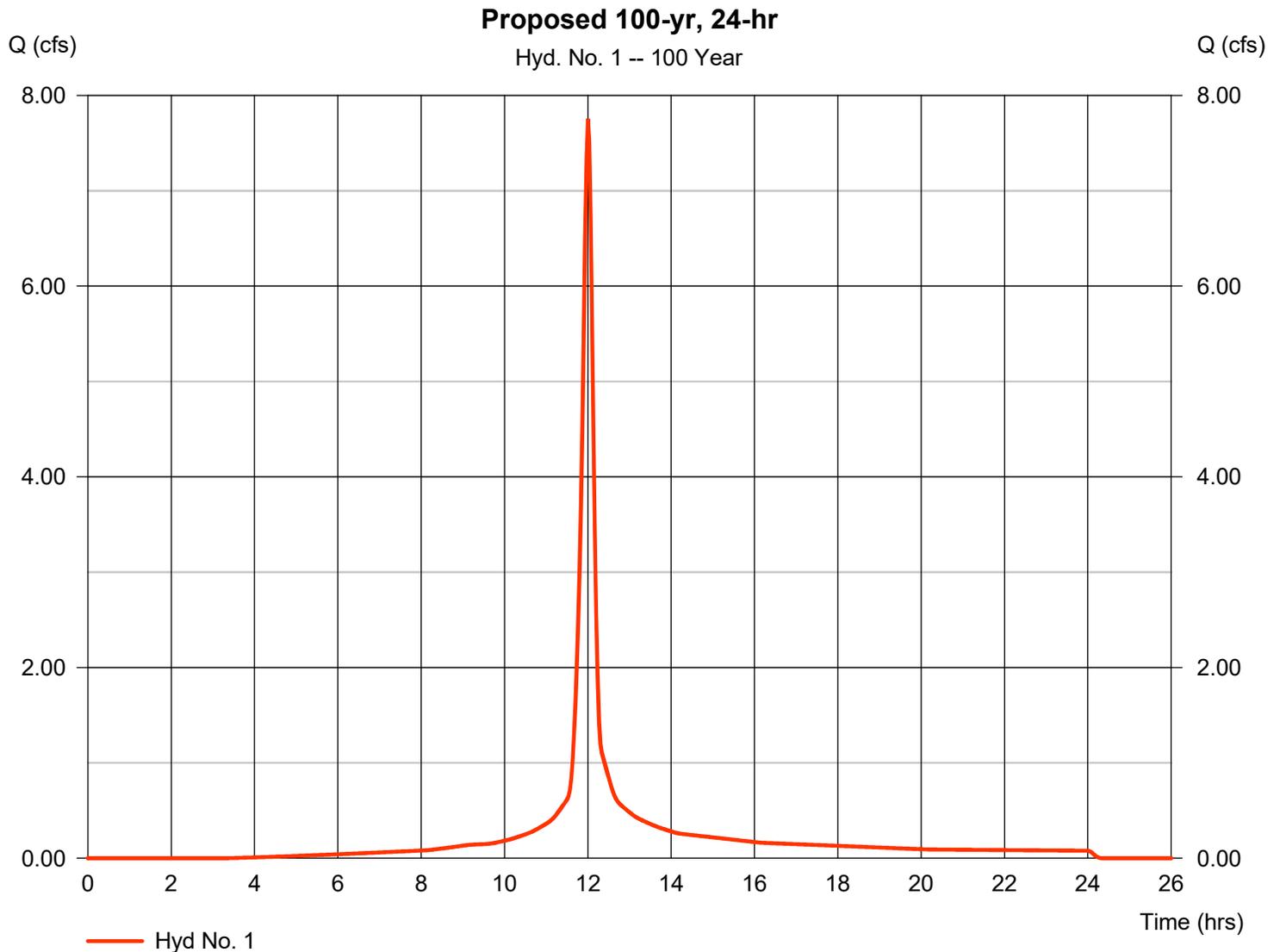


Hydrograph Report

Hyd. No. 1

Proposed 100-yr, 24-hr

Hydrograph type	= SCS Runoff	Peak discharge	= 7.754 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.00 hrs
Time interval	= 2 min	Hyd. volume	= 21,206 cuft
Drainage area	= 2.047 ac	Curve number	= 94
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 3.43 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



SEWER MAIN ANALYSIS

HOME 2 SUITES

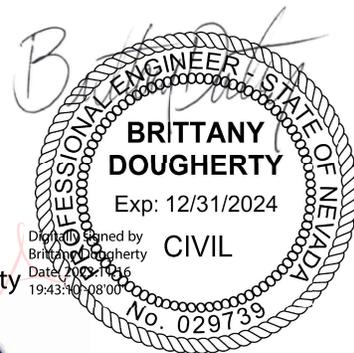
APN: 002-761-03

4011 N. CARSON STREET
CARSON CITY, NEVADA

Prepared For

Mr. Jaswinder Dhani
Carson City Hotel, LLC
2551 Manhattan Drive
Carson City NV 89703

Prepared By Brittany Dougherty



Digital Signature by
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Date: 2023-11-16
19:43:40 -0800

11/17/2023



We Strive for Excellence

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File No.: 23210.001-B
November 17, 2023

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I	APPENDIX A – EXHIBITS
A.	VICINITY MAP
B.	Water Use Calculations

I INTRODUCTION

This report intends to serve as a Sewer Main Analysis for Home 2 Suites hotel in Carson City, NV.

A. Site Location

This project is located at 4011 N Carson Street, Carson City, Nevada 89703 (APN: 002-76-103). This site is within a portion of Section 06, Township 15 North, Range 20 East, MDM. The project is abutted by Silver Oak Drive to the south and N Carson Street to the west. To the North is a hotel zoned for retail commercial and East of the site is a vacant parcel also zoned retail commercial. To the South there are several developed retail commercial zoned parcels and to the West is an undeveloped parcel zoned rcp. The overall site layout as well as a vicinity map is shown on the exhibit in Appendix A.

B. Site Description

The parcel consists of a total acreage of 2.047 acres. The proposed project is for the construction of a new Home 2 Suites facility. This 91-room hotel will consist of one 60,000+/- sf 4-story building with associated landscaping and parking. This hotel does not have a full kitchen, but rather a place to heat and serve food.

C. MPR Sewer Requirements

A Major Project Review Meeting was held with Carson City (MPR-2023-0322). Per review of MPR meeting notes for this project, two items (Items 13-14) were addressed towards the sewer requirements for this project:

13. There is an 8" PVC main to the west and south of the property. The capacity of this main is unknown as it is not in the city's sewer model and would need to be verified for capacity by the developer's engineer. There is approximately 1,400 feet of sewer main downstream in College Parkway that is at capacity. The developer would be required to enter into a pro rata share agreement with the city for the cost to upgrade the sewer main to accommodate the additional flow from this project.
14. A sewer main analysis signed by a professional engineer must be submitted that includes addressing the effect of flows on the existing City system. See section 15.3.2 of CCDS.

The purpose of this report is to address both items mentioned in the MPR letter for MPR- 2021-0322.

If any findings, assumptions, conditions, or project plans are found to vary from those described in this report, we should be contacted immediately to verify that the recommendations contained herein remain applicable to the final project design. Accordingly, this report may be revised at any time.

II OVERVIEW AND SCOPE OF ANALYSIS

The site encompasses approximately 2.047 acres and is located at the corner of North Carson Street and Silver Oak Drive. The site is currently vacant. Figure 1 below shows a conceptual layout of the proposed 91-room hotel improvements.

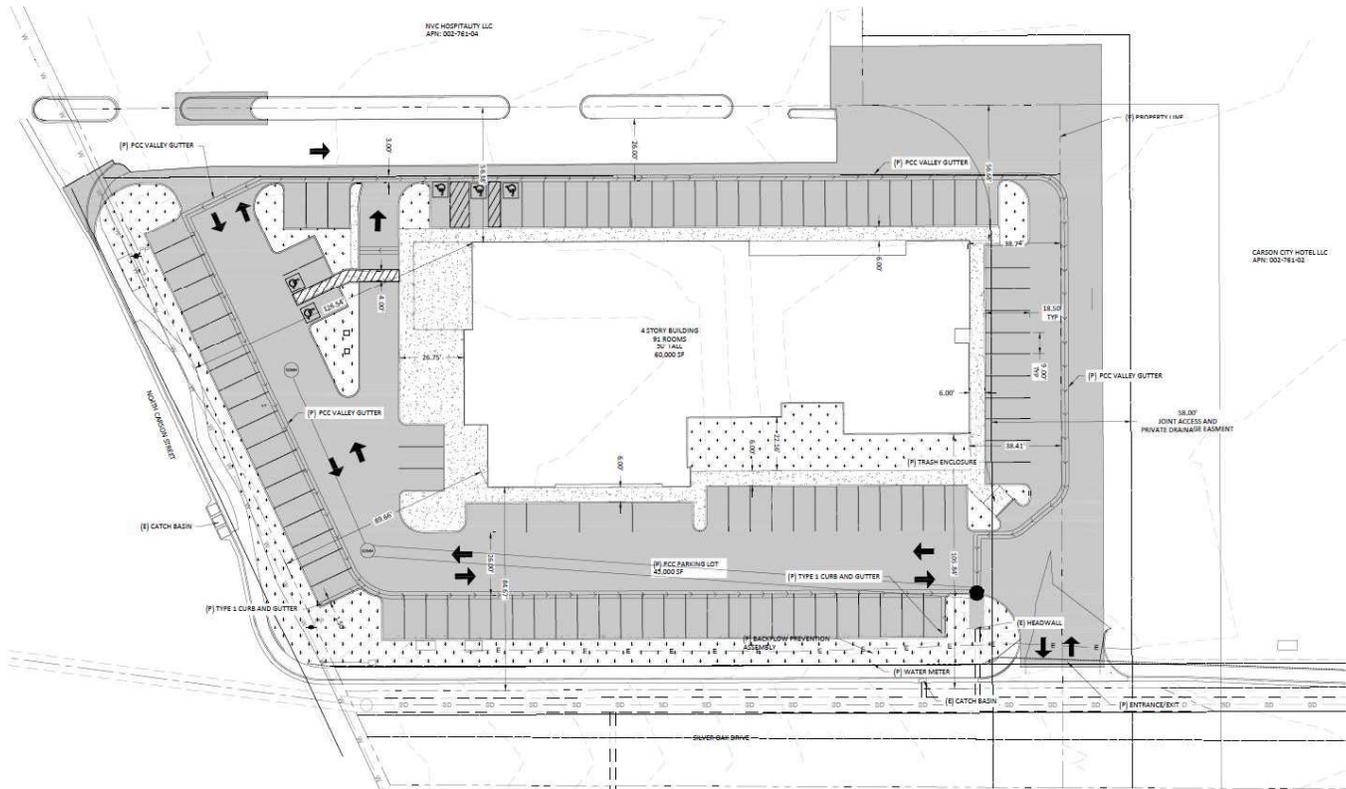


Figure 1 – Conceptual Site Layout

A. Existing Sewer Mains

This proposed project will connect to the existing 8” PVC main located within Silver Oak Dr that runs from East to West. Based on information from City staff, the capacity in the 8” main is not known, but at the time of this report there are 5 existing upstream connections feeding into this main. Using the known zoning and development information, an average daily flow of 22,160 gallons per day [0.034 cfs] was estimated. Due to the lack of information and known fixtures within each building, this is a gross estimate used only for an approximate flow within the existing pipe.

	Rooms	Gallons/Day (assumed)
Holiday Inn and Suites	85	6000
Greater Nevada CU	-	2160
My Place Hotel - Carson City	64	4500
Hampton Inn	85	6000
Taco Bell	-	3500
Total:		22,160

For the three upstream hotels, we used the number of rooms to interpolate a value based on the known sewer effluent at the Springhill Suites site in Reno. The credit union and Taco Bell were calculated using assumed fixture units to determine an approximate outflow.

Review of Carson City topography contours were analyzed to determine an approximate slope of the sanitary sewer mains for their respective sections. Based on topography contours, the 8" PVC Main along N. Carson Street to the west of our property is sloped at approximately 1.3%.



Figure 1 – Carson City Public Works Existing Municipal Sewer System

Sewer mains are deemed to be at capacity when the design peak flow is at depth/diameter (d/D) = 0.50, for a pipe that is 15 inches or less in diameter, and depth/diameter (d/D) = 0.75, for a pipe that is greater than fifteen (15) inches in diameter. Using the values above, a depth of 0.88 inches and a d/D of 0.11 was calculated.

After coordination with Carson City Public Works, it was also determined that 1,220 feet of sewer main downstream in College Parking is over capacity prior to this project at 4011 N. Carson Street. Sewer outflows from this proposed development will determine the pro-rata share required to upsize the undersized pipe downstream.

B. Estimated Peak Sewer Flows

Using Manning's Equation, the 8" PVC Main along the west side of the project location has a capacity of 0.80 cfs (assuming half full, 4" depth, Manning's Coefficient of 0.009 for PVC, and 1.3% slope). Using the water bills from the Springhill Suites site in Reno, an average daily flow of 6,264 gallons per day [<0.01 cfs] was estimated. The increase in flows along with the approximate existing flow of 0.34 cfs amount to <0.4 cfs at the point of connection. Based on this information, the proposed improvements will still allow adequate flow in the 8" main within Silver Oak.

The 8" main with combined existing and proposed effluent will flow south towards College Parkway where it will feed into the existing over capacity sewer main. Using average daily flows, a pro-rata share price will be determined to upsize the undersized pipe. See Appendix A for associated water use calculations.

III CONCLUSIONS

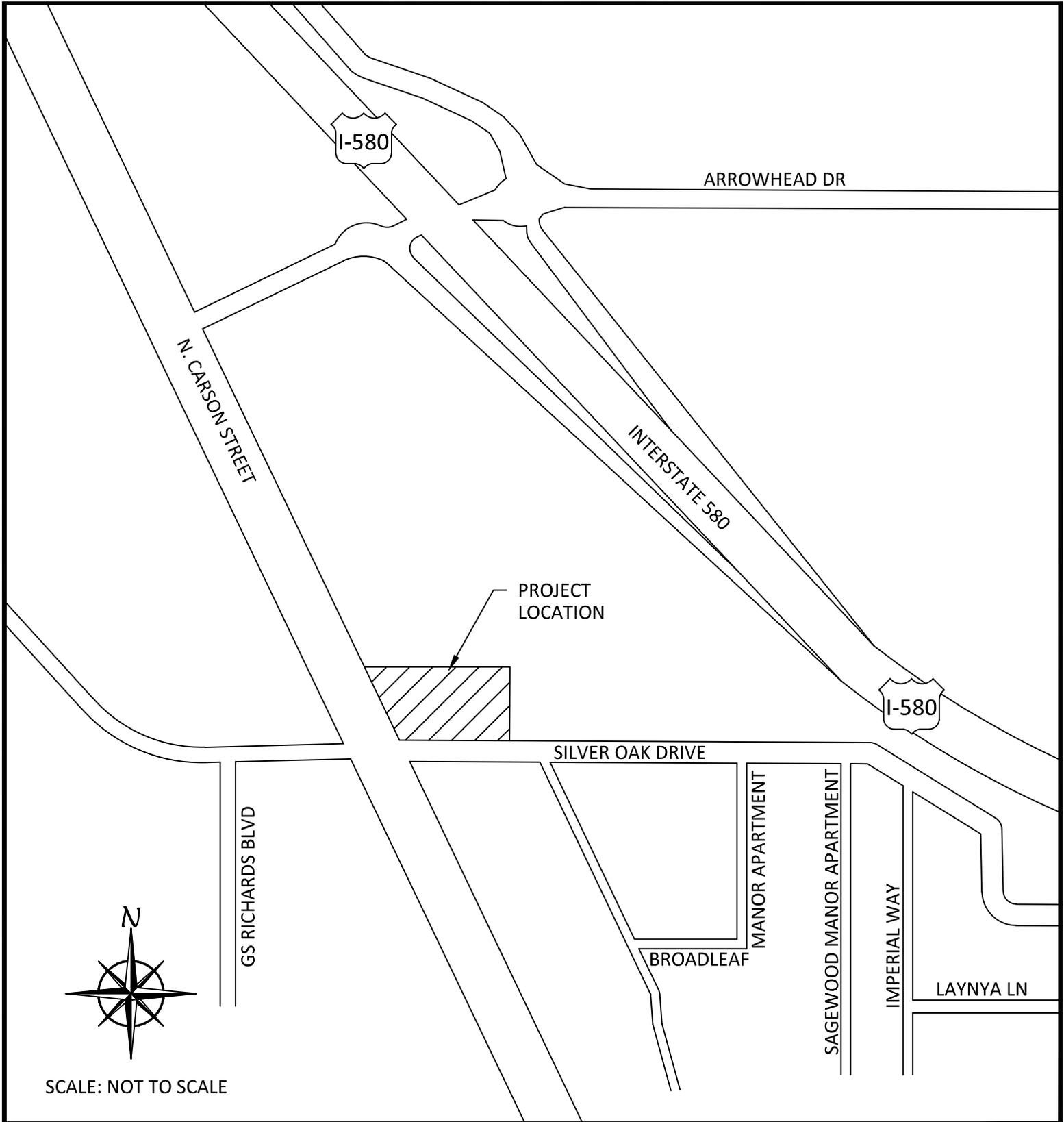
This Sewer Main Analysis conducted for the Home 2 Suites hotel project at 4011 N. Carson Street in Carson City, NV, addressed the specific sewer requirements outlined in the Major Project Review Meeting (MPR-2023-0322). The analysis focused on two key items (13 and 14) raised in the MPR meeting notes, emphasizing the need to assess and potentially upgrade the existing sewer mains to accommodate the proposed development.

This study revealed that the proposed project will connect to the existing 8" PVC main within Silver Oak Drive, and while the capacity of this main was initially unknown, an estimate was calculated based on known upstream connections. The report considered the contribution from surrounding establishments, providing an average daily flow estimate of 22,160 gallons. Additionally, the downstream sewer main in College Parkway was identified as over capacity, necessitating further investigation for upsizing, with the pro-rata share to be determined based on the proposed development's sewer outflows.

Overall, this Sewer Main Analysis provides insight into the existing sewer network's capacity, potential challenges, and proposed solutions to ensure the Home 2 Suites hotel project aligns with Carson City's sewer infrastructure requirements.

APPENDIX A
EXHIBITS





220 S. Rock Blvd, Ste 12; Reno, NV 89502

HOMES 2 SUITES SPECIAL USE PERMIT

VICINITY MAP

Home 2 Suites Water Usage - Spring Hill Suites Reno NV

Billing Period	<i>April 02, 2023 - May 01, 2023</i>	<i>May 01, 2023 - June 01, 2023</i>	<i>June 01, 2023 - July 04, 2023</i>
Gallons Used	226,380	214,830	296,260
Average Gallon/Day	7,806	6,930	8,978
Period Length	29	31	33

Billing Period	<i>July 04, 2023 - Aug 01, 2023</i>	<i>Aug 01, 2023 - Sep 03, 2023</i>	<i>Sep 03, 2023 - Oct 01, 2023</i>
Gallons Used	246,380	267,830	215,390
Average Gallon/Day	8,799	8,116	7,692
Period Length	28	33	28

6 Month Total Usage:	1,467,070	gal
Average Daily Usage:	8053.5	gal

	Rooms	6 Month Total Usage	Average Daily Usage
Springfield Hill Suites	117	1,467,070	8053.5
Homes 2 Suites	91	1,141,054	6,264

 **TRAFFIC IMPACT STUDY**

HOME2 SUITES – CARSON CITY

CARSON CITY, NEVADA

APN: 002-761-03

Prepared for:
Carson City Hotel, LLC.
2551 Manhattan Drive
Carson City, Nevada 89703

Prepared by:
Kimley»»Horn

November 2023
192434000
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TRAFFIC IMPACT STUDY

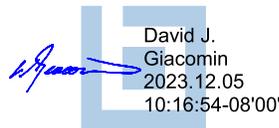
FOR

HOME2 SUITES – CARSON CITY

Prepared for:

Carson City Hotel, LLC.

2551 Manhattan Drive
Carson City, Nevada 89703



Prepared by:

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This document, together with the concepts and designs presented herein, as an instrument of service, is intended only for the specific purpose and client for which it was prepared. Reuse of and improper reliance on this document without written authorization and adaptation by Kimley-Horn and Associates, Inc. shall be without liability to Kimley-Horn and Associates, Inc.

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EXECUTIVE SUMMARY

The purpose of this traffic study is to identify traffic generation characteristics of a proposed hotel, identify potential traffic related impacts on the surrounding street network, and develop mitigation measures required for identified impacts.

The proposed Home2 Suites hotel is to be generally located in the northeast corner of North Carson Street and Silver Oak Drive on approximately 2.05 Acres within APN 002-761-03 in Carson City, Nevada. Upon completion, the buildout of the proposed development is anticipated to consist of a 91-suite hotel.

Regional access to the project site is expected to be provided via Interstate 580 (I-580) Primary access to the project site is anticipated to be from North Carson Street and Silver Oak Drive. Direct access to the project site is planned to be provided by one (1) full access drive located on Silver Oak Drive and one (1) existing right-in/right-out only access drive located on North Carson Street.

As a part of this study the following three (3) key intersections and two (2) project access drives were analyzed:

- North Carson Street and Medical Parkway/Arrowhead Drive (#1)
- North Carson Street and Silver Oak Drive (#2)
- North Carson Street and West College Parkway (#3)
- North Carson Street and Project Access Drive (A)
- Silver Oak Drive and Project Access Drive (B)

The study area intersections and project access drive are shown in **Figure E-1**.

Full buildout of the development is expected to generate approximately 566 daily weekday driveway trips, with 37 of these trips occurring during the morning peak hour and 44 trips occurring during the evening peak hour.

The proposed hotel development traffic is anticipated to generate traffic volumes resulting in the following recommendations:

- The developer is recommended to install an R1-1 “STOP” sign with appropriate pavement markings for the egressing access drive on to Silver Oak Drive.
- Signalization is recommended at the intersection of North Carson Street and Silver Oak Drive (#2) for the 2050 Background scenario.
- All on-site and off-site signing and striping improvements should be incorporated into the Civil Drawings and conform to the current Manual on Uniform Traffic Control Devices (MUTCD), as applicable.
- The project is not anticipated to have significant impacts to the key study intersections and the surrounding street network.



STUDY INTERSECTIONS

1. North Carson Street and Medical Parkway/Arrowhead Drive
2. North Carson Street and Silver Oak Drive
3. North Carson Street and West College Parkway
- A. North Carson Street and Project Access Drive
- B. Silver Oak Drive and Project Access Drive



SOURCE: NEARMAP US, INC.

LEGEND:

- ① Study Area Key Intersection
- Ⓐ Project Access Drive

HOME2 SUITES – CARSON CITY STUDY AREA INTERSECTIONS AND PROJECT ACCESS DRIVES

FIGURE E-1



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- Appendix C Trip Generation Calculations
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- Appendix E Project Access Drive Peak Hour LOS Calculations
- Appendix F Signal Warrant Calculations
- Appendix G ITE Time of Day Distribution Calculations
- Appendix H Crash Data

1. INTRODUCTION

Kimley-Horn and Associates, Inc. has been retained by Carson City Hotel, LLC. to prepare a traffic impact study for a hotel. The purpose of this traffic impact study is to identify traffic generation characteristics of the proposed development, identify potential traffic related impacts on the local street system, and develop mitigation measures required for the identified impacts.

The proposed Home2 Suites hotel is to be generally located in the northeast corner of North Carson Street and Silver Oak Drive on approximately 2.05 Acres within APN 002-761-03 in Carson City, Nevada. Upon completion, the buildout of the proposed development is anticipated to consist of a 91-suite hotel. The location of the project site with respect to Carson City is shown on **Figure 1** and a site plan is provided in **Appendix A**.

Regional access to the project site is expected to be provided via Interstate 580 (I-580) Primary access to the project site is anticipated to be from North Carson Street and Silver Oak Drive. Direct access to the project site is planned to be provided by one (1) full access drive located on Silver Oak Drive and one (1) existing right-in/right-out only access drive located on North Carson Street.

2. EXISTING CONDITIONS

This section of the report details existing conditions near the project site.

2.1. Study Area Intersections

As a part of this study the following three (3) key intersections and two (2) project access drives were analyzed:

- North Carson Street and Medical Parkway/Arrowhead Drive (#1)
- North Carson Street and Silver Oak Drive (#2)
- North Carson Street and West College Parkway (#3)
- North Carson Street and Project Access Drive (A)
- Silver Oak Drive and Project Access Drive (B)

2.2. Existing Land Uses

The location for the proposed hotel is currently undeveloped. The area surrounding the project site is composed primarily of commercial and residential land uses. The location of the project site and study area intersections are shown on **Figure 2**.

2.3. Existing Lane Configurations and Control

Regional access to the project site is expected to be provided via I-580. Primary access to the project site is anticipated to be from North Carson Street and Silver Oak Drive. Direct access to the project site is planned to be provided by one (1) full access drive located on Silver Oak Drive and one (1) existing right-in/right-out only access drive located on North Carson Street. Existing lane configuration and traffic control at the time of this study are illustrated in **Figure 2**.

2.4. Existing Turning Movements

Existing turning movement data was field counted for 24 hours, as summarized in **Table 1**, for the study area intersections identified in **Section 2.1**. Count data sheets are provided in **Appendix B**.

Table 1 –Turning Movement Count Dates

Intersection	Count Date	Weather Conditions
North Carson Street and Medical Parkway/Arrowhead Drive (#1)	Tuesday, November 7, 2023	Partly Sunny
North Carson Street and Silver Oak Drive (#2)	Tuesday, November 7, 2023	Partly Sunny
North Carson Street and West College Parkway (#3)	Tuesday, November 7, 2023	Partly Sunny

Turning movement count data taken in the field was compared to existing traffic counts collected at nearby NDOT TRINA Count Stations. A summary of the comparison is shown in **Table 2**.

Table 2 –Turning Movement Count Comparison

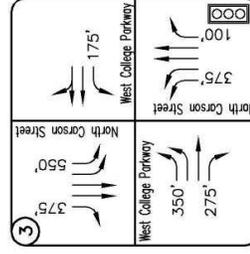
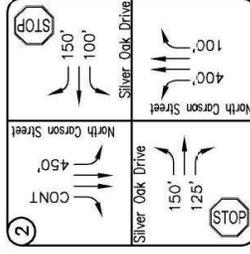
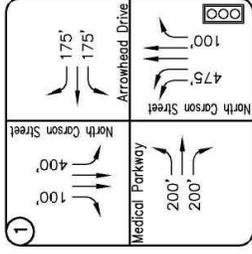
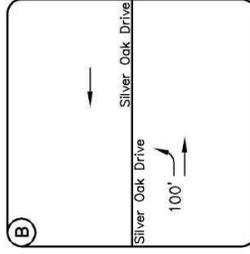
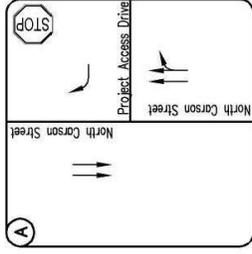
Count Station	TRINA Volume (Vehicles)		Existing Volume (Vehicles)	
	East	West	East	West
0250201, Arrowhead Dr. 350ft E of Carson St <i>Tuesday, August 2, 2022; East-West</i>	3,500	3,402	4,161	3,987
0250141, N Carson St. 450ft of Silver Oak Dr. <i>Tuesday, May 17, 2022; North-South</i>	8,366	8,270	7,848	8,020
0250139, College Pkwy 250ft of Imperial Way <i>Tuesday, August 2, 2022; East-West</i>	4,809	4,974	4,512	4,447

At Silver Oak Drive and College Parkway, the traffic volumes counted by TRINA in 2022 and counted on Tuesday, November 7, 2023 are generally within 10 percent (10%) of each other. Traffic volumes at Arrowhead Drive saw an approximate 20 percent (20%) increase in 2023 when compared to 2022. As such, traffic volumes counted on Tuesday, November 7, 2023 were used to establish existing conditions at the study intersections. **Figure 3** illustrates the 2023 existing peak hour traffic volumes.



SOURCE: NEARMAP US, INC.

HOME2 SUITES – CARSON CITY 2023 EXISTING LANE CONFIGURATION AND CONTROL



LEGEND:

- ① Study Area Key Intersection
- Ⓐ Project Access Drive
- Ⓢ Stop-Controlled Intersection
- Ⓜ Signalized Intersection
- xxx' Storage Bay Length

FIGURE 2





Study Area Key Intersection	AM(PM) Peak Hour Traffic Volumes																																
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3 N CARSON ST & W COLLEGE PKWY	<table border="1"> <tr> <td>← 90(170)</td> <td>← 352(567)</td> <td>← 90(125)</td> <td>← 70(78)</td> </tr> <tr> <td>← 90(170)</td> <td>← 352(567)</td> <td>← 90(125)</td> <td>← 140(205)</td> </tr> <tr> <td>← 90(170)</td> <td>← 352(567)</td> <td>← 90(125)</td> <td>← 93(125)</td> </tr> <tr> <td>← 90(170)</td> <td>← 352(567)</td> <td>← 90(125)</td> <td>← 47(137)</td> </tr> <tr> <td>← 90(170)</td> <td>← 352(567)</td> <td>← 90(125)</td> <td>← 548(452)</td> </tr> <tr> <td>← 90(170)</td> <td>← 352(567)</td> <td>← 90(125)</td> <td>← 71(81)</td> </tr> <tr> <td>← 90(170)</td> <td>← 352(567)</td> <td>← 90(125)</td> <td>← 47(137)</td> </tr> <tr> <td>← 90(170)</td> <td>← 352(567)</td> <td>← 90(125)</td> <td>← 548(452)</td> </tr> </table>	← 90(170)	← 352(567)	← 90(125)	← 70(78)	← 90(170)	← 352(567)	← 90(125)	← 140(205)	← 90(170)	← 352(567)	← 90(125)	← 93(125)	← 90(170)	← 352(567)	← 90(125)	← 47(137)	← 90(170)	← 352(567)	← 90(125)	← 548(452)	← 90(170)	← 352(567)	← 90(125)	← 71(81)	← 90(170)	← 352(567)	← 90(125)	← 47(137)	← 90(170)	← 352(567)	← 90(125)	← 548(452)
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A N CARSON ST & PROJECT ACCESS DRIVE	<table border="1"> <tr> <td>← 697(710)</td> <td>← 583(709)</td> </tr> </table>	← 697(710)	← 583(709)																														
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B SILVER OAK DR & PROJECT ACCESS DRIVE	<table border="1"> <tr> <td>← 66(31)</td> <td>← 25(44)</td> </tr> </table>	← 66(31)	← 25(44)																														
← 66(31)	← 25(44)																																

LEGEND:

① Study Area Key Intersection

←-xx(xxx) AM(PM) Peak Hour Traffic Volumes

**HOME2 SUITES – CARSON CITY
2023 EXISTING PEAK HOUR TRAFFIC VOLUMES**

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3. FUTURE CONDITIONS

This section of the report details the conditions that are expected in the future at the time the proposed project is anticipated to be completed.

3.1. 2050 Background Lane Configuration and Control

Regional access to the project site is expected to be provided via I-580. Primary access to the project site is anticipated to be from North Carson Street and Silver Oak Drive. Direct access to the project site is planned to be provided by one (1) full access drive located on Silver Oak Drive and one (1) existing right-in/right-out only access drive located on North Carson Street. Speed limits, lane configuration, and traffic control in 2050 illustrated in **Figure 4** are anticipated to remain the same as illustrated in **Figure 2** with the exception of the project access drive onto Silver Oak Drive (B) and signalization of North Carson Street and Silver Oak Drive (#2) in 2050.

3.2. 2050 Buildout Background Traffic

To accurately determine the impact of project traffic, it is necessary to establish future baseline traffic volumes along roadways in the vicinity of the proposed development site.

Three (3) nearby developments were factored into the 2050 background conditions. Silver Oak Apartments is anticipated to be located on the southwest corner of North Carson Street and Silver Oak Drive. The multifamily housing (low-rise) is anticipated to generate 1,216 daily trips with 78 trips occurring during the AM peak hour and 97 occurring during the PM peak hour.

Oasis Assisted Living is anticipated to be located on the northwest corner of North Carson Street and Medical Parkway. The development will involve the removal of the existing Michael Hohl RV Center. The nursing home is anticipated to generate 64 net AM peak hour trips and 112 net PM peak hour trips.

Unbuilt residential parcels in the Silver Oak community are located west of North Carson Street between Medical Parkway and West College Parkway. There are a total of 297 units across three blocks (145 units in Block CC, 64 units in Block DD, and 78 units in Block EE) which are anticipated to generate 2,709 daily trips, with 212 occurring during the AM peak hour and 284 occurring during the PM peak hour. Block CC will access North Carson Street via West College Parkway; Block DD will access North Carson Street via Silver Oak Drive; Block EE will access North Carson Street via Silver Oak Drive and Medical Parkway. Trips utilizing and passing through North Carson Street and Silver Oak Drive (#2) were incorporated into the study, as such the volumes may appear unbalanced between intersections along North Carson Street.

Forecasted traffic volumes for the 2050 year were obtained using the Carson Area Metropolitan Planning Organization (CAMPO) Travel Demand Model. Traffic volumes were obtained for 2030 and 2050 at the approaches of each study area intersection to determine an annual growth rate. This was used to grow 2023 existing turning movement counts for the 2050 background year. The growth rate factors are summarized in **Table 3**. The 2050 background peak hour traffic volumes at the key intersections are illustrated in **Figure 5**.

Table 3 – 2050 Growth Rate Summary

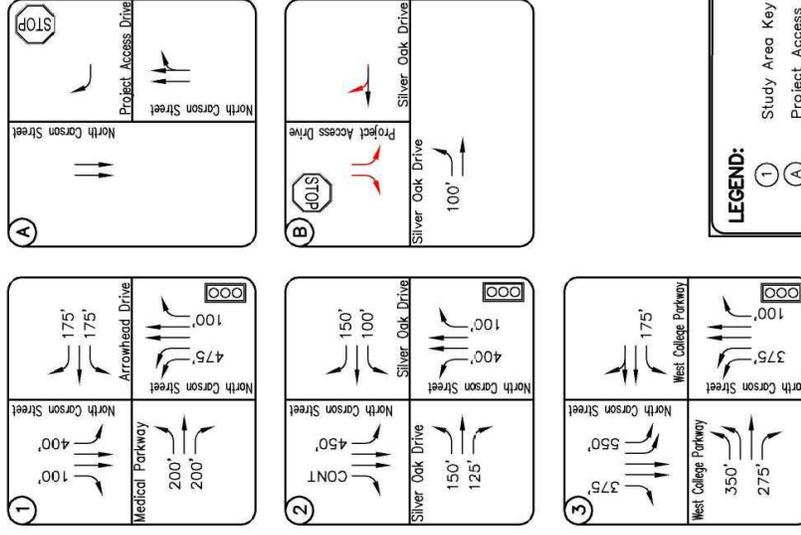
Intersection Location	Approach	2030 Volumes (Vehicles)	2050 Volumes (Vehicles)	Annual Growth Rate
N Carson Street and Medical Parkway/Arrowhead Drive (#1)	Northbound	19,525	21,846	0.56%
	Southbound	18,772	21,399	0.66%
	Eastbound	4,098	5,205	1.20%
	Westbound	4,514	5,577	1.06%
N Carson Street and Silver Oak Drive (#2)	Northbound	18,252	20,174	0.50%
	Southbound	19,525	21,846	0.56%
	Westbound	2,242	2,320	0.17%
N Carson Street and W College Parkway (#3)	Northbound	18,921	20,950	0.51%
	Southbound	18,252	20,174	0.50%
	Eastbound	18,861	20,234	0.35%
	Westbound	16,572	18,160	0.46%

Source: CAMPO Travel Demand Model



SOURCE: NEARMAP US, INC.

HOME2 SUITES – CARSON CITY 2050 BACKGROUND PLUS PROJECT LANE CONFIGURATION AND CONTROL



LEGEND:

- ① Study Area Key Intersection
- Ⓐ Project Access Drive
- Ⓢ Stop-Controlled Intersection
- Ⓢ Signalized Intersection
- Ⓢ Storage Bay Length
- Ⓢ Existing Approach
- ➔ Project Improvement

FIGURE 4





A	N CARSON ST & PROJECT ACCESS DRIVE	← 832(923)	← 774(902)

B	SILVER OAK DR & PROJECT ACCESS DRIVE	← 69(41)	→ 29(53)

1	N CARSON ST & MEDICAL PKWY/ARROWHEAD DR	← 139(18)	← 573(470)	← 128(127)	← 183(92)	← 372(649)	← 108(150)	← 85(134)	← 334(89)	← 141(106)
		← 57(179)	← 114(290)	← 88(217)	← 183(92)	← 372(649)	← 108(150)	← 85(134)	← 334(89)	← 141(106)

2	N CARSON ST & SILVER OAK DR	← 54(63)	← 765(837)	← 27(40)	← 41(25)	← 28(16)	← 29(46)	← 661(811)	← 16(29)	← 58(49)	← 0(1)	← 44(50)
		← 54(63)	← 765(837)	← 27(40)	← 41(25)	← 28(16)	← 29(46)	← 661(811)	← 16(29)	← 58(49)	← 0(1)	← 44(50)

3	N CARSON ST & W COLLEGE PKWY	← 133(88)	← 266(290)	← 176(160)	← 103(203)	← 403(677)	← 103(150)	← 79(104)	← 162(285)	← 105(166)	← 61(180)	← 629(526)	← 81(94)
		← 133(88)	← 266(290)	← 176(160)	← 103(203)	← 403(677)	← 103(150)	← 79(104)	← 162(285)	← 105(166)	← 61(180)	← 629(526)	← 81(94)

LEGEND:

① Study Area Key Intersection

←-xx(xxx) AM(PM) Peak Hour Traffic Volumes

**HOME2 SUITES – CARSON CITY
2050 BACKGROUND PEAK HOUR TRAFFIC VOLUMES**

FIGURE 5



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3.3. Project Trip Generation

For purposes of estimating the number of new trips that are anticipated to be generated by the proposed hotel, the Institute of Transportation Engineers (ITE) Trip Generation Manual, 11th Edition was used. The ITE Trip Generation Manual informational report is a standard reference used by jurisdictions throughout the country and is based on actual trip generation studies performed at numerous locations in areas of various populations. Because the proposed hotel fits the description of ITE Land Use Code 310 – Hotel and the description of ITE Land Use Code 311 – All Suites Hotel, a blended rate between the two ITE uses was developed to estimate the number of new trips anticipated to be generated by the hotel.

The project is expected to consist of 91 rooms. **Table 4** summarizes the estimated project trips. The proposed development is anticipated to generate 566 daily weekday trips, with 37 of these trips occurring during the morning peak hour and 44 trips occurring during the evening peak hour. Calculations are provided in **Appendix C**.

Table 4 – Trip Generation

ITE Code	Description	Size	AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	
310	Hotel	91 Rooms	24	18	42	28	26	54	728
311	All Suites Hotel	91 Rooms	16	15	31	16	17	33	402
-	Blended Hotel Rate	91 Rooms	20	17	37	22	22	44	566
Total			20	17	37	22	22	44	566

Source: ITE Trip Generation Manual, 11th Edition

3.4. Project Trip Distribution

The study area street network characteristics, including the existing traffic patterns, expected street network, and access to regional facilities (I-580) were used to determine the distribution of site generated traffic. The directional distribution of traffic is a means to quantify the percentage of site-generated traffic that approaches the site from a given direction and departs the site in the same or different direction. **Figure 6** shows the trip distribution at the study area intersections and the project access drive.

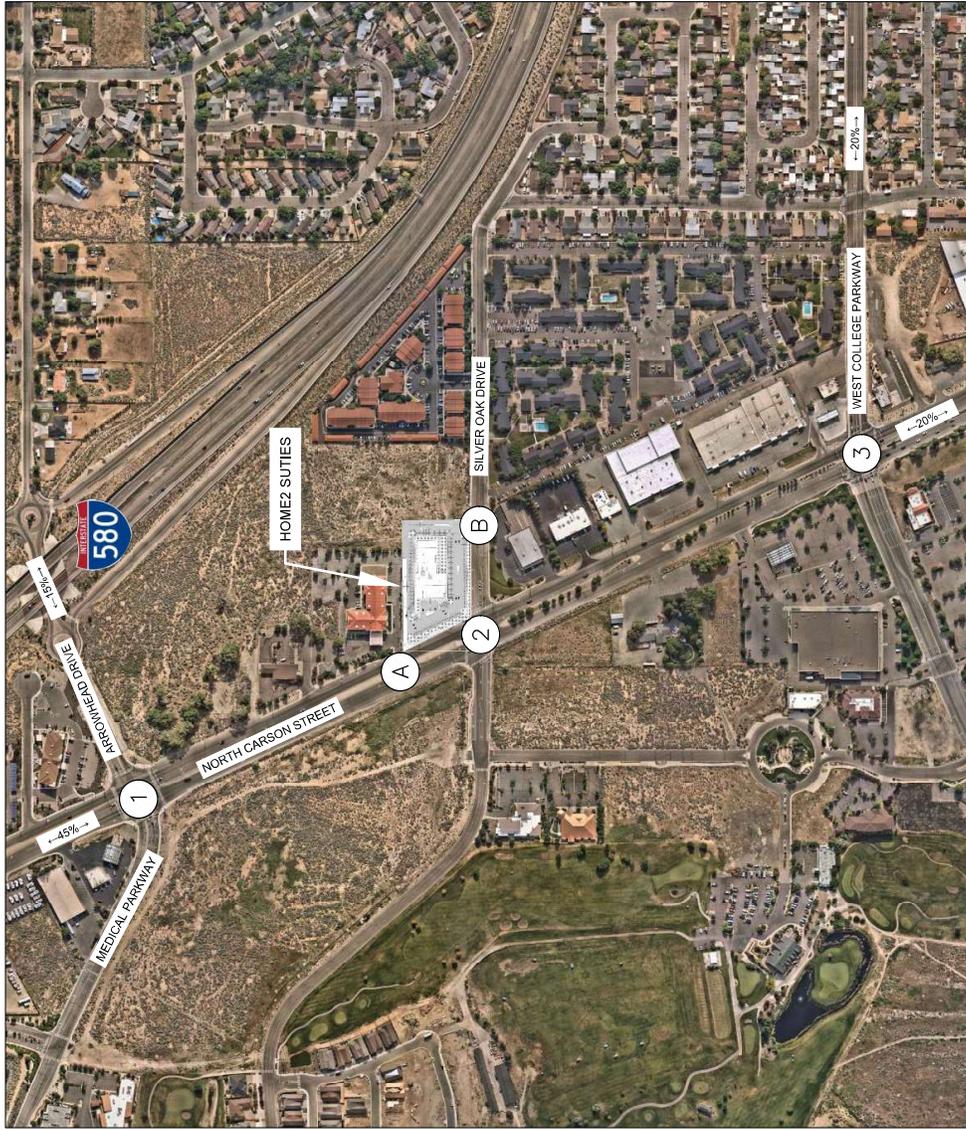
3.5. Traffic Assignment

Project traffic assignment was obtained by applying the project trip distribution to the estimated traffic generation of the development shown in **Table 4**. Project traffic assignment is shown in **Figure 7** for the development.

The entering and exiting trips at the project access drive are rounded to the nearest whole number when assigned. Therefore, the number of trips assigned to the project driveway may differ slightly from the total trip generation.

3.6. Buildout Traffic Volumes

The project generated traffic volumes shown in **Figure 7** were added to the 2023 existing and 2050 background traffic volumes illustrated in **Figure 3** and **Figure 5**, respectively, to represent estimated traffic conditions for full project development in 2023 and 2050. The 2023 and 2050 background plus project peak hour traffic volumes for the study area intersections and the project access drive are illustrated in **Figure 8** and **Figure 9**, respectively.



SOURCE: NEARMAP US, INC.

HOME2 SUITES – CARSON CITY PROJECT TRIP DISTRIBUTION

Study Area Key Intersection	Project Access Drive	IN(OUT) Peak Hour Trip Distribution	Global Peak Hour Trip Distribution
1 N CARSON ST & MEDICAL PKWY/ARROWHEAD DR	← 45%(0%)	← 15%(0%)	← 20%(0%)
	→ 0%(45%)	→ 0%(15%)	→ 0%(20%)
2 N CARSON ST & SILVER OAK DR	← 60%(0%)	← 0%(40%)	← 20%(0%)
	→ 0%(40%)	→ 0%	→ 0%(20%)
3 N CARSON ST & W COLLEGE PKWY	← 20%(0%)	← 40%(0%)	← 20%(0%)
	→ 0%(20%)	→ 60%(0%)	→ 0%(20%)
A N CARSON ST & PROJECT ACCESS DRIVE	← 0%(60%)	← 40%(0%)	← 20%(0%)
	→ 40%(0%)	→ 0%	→ 0%(20%)
B SILVER OAK DR & PROJECT ACCESS DRIVE	← 60%(0%)	← 0%	← 20%(0%)
	→ 0%	→ 0%	→ 0%(20%)

LEGEND:

- ① Study Area Key Intersection
- Ⓐ Project Access Drive
- ←-XXX(XXX) IN(OUT) Peak Hour Trip Distribution
- ←-XXX-→ Global Peak Hour Trip Distribution

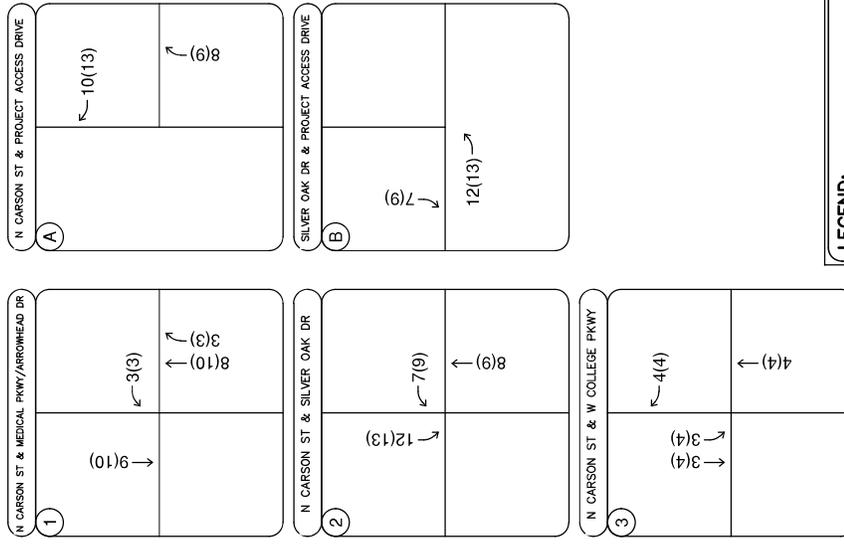
FIGURE 6





SOURCE: NEARMAP US, INC.

HOME2 SUITES – CARSON CITY PROJECT TRIP ASSIGNMENT



LEGEND:

- ① Study Area Key Intersection
- A Project Access Drive
- ←X(X) AM(FM) Peak Hour Traffic Volumes

FIGURE 7





SOURCE: NEARMAP US, INC.

HOME2 SUITES – CARSON CITY 2023 EXISTING PLUS PROJECT PEAK HOUR TRAFFIC VOLUMES

Study Area Key Intersection	Project Access Drive	AM(FM) Peak Hour Traffic Volumes
1 N CARSON ST & MEDICAL PKWY/ARROWHEAD DR	← 64(101) ← 251(67) ← 109(83)	↑ 318(556) ↑ 155(78) ↑ 96(132)
	↑ 104(98) ↑ 482(384) ↑ 116(15)	← 41(130) ← 82(208) ← 64(157)
2 N CARSON ST & SILVER OAK DR	← 39(19) ← 34(21)	↑ 534(670) ↑ 21(16) ↑ 14(25)
	↑ 35(46) ↑ 642(662) ↑ 32(15)	← 6(15) ← 0(1) ← 22(19)
3 N CARSON ST & W COLLEGE PKWY	← 74(82) ← 140(205) ← 93(125)	↑ 47(137) ↑ 552(456) ↑ 71(81)
	↑ 90(170) ↑ 355(571) ↑ 93(129)	← 164(116) ← 237(205) ← 104(54)
A N CARSON ST & PROJECT ACCESS DRIVE	← 697(710)	↑ 583(709) ↑ 8(9)
	← 10(13)	
B SILVER OAK DR & PROJECT ACCESS DRIVE	← 66(31)	↑ 7(9)
	← 12(13) ← 25(44)	

LEGEND:

- ① Study Area Key Intersection
- Ⓐ Project Access Drive
- ←X(XXX) AM(FM) Peak Hour Traffic Volumes



SOURCE: NEARMAP US, INC.

HOME2 SUITES – CARSON CITY 2050 BACKGROUND PLUS PROJECT PEAK HOUR TRAFFIC VOLUMES

1 N CARSON ST & MEDICAL PKWY/ARROWHEAD DR		2 N CARSON ST & SILVER OAK DR		3 N CARSON ST & W COLLEGE PKWY	
← 139(18) ← 582(480) ← 128(127)	← 88(217) ← 114(290) ← 57(179)	← 54(63) ← 765(837) ← 39(53)	← 41(25) ← 35(25)	← 106(154) ← 406(681) ← 132(203)	← 176(160) ← 266(290) ← 133(88)
← 183(92) ← 380(659) ← 111(153)	← 144(109) ← 334(89) ← 85(134)	← 29(46) ← 669(820) ← 16(29)	← 7(9) ← 69(41)	← 83(108) ← 162(285) ← 105(166)	← 61(180) ← 633(530) ← 81(94)
A N CARSON ST & PROJECT ACCESS DRIVE		B SILVER OAK DR & PROJECT ACCESS DRIVE		LEGEND:	
← 832(923)	← 10(13) ← 774(902) ← 8(9)	← 12(13) ← 29(53)	← XX(XX)	Study Area Key Intersection	Project Access Drive
				AM(FM) Peak Hour Traffic Volumes	

FIGURE 9
Kimley»Horn

4. TRAFFIC IMPACT ANALYSIS

Traffic analyses for 2023 existing, 2023 existing plus project, 2050 background, and 2050 background plus project scenarios were conducted at the identified key intersections to determine possible existing and/or future deficiencies in the street network.

4.1. Analysis Methodology

Study area intersections were analyzed based on average total delay analysis for signalized and unsignalized intersections presented in the Transportation Research Board’s “Highway Capacity Manual” 6th Edition (HCM 6). Under the unsignalized analysis, the level of service (LOS) for a two-way stop-controlled intersection is determined by the computed or measured control delay and is defined for each minor movement. LOS for a two-way stop-controlled intersection is not defined for the intersection as a whole. LOS for a signalized or four-way stop controlled intersection is defined for the intersection as a whole. **Table 5** shows the definition of LOS for intersections.

Table 5 – Level of Service Definitions

Level of Service	Signalized Intersection Average Total Delay (sec/veh)	Unsignalized Intersection Average Total Delay (sec/veh)
A	≤10	10
B	>10 and ≤20	>10 and ≤15
C	>20 and ≤35	>15 and ≤25
D	>35 and ≤55	>25 and ≤35
E	>55 and ≤80	>35 and ≤50
F	>80	>50

Definitions provided from the Highway Capacity Manual, 6th Edition, Transportation Research Board.

Synchro 11 was used to analyze the study area intersections and driveways for LOS. Synchro is an interactive computer program that enables planners and engineers to forecast the traffic impacts of new developments; conduct area-wide traffic forecasting studies; test different mitigation measures and compare different traffic scenarios. Synchro 11 utilizes HCM 6 methodology to analyze intersection delay and LOS. The intersection of North Carson Street and Silver Oak Drive (#2) involves a wide median that allows for vehicles to complete eastbound to northbound left turns and westbound to southbound left turns in multiple stages. Standard Synchro 11 methodology (consistent with how delay is reported in accordance with HCM 6th Edition) states that intersections with medians along the main approach wide enough to fit vehicles should have the number of vehicles in median storage modified accordingly. Prior to Synchro 9 this was automatically calculated by Synchro and incorporated in HCM methodology for reporting delay. At the request of Carson City, this intersection was not analyzed according to this standard methodology. This resulted in reporting lower LOS results for all scenarios at the intersection of North Carson Street and Silver Oak Drive (#2). As a result of this change, a mitigation has been provided for this intersection in the report.

4.2. Key Intersection Operational Analysis

Calculations for the LOS at the key intersections are provided in **Appendix D**. The 2023 existing and 2050 background analysis is based on the lane geometry and intersection control shown in **Figure 2**. The 2023 existing plus project and 2050 background plus project analyses are based on the lane geometry and intersection control shown in **Figure 4**. The results of the Key Intersection LOS Analysis for existing and horizon year conditions are summarized in **Table 6**. The results of the project access drive LOS Analysis are summarized in **Table 7**.

Table 6 – Key Intersection Peak Hour LOS Analysis

Intersection	2023 Existing		2023 Existing Plus Project		2050 Background		2050 Background Plus Project	
	AM	PM	AM	PM	AM	PM	AM	PM
	Delay (LOS)	Delay (LOS)	Delay (LOS)	Delay (LOS)	Delay (LOS)	Delay (LOS)	Delay (LOS)	Delay (LOS)
North Carson Street and Medical* Parkway/Arrowhead Drive (#1) Signalized	21.3 (C)	29.7 (C)	21.3 (C)	29.9 (C)	25.4 (C)	33.1 (C)	25.5 (C)	33.4 (C)
North Carson Street and Silver Oak Drive (#2)* Two-Way Stop Control Westbound Left/Through/Right Eastbound Left/Through/Right Signalized	19.0 (C) 15.2 (C) -	20.8 (C) 19.0 (C) -	15.6 (C) 22.2 (C) -	22.0 (C) 24.5 (C) -	65.3 (F) 29.1 (D) 5.0 (A)	65.0 (F) 33.7 (D) 4.6 (A)	72.3 (F) 37.1 (E) 5.0 (A)	71.3 (F) 49.6 (E) 4.7 (A)
North Carson Street and West College Parkway (#3)* Signalized	21.0 (C)	20.8 (C)	21.0 (C)	20.8 (C)	23.2 (C)	25.9 (C)	23.3 (C)	26.0 (C)

*Splits and cycle lengths were optimized during analysis.

The key intersections are expected to operate at acceptable LOS (as defined by the Carson City) under 2023 existing, 2023 existing plus project, 2050 background, and 2050 background plus project scenarios with the exception of North Carson Street and Silver Oak Drive (#2) in the 2050 background and 2050 background plus project scenario. Acceptable LOS is achievable through signalization of the intersection, as shown in **Table 4**.

4.3. Project Access Operational Analysis

The 2023 existing plus project and 2050 background plus project analysis is based on the lane configuration and intersection control shown in **Figure 4**. The analysis is based on traffic volumes shown in **Figure 8** and **Figure 9**, respectively. Calculations are located in **Appendix E**. The results of the LOS analysis for the project access drive onto North Carson Street and Silver Oak Drive are presented in **Table 7**. The proposed project access drive is expected to operate at acceptable LOS in 2023 existing plus project and 2050 background plus project AM and PM peak hours.

Table 7 – Project Access Drive Peak Hour LOS Analysis

Intersection	2023 Existing Plus Project		2050 Background Plus Project	
	AM	PM	AM	PM
	Delay (LOS)	Delay (LOS)	Delay (LOS)	Delay (LOS)
North Carson Street and Project Access Drive (A) Two-Way Stop (Right-In/Right-Out Only) Westbound Approach	10.4 (B)	11.0 (B)	11.3 (B)	12.1 (B)
Silver Oak Drive and Project Access Drive (B) Two-Way Stop (Full Access) Southbound Approach	8.7 (A)	8.5 (A)	8.7 (A)	8.5 (A)

4.4. Left Turn Storage Bay Analysis

Left turn storage bay analysis was conducted for signalized turning movements anticipated to be impacted by the addition of project traffic at the study area intersections as well as the intersection of the project access drive. The analysis was conducted using the Synchro 11 software and HCM 6 methodology to obtain 95th percentile queues and are summarized in **Table 8** and provided with the LOS calculations in **Appendix D**.

The left turn storage bay calculations include AM and PM peak volumes. The existing storage bays have adequate length to serve 2023 background plus project and 2050 background plus project conditions during both the AM and PM peak hours.

Table 8 – Left Turn Storage Bay Analysis

Intersection	Storage Provided (ft)	2023 Existing Plus Project		2050 Background Plus Project	
		AM	PM	AM	PM
North Carson Street and Medical Parkway/Arrowhead Drive (#1)					
Signalized					
Northbound Left	475' (Dual)	53'	40'	75'	48'
Southbound Left	400'	100'	118'	133'	173'
Eastbound Left	200'	33'	105'	53'	153'
Westbound Left	175'	105'	85'	155'	105'
North Carson Street and Silver Oak Drive (#2)					
Two-Way Stop Control					
Northbound Left	400'	3'	3'	3'	5'
Southbound Left	450'	3'	5'	5'	5'
Eastbound Left	150'	5'	10'	93'	83'
Westbound Left	100'	23'	15'	43'	38'
North Carson Street and West College Parkway (#3)					
Signalized					
Northbound Left (Dual)	375' (Dual)	18'	43'	23'	75'
Southbound Left	550' (Dual)	33'	40'	40'	63'
Eastbound Left	350' (Dual)	65'	38'	78'	63'
Westbound Left	175'	95'	115'	115'	158'

4.1. Signal Warrant Analysis

Per request by Carson City, a signal warrant analysis was performed at North Carson Street and Silver Oak Drive. The analysis was conducted per the 2009 Manual on Uniform Traffic Control Devices (MUTCD). Signal warrant calculations are provided in **Appendix F**.

The 2023 existing, 2023 background plus project, 2050 background, and 2050 background plus project scenarios were evaluated. The 2023 background plus project scenario includes existing 2023 volumes with project generated traffic by the proposed hotel. The 2050 background scenario includes 2023 volumes grown as described in **Section 3.2** and project generated traffic by the Silver Oak Apartments and the unbuilt parcels within the Silver Oak Community also described in **Section 3.2**. The 2050 background plus project includes volumes and project generated traffic from the 2050 background scenario in addition to project generated traffic by the proposed hotel.

The ITE Time of Day Distribution (2018) was used to obtain the hourly trips generated for the hotel over 24-hours. The hourly trips generated are based on the daily trips and assumes a directional distribution of 50 percent (50%) entering and exiting. Calculations for the hourly trips generated by each land use is provided in **Attachment G**. To be conservative, right-turn volumes on the minor approaches were not reduced.

4.1. North Carson Street and Silver Oak Drive (#2)

Signal warrant analysis was conducted at North Carson Street and Silver Oak Drive per the 2009 MUTCD. The warrant analysis for the summarized in **Table 9**.

Table 9 – North Carson Street and Silver Oak Drive Signal Warrant Analysis

Warrant	2023 Existing	2023 Existing Plus Project	2050 Background	2050 Background Plus Project
Warrant 1 – Condition A	Not Satisfied	Not Satisfied	Not Satisfied	Not Satisfied
Warrant 1 – Condition B	Not Satisfied	Not Satisfied	Satisfied	Satisfied
Warrant 1 – A, Part 2*	Not Satisfied	Not Satisfied	Not Satisfied	Not Satisfied
Warrant 1 – B, Part 2*	Not Satisfied	Not Satisfied	Satisfied	Satisfied
Warrant 2	Not Satisfied	Not Satisfied	Satisfied	Satisfied

*8 hours needed for both Condition A, Part 2 and B, Part 2

It was found that signal warrants are met at North Carson Street and Silver Oak Drive (#2) for the 2050 background and 2050 background plus project traffic volumes. Under these scenarios, traffic volumes meet the Eight-Hour Vehicular Volume Warrant (Warrant 1 – Condition B) and the Four-Hour Vehicular Volume Warrant (Warrant 2).

Therefore, it is recommended that the North Carson Street and Silver Oak Drive (#2) be signalized in 2050 with or without the addition of project traffic.

5. CRASH DATA SUMMARY

Crash data was requested for the three (3) existing key intersection from the NDOT Safety Engineering Division for the most recent four-year period (January 1, 2016 – December 31, 2020). The crash data for the study intersections is summarized in **Table 10**. A detailed summary is included in **Appendix H**. The intersection crashes include those crashes on both the major and minor streets of the key intersections during the three-year analysis period.

Table 10 – Crash Data Summary

Intersection Name	Total Crashes	Property Damage Only	Injury	Fatal
North Carson Street and Medical Parkway/Arrowhead Drive (#1)	20	14 (70%)	6 (30%)	0 (0%)
North Carson Street and Silver Oak Drive (#2)	11	7 (64%)	3 (27%)	1 (9%)
North Carson Street and West College Parkway (#3)	29	21 (72%)	7 (24%)	1 (3%)
Total	60	42 (70%)	16 (27%)	2 (3%)

A total of 60 crashes were recorded at the three (3) intersections in the most recent four-year period. Those 60 crashes resulted in 42 injury crashes (70%) and 16 property damage only crashes (27%). There was a total of two (2) fatal crashes reported across the three (3) study intersections. The fatal crash at North Carson Street and Silver Oak Drive (#2) involved a motorist traveling straight colliding with a pedestrian in dark conditions. The fatal crash at North Carson Street and West College Parkway (#3) involved two vehicles, one of which failed to yield to right-of-way.

Because of the minimal lighting provided at North Carson Street and Silver Oak Drive (#2), installation of a Rectangular Rapid Flashing Beacon (RRFB) would improve safety when pedestrians are crossing North Carson Street during the evening. More details on RRFBs and their impacts to pedestrian safety is provided by the Federal Highway Administration at [Rectangular Rapid-Flashing Beacon \(RRFB\) Safe Transportation for Every Pedestrian Countermeasure Tech Sheet \(dot.gov\)](https://www.fhwa.dot.gov/pedestrian/safety/rrfb/rectangular_rapid_flashing_beacon_rrfb_safe_transportation_for_every_pedestrian_countermeasure_tech_sheet.dot.gov).

6. BICYCLE/PEDESTRIAN/TRANSIT FACILITIES

This section of the report details bicycle and pedestrian access to local attractions.

6.1. Local Bicycle/Pedestrian Access

There are no existing bicycle facilities along North Carson Street between Medical Parkway/Arrowhead Drive and West College Parkway. According to the 2050 Regional Transportation Plan (RTP), on-street bicycle facilities are planned to be provided along at this corridor. Bicycle lanes are provided along Medical Parkway/Arrowhead Drive, Silver Oak Drive, and West College Parkway.

Pedestrian access is provided by sidewalks on both sides of North Carson Street, Medical Parkway/Arrowhead Drive, Silver Oak Drive, and West College Parkway. Additionally, each study area intersection has crosswalk and pedestrian push buttons with the exception of North Carson Street and Silver Oak Drive (#2).

6.2. Public Transportation

Carson City provides public transportation services through Jump Around Carson (JAC). Currently, JAC provides service for four fixed routes and ADA paratransit services. Route 1 services North Carson Street between Medical Parkway/Arrowhead Drive and West College Parkway. The nearest bus stops to the project site is (1) at the Carson Tahoe Regional Medical Center along Medical Parkway and (2) at the intersection of North Carson Street and West College Parkway. While there are no direct improvements planned for the bus services around the project site, the 2050 RTP states general improvements that include expanding the routes serviced from four (4) to six (6) and eventually fully covering Carson City.

7. CONCLUSIONS/RECOMMENDATIONS

The proposed hotel development traffic is anticipated to generate traffic volumes resulting in the following recommendations:

- The developer is recommended to install an R1-1 “STOP” sign with appropriate pavement markings for the egressing access drive on to Silver Oak Drive.
- Signalization is recommended at the intersection of North Carson Street and Silver Oak Drive (#2) for the 2050 Background scenario.
- All on-site and off-site signing and striping improvements should be incorporated into the Civil Drawings and conform to the current Manual on Uniform Traffic Control Devices (MUTCD), as applicable.
- The project is not anticipated to have significant impacts to the key study intersections and the surrounding street network.

APPENDIX A
SITE PLAN

APPENDIX B
COUNT DATA

N Carson St and Medical Pkwy/Arrowhead Dr - TMC

Tue Nov 7, 2023

Full Length (12 AM-12 AM (+1))

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)

All Movements

ID: 1128305, Location: 39.19751, -119.777283

Provided by: Kimley-Horn and Associates, Inc.
767 Eustis Street, Suite 100, Saint Paul, MN, 55114, US

Leg Direction	N Carson St Northbound					N Carson St Southbound					Medical Pkwy Eastbound					Arrowhead Dr Westbound					
Time	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	Int
2023-11-07 12:00AM	3	7	5	0	15	1	19	3	1	24	11	6	5	0	22	3	6	2	0	11	72
1:00AM	2	9	5	3	19	2	13	3	0	18	0	6	8	0	14	0	0	0	0	0	51
2:00AM	0	7	1	0	8	3	7	0	0	10	3	2	1	0	6	2	4	0	0	6	30
3:00AM	4	15	4	1	24	1	6	4	1	12	3	5	3	0	11	2	5	0	0	7	54
4:00AM	11	49	10	1	71	1	15	7	0	23	7	3	0	0	10	16	11	3	0	30	134
5:00AM	19	91	32	0	142	29	61	27	2	119	9	15	5	0	29	16	69	7	0	92	382
6:00AM	60	221	113	1	395	110	260	72	1	443	20	45	26	0	91	46	200	29	0	275	1204
7:00AM	91	294	119	9	513	108	437	102	0	647	66	69	36	0	171	61	249	92	0	402	1733
8:00AM	85	278	149	15	527	75	408	75	1	559	92	87	36	0	215	51	208	80	0	339	1640
9:00AM	69	267	132	12	480	46	336	49	0	431	155	112	42	0	309	35	184	74	0	293	1513
10:00AM	86	284	140	21	531	45	310	54	0	409	181	137	50	0	368	44	190	70	0	304	1612
11:00AM	106	328	153	16	603	34	299	55	0	388	236	126	61	0	423	51	118	57	0	226	1640
12:00PM	122	345	151	15	633	33	319	65	1	418	160	119	44	0	323	65	151	90	0	306	1680
1:00PM	116	257	141	23	537	39	275	52	6	372	157	109	67	0	333	53	180	78	0	311	1553
2:00PM	113	347	153	16	629	28	311	70	2	411	202	161	77	0	440	65	136	82	0	283	1763
3:00PM	128	458	95	15	696	26	380	65	3	474	171	200	101	0	472	107	107	104	0	318	1960
4:00PM	126	482	77	15	700	17	366	82	8	473	174	220	135	0	529	106	71	74	0	251	1953
5:00PM	108	479	58	10	655	20	394	75	6	495	81	135	109	0	325	74	69	78	0	221	1696
6:00PM	50	222	48	10	330	28	207	39	3	277	60	74	38	0	172	37	56	40	0	133	912
7:00PM	46	149	31	7	233	6	114	19	4	143	50	64	43	0	157	25	25	18	0	68	601
8:00PM	22	91	19	2	134	3	96	20	1	120	41	58	17	0	116	12	16	18	0	46	416
9:00PM	15	51	5	0	71	4	92	10	3	109	9	21	7	0	37	8	17	16	0	41	258
10:00PM	6	26	12	0	44	4	54	8	0	66	14	16	8	0	38	3	11	3	0	17	165
11:00PM	6	14	6	0	26	1	31	6	2	40	18	15	5	0	38	2	2	3	0	7	111
Total	1394	4771	1659	192	8016	664	4810	962	45	6481	1920	1805	924	0	4649	884	2085	1018	0	3987	23133
% Approach	17.4%	59.5%	20.7%	2.4%	-	10.2%	74.2%	14.8%	0.7%	-	41.3%	38.8%	19.9%	0%	-	22.2%	52.3%	25.5%	0%	-	-
% Total	6.0%	20.6%	7.2%	0.8%	34.7%	2.9%	20.8%	4.2%	0.2%	28.0%	8.3%	7.8%	4.0%	0%	20.1%	3.8%	9.0%	4.4%	0%	17.2%	-
Lights	1371	4666	1609	190	7836	642	4694	940	45	6321	1862	1769	908	0	4539	866	2041	1007	0	3914	22610
% Lights	98.4%	97.8%	97.0%	99.0%	97.8%	96.7%	97.6%	97.7%	100%	97.5%	97.0%	98.0%	98.3%	0%	97.6%	98.0%	97.9%	98.9%	0%	98.2%	97.7%
Articulated Trucks	3	24	2	0	29	5	24	3	0	32	5	0	3	0	8	1	1	1	0	3	72
% Articulated Trucks	0.2%	0.5%	0.1%	0%	0.4%	0.8%	0.5%	0.3%	0%	0.5%	0.3%	0%	0.3%	0%	0.2%	0.1%	0%	0.1%	0%	0.1%	0.3%
Buses and Single-Unit Trucks	20	81	48	2	151	17	92	19	0	128	53	36	13	0	102	17	43	10	0	70	451
% Buses and Single-Unit Trucks	1.4%	1.7%	2.9%	1.0%	1.9%	2.6%	1.9%	2.0%	0%	2.0%	2.8%	2.0%	1.4%	0%	2.2%	1.9%	2.1%	1.0%	0%	1.8%	1.9%

*L: Left, R: Right, T: Thru, U: U-Turn

N Carson St and Medical Pkwy/Arrowhead Dr - TMC

Tue Nov 7, 2023

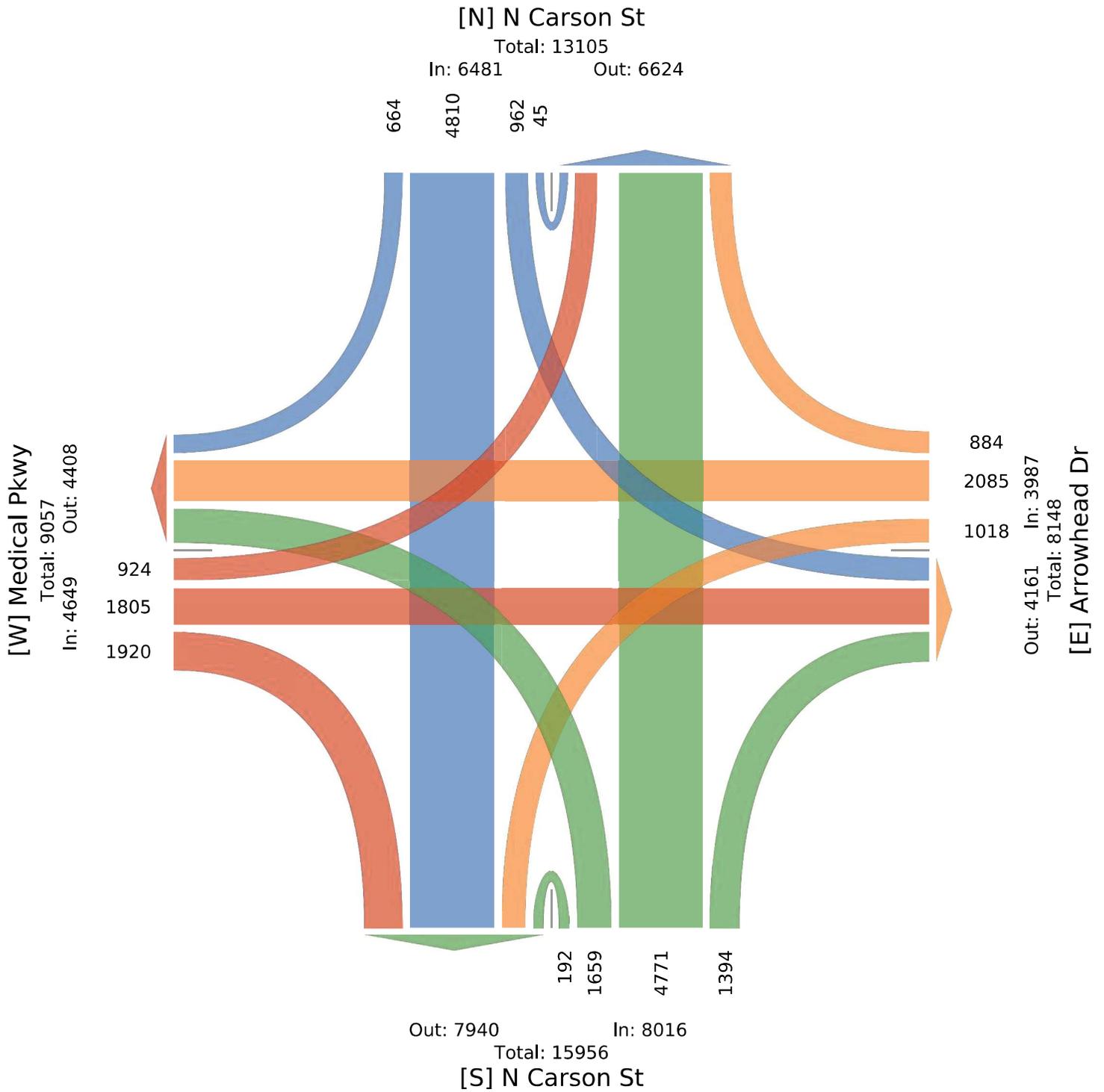
Full Length (12 AM-12 AM (+1))

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)

All Movements

ID: 1128305, Location: 39.19751, -119.777283

Provided by: Kimley-Horn and Associates, Inc.
767 Eustis Street, Suite 100, Saint Paul, MN, 55114, US



N Carson St and Medical Pkwy/Arrowhead Dr - TMC

Tue Nov 7, 2023

AM Peak (7:15 AM - 8:15 AM)

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)

All Movements

ID: 1128305, Location: 39.19751, -119.777283

Provided by: Kimley-Horn and Associates, Inc.
767 Eustis Street, Suite 100, Saint Paul, MN, 55114, US

Leg Direction	N Carson St Northbound					N Carson St Southbound					Medical Pkwy Eastbound					Arrowhead Dr Westbound					
Time	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	Int
2023-11-07 7:15AM	25	84	20	0	129	36	82	21	0	139	19	18	12	0	49	25	53	18	0	96	413
7:30AM	27	87	40	2	156	19	132	32	0	183	16	21	12	0	49	15	54	21	0	90	478
7:45AM	22	66	39	6	133	35	155	29	0	219	18	18	9	0	45	14	88	41	0	143	540
8:00AM	19	73	46	2	140	26	104	22	0	152	11	25	8	0	44	10	56	26	0	92	428
Total	93	310	145	10	558	116	473	104	0	693	64	82	41	0	187	64	251	106	0	421	1859
% Approach	16.7%	55.6%	26.0%	1.8%	-	16.7%	68.3%	15.0%	0%	-	34.2%	43.9%	21.9%	0%	-	15.2%	59.6%	25.2%	0%	-	-
% Total	5.0%	16.7%	7.8%	0.5%	30.0%	6.2%	25.4%	5.6%	0%	37.3%	3.4%	4.4%	2.2%	0%	10.1%	3.4%	13.5%	5.7%	0%	22.6%	-
PHF	0.861	0.891	0.788	0.417	0.894	0.806	0.763	0.813	-	0.791	0.842	0.820	0.854	-	0.954	0.640	0.713	0.646	-	0.736	0.861
Lights	92	305	143	9	549	113	463	102	0	678	58	80	40	0	178	63	250	105	0	418	1823
% Lights	98.9%	98.4%	98.6%	90.0%	98.4%	97.4%	97.9%	98.1%	0%	97.8%	90.6%	97.6%	97.6%	0%	95.2%	98.4%	99.6%	99.1%	0%	99.3%	98.1%
Articulated Trucks	0	1	0	0	1	0	2	1	0	3	1	0	1	0	2	0	1	0	0	1	7
% Articulated Trucks	0%	0.3%	0%	0%	0.2%	0%	0.4%	1.0%	0%	0.4%	1.6%	0%	2.4%	0%	1.1%	0%	0.4%	0%	0%	0.2%	0.4%
Buses and Single-Unit Trucks	1	4	2	1	8	3	8	1	0	12	5	2	0	0	7	1	0	1	0	2	29
% Buses and Single-Unit Trucks	1.1%	1.3%	1.4%	10.0%	1.4%	2.6%	1.7%	1.0%	0%	1.7%	7.8%	2.4%	0%	0%	3.7%	1.6%	0%	0.9%	0%	0.5%	1.6%

*L: Left, R: Right, T: Thru, U: U-Turn

N Carson St and Medical Pkwy/Arrowhead Dr - TMC

Tue Nov 7, 2023

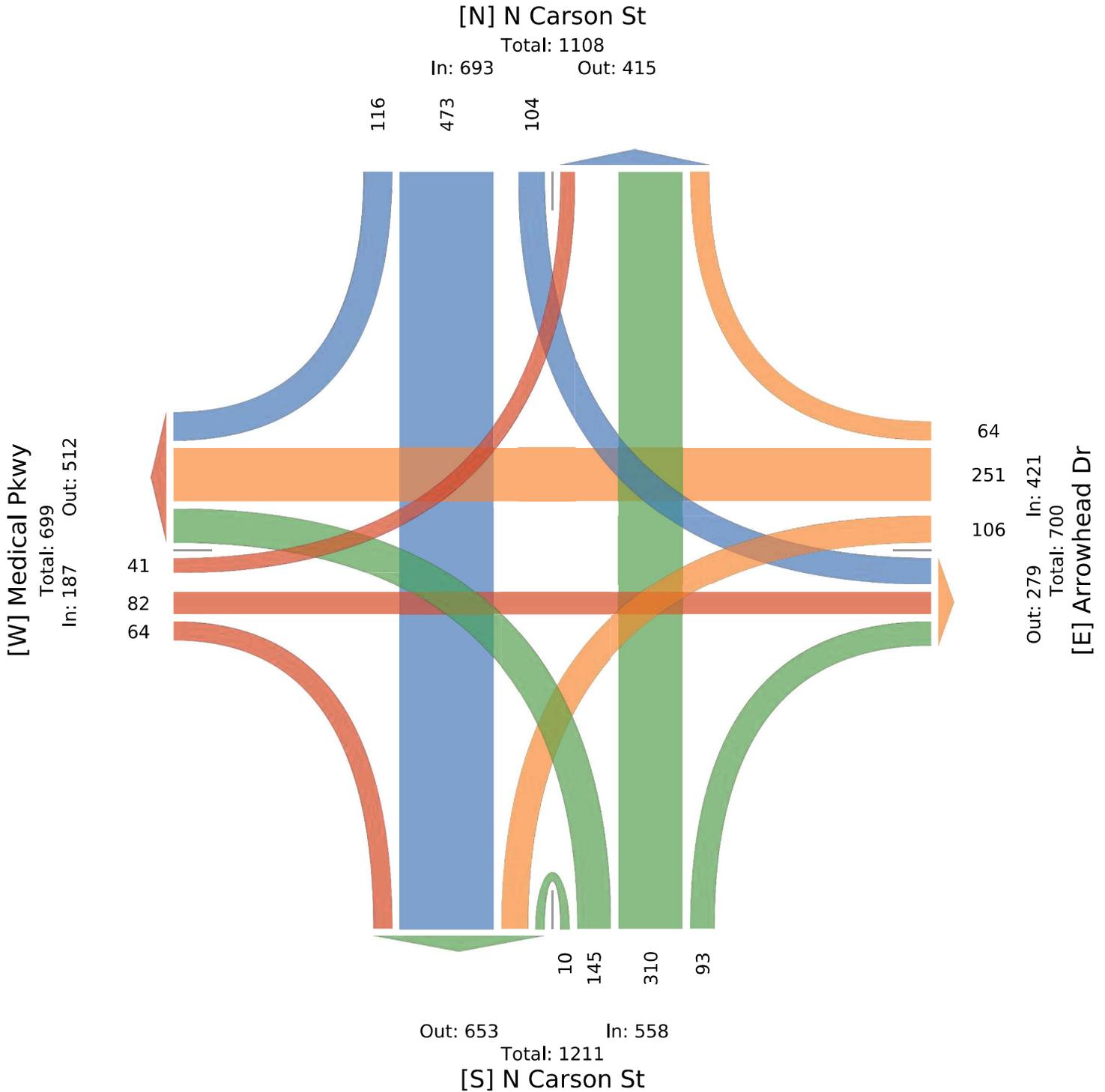
AM Peak (7:15 AM - 8:15 AM)

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)

All Movements

ID: 1128305, Location: 39.19751, -119.777283

Provided by: Kimley-Horn and Associates, Inc.
767 Eustis Street, Suite 100, Saint Paul, MN, 55114, US



N Carson St and Medical Pkwy/Arrowhead Dr - TMC

Tue Nov 7, 2023

Midday Peak (12 PM - 1 PM)

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)

All Movements

ID: 1128305, Location: 39.19751, -119.777283

Provided by: Kimley-Horn and Associates, Inc.
767 Eustis Street, Suite 100, Saint Paul, MN, 55114, US

Leg Direction	N Carson St Northbound					N Carson St Southbound					Medical Pkwy Eastbound					Arrowhead Dr Westbound					
Time	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	Int
2023-11-07 12:00PM	33	81	23	3	140	12	69	17	0	98	61	45	14	0	120	24	24	35	0	83	441
12:15PM	32	94	35	4	165	5	72	16	0	93	50	21	9	0	80	17	31	10	0	58	396
12:30PM	28	83	35	6	152	7	83	14	1	105	17	34	12	0	63	11	62	27	0	100	420
12:45PM	29	87	58	2	176	9	95	18	0	122	32	19	9	0	60	13	34	18	0	65	423
Total	122	345	151	15	633	33	319	65	1	418	160	119	44	0	323	65	151	90	0	306	1680
% Approach	19.3%	54.5%	23.9%	2.4%	-	7.9%	76.3%	15.6%	0.2%	-	49.5%	36.8%	13.6%	0%	-	21.2%	49.3%	29.4%	0%	-	-
% Total	7.3%	20.5%	9.0%	0.9%	37.7%	2.0%	19.0%	3.9%	0.1%	24.9%	9.5%	7.1%	2.6%	0%	19.2%	3.9%	9.0%	5.4%	0%	18.2%	-
PHF	0.924	0.918	0.651	0.625	0.899	0.688	0.839	0.903	0.250	0.857	0.656	0.661	0.786	-	0.673	0.677	0.609	0.643	-	0.765	0.952
Lights	117	334	148	15	614	32	313	62	1	408	154	118	44	0	316	61	150	89	0	300	1638
% Lights	95.9%	96.8%	98.0%	100%	97.0%	97.0%	98.1%	95.4%	100%	97.6%	96.3%	99.2%	100%	0%	97.8%	93.8%	99.3%	98.9%	0%	98.0%	97.5%
Articulated Trucks	1	2	1	0	4	0	1	1	0	2	2	0	0	0	2	0	0	0	0	0	8
% Articulated Trucks	0.8%	0.6%	0.7%	0%	0.6%	0%	0.3%	1.5%	0%	0.5%	1.3%	0%	0%	0%	0.6%	0%	0%	0%	0%	0%	0.5%
Buses and Single-Unit Trucks	4	9	2	0	15	1	5	2	0	8	4	1	0	0	5	4	1	1	0	6	34
% Buses and Single-Unit Trucks	3.3%	2.6%	1.3%	0%	2.4%	3.0%	1.6%	3.1%	0%	1.9%	2.5%	0.8%	0%	0%	1.5%	6.2%	0.7%	1.1%	0%	2.0%	2.0%

*L: Left, R: Right, T: Thru, U: U-Turn

N Carson St and Medical Pkwy/Arrowhead Dr - TMC

Tue Nov 7, 2023

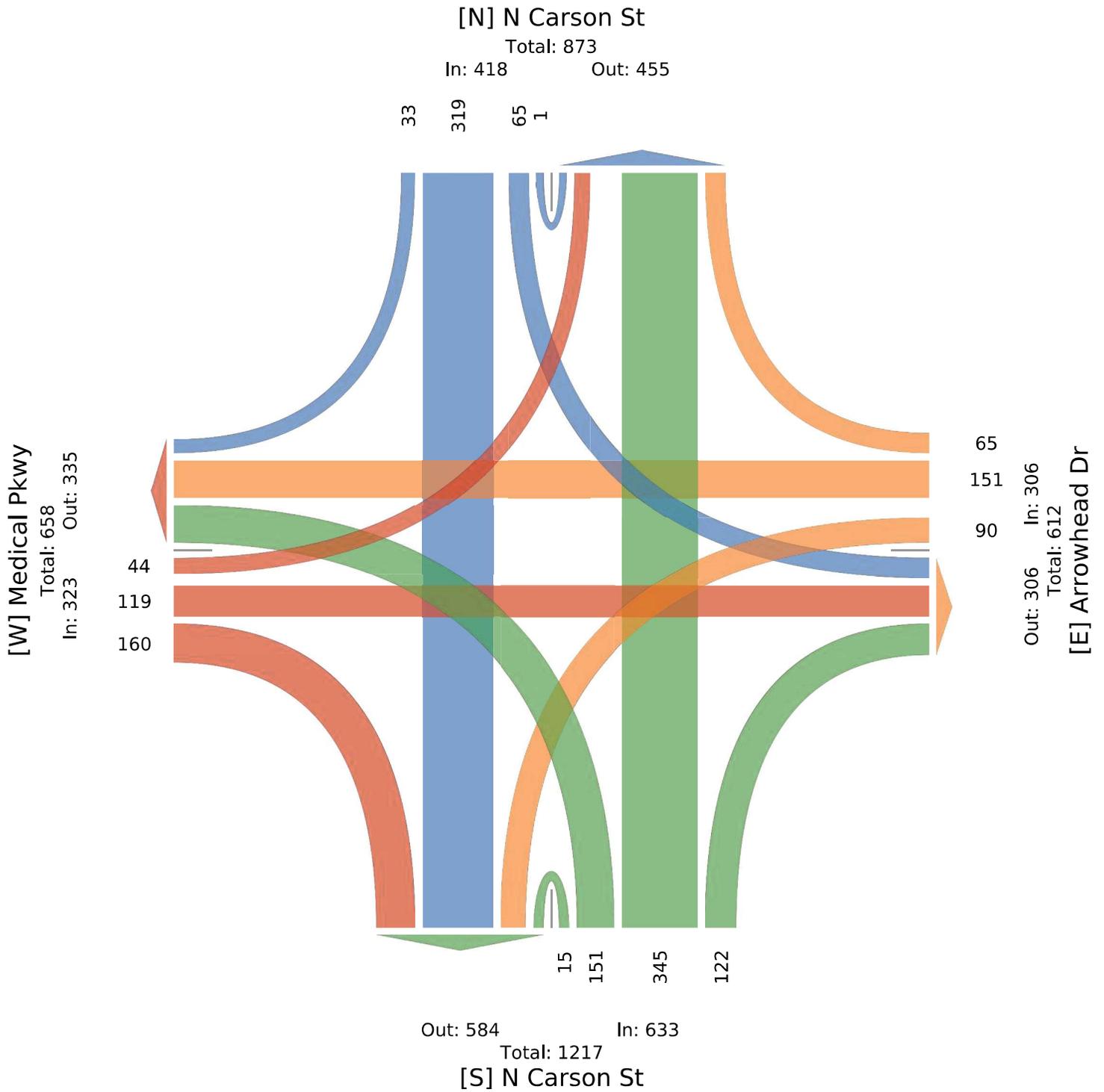
Midday Peak (12 PM - 1 PM)

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)

All Movements

ID: 1128305, Location: 39.19751, -119.777283

Provided by: Kimley-Horn and Associates, Inc.
767 Eustis Street, Suite 100, Saint Paul, MN, 55114, US



N Carson St and Medical Pkwy/Arrowhead Dr - TMC

Tue Nov 7, 2023

PM Peak (4:15 PM - 5:15 PM) - Overall Peak Hour

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)

All Movements

ID: 1128305, Location: 39.19751, -119.777283

Provided by: Kimley-Horn and Associates, Inc.
767 Eustis Street, Suite 100, Saint Paul, MN, 55114, US

Leg Direction	N Carson St Northbound					N Carson St Southbound					Medical Pkwy Eastbound					Arrowhead Dr Westbound					Int
	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	
2023-11-07 4:15PM	26	135	20	3	184	1	102	22	2	127	30	42	25	0	97	19	17	18	0	54	462
4:30PM	35	136	16	3	190	7	80	22	0	109	48	62	30	0	140	37	19	11	0	67	506
4:45PM	36	121	19	1	177	4	88	19	2	113	49	54	41	0	144	19	19	25	0	63	497
5:00PM	32	154	14	2	202	3	104	31	0	138	30	50	34	0	114	26	12	26	0	64	518
Total	129	546	69	9	753	15	374	94	4	487	157	208	130	0	495	101	67	80	0	248	1983
% Approach	17.1%	72.5%	9.2%	1.2%	-	3.1%	76.8%	19.3%	0.8%	-	31.7%	42.0%	26.3%	0%	-	40.7%	27.0%	32.3%	0%	-	-
% Total	6.5%	27.5%	3.5%	0.5%	38.0%	0.8%	18.9%	4.7%	0.2%	24.6%	7.9%	10.5%	6.6%	0%	25.0%	5.1%	3.4%	4.0%	0%	12.5%	-
PHF	0.896	0.886	0.863	0.750	0.932	0.536	0.899	0.758	0.500	0.882	0.801	0.839	0.793	-	0.859	0.682	0.882	0.769	-	0.925	0.957
Lights	127	542	65	9	743	15	371	93	4	483	156	205	128	0	489	100	66	80	0	246	1961
% Lights	98.4%	99.3%	94.2%	100%	98.7%	100%	99.2%	98.9%	100%	99.2%	99.4%	98.6%	98.5%	0%	98.8%	99.0%	98.5%	100%	0%	99.2%	98.9%
Articulated Trucks	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
% Articulated Trucks	0.8%	0%	0%	0%	0.1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0.1%
Buses and Single-Unit Trucks	1	4	4	0	9	0	3	1	0	4	1	3	2	0	6	1	1	0	0	2	21
% Buses and Single-Unit Trucks	0.8%	0.7%	5.8%	0%	1.2%	0%	0.8%	1.1%	0%	0.8%	0.6%	1.4%	1.5%	0%	1.2%	1.0%	1.5%	0%	0%	0.8%	1.1%

*L: Left, R: Right, T: Thru, U: U-Turn

N Carson St and Medical Pkwy/Arrowhead Dr - TMC

Tue Nov 7, 2023

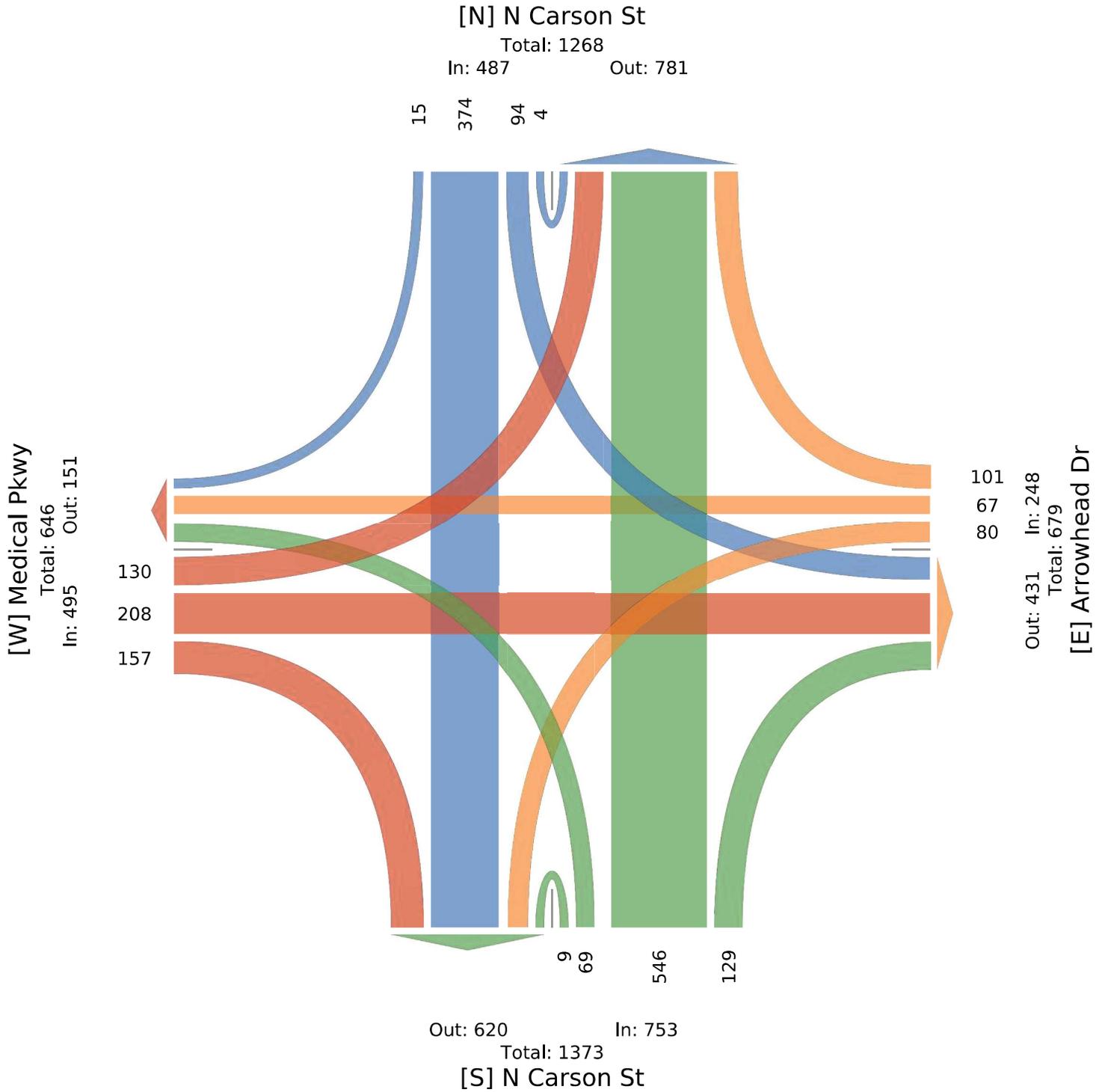
PM Peak (4:15 PM - 5:15 PM) - Overall Peak Hour

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)

All Movements

ID: 1128305, Location: 39.19751, -119.777283

Provided by: Kimley-Horn and Associates, Inc.
767 Eustis Street, Suite 100, Saint Paul, MN, 55114, US



N Carson St and Silver Oak Dr TMC - TMC

Tue Nov 7, 2023

Full Length (12 AM-12 AM (+1))

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)

All Movements

ID: 1128307, Location: 39.19423, -119.775335

Provided by: Kimley-Horn and Associates, Inc.
 767 Eustis Street, Suite 100, Saint Paul, MN, 55114, US

Leg Direction	N Carson St Northbound					N Carson St Southbound					Silver Oak Dr Eastbound					Silver Oak Dr Westbound						
Time	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	Int	
2023-11-07 12:00AM	0	11	0	0	11	1	25	3	3	32	0	0	0	0	0	0	0	0	0	0	0	43
1:00AM	0	18	0	0	18	0	8	1	2	11	0	0	0	0	0	0	0	0	0	0	0	29
2:00AM	0	7	0	0	7	0	10	1	0	11	0	0	0	0	0	0	0	1	0	0	1	19
3:00AM	0	18	0	0	18	0	10	0	0	10	0	0	0	0	0	0	4	0	0	0	4	32
4:00AM	1	64	0	0	65	0	22	2	2	26	0	0	0	0	0	0	9	0	1	0	10	101
5:00AM	4	131	2	0	137	1	71	3	1	76	0	0	0	0	0	0	14	0	3	0	17	230
6:00AM	2	342	11	0	355	11	273	5	3	292	6	0	6	0	12	36	2	7	0	45	704	
7:00AM	14	439	27	0	480	30	562	12	6	610	13	0	8	0	21	52	0	22	0	74	1185	
8:00AM	15	494	20	0	529	24	565	8	14	611	22	1	5	0	28	27	0	23	0	50	1218	
9:00AM	12	454	22	1	489	19	541	7	13	580	29	0	4	0	33	14	1	9	0	24	1126	
10:00AM	12	475	19	2	508	23	520	14	20	577	24	0	16	0	40	16	1	15	0	32	1157	
11:00AM	17	552	21	2	592	22	520	13	21	576	32	0	11	0	43	18	0	15	0	33	1244	
12:00PM	14	564	31	1	610	8	549	15	19	591	27	1	10	0	38	28	0	8	0	36	1275	
1:00PM	21	557	18	0	596	27	485	14	11	537	21	1	18	0	40	25	1	11	0	37	1210	
2:00PM	28	589	19	1	637	11	566	17	16	610	27	1	13	0	41	22	0	12	0	34	1322	
3:00PM	27	633	12	2	674	12	642	20	17	691	23	0	13	0	36	14	0	12	0	26	1427	
4:00PM	27	642	12	4	685	10	585	35	14	644	16	1	20	0	37	14	0	19	0	33	1399	
5:00PM	32	603	9	2	646	5	573	30	8	616	7	0	13	0	20	17	0	12	0	29	1311	
6:00PM	26	292	7	3	328	4	291	18	7	320	3	0	3	0	6	7	0	12	0	19	673	
7:00PM	25	215	2	1	243	1	162	21	6	190	0	0	2	0	2	11	1	5	1	18	453	
8:00PM	15	125	0	0	140	2	144	9	3	158	5	0	3	0	8	10	0	5	0	15	321	
9:00PM	7	67	0	0	74	2	108	15	1	126	1	0	0	0	1	6	0	4	0	10	211	
10:00PM	5	39	0	0	44	1	61	8	1	71	0	0	0	0	0	3	1	0	0	4	119	
11:00PM	6	22	2	0	30	0	50	3	1	54	1	1	0	0	2	3	0	3	0	6	92	
Total	310	7353	234	19	7916	214	7343	274	189	8020	257	6	145	0	408	350	8	198	1	557	16901	
% Approach	3.9%	92.9%	3.0%	0.2%	-	2.7%	91.6%	3.4%	2.4%	-	63.0%	1.5%	35.5%	0%	-	62.8%	1.4%	35.5%	0.2%	-	-	
% Total	1.8%	43.5%	1.4%	0.1%	46.8%	1.3%	43.4%	1.6%	1.1%	47.5%	1.5%	0%	0.9%	0%	2.4%	2.1%	0%	1.2%	0%	3.3%	-	
Lights	298	7186	231	19	7734	207	7164	271	185	7827	254	5	142	0	401	344	8	193	1	546	16508	
% Lights	96.1%	97.7%	98.7%	100%	97.7%	96.7%	97.6%	98.9%	97.9%	97.6%	98.8%	83.3%	97.9%	0%	98.3%	98.3%	100%	97.5%	100%	98.0%	97.7%	
Articulated Trucks	0	26	1	0	27	1	30	0	3	34	1	0	1	0	2	0	0	0	0	0	63	
% Articulated Trucks	0%	0.4%	0.4%	0%	0.3%	0.5%	0.4%	0%	1.6%	0.4%	0.4%	0%	0.7%	0%	0.5%	0%	0%	0%	0%	0%	0.4%	
Buses and Single-Unit Trucks	12	141	2	0	155	6	149	3	1	159	2	1	2	0	5	6	0	5	0	11	330	
% Buses and Single-Unit Trucks	3.9%	1.9%	0.9%	0%	2.0%	2.8%	2.0%	1.1%	0.5%	2.0%	0.8%	16.7%	1.4%	0%	1.2%	1.7%	0%	2.5%	0%	2.0%	2.0%	

*L: Left, R: Right, T: Thru, U: U-Turn

N Carson St and Silver Oak Dr TMC - TMC

Tue Nov 7, 2023

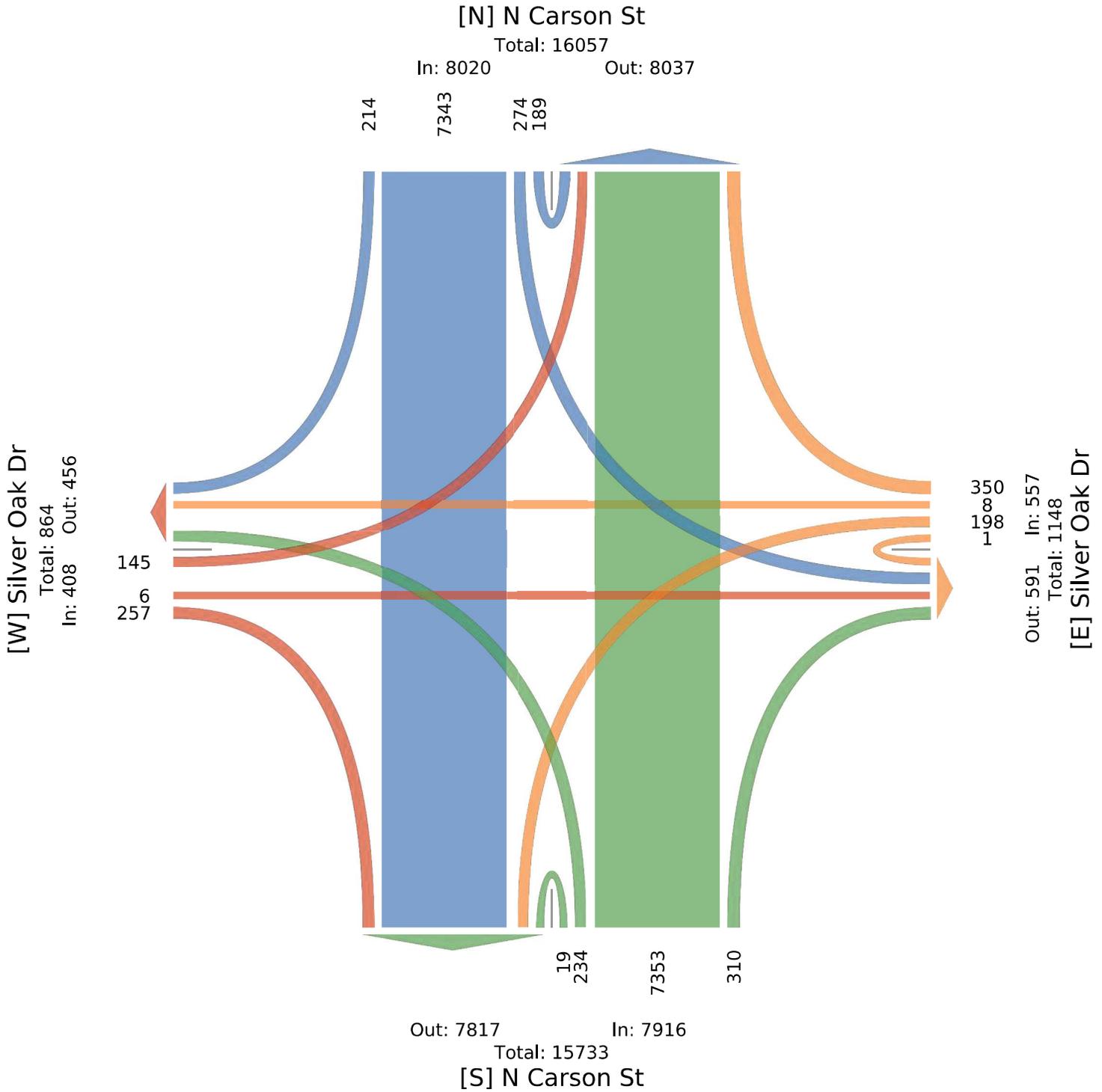
Full Length (12 AM-12 AM (+1))

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)

All Movements

ID: 1128307, Location: 39.19423, -119.775335

Provided by: Kimley-Horn and Associates, Inc.
767 Eustis Street, Suite 100, Saint Paul, MN, 55114, US



N Carson St and Silver Oak Dr TMC - TMC

Provided by: Kimley-Horn and Associates, Inc.
767 Eustis Street, Suite 100, Saint Paul, MN, 55114, US

Tue Nov 7, 2023

AM Peak (7:30 AM - 8:30 AM)

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)

All Movements

ID: 1128307, Location: 39.19423, -119.775335

Leg Direction	N Carson St Northbound					N Carson St Southbound					Silver Oak Dr Eastbound					Silver Oak Dr Westbound					
Time	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	Int
2023-11-07 7:30AM	4	132	8	0	144	7	156	3	0	166	5	0	2	0	7	11	0	4	0	15	332
7:45AM	3	112	4	0	119	11	210	4	5	230	5	0	2	0	7	14	0	9	0	23	379
8:00AM	2	133	6	0	141	9	139	1	4	153	5	0	2	0	7	8	0	7	0	15	316
8:15AM	5	149	3	0	157	5	137	3	3	148	7	0	0	0	7	6	0	7	0	13	325
Total	14	526	21	0	561	32	642	11	12	697	22	0	6	0	28	39	0	27	0	66	1352
% Approach	2.5%	93.8%	3.7%	0%	-	4.6%	92.1%	1.6%	1.7%	-	78.6%	0%	21.4%	0%	-	59.1%	0%	40.9%	0%	-	-
% Total	1.0%	38.9%	1.6%	0%	41.5%	2.4%	47.5%	0.8%	0.9%	51.6%	1.6%	0%	0.4%	0%	2.1%	2.9%	0%	2.0%	0%	4.9%	-
PHF	0.700	0.883	0.656	-	0.893	0.727	0.764	0.688	0.600	0.758	0.786	-	0.750	-	1.000	0.696	-	0.750	-	0.717	0.892
Lights	12	515	21	0	548	31	625	10	12	678	22	0	6	0	28	39	0	25	0	64	1318
% Lights	85.7%	97.9%	100%	0%	97.7%	96.9%	97.4%	90.9%	100%	97.3%	100%	0%	100%	0%	100%	100%	0%	92.6%	0%	97.0%	97.5%
Articulated Trucks	0	2	0	0	2	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	3
% Articulated Trucks	0%	0.4%	0%	0%	0.4%	0%	0.2%	0%	0%	0.1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0.2%
Buses and Single-Unit Trucks	2	9	0	0	11	1	16	1	0	18	0	0	0	0	0	0	0	2	0	2	31
% Buses and Single-Unit Trucks	14.3%	1.7%	0%	0%	2.0%	3.1%	2.5%	9.1%	0%	2.6%	0%	0%	0%	0%	0%	0%	0%	7.4%	0%	3.0%	2.3%

*L: Left, R: Right, T: Thru, U: U-Turn

N Carson St and Silver Oak Dr TMC - TMC

Tue Nov 7, 2023

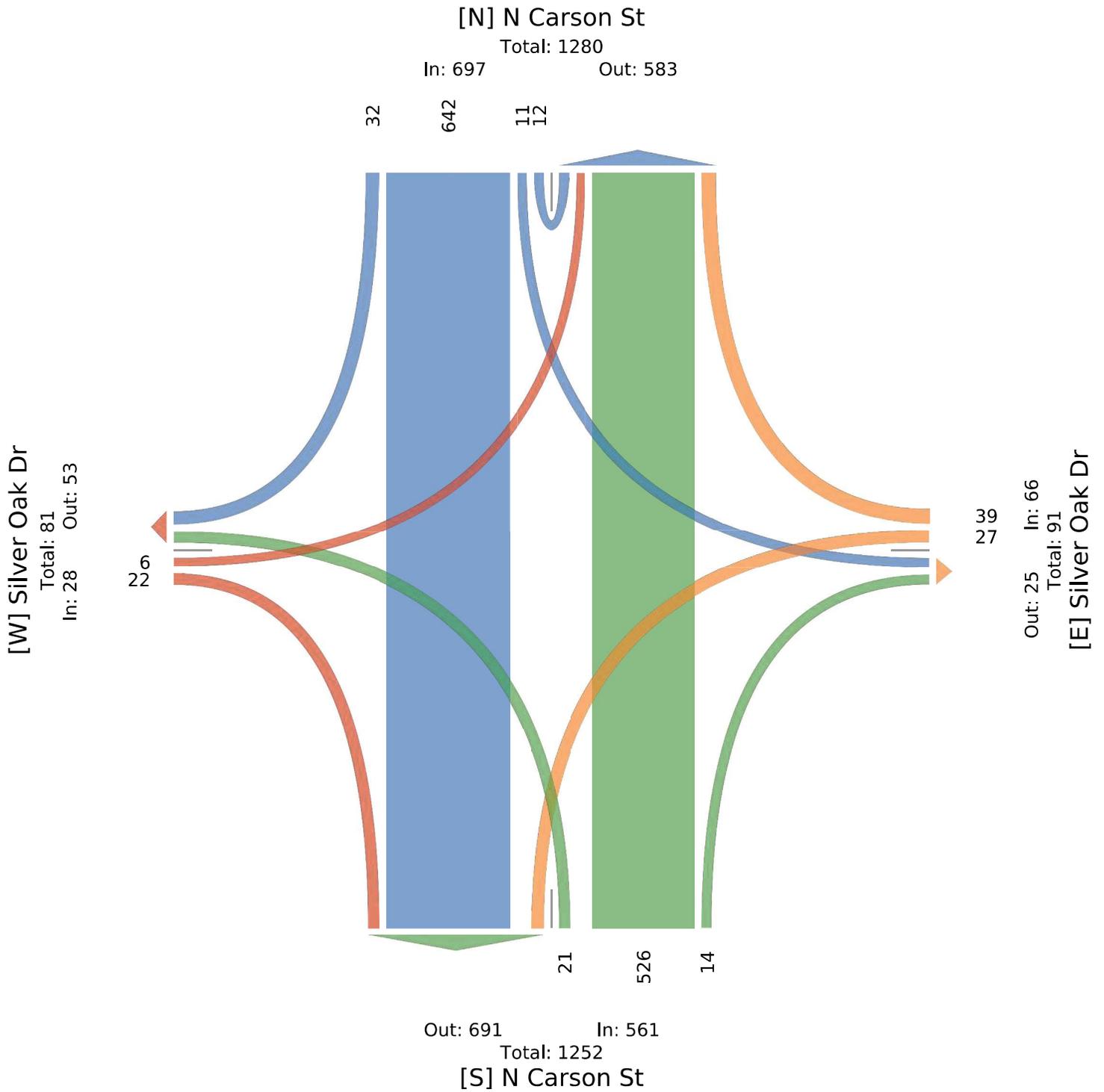
AM Peak (7:30 AM - 8:30 AM)

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)

All Movements

ID: 1128307, Location: 39.19423, -119.775335

Provided by: Kimley-Horn and Associates, Inc.
767 Eustis Street, Suite 100, Saint Paul, MN, 55114, US



N Carson St and Silver Oak Dr TMC - TMC

Provided by: Kimley-Horn and Associates, Inc.
767 Eustis Street, Suite 100, Saint Paul, MN, 55114, US

Tue Nov 7, 2023

Midday Peak (12 PM - 1 PM)

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)

All Movements

ID: 1128307, Location: 39.19423, -119.775335

Leg Direction	N Carson St Northbound					N Carson St Southbound					Silver Oak Dr Eastbound					Silver Oak Dr Westbound					
Time	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	Int
2023-11-07 12:00PM	2	133	7	1	143	2	161	3	7	173	8	0	0	0	8	5	0	1	0	6	330
12:15PM	2	150	9	0	161	1	124	3	6	134	9	1	4	0	14	9	0	2	0	11	320
12:30PM	6	136	8	0	150	4	121	7	4	136	5	0	4	0	9	8	0	2	0	10	305
12:45PM	4	145	7	0	156	1	143	2	2	148	5	0	2	0	7	6	0	3	0	9	320
Total	14	564	31	1	610	8	549	15	19	591	27	1	10	0	38	28	0	8	0	36	1275
% Approach	2.3%	92.5%	5.1%	0.2%	-	1.4%	92.9%	2.5%	3.2%	-	71.1%	2.6%	26.3%	0%	-	77.8%	0%	22.2%	0%	-	-
% Total	1.1%	44.2%	2.4%	0.1%	47.8%	0.6%	43.1%	1.2%	1.5%	46.4%	2.1%	0.1%	0.8%	0%	3.0%	2.2%	0%	0.6%	0%	2.8%	-
PHF	0.583	0.940	0.861	0.250	0.947	0.500	0.852	0.536	0.679	0.854	0.750	0.250	0.625	-	0.679	0.778	-	0.667	-	0.818	0.966
Lights	14	547	31	1	593	8	532	15	18	573	27	0	10	0	37	28	0	8	0	36	1239
% Lights	100%	97.0%	100%	100%	97.2%	100%	96.9%	100%	94.7%	97.0%	100%	0%	100%	0%	97.4%	100%	0%	100%	0%	100%	97.2%
Articulated Trucks	0	4	0	0	4	0	3	0	0	3	0	0	0	0	0	0	0	0	0	0	7
% Articulated Trucks	0%	0.7%	0%	0%	0.7%	0%	0.5%	0%	0%	0.5%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0.5%
Buses and Single-Unit Trucks	0	13	0	0	13	0	14	0	1	15	0	1	0	0	1	0	0	0	0	0	29
% Buses and Single-Unit Trucks	0%	2.3%	0%	0%	2.1%	0%	2.6%	0%	5.3%	2.5%	0%	100%	0%	0%	2.6%	0%	0%	0%	0%	0%	2.3%

*L: Left, R: Right, T: Thru, U: U-Turn

N Carson St and Silver Oak Dr TMC - TMC

Tue Nov 7, 2023

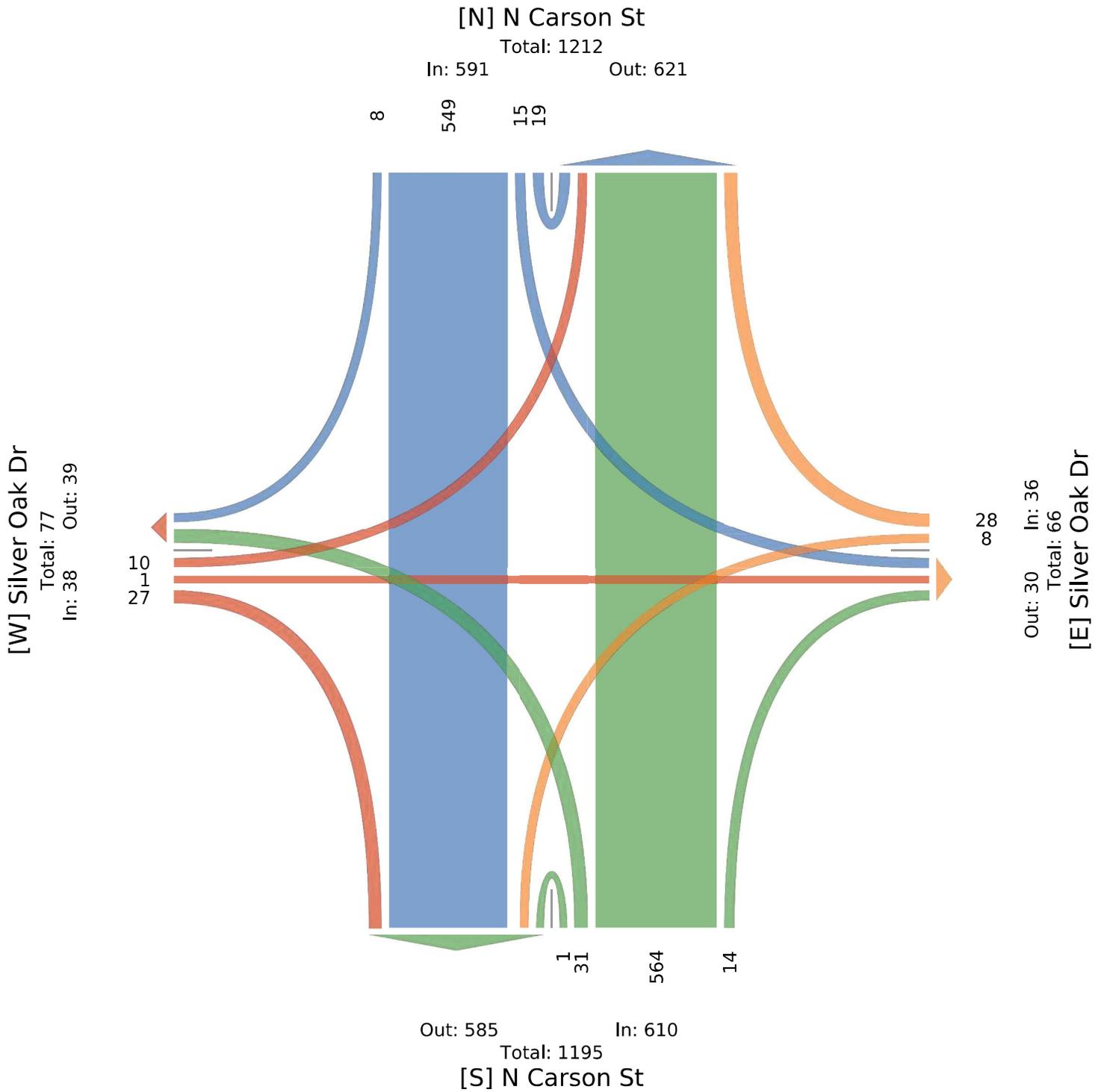
Midday Peak (12 PM - 1 PM)

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)

All Movements

ID: 1128307, Location: 39.19423, -119.775335

Provided by: Kimley-Horn and Associates, Inc.
767 Eustis Street, Suite 100, Saint Paul, MN, 55114, US



N Carson St and Silver Oak Dr TMC - TMC

Provided by: Kimley-Horn and Associates, Inc.
767 Eustis Street, Suite 100, Saint Paul, MN, 55114, US

Tue Nov 7, 2023

PM Peak (2:45 PM - 3:45 PM) - Overall Peak Hour

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)

All Movements

ID: 1128307, Location: 39.19423, -119.775335

Leg Direction	N Carson St Northbound					N Carson St Southbound					Silver Oak Dr Eastbound					Silver Oak Dr Westbound					Int
	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	
2023-11-07 2:45PM	6	165	6	0	177	3	150	5	4	162	5	1	3	0	9	7	0	5	0	12	360
3:00PM	1	140	1	0	142	4	207	2	4	217	5	0	6	0	11	2	0	5	0	7	377
3:15PM	8	170	5	1	184	4	149	5	2	160	6	0	2	0	8	4	0	0	0	4	356
3:30PM	10	186	3	0	199	4	156	7	4	171	3	0	4	0	7	6	0	2	0	8	385
Total	25	661	15	1	702	15	662	19	14	710	19	1	15	0	35	19	0	12	0	31	1478
% Approach	3.6%	94.2%	2.1%	0.1%	-	2.1%	93.2%	2.7%	2.0%	-	54.3%	2.9%	42.9%	0%	-	61.3%	0%	38.7%	0%	-	-
% Total	1.7%	44.7%	1.0%	0.1%	47.5%	1.0%	44.8%	1.3%	0.9%	48.0%	1.3%	0.1%	1.0%	0%	2.4%	1.3%	0%	0.8%	0%	2.1%	-
PHF	0.625	0.888	0.625	0.250	0.882	0.938	0.800	0.679	0.875	0.818	0.792	0.250	0.625	-	0.795	0.679	-	0.600	-	0.646	0.960
Lights	23	642	15	1	681	14	653	19	14	700	19	1	15	0	35	17	0	12	0	29	1445
% Lights	92.0%	97.1%	100%	100%	97.0%	93.3%	98.6%	100%	100%	98.6%	100%	100%	100%	0%	100%	89.5%	0%	100%	0%	93.5%	97.8%
Articulated Trucks	0	2	0	0	2	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	4
% Articulated Trucks	0%	0.3%	0%	0%	0.3%	0%	0.3%	0%	0%	0.3%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0.3%
Buses and Single-Unit Trucks	2	17	0	0	19	1	7	0	0	8	0	0	0	0	0	2	0	0	0	2	29
% Buses and Single-Unit Trucks	8.0%	2.6%	0%	0%	2.7%	6.7%	1.1%	0%	0%	1.1%	0%	0%	0%	0%	0%	10.5%	0%	0%	0%	6.5%	2.0%

*L: Left, R: Right, T: Thru, U: U-Turn

N Carson St and Silver Oak Dr TMC - TMC

Tue Nov 7, 2023

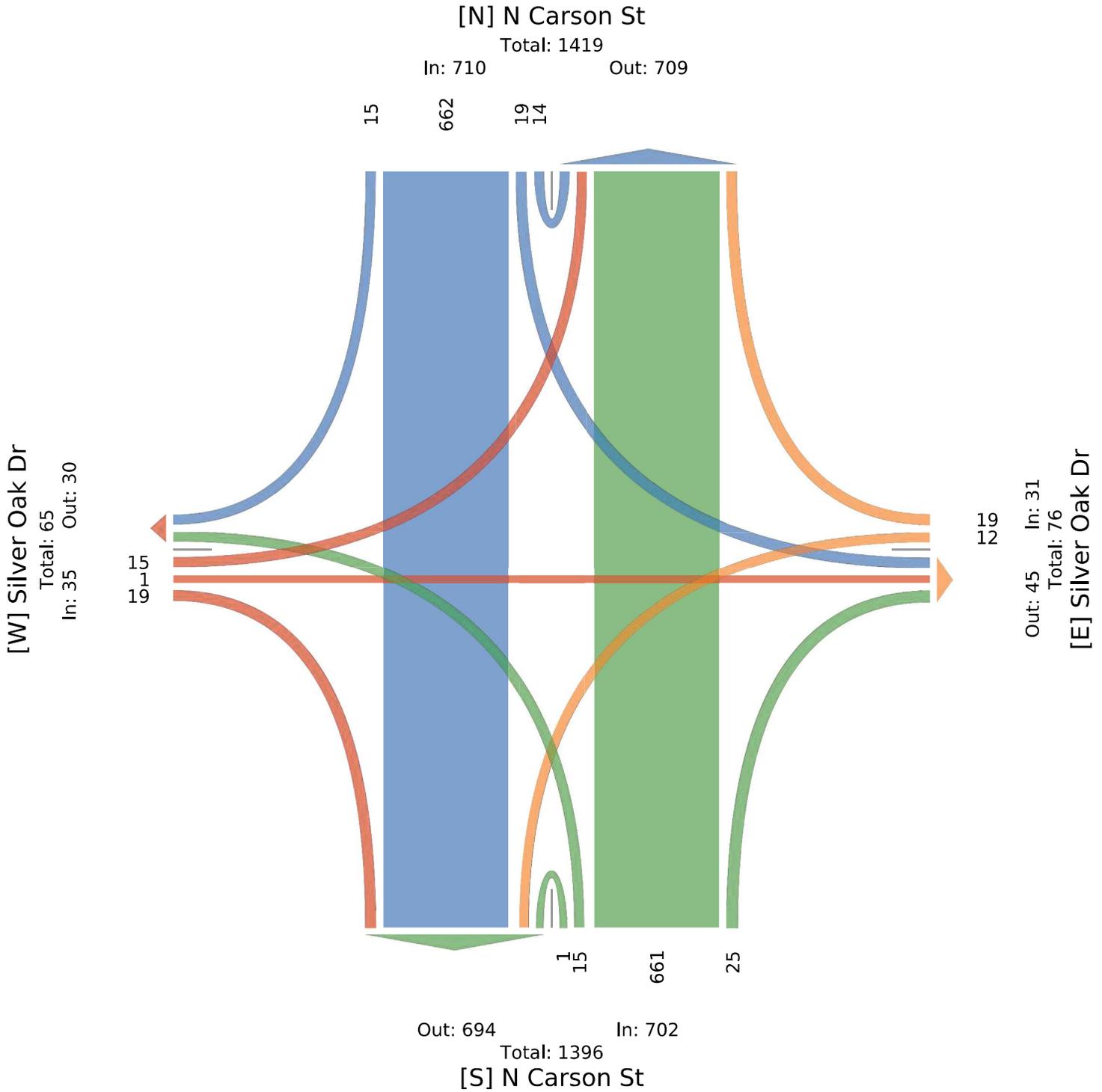
PM Peak (2:45 PM - 3:45 PM) - Overall Peak Hour

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)

All Movements

ID: 1128307, Location: 39.19423, -119.775335

Provided by: Kimley-Horn and Associates, Inc.
767 Eustis Street, Suite 100, Saint Paul, MN, 55114, US



N Carson St and W College Pkwy - TMC

Tue Nov 7, 2023

Full Length (12 AM-12 AM (+1))

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)

All Movements

ID: 1128308, Location: 39.190715, -119.773093

Provided by: Kimley-Horn and Associates, Inc.
767 Eustis Street, Suite 100, Saint Paul, MN, 55114, US

Leg Direction	N Carson St Northbound					N Carson St Southbound					W College Pkwy Eastbound					W College Pkwy Westbound					
Time	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	Int
2023-11-07 12:00AM	2	17	7	0	26	6	8	1	0	15	4	4	7	0	15	1	1	0	0	2	58
1:00AM	1	7	3	0	11	1	8	0	0	9	5	4	1	0	10	2	0	2	0	4	34
2:00AM	1	5	4	0	10	2	4	1	0	7	0	4	1	0	5	0	1	3	0	4	26
3:00AM	0	8	1	0	9	1	15	1	0	17	3	3	3	0	9	4	4	1	0	9	44
4:00AM	4	15	2	0	21	5	34	3	0	42	18	4	5	0	27	4	13	8	0	25	115
5:00AM	9	55	7	0	71	9	89	14	0	112	25	14	15	0	54	8	27	26	0	61	298
6:00AM	21	248	25	2	296	25	235	7	2	269	63	37	54	1	155	28	66	61	0	155	875
7:00AM	66	460	34	6	566	66	309	73	5	453	85	203	151	0	439	73	133	85	1	292	1750
8:00AM	67	497	48	0	612	94	342	66	1	503	90	167	127	0	384	74	93	96	0	263	1762
9:00AM	70	442	57	0	569	72	324	73	2	471	78	203	96	1	378	71	116	77	0	264	1682
10:00AM	65	417	90	0	572	103	362	93	7	565	81	176	123	0	380	92	139	75	1	307	1824
11:00AM	63	428	108	0	599	134	414	93	7	648	71	134	125	0	330	120	175	101	0	396	1973
12:00PM	83	420	94	0	597	145	412	154	4	715	103	207	146	0	456	119	204	103	0	426	2194
1:00PM	50	379	84	0	513	118	430	106	5	659	85	153	133	0	371	89	145	79	1	314	1857
2:00PM	79	436	95	0	610	137	433	96	1	667	93	128	126	0	347	106	199	90	0	395	2019
3:00PM	109	455	118	4	686	162	492	122	5	781	69	186	128	0	383	93	172	90	0	355	2205
4:00PM	83	439	133	0	655	161	558	115	4	838	63	188	102	1	354	83	173	94	0	350	2197
5:00PM	78	417	101	6	602	144	462	99	0	705	50	198	104	0	352	69	205	102	1	377	2036
6:00PM	47	198	50	0	295	81	257	44	0	382	41	92	59	0	192	38	132	38	0	208	1077
7:00PM	21	121	40	1	183	56	173	27	3	259	24	61	30	0	115	22	68	27	0	117	674
8:00PM	31	94	34	0	159	48	109	22	0	179	10	35	28	0	73	21	58	19	1	99	510
9:00PM	22	72	22	0	116	25	53	4	0	82	7	15	20	0	42	11	26	12	0	49	289
10:00PM	10	40	12	0	62	17	32	4	1	54	6	8	10	0	24	8	13	6	0	27	167
11:00PM	7	32	17	1	57	16	19	7	0	42	6	9	6	0	21	5	7	1	0	13	133
Total	989	5702	1186	20	7897	1628	5574	1225	47	8474	1080	2233	1600	3	4916	1141	2170	1196	5	4512	25799
% Approach	12.5%	72.2%	15.0%	0.3%	-	19.2%	65.8%	14.5%	0.6%	-	22.0%	45.4%	32.5%	0.1%	-	25.3%	48.1%	26.5%	0.1%	-	-
% Total	3.8%	22.1%	4.6%	0.1%	30.6%	6.3%	21.6%	4.7%	0.2%	32.8%	4.2%	8.7%	6.2%	0%	19.1%	4.4%	8.4%	4.6%	0%	17.5%	-
Lights	967	5579	1145	20	7711	1602	5454	1211	46	8313	1042	2187	1579	3	4811	1116	2122	1172	5	4415	25250
% Lights	97.8%	97.8%	96.5%	100%	97.6%	98.4%	97.8%	98.9%	97.9%	98.1%	96.5%	97.9%	98.7%	100%	97.9%	97.8%	97.8%	98.0%	100%	97.9%	97.9%
Articulated Trucks	3	24	6	0	33	8	21	1	0	30	4	9	3	0	16	5	6	2	0	13	92
% Articulated Trucks	0.3%	0.4%	0.5%	0%	0.4%	0.5%	0.4%	0.1%	0%	0.4%	0.4%	0.4%	0.2%	0%	0.3%	0.4%	0.3%	0.2%	0%	0.3%	0.4%
Buses and Single-Unit Trucks	19	99	35	0	153	18	99	13	1	131	34	37	18	0	89	20	42	22	0	84	457
% Buses and Single-Unit Trucks	1.9%	1.7%	3.0%	0%	1.9%	1.1%	1.8%	1.1%	2.1%	1.5%	3.1%	1.7%	1.1%	0%	1.8%	1.8%	1.9%	1.8%	0%	1.9%	1.8%

*L: Left, R: Right, T: Thru, U: U-Turn

N Carson St and W College Pkwy - TMC

Tue Nov 7, 2023

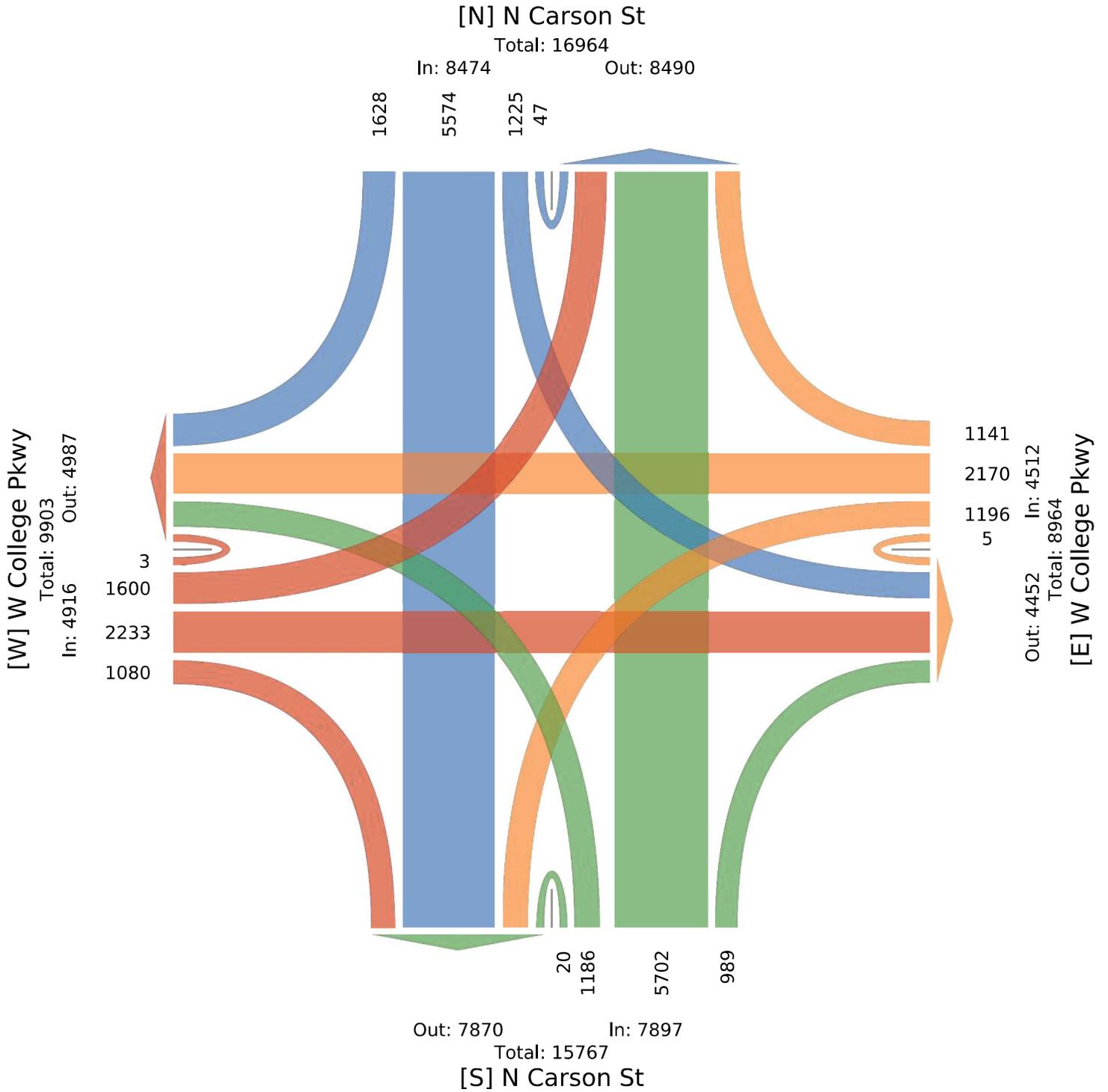
Full Length (12 AM-12 AM (+1))

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)

All Movements

ID: 1128308, Location: 39.190715, -119.773093

Provided by: Kimley-Horn and Associates, Inc.
767 Eustis Street, Suite 100, Saint Paul, MN, 55114, US



N Carson St and W College Pkwy - TMC

Tue Nov 7, 2023

AM Peak (7:30 AM - 8:30 AM)

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)

All Movements

ID: 1128308, Location: 39.190715, -119.773093

Provided by: Kimley-Horn and Associates, Inc.
767 Eustis Street, Suite 100, Saint Paul, MN, 55114, US

Leg Direction	N Carson St Northbound					N Carson St Southbound					W College Pkwy Eastbound					W College Pkwy Westbound					
Time	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	Int
2023-11-07 7:30AM	23	112	9	1	145	17	94	30	0	141	18	57	34	0	109	14	34	21	0	69	464
7:45AM	25	172	14	1	212	25	74	20	4	123	28	96	52	0	176	27	54	18	1	100	611
8:00AM	10	135	10	0	155	27	95	19	0	141	26	37	44	0	107	15	25	26	0	66	469
8:15AM	13	129	12	0	154	21	89	17	0	127	32	47	34	0	113	14	27	27	0	68	462
Total	71	548	45	2	666	90	352	86	4	532	104	237	164	0	505	70	140	92	1	303	2006
% Approach	10.7%	82.3%	6.8%	0.3%	-	16.9%	66.2%	16.2%	0.8%	-	20.6%	46.9%	32.5%	0%	-	23.1%	46.2%	30.4%	0.3%	-	-
% Total	3.5%	27.3%	2.2%	0.1%	33.2%	4.5%	17.5%	4.3%	0.2%	26.5%	5.2%	11.8%	8.2%	0%	25.2%	3.5%	7.0%	4.6%	0%	15.1%	-
PHF	0.710	0.797	0.804	0.500	0.785	0.833	0.926	0.717	0.250	0.943	0.813	0.617	0.788	-	0.717	0.648	0.648	0.852	0.250	0.758	0.821
Lights	69	534	42	2	647	89	344	84	4	521	102	231	157	0	490	68	136	91	1	296	1954
% Lights	97.2%	97.4%	93.3%	100%	97.1%	98.9%	97.7%	97.7%	100%	97.9%	98.1%	97.5%	95.7%	0%	97.0%	97.1%	97.1%	98.9%	100%	97.7%	97.4%
Articulated Trucks	0	1	0	0	1	0	2	0	0	2	0	3	0	0	3	0	2	0	0	2	8
% Articulated Trucks	0%	0.2%	0%	0%	0.2%	0%	0.6%	0%	0%	0.4%	0%	1.3%	0%	0%	0.6%	0%	1.4%	0%	0%	0.7%	0.4%
Buses and Single-Unit Trucks	2	13	3	0	18	1	6	2	0	9	2	3	7	0	12	2	2	1	0	5	44
% Buses and Single-Unit Trucks	2.8%	2.4%	6.7%	0%	2.7%	1.1%	1.7%	2.3%	0%	1.7%	1.9%	1.3%	4.3%	0%	2.4%	2.9%	1.4%	1.1%	0%	1.7%	2.2%

*L: Left, R: Right, T: Thru, U: U-Turn

N Carson St and W College Pkwy - TMC

Tue Nov 7, 2023

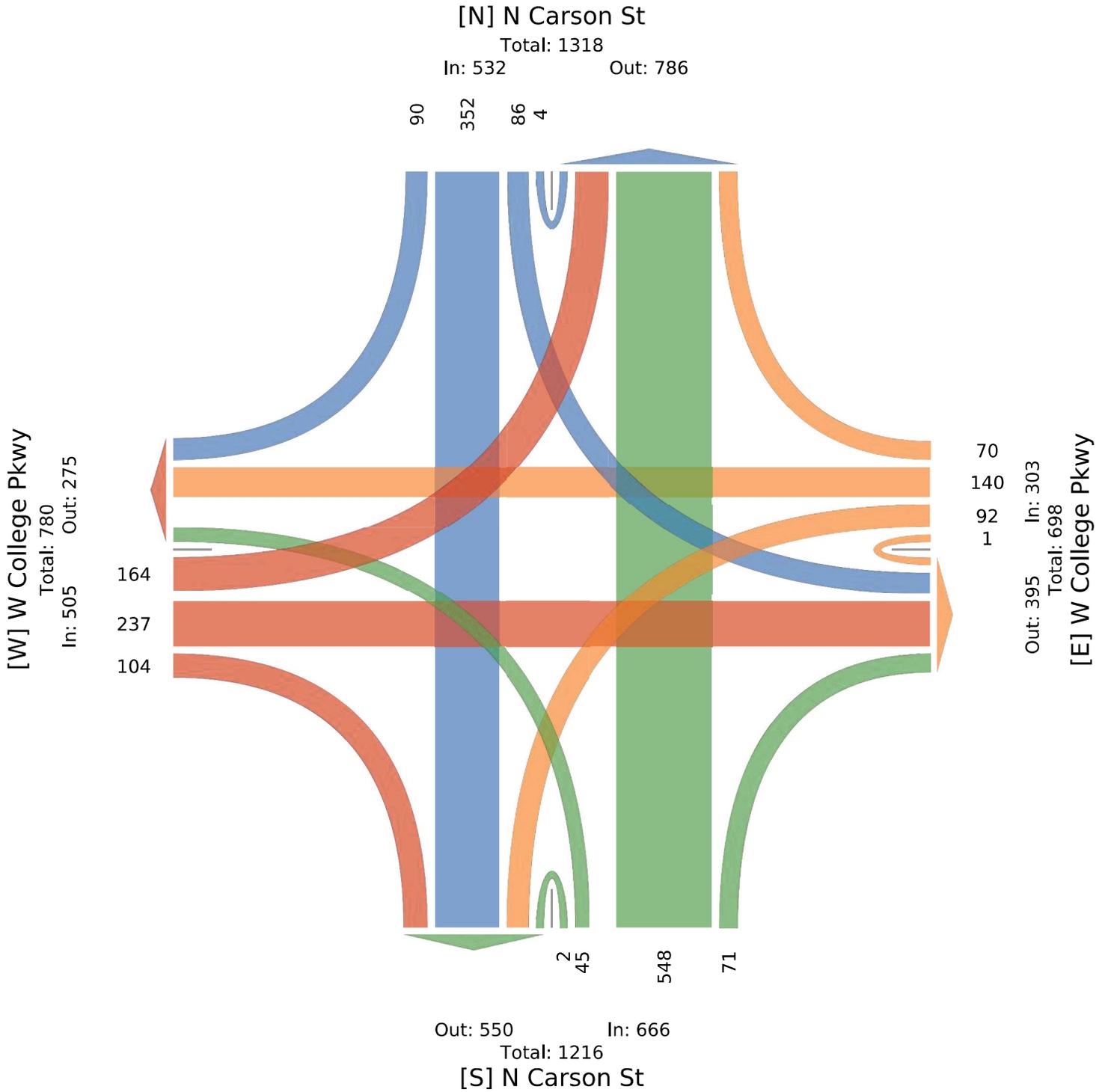
AM Peak (7:30 AM - 8:30 AM)

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)

All Movements

ID: 1128308, Location: 39.190715, -119.773093

Provided by: Kimley-Horn and Associates, Inc.
767 Eustis Street, Suite 100, Saint Paul, MN, 55114, US



N Carson St and W College Pkwy - TMC

Tue Nov 7, 2023

Midday Peak (12 PM - 1 PM)

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)

All Movements

ID: 1128308, Location: 39.190715, -119.773093

Provided by: Kimley-Horn and Associates, Inc.
767 Eustis Street, Suite 100, Saint Paul, MN, 55114, US

Leg Direction	N Carson St Northbound					N Carson St Southbound					W College Pkwy Eastbound					W College Pkwy Westbound					Int
	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	
2023-11-07 12:00PM	24	107	35	0	166	34	82	32	2	150	27	44	42	0	113	36	59	25	0	120	549
12:15PM	15	111	18	0	144	37	113	48	2	200	22	48	33	0	103	24	50	25	0	99	546
12:30PM	25	95	22	0	142	32	101	36	0	169	29	49	36	0	114	28	52	18	0	98	523
12:45PM	19	107	19	0	145	42	116	38	0	196	25	66	35	0	126	31	43	35	0	109	576
Total	83	420	94	0	597	145	412	154	4	715	103	207	146	0	456	119	204	103	0	426	2194
% Approach	13.9%	70.4%	15.7%	0%	-	20.3%	57.6%	21.5%	0.6%	-	22.6%	45.4%	32.0%	0%	-	27.9%	47.9%	24.2%	0%	-	-
% Total	3.8%	19.1%	4.3%	0%	27.2%	6.6%	18.8%	7.0%	0.2%	32.6%	4.7%	9.4%	6.7%	0%	20.8%	5.4%	9.3%	4.7%	0%	19.4%	-
PHF	0.830	0.946	0.671	-	0.899	0.863	0.888	0.802	0.500	0.894	0.888	0.784	0.869	-	0.905	0.826	0.864	0.736	-	0.888	0.952
Lights	81	414	90	0	585	140	401	154	4	699	101	203	146	0	450	118	200	101	0	419	2153
% Lights	97.6%	98.6%	95.7%	0%	98.0%	96.6%	97.3%	100%	100%	97.8%	98.1%	98.1%	100%	0%	98.7%	99.2%	98.0%	98.1%	0%	98.4%	98.1%
Articulated Trucks	1	1	0	0	2	2	1	0	0	3	1	0	0	0	1	0	1	0	0	1	7
% Articulated Trucks	1.2%	0.2%	0%	0%	0.3%	1.4%	0.2%	0%	0%	0.4%	1.0%	0%	0%	0%	0.2%	0%	0.5%	0%	0%	0.2%	0.3%
Buses and Single-Unit Trucks	1	5	4	0	10	3	10	0	0	13	1	4	0	0	5	1	3	2	0	6	34
% Buses and Single-Unit Trucks	1.2%	1.2%	4.3%	0%	1.7%	2.1%	2.4%	0%	0%	1.8%	1.0%	1.9%	0%	0%	1.1%	0.8%	1.5%	1.9%	0%	1.4%	1.5%

*L: Left, R: Right, T: Thru, U: U-Turn

N Carson St and W College Pkwy - TMC

Tue Nov 7, 2023

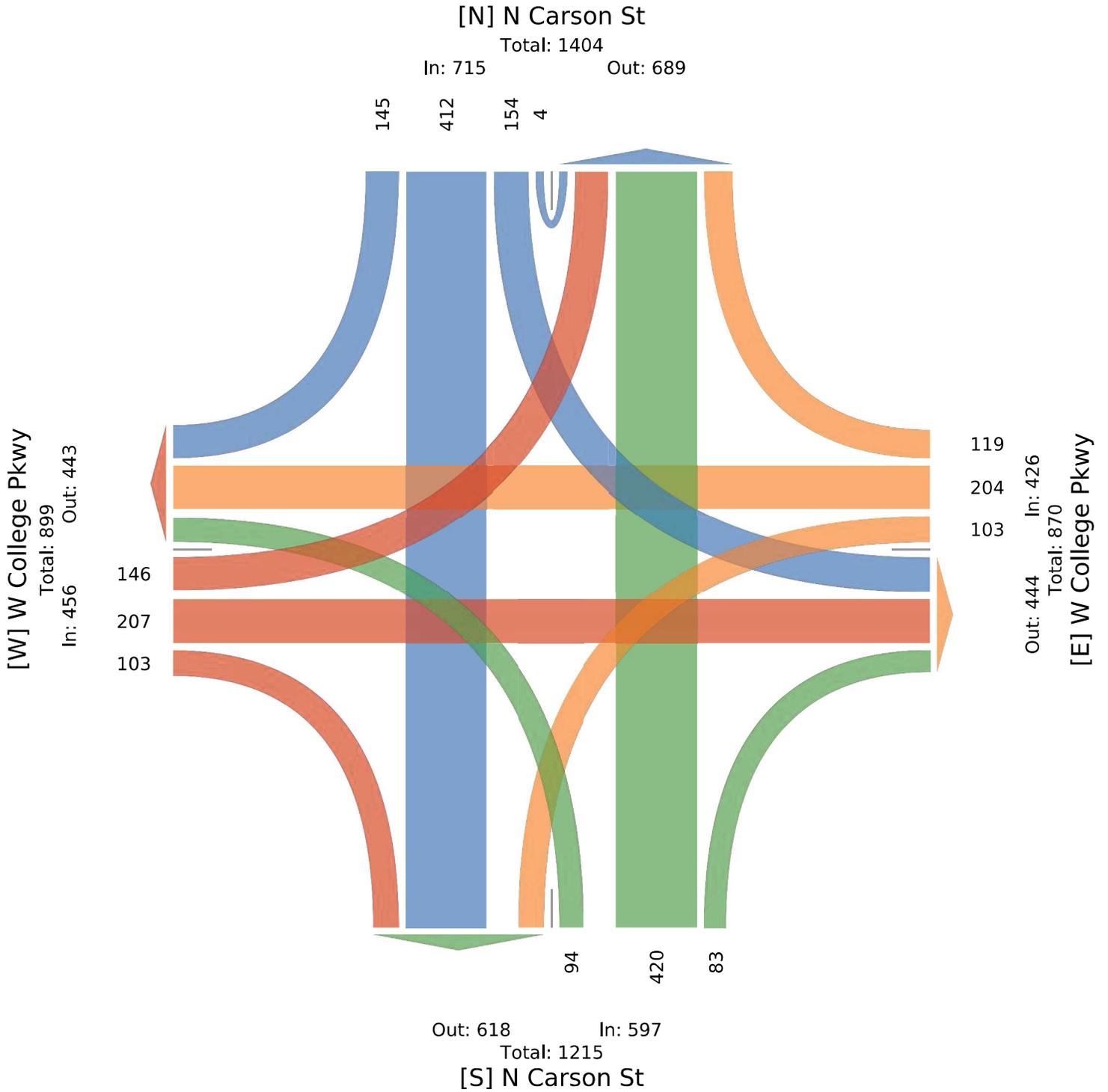
Midday Peak (12 PM - 1 PM)

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)

All Movements

ID: 1128308, Location: 39.190715, -119.773093

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N Carson St and W College Pkwy - TMC

Tue Nov 7, 2023

PM Peak (4:30 PM - 5:30 PM) - Overall Peak Hour

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)

All Movements

ID: 1128308, Location: 39.190715, -119.773093

Provided by: Kimley-Horn and Associates, Inc.
767 Eustis Street, Suite 100, Saint Paul, MN, 55114, US

Leg Direction	N Carson St Northbound					N Carson St Southbound					W College Pkwy Eastbound					W College Pkwy Westbound					Int
	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	
2023-11-07 4:30PM	10	107	34	0	151	39	133	28	2	202	13	50	31	0	94	19	48	29	0	96	543
4:45PM	23	116	40	0	179	43	157	32	2	234	16	47	27	0	90	19	42	29	0	90	593
5:00PM	25	119	37	2	183	47	144	29	0	220	14	58	33	0	105	24	68	40	0	132	640
5:15PM	23	110	23	1	157	41	133	32	0	206	11	50	25	0	86	16	47	27	0	90	539
Total	81	452	134	3	670	170	567	121	4	862	54	205	116	0	375	78	205	125	0	408	2315
% Approach	12.1%	67.5%	20.0%	0.4%	-	19.7%	65.8%	14.0%	0.5%	-	14.4%	54.7%	30.9%	0%	-	19.1%	50.2%	30.6%	0%	-	-
% Total	3.5%	19.5%	5.8%	0.1%	28.9%	7.3%	24.5%	5.2%	0.2%	37.2%	2.3%	8.9%	5.0%	0%	16.2%	3.4%	8.9%	5.4%	0%	17.6%	-
PHF	0.810	0.950	0.838	0.375	0.915	0.904	0.903	0.945	0.500	0.921	0.844	0.884	0.879	-	0.893	0.813	0.754	0.781	-	0.773	0.904
Lights	81	449	132	3	665	170	565	121	4	860	53	204	116	0	373	78	204	125	0	407	2305
% Lights	100%	99.3%	98.5%	100%	99.3%	100%	99.6%	100%	100%	99.8%	98.1%	99.5%	100%	0%	99.5%	100%	99.5%	100%	0%	99.8%	99.6%
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Articulated Trucks	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Buses and Single-Unit Trucks	0	3	2	0	5	0	2	0	0	2	1	1	0	0	2	0	1	0	0	1	10
% Buses and Single-Unit Trucks	0%	0.7%	1.5%	0%	0.7%	0%	0.4%	0%	0%	0.2%	1.9%	0.5%	0%	0%	0.5%	0%	0.5%	0%	0%	0.2%	0.4%

*L: Left, R: Right, T: Thru, U: U-Turn

N Carson St and W College Pkwy - TMC

Tue Nov 7, 2023

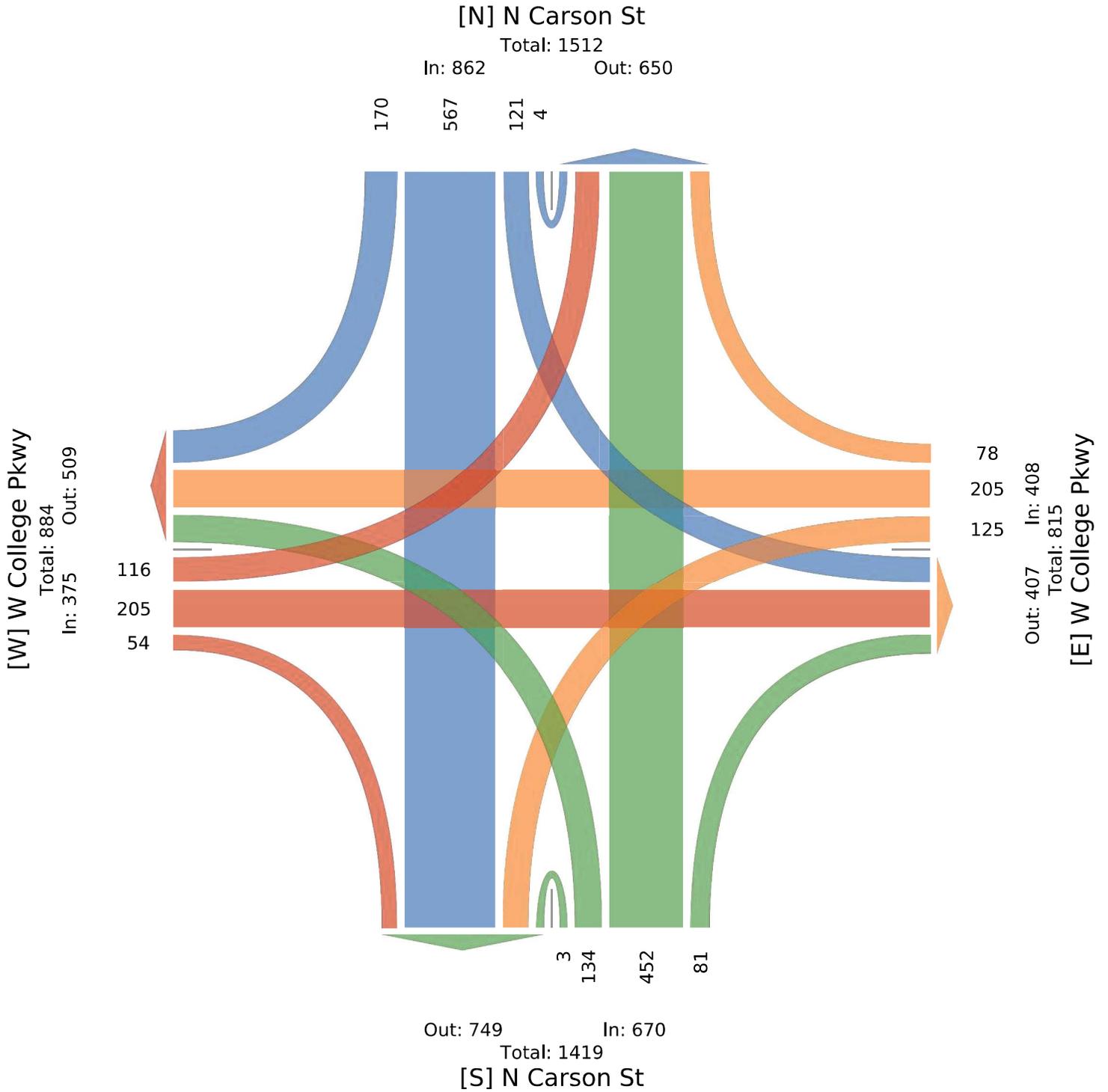
PM Peak (4:30 PM - 5:30 PM) - Overall Peak Hour

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)

All Movements

ID: 1128308, Location: 39.190715, -119.773093

Provided by: Kimley-Horn and Associates, Inc.
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APPENDIX C
TRIP GENERATION CALCULATIONS

Project Home2 Suites - Carson City



Trip generation for Hotel

Designed by AKT

Date November 13, 2023

Job No. 192434000

Checked by DJG

Date November 13, 2023

Sheet No. 1 of 1

TRIP GENERATION MANUAL TECHNIQUES

ITE Trip Generation 11th Edition, Average Rate Equations

Land Use Code - 310 Hotel
Land Use Sub Category
Setting/Location General Urban/Suburban
Independent Variable - Room(s)
Number of Units (X) - 91

T = Trip Ends

Peak Hour: Weekday, Adjacent Street Traffic

One Hour Between 7 and 9 AM

Average Rate
T = (X) * 0.46
T = 42
Trip Ends Per Room(s)
Trip Ends

Directional Distribution:
56% Entering 44% Exiting
24 Entering 18 Exiting

Peak Hour: Weekday, Adjacent Street Traffic

One Hour Between 4 and 6 PM

Average Rate
T = (X) * 0.59
T = 54
Trip Ends Per Room(s)
Trip Ends

Directional Distribution:
51% Entering 49% Exiting
28 Entering 26 Exiting

Daily Weekday

Average Rate
T = (X) * 7.99
T = 728
Trip Ends Per Room(s)
Trip Ends

Directional Distribution:
50% Entering 50% Exiting
364 Entering 364 Exiting

Non-Pass-By Trip Percentage

Non-Pass-By Trip Volumes

AM Peak 100%
PM Peak 100%

AM Peak 24 Entering 18 Exiting
PM Peak 28 Entering 26 Exiting

Note: Rounding may occur in calculations

Project Home2 Suites - Carson City



Trip generation for All Suites Hotel

Designed by AKT

Date November 13, 2023

Job No. 192434000

Checked by DJG

Date November 13, 2023

Sheet No. 1 of 1

TRIP GENERATION MANUAL TECHNIQUES

ITE Trip Generation 11th Edition, Average Rate Equations

Land Use Code - 311 All Suites Hotel
Land Use Sub Category
Setting/Location General Urban/Suburban
Independent Variable - Room(s)
Number of Units (X) - 91

T = Trip Ends

Peak Hour: Weekday, Adjacent Street Traffic

One Hour Between 7 and 9 AM

Average Rate
T = (X) * 0.34
T = 31

Trip Ends Per Room(s)
Trip Ends

Directional Distribution:
53% Entering 47% Exiting
16 Entering 15 Exiting

Peak Hour: Weekday, Adjacent Street Traffic

One Hour Between 4 and 6 PM

Average Rate
T = (X) * 0.36
T = 33

Trip Ends Per Room(s)
Trip Ends

Directional Distribution:
49% Entering 51% Exiting
16 Entering 17 Exiting

Daily Weekday

Average Rate
T = (X) * 4.4
T = 402

Trip Ends Per Room(s)
Trip Ends

Directional Distribution:
50% Entering 50% Exiting
201 Entering 201 Exiting

Non-Pass-By Trip Percentage

AM Peak 100%
PM Peak 100%

Non-Pass-By Trip Volumes

AM Peak 16 Entering 15 Exiting
PM Peak 16 Entering 17 Exiting

Note: Rounding may occur in calculations

Project Home2 Suites - Carson City



Trip generation for Hotel

Designed by AKT

Date November 15, 2023

Job No. 192434000

Checked by DJG

Date November 15, 2023

Sheet No. 1 of 1

TRIP GENERATION MANUAL TECHNIQUES

ITE Trip Generation 11th Edition, Average Rate Equations

Land Use Code -	-	Blended Rate of ITE 310 and ITE 311
Land Use Sub Category		
Setting/Location		General Urban/Suburban
Independent Variable -		Room(S)
Number of Units (X) -		91

T = Trip Ends

Peak Hour: Weekday, Adjacent Street Traffic

One Hour Between 7 and 9 AM

Average Rate			Directional Distribution:
$T = (X) * 0.40$	Trip Ends Per	Room(S)	55% Entering 46% Exiting
T = 37	Trip Ends		20 Entering 17 Exiting

Peak Hour: Weekday, Adjacent Street Traffic

One Hour Between 4 and 6 PM

Average Rate			Directional Distribution:
$T = (X) * 0.48$	Trip Ends Per	Room(S)	50% Entering 50% Exiting
T = 44	Trip Ends		22 Entering 22 Exiting

Daily Weekday

Average Rate			Directional Distribution:
$T = (X) * 6.20$	Trip Ends Per	Room(S)	50% Entering 50% Exiting
T = 566	Trip Ends		283 Entering 283 Exiting

Non-Pass-By Trip Percentage

Non-Pass-By Trip Volumes

AM Peak	100%	AM Peak	20 Entering	17 Exiting
PM Peak	100%	PM Peak	22 Entering	22 Exiting

Note: Rounding may occur in calculations

APPENDIX D
KEY INTERSECTION PEAK HOUR LOS CALCULATIONS

HCM 6th Signalized Intersection Summary
 1: N Carson Street & Medical Parkway/Arrowhead Drive

11/16/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	41	82	64	106	251	64	155	310	93	104	473	116
Future Volume (veh/h)	41	82	64	106	251	64	155	310	93	104	473	116
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	48	95	74	123	292	74	180	360	108	121	550	135
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	84	308	261	157	385	326	294	1186	529	154	1193	532
Arrive On Green	0.05	0.16	0.16	0.09	0.21	0.21	0.08	0.33	0.33	0.09	0.34	0.34
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	3456	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	48	95	74	123	292	74	180	360	108	121	550	135
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1728	1777	1585	1781	1777	1585
Q Serve(g_s), s	1.5	2.5	2.3	3.7	8.1	2.1	2.8	4.1	2.7	3.7	6.7	3.4
Cycle Q Clear(g_c), s	1.5	2.5	2.3	3.7	8.1	2.1	2.8	4.1	2.7	3.7	6.7	3.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	84	308	261	157	385	326	294	1186	529	154	1193	532
V/C Ratio(X)	0.57	0.31	0.28	0.78	0.76	0.23	0.61	0.30	0.20	0.78	0.46	0.25
Avail Cap(c_a), veh/h	162	611	518	178	628	532	313	1186	529	175	1193	532
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.7	20.3	20.2	24.6	20.6	18.2	24.3	13.6	13.1	24.7	14.4	13.3
Incr Delay (d2), s/veh	6.0	0.6	0.6	18.1	3.1	0.3	3.2	0.7	0.9	18.4	1.3	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.3	1.9	1.5	4.1	6.4	1.3	2.1	2.8	1.7	4.0	4.7	2.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	31.7	20.8	20.8	42.7	23.7	18.6	27.5	14.3	14.0	43.1	15.7	14.4
LnGrp LOS	C	C	C	D	C	B	C	B	B	D	B	B
Approach Vol, veh/h		217			489			648			806	
Approach Delay, s/veh		23.2			27.7			17.9			19.6	
Approach LOS		C			C			B			B	
Timer - Assigned Phs												
Phs Duration (G+Y+Rc), s	9.3	22.9	9.4	13.6	9.2	23.0	7.1	15.8				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	5.4	18.1	5.5	18.0	5.0	18.5	5.0	18.5				
Max Q Clear Time (g_c+l1), s	5.7	6.1	5.7	4.5	4.8	8.7	3.5	10.1				
Green Ext Time (p_c), s	0.0	2.1	0.0	0.5	0.0	2.9	0.0	1.2				
Intersection Summary												
HCM 6th Ctrl Delay				21.3								
HCM 6th LOS				C								

HCM 6th TWSC
2: N Carson Street & Silver Oak Drive

11/16/2023

Intersection												
Int Delay, s/veh	1.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	6	0	22	27	0	39	21	526	14	23	642	32
Future Vol, veh/h	6	0	22	27	0	39	21	526	14	23	642	32
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	150	-	125	100	-	150	400	-	100	450	-	0
Veh in Median Storage, #	-	1	-	-	1	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	7	0	25	30	0	44	24	591	16	26	721	36

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1117	1428	361	1052	1448	296	757	0	0	607	0	0
Stage 1	773	773	-	639	639	-	-	-	-	-	-	-
Stage 2	344	655	-	413	809	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	162	134	636	181	130	700	850	-	-	967	-	-
Stage 1	358	407	-	431	469	-	-	-	-	-	-	-
Stage 2	645	461	-	587	392	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	145	127	636	167	123	700	850	-	-	967	-	-
Mov Cap-2 Maneuver	257	244	-	287	238	-	-	-	-	-	-	-
Stage 1	348	396	-	419	456	-	-	-	-	-	-	-
Stage 2	588	448	-	549	381	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	12.7	14	0.4	0.3
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBL	SBT	SBR
Capacity (veh/h)	850	-	-	257	-	636	287	-	700	967	-	-
HCM Lane V/C Ratio	0.028	-	-	0.026	-	0.039	0.106	-	0.063	0.027	-	-
HCM Control Delay (s)	9.4	-	-	19.4	0	10.9	19	0	10.5	8.8	-	-
HCM Lane LOS	A	-	-	C	A	B	C	A	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.1	-	0.1	0.4	-	0.2	0.1	-	-

HCM 6th Signalized Intersection Summary

3: N Carson Street & W College Parkway

11/16/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	164	237	104	93	140	70	47	548	71	90	352	90
Future Volume (veh/h)	164	237	104	93	140	70	47	548	71	90	352	90
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	200	289	127	113	171	85	57	668	87	110	429	110
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	302	381	323	144	461	219	180	1158	516	251	1230	549
Arrive On Green	0.09	0.20	0.20	0.08	0.20	0.20	0.05	0.33	0.33	0.07	0.35	0.35
Sat Flow, veh/h	3456	1870	1585	1781	2337	1110	3456	3554	1585	3456	3554	1585
Grp Volume(v), veh/h	200	289	127	113	128	128	57	668	87	110	429	110
Grp Sat Flow(s),veh/h/ln	1728	1870	1585	1781	1777	1670	1728	1777	1585	1728	1777	1585
Q Serve(g_s), s	3.2	8.3	3.9	3.5	3.5	3.8	0.9	8.9	2.2	1.7	5.1	2.8
Cycle Q Clear(g_c), s	3.2	8.3	3.9	3.5	3.5	3.8	0.9	8.9	2.2	1.7	5.1	2.8
Prop In Lane	1.00		1.00	1.00		0.66	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	302	381	323	144	351	330	180	1158	516	251	1230	549
V/C Ratio(X)	0.66	0.76	0.39	0.78	0.37	0.39	0.32	0.58	0.17	0.44	0.35	0.20
Avail Cap(c_a), veh/h	310	593	502	173	576	541	304	1158	516	304	1230	549
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.1	21.3	19.6	25.6	19.7	19.8	25.9	15.9	13.7	25.2	13.8	13.0
Incr Delay (d2), s/veh	5.0	3.1	0.8	17.5	0.6	0.7	1.0	2.1	0.7	1.2	0.8	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.6	6.5	2.5	3.8	2.5	2.6	0.7	6.3	1.5	1.3	3.5	1.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	30.1	24.4	20.4	43.1	20.4	20.6	26.9	18.0	14.4	26.4	14.6	13.9
LnGrp LOS	C	C	C	D	C	C	C	B	B	C	B	B
Approach Vol, veh/h		616			369			812			649	
Approach Delay, s/veh		25.4			27.4			18.2			16.5	
Approach LOS		C			C			B			B	
Timer - Assigned Phs												
Phs Duration (G+Y+Rc), s	1	2	3	4	5	6	7	8				
Change Period (Y+Rc), s	8.6	23.0	9.1	16.1	7.5	24.2	9.5	15.7				
Max Green Setting (Gmax), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Q Clear Time (g_c+l1), s	5.0	18.5	5.5	18.0	5.0	18.5	5.1	18.4				
Green Ext Time (p_c), s	3.7	10.9	5.5	10.3	2.9	7.1	5.2	5.8				
Green Ext Time (p_c), s	0.0	2.9	0.0	1.3	0.0	2.5	0.0	1.1				
Intersection Summary												
HCM 6th Ctrl Delay			21.0									
HCM 6th LOS			C									

HCM 6th Signalized Intersection Summary
 1: N Carson Street & Medical Parkway/Arrowhead Drive

11/16/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	130	208	157	80	67	101	78	546	129	98	374	15
Future Volume (veh/h)	130	208	157	80	67	101	78	546	129	98	374	15
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	135	217	164	83	70	105	81	569	134	102	390	16
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	404	632	535	206	424	359	226	828	369	168	931	415
Arrive On Green	0.22	0.33	0.33	0.11	0.22	0.22	0.06	0.23	0.23	0.09	0.26	0.26
Sat Flow, veh/h	1795	1885	1598	1795	1885	1598	3483	3582	1598	1795	3582	1598
Grp Volume(v), veh/h	135	217	164	83	70	105	81	569	134	102	390	16
Grp Sat Flow(s),veh/h/ln	1795	1885	1598	1795	1885	1598	1742	1791	1598	1795	1791	1598
Q Serve(g_s), s	5.0	6.9	6.1	3.4	2.4	4.4	1.8	11.6	5.6	4.4	7.2	0.6
Cycle Q Clear(g_c), s	5.0	6.9	6.1	3.4	2.4	4.4	1.8	11.6	5.6	4.4	7.2	0.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	404	632	535	206	424	359	226	828	369	168	931	415
V/C Ratio(X)	0.33	0.34	0.31	0.40	0.17	0.29	0.36	0.69	0.36	0.61	0.42	0.04
Avail Cap(c_a), veh/h	404	632	535	206	424	359	226	828	369	168	931	415
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.0	20.0	19.7	32.8	25.0	25.7	35.8	28.1	25.8	34.8	24.6	22.1
Incr Delay (d2), s/veh	2.2	1.5	1.5	5.7	0.8	2.1	4.4	4.6	2.7	15.2	1.4	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	4.2	5.7	4.3	3.2	2.0	3.3	1.6	9.1	4.2	4.6	5.7	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	28.2	21.5	21.2	38.6	25.8	27.8	40.2	32.7	28.5	50.0	26.0	22.3
LnGrp LOS	C	C	C	D	C	C	D	C	C	D	C	C
Approach Vol, veh/h		516			258			784			508	
Approach Delay, s/veh		23.1			30.7			32.8			30.7	
Approach LOS		C			C			C			C	
Timer - Assigned Phs												
Phs Duration (G+Y+Rc), s	12.0	23.0	13.7	31.3	9.7	25.3	22.5	22.5				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	7.5	18.5	9.2	26.8	5.2	20.8	18.0	18.0				
Max Q Clear Time (g_c+l1), s	6.4	13.6	5.4	8.9	3.8	9.2	7.0	6.4				
Green Ext Time (p_c), s	0.0	1.9	0.0	1.7	0.0	2.0	0.2	0.5				
Intersection Summary												
HCM 6th Ctrl Delay			29.6									
HCM 6th LOS			C									

HCM 6th TWSC
2: N Carson Street & Silver Oak Drive

11/16/2023

Intersection												
Int Delay, s/veh	0.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	15	1	19	12	0	19	16	661	25	33	662	15
Future Vol, veh/h	15	1	19	12	0	19	16	661	25	33	662	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	150	-	125	100	-	150	400	-	100	450	-	0
Veh in Median Storage, #	-	1	-	-	1	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	16	1	20	13	0	20	17	689	26	34	690	16

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1137	1507	345	1137	1497	345	706	0	0	715	0	0
Stage 1	758	758	-	723	723	-	-	-	-	-	-	-
Stage 2	379	749	-	414	774	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	157	120	651	157	121	651	888	-	-	881	-	-
Stage 1	365	413	-	384	429	-	-	-	-	-	-	-
Stage 2	615	417	-	586	406	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	146	113	651	145	114	651	888	-	-	881	-	-
Mov Cap-2 Maneuver	260	228	-	264	232	-	-	-	-	-	-	-
Stage 1	358	397	-	377	421	-	-	-	-	-	-	-
Stage 2	585	409	-	545	390	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	14.8		14		0.2		0.4	
HCM LOS	B		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBL	SBT	SBR
Capacity (veh/h)	888	-	-	260	228	651	264	-	651	881	-	-
HCM Lane V/C Ratio	0.019	-	-	0.06	0.005	0.03	0.047	-	0.03	0.039	-	-
HCM Control Delay (s)	9.1	-	-	19.7	20.9	10.7	19.3	0	10.7	9.3	-	-
HCM Lane LOS	A	-	-	C	C	B	C	A	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.2	0	0.1	0.1	-	0.1	0.1	-	-

HCM 6th Signalized Intersection Summary

3: N Carson Street & W College Parkway

11/16/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	116	205	54	125	205	78	137	452	81	125	567	170
Future Volume (veh/h)	116	205	54	125	205	78	137	452	81	125	567	170
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	129	228	60	139	228	87	152	502	90	139	630	189
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	271	318	269	177	484	179	284	1177	525	277	1170	522
Arrive On Green	0.08	0.17	0.17	0.10	0.19	0.19	0.08	0.33	0.33	0.08	0.33	0.33
Sat Flow, veh/h	3483	1885	1598	1795	2558	948	3483	3582	1598	3483	3582	1598
Grp Volume(v), veh/h	129	228	60	139	158	157	152	502	90	139	630	189
Grp Sat Flow(s),veh/h/ln	1742	1885	1598	1795	1791	1715	1742	1791	1598	1742	1791	1598
Q Serve(g_s), s	2.0	6.3	1.8	4.2	4.3	4.5	2.3	6.1	2.2	2.1	8.0	5.0
Cycle Q Clear(g_c), s	2.0	6.3	1.8	4.2	4.3	4.5	2.3	6.1	2.2	2.1	8.0	5.0
Prop In Lane	1.00		1.00	1.00		0.55	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	271	318	269	177	339	324	284	1177	525	277	1170	522
V/C Ratio(X)	0.48	0.72	0.22	0.79	0.47	0.49	0.54	0.43	0.17	0.50	0.54	0.36
Avail Cap(c_a), veh/h	358	612	519	191	588	563	314	1177	525	314	1170	522
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.5	21.8	19.9	24.4	20.0	20.1	24.4	14.5	13.2	24.4	15.2	14.3
Incr Delay (d2), s/veh	1.3	3.0	0.4	18.0	1.0	1.1	1.6	1.1	0.7	1.4	1.8	1.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.5	5.1	1.2	4.6	3.2	3.2	1.7	4.2	1.5	1.6	5.7	3.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	25.8	24.8	20.3	42.4	21.0	21.2	26.0	15.7	13.9	25.8	17.0	16.2
LnGrp LOS	C	C	C	D	C	C	C	B	B	C	B	B
Approach Vol, veh/h		417			454			744			958	
Approach Delay, s/veh		24.5			27.6			17.6			18.1	
Approach LOS		C			C			B			B	
Timer - Assigned Phs												
Phs Duration (G+Y+Rc), s	1	2	3	4	5	6	7	8				
Change Period (Y+Rc), s	8.9	22.7	10.0	13.8	9.0	22.6	8.8	15.0				
Max Green Setting (Gmax), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Q Clear Time (g_c+l1), s	5.0	18.1	5.9	18.0	5.0	18.1	5.7	18.2				
Green Ext Time (p_c), s	4.1	8.1	6.2	8.3	4.3	10.0	4.0	6.5				
	0.0	2.6	0.0	1.0	0.0	3.1	0.1	1.4				
Intersection Summary												
HCM 6th Ctrl Delay				20.7								
HCM 6th LOS				C								

HCM 6th Signalized Intersection Summary

1: N Carson Street & Medical Parkway/Arrowhead Drive

11/16/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	41	82	64	106	251	64	155	322	93	104	487	116
Future Volume (veh/h)	41	82	64	106	251	64	155	322	93	104	487	116
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	48	95	74	123	292	74	180	374	108	121	566	135
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	84	308	261	157	385	326	294	1186	529	154	1193	532
Arrive On Green	0.05	0.16	0.16	0.09	0.21	0.21	0.08	0.33	0.33	0.09	0.34	0.34
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	3456	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	48	95	74	123	292	74	180	374	108	121	566	135
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1728	1777	1585	1781	1777	1585
Q Serve(g_s), s	1.5	2.5	2.3	3.7	8.1	2.1	2.8	4.3	2.7	3.7	6.9	3.4
Cycle Q Clear(g_c), s	1.5	2.5	2.3	3.7	8.1	2.1	2.8	4.3	2.7	3.7	6.9	3.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	84	308	261	157	385	326	294	1186	529	154	1193	532
V/C Ratio(X)	0.57	0.31	0.28	0.78	0.76	0.23	0.61	0.32	0.20	0.78	0.47	0.25
Avail Cap(c_a), veh/h	162	611	518	178	628	532	313	1186	529	175	1193	532
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.7	20.3	20.2	24.6	20.6	18.2	24.3	13.7	13.1	24.7	14.5	13.3
Incr Delay (d2), s/veh	6.0	0.6	0.6	18.1	3.1	0.3	3.2	0.7	0.9	18.4	1.4	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.3	1.9	1.5	4.1	6.4	1.3	2.1	3.0	1.7	4.0	4.8	2.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	31.7	20.8	20.8	42.7	23.7	18.6	27.5	14.4	14.0	43.1	15.8	14.4
LnGrp LOS	C	C	C	D	C	B	C	B	B	D	B	B
Approach Vol, veh/h		217			489			662			822	
Approach Delay, s/veh		23.2			27.7			17.9			19.6	
Approach LOS		C			C			B			B	
Timer - Assigned Phs												
Phs Duration (G+Y+Rc), s	9.3	22.9	9.4	13.6	9.2	23.0	7.1	15.8				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	5.4	18.1	5.5	18.0	5.0	18.5	5.0	18.5				
Max Q Clear Time (g_c+I1), s	5.7	6.3	5.7	4.5	4.8	8.9	3.5	10.1				
Green Ext Time (p_c), s	0.0	2.2	0.0	0.5	0.0	3.0	0.0	1.2				
Intersection Summary												
HCM 6th Ctrl Delay				21.3								
HCM 6th LOS				C								

HCM 6th TWSC
2: N Carson Street & Silver Oak Drive

11/16/2023

Intersection												
Int Delay, s/veh	1.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	6	0	22	32	0	39	21	532	14	37	642	32
Future Vol, veh/h	6	0	22	32	0	39	21	532	14	37	642	32
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	150	-	125	100	-	150	400	-	100	450	-	0
Veh in Median Storage, #	-	1	-	-	1	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	7	0	25	36	0	44	24	598	16	42	721	36

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1152	1467	361	1091	1487	299	757	0	0	614	0	0
Stage 1	805	805	-	646	646	-	-	-	-	-	-	-
Stage 2	347	662	-	445	841	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	153	127	636	169	123	697	850	-	-	961	-	-
Stage 1	342	393	-	427	465	-	-	-	-	-	-	-
Stage 2	642	457	-	562	379	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	136	118	636	154	114	697	850	-	-	961	-	-
Mov Cap-2 Maneuver	245	231	-	275	227	-	-	-	-	-	-	-
Stage 1	332	376	-	415	452	-	-	-	-	-	-	-
Stage 2	585	444	-	517	362	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	12.9		14.8		0.3		0.5	
HCM LOS	B		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBL	SBT	SBR
Capacity (veh/h)	850	-	-	245	-	636	275	-	697	961	-	-
HCM Lane V/C Ratio	0.028	-	-	0.028	-	0.039	0.131	-	0.063	0.043	-	-
HCM Control Delay (s)	9.4	-	-	20.1	0	10.9	20.1	0	10.5	8.9	-	-
HCM Lane LOS	A	-	-	C	A	B	C	A	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.1	-	0.1	0.4	-	0.2	0.1	-	-

HCM 6th Signalized Intersection Summary
 3: N Carson Street & W College Parkway

11/16/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	164	237	108	93	140	70	47	550	71	93	354	90
Future Volume (veh/h)	164	237	108	93	140	70	47	550	71	93	354	90
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	200	289	132	113	171	85	57	671	87	113	432	110
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	302	381	323	144	462	219	180	1156	516	253	1231	549
Arrive On Green	0.09	0.20	0.20	0.08	0.20	0.20	0.05	0.33	0.33	0.07	0.35	0.35
Sat Flow, veh/h	3456	1870	1585	1781	2337	1110	3456	3554	1585	3456	3554	1585
Grp Volume(v), veh/h	200	289	132	113	128	128	57	671	87	113	432	110
Grp Sat Flow(s),veh/h/ln	1728	1870	1585	1781	1777	1670	1728	1777	1585	1728	1777	1585
Q Serve(g_s), s	3.2	8.3	4.1	3.5	3.5	3.8	0.9	8.9	2.2	1.8	5.1	2.8
Cycle Q Clear(g_c), s	3.2	8.3	4.1	3.5	3.5	3.8	0.9	8.9	2.2	1.8	5.1	2.8
Prop In Lane	1.00		1.00	1.00		0.66	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	302	381	323	144	351	330	180	1156	516	253	1231	549
V/C Ratio(X)	0.66	0.76	0.41	0.78	0.37	0.39	0.32	0.58	0.17	0.45	0.35	0.20
Avail Cap(c_a), veh/h	310	592	502	172	575	541	304	1156	516	304	1231	549
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.1	21.3	19.7	25.6	19.7	19.8	26.0	15.9	13.7	25.2	13.8	13.1
Incr Delay (d2), s/veh	5.0	3.1	0.8	17.5	0.6	0.7	1.0	2.1	0.7	1.2	0.8	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.6	6.5	2.6	3.8	2.5	2.6	0.7	6.4	1.5	1.3	3.5	1.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	30.2	24.4	20.5	43.1	20.4	20.6	27.0	18.1	14.4	26.5	14.6	13.9
LnGrp LOS	C	C	C	D	C	C	C	B	B	C	B	B
Approach Vol, veh/h		621			369			815			655	
Approach Delay, s/veh		25.4			27.4			18.3			16.5	
Approach LOS		C			C			B			B	
Timer - Assigned Phs												
Phs Duration (G+Y+Rc), s	1	2	3	4	5	6	7	8				
Change Period (Y+Rc), s	8.7	23.0	9.1	16.1	7.5	24.2	9.5	15.7				
Max Green Setting (Gmax), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Q Clear Time (g_c+l1), s	5.0	18.5	5.5	18.0	5.0	18.5	5.1	18.4				
Green Ext Time (p_c), s	3.8	10.9	5.5	10.3	2.9	7.1	5.2	5.8				
	0.0	2.9	0.0	1.3	0.0	2.5	0.0	1.1				
Intersection Summary												
HCM 6th Ctrl Delay			21.0									
HCM 6th LOS			C									

HCM 6th Signalized Intersection Summary
 1: N Carson Street & Medical Parkway/Arrowhead Drive

11/16/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	130	208	157	80	67	101	78	561	129	98	389	15
Future Volume (veh/h)	130	208	157	80	67	101	78	561	129	98	389	15
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	135	217	164	83	70	105	81	584	134	102	405	16
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	404	632	535	206	424	359	226	828	369	168	931	415
Arrive On Green	0.22	0.33	0.33	0.11	0.22	0.22	0.06	0.23	0.23	0.09	0.26	0.26
Sat Flow, veh/h	1795	1885	1598	1795	1885	1598	3483	3582	1598	1795	3582	1598
Grp Volume(v), veh/h	135	217	164	83	70	105	81	584	134	102	405	16
Grp Sat Flow(s),veh/h/ln	1795	1885	1598	1795	1885	1598	1742	1791	1598	1795	1791	1598
Q Serve(g_s), s	5.0	6.9	6.1	3.4	2.4	4.4	1.8	12.0	5.6	4.4	7.5	0.6
Cycle Q Clear(g_c), s	5.0	6.9	6.1	3.4	2.4	4.4	1.8	12.0	5.6	4.4	7.5	0.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	404	632	535	206	424	359	226	828	369	168	931	415
V/C Ratio(X)	0.33	0.34	0.31	0.40	0.17	0.29	0.36	0.71	0.36	0.61	0.43	0.04
Avail Cap(c_a), veh/h	404	632	535	206	424	359	226	828	369	168	931	415
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.0	20.0	19.7	32.8	25.0	25.7	35.8	28.2	25.8	34.8	24.7	22.1
Incr Delay (d2), s/veh	2.2	1.5	1.5	5.7	0.8	2.1	4.4	5.0	2.7	15.2	1.5	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	4.2	5.7	4.3	3.2	2.0	3.3	1.6	9.4	4.2	4.6	5.9	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	28.2	21.5	21.2	38.6	25.8	27.8	40.2	33.3	28.5	50.0	26.2	22.3
LnGrp LOS	C	C	C	D	C	C	D	C	C	D	C	C
Approach Vol, veh/h		516			258			799			523	
Approach Delay, s/veh		23.1			30.7			33.2			30.7	
Approach LOS		C			C			C			C	
Timer - Assigned Phs												
Phs Duration (G+Y+Rc), s	12.0	23.0	13.7	31.3	9.7	25.3	22.5	22.5				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	7.5	18.5	9.2	26.8	5.2	20.8	18.0	18.0				
Max Q Clear Time (g_c+l1), s	6.4	14.0	5.4	8.9	3.8	9.5	7.0	6.4				
Green Ext Time (p_c), s	0.0	1.8	0.0	1.7	0.0	2.0	0.2	0.5				
Intersection Summary												
HCM 6th Ctrl Delay			29.8									
HCM 6th LOS			C									

HCM 6th TWSC
2: N Carson Street & Silver Oak Drive

11/16/2023

Intersection												
Int Delay, s/veh	1.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	15	1	19	19	0	19	16	668	25	48	662	15
Future Vol, veh/h	15	1	19	19	0	19	16	668	25	48	662	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	150	-	125	100	-	150	400	-	100	450	-	0
Veh in Median Storage, #	-	1	-	-	1	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	16	1	20	20	0	20	17	696	26	50	690	16

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1172	1546	345	1176	1536	348	706	0	0	722	0	0
Stage 1	790	790	-	730	730	-	-	-	-	-	-	-
Stage 2	382	756	-	446	806	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	148	113	651	147	115	648	888	-	-	876	-	-
Stage 1	350	400	-	380	426	-	-	-	-	-	-	-
Stage 2	612	414	-	561	393	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	135	105	651	134	106	648	888	-	-	876	-	-
Mov Cap-2 Maneuver	248	215	-	253	223	-	-	-	-	-	-	-
Stage 1	343	377	-	373	418	-	-	-	-	-	-	-
Stage 2	582	406	-	511	371	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	15.2		15.6		0.2		0.6	
HCM LOS	C		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBL	SBT	SBR
Capacity (veh/h)	888	-	-	248	215	651	253	-	648	876	-	-
HCM Lane V/C Ratio	0.019	-	-	0.063	0.005	0.03	0.078	-	0.031	0.057	-	-
HCM Control Delay (s)	9.1	-	-	20.5	21.8	10.7	20.4	0	10.7	9.4	-	-
HCM Lane LOS	A	-	-	C	C	B	C	A	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.2	0	0.1	0.3	-	0.1	0.2	-	-

HCM 6th Signalized Intersection Summary
 3: N Carson Street & W College Parkway

11/16/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	116	205	58	125	205	78	137	454	81	129	569	170
Future Volume (veh/h)	116	205	58	125	205	78	137	454	81	129	569	170
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	129	228	64	139	228	87	152	504	90	143	632	189
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	271	318	269	177	484	180	284	1174	524	279	1170	522
Arrive On Green	0.08	0.17	0.17	0.10	0.19	0.19	0.08	0.33	0.33	0.08	0.33	0.33
Sat Flow, veh/h	3483	1885	1598	1795	2558	948	3483	3582	1598	3483	3582	1598
Grp Volume(v), veh/h	129	228	64	139	158	157	152	504	90	143	632	189
Grp Sat Flow(s),veh/h/ln	1742	1885	1598	1795	1791	1715	1742	1791	1598	1742	1791	1598
Q Serve(g_s), s	2.0	6.3	1.9	4.2	4.3	4.5	2.3	6.1	2.2	2.2	8.0	5.0
Cycle Q Clear(g_c), s	2.0	6.3	1.9	4.2	4.3	4.5	2.3	6.1	2.2	2.2	8.0	5.0
Prop In Lane	1.00		1.00	1.00		0.55	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	271	318	269	177	339	325	284	1174	524	279	1170	522
V/C Ratio(X)	0.48	0.72	0.24	0.79	0.46	0.48	0.54	0.43	0.17	0.51	0.54	0.36
Avail Cap(c_a), veh/h	358	612	519	191	588	563	314	1174	524	314	1170	522
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.5	21.8	20.0	24.4	20.0	20.1	24.4	14.6	13.3	24.5	15.3	14.3
Incr Delay (d2), s/veh	1.3	3.0	0.4	18.0	1.0	1.1	1.6	1.1	0.7	1.4	1.8	1.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.5	5.1	1.2	4.6	3.2	3.2	1.7	4.3	1.5	1.6	5.7	3.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	25.8	24.8	20.4	42.4	21.0	21.2	26.0	15.7	14.0	25.9	17.1	16.2
LnGrp LOS	C	C	C	D	C	C	C	B	B	C	B	B
Approach Vol, veh/h		421			454			746			964	
Approach Delay, s/veh		24.4			27.6			17.6			18.2	
Approach LOS		C			C			B			B	
Timer - Assigned Phs												
Phs Duration (G+Y+Rc), s	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.9	22.7	10.0	13.8	9.0	22.6	8.8	15.0				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	5.0	18.1	5.9	18.0	5.0	18.1	5.7	18.2				
Max Q Clear Time (g_c+l1), s	4.2	8.1	6.2	8.3	4.3	10.0	4.0	6.5				
Green Ext Time (p_c), s	0.0	2.6	0.0	1.0	0.0	3.1	0.1	1.4				
Intersection Summary												
HCM 6th Ctrl Delay			20.7									
HCM 6th LOS			C									

HCM 6th Signalized Intersection Summary
 1: N Carson Street & Medical Parkway/Arrowhead Drive

11/16/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	57	114	88	141	334	85	183	372	108	128	573	139
Future Volume (veh/h)	57	114	88	141	334	85	183	372	108	128	573	139
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	66	133	102	164	388	99	213	433	126	149	666	162
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	97	356	302	204	469	397	312	1076	480	188	1129	504
Arrive On Green	0.05	0.19	0.19	0.11	0.25	0.25	0.09	0.30	0.30	0.11	0.32	0.32
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	3456	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	66	133	102	164	388	99	213	433	126	149	666	162
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1728	1777	1585	1781	1777	1585
Q Serve(g_s), s	2.3	3.9	3.5	5.6	12.3	3.1	3.8	6.1	3.8	5.1	9.9	4.9
Cycle Q Clear(g_c), s	2.3	3.9	3.5	5.6	12.3	3.1	3.8	6.1	3.8	5.1	9.9	4.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	97	356	302	204	469	397	312	1076	480	188	1129	504
V/C Ratio(X)	0.68	0.37	0.34	0.80	0.83	0.25	0.68	0.40	0.26	0.79	0.59	0.32
Avail Cap(c_a), veh/h	142	536	455	213	611	518	363	1076	480	213	1129	504
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	29.1	22.1	22.0	27.1	22.2	18.8	27.7	17.4	16.6	27.4	18.0	16.3
Incr Delay (d2), s/veh	8.1	0.6	0.7	18.9	7.2	0.3	4.2	1.1	1.3	16.6	2.3	1.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.1	3.0	2.3	6.0	9.9	2.0	3.0	4.4	2.6	5.3	7.3	3.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	37.2	22.8	22.6	46.0	29.4	19.1	31.9	18.5	17.9	44.1	20.2	18.0
LnGrp LOS	D	C	C	D	C	B	C	B	B	D	C	B
Approach Vol, veh/h		301			651			772			977	
Approach Delay, s/veh		25.9			32.0			22.1			23.5	
Approach LOS		C			C			C			C	
Timer - Assigned Phs												
Phs Duration (G+Y+Rc), s	11.1	23.5	11.7	16.5	10.2	24.4	7.9	20.2				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	7.5	19.0	7.5	18.0	6.6	19.9	5.0	20.5				
Max Q Clear Time (g_c+l1), s	7.1	8.1	7.6	5.9	5.8	11.9	4.3	14.3				
Green Ext Time (p_c), s	0.0	2.5	0.0	0.8	0.1	3.2	0.0	1.4				
Intersection Summary												
HCM 6th Ctrl Delay			25.4									
HCM 6th LOS			C									

HCM 6th TWSC
2: N Carson Street & Silver Oak Drive

11/16/2023

Intersection												
Int Delay, s/veh	2.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	58	0	44	28	0	41	29	661	16	27	765	54
Future Vol, veh/h	58	0	44	28	0	41	29	661	16	27	765	54
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	150	-	125	100	-	150	400	-	100	450	-	0
Veh in Median Storage, #	-	1	-	-	1	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	65	0	49	31	0	46	33	743	18	30	860	61

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1358	1747	430	1299	1790	372	921	0	0	761	0	0
Stage 1	920	920	-	809	809	-	-	-	-	-	-	-
Stage 2	438	827	-	490	981	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	107	85	573	119	80	625	737	-	-	847	-	-
Stage 1	292	348	-	340	392	-	-	-	-	-	-	-
Stage 2	567	384	-	529	326	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	93	78	573	102	74	625	737	-	-	847	-	-
Mov Cap-2 Maneuver	199	189	-	215	180	-	-	-	-	-	-	-
Stage 1	279	336	-	325	374	-	-	-	-	-	-	-
Stage 2	502	367	-	466	315	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	23.2		16.6		0.4		0.3	
HCM LOS	C		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBL	SBT	SBR
Capacity (veh/h)	737	-	-	199	-	573	215	-	625	847	-	-
HCM Lane V/C Ratio	0.044	-	-	0.327	-	0.086	0.146	-	0.074	0.036	-	-
HCM Control Delay (s)	10.1	-	-	31.7	0	11.9	24.6	0	11.2	9.4	-	-
HCM Lane LOS	B	-	-	D	A	B	C	A	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	1.4	-	0.3	0.5	-	0.2	0.1	-	-

HCM 6th Signalized Intersection Summary
 2: N Carson Street & Silver Oak Drive

12/04/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	58	0	44	28	0	41	29	661	16	27	765	54
Future Volume (veh/h)	58	0	44	28	0	41	29	661	16	27	765	54
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	65	0	49	31	0	46	33	743	18	30	860	61
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	510	283	240	509	283	240	486	1665	742	536	1665	742
Arrive On Green	0.15	0.00	0.15	0.15	0.00	0.15	0.47	0.47	0.47	0.47	0.47	0.47
Sat Flow, veh/h	1360	1870	1585	1356	1870	1585	607	3554	1585	705	3554	1585
Grp Volume(v), veh/h	65	0	49	31	0	46	33	743	18	30	860	61
Grp Sat Flow(s),veh/h/ln	1360	1870	1585	1356	1870	1585	607	1777	1585	705	1777	1585
Q Serve(g_s), s	1.0	0.0	0.6	0.5	0.0	0.6	1.0	3.3	0.1	0.7	4.0	0.5
Cycle Q Clear(g_c), s	1.0	0.0	0.6	0.5	0.0	0.6	5.0	3.3	0.1	4.0	4.0	0.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	510	283	240	509	283	240	486	1665	742	536	1665	742
V/C Ratio(X)	0.13	0.00	0.20	0.06	0.00	0.19	0.07	0.45	0.02	0.06	0.52	0.08
Avail Cap(c_a), veh/h	1339	1423	1206	1336	1423	1206	663	2704	1206	742	2704	1206
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	9.0	0.0	8.8	8.7	0.0	8.8	6.2	4.2	3.4	5.6	4.4	3.5
Incr Delay (d2), s/veh	0.1	0.0	0.4	0.0	0.0	0.4	0.1	0.2	0.0	0.0	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.4	0.0	0.3	0.2	0.0	0.3	0.1	0.6	0.0	0.1	0.7	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	9.1	0.0	9.2	8.8	0.0	9.2	6.2	4.4	3.4	5.6	4.7	3.5
LnGrp LOS	A	A	A	A	A	A	A	A	A	A	A	A
Approach Vol, veh/h		114			77			794			951	
Approach Delay, s/veh		9.1			9.0			4.5			4.6	
Approach LOS		A			A			A			A	
Timer - Assigned Phs												
		2		4		6		8				
Phs Duration (G+Y+Rc), s		15.6		8.1		15.6		8.1				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		18.0		18.0		18.0		18.0				
Max Q Clear Time (g_c+I1), s		7.0		3.0		6.0		2.6				
Green Ext Time (p_c), s		4.1		0.2		5.0		0.1				
Intersection Summary												
HCM 6th Ctrl Delay				5.0								
HCM 6th LOS				A								

HCM 6th Signalized Intersection Summary

3: N Carson Street & W College Parkway

11/16/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	176	266	133	105	162	79	61	629	81	103	403	103
Future Volume (veh/h)	176	266	133	105	162	79	61	629	81	103	403	103
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	215	324	162	128	198	96	74	767	99	126	491	126
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	298	412	349	163	530	247	206	1101	491	255	1152	514
Arrive On Green	0.09	0.22	0.22	0.09	0.23	0.23	0.06	0.31	0.31	0.07	0.32	0.32
Sat Flow, veh/h	3456	1870	1585	1781	2353	1097	3456	3554	1585	3456	3554	1585
Grp Volume(v), veh/h	215	324	162	128	148	146	74	767	99	126	491	126
Grp Sat Flow(s),veh/h/ln	1728	1870	1585	1781	1777	1673	1728	1777	1585	1728	1777	1585
Q Serve(g_s), s	3.6	9.7	5.2	4.2	4.1	4.4	1.2	11.2	2.7	2.1	6.4	3.4
Cycle Q Clear(g_c), s	3.6	9.7	5.2	4.2	4.1	4.4	1.2	11.2	2.7	2.1	6.4	3.4
Prop In Lane	1.00		1.00	1.00		0.66	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	298	412	349	163	400	377	206	1101	491	255	1152	514
V/C Ratio(X)	0.72	0.79	0.46	0.79	0.37	0.39	0.36	0.70	0.20	0.49	0.43	0.25
Avail Cap(c_a), veh/h	298	570	483	172	559	527	292	1101	491	292	1152	514
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.3	21.7	20.0	26.3	19.3	19.4	26.7	17.9	15.0	26.3	15.7	14.7
Incr Delay (d2), s/veh	8.2	5.0	1.0	20.1	0.6	0.7	1.1	3.7	0.9	1.5	1.2	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	3.1	7.9	3.4	4.6	3.0	3.0	0.9	8.2	1.8	1.5	4.5	2.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	34.5	26.7	21.0	46.4	19.9	20.1	27.8	21.6	15.9	27.8	16.8	15.8
LnGrp LOS	C	C	C	D	B	C	C	C	B	C	B	B
Approach Vol, veh/h		701			422			940			743	
Approach Delay, s/veh		27.8			28.0			21.5			18.5	
Approach LOS		C			C			C			B	
Timer - Assigned Phs												
Phs Duration (G+Y+Rc), s	1	2	3	4	5	6	7	8				
Change Period (Y+Rc), s	8.9	22.8	9.9	17.5	8.0	23.7	9.6	17.8				
Max Green Setting (Gmax), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Q Clear Time (g_c+l1), s	5.0	18.3	5.7	18.0	5.0	18.3	5.1	18.6				
Green Ext Time (p_c), s	4.1	13.2	6.2	11.7	3.2	8.4	5.6	6.4				
	0.0	2.4	0.0	1.4	0.0	2.6	0.0	1.3				
Intersection Summary												
HCM 6th Ctrl Delay				23.2								
HCM 6th LOS				C								

HCM 6th Signalized Intersection Summary
 1: N Carson Street & Medical Parkway/Arrowhead Drive

11/16/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	179	290	217	106	89	134	92	649	150	127	470	18
Future Volume (veh/h)	179	290	217	106	89	134	92	649	150	127	470	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	186	302	226	110	93	140	96	676	156	132	490	19
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	404	603	511	233	424	359	239	828	369	168	918	409
Arrive On Green	0.22	0.32	0.32	0.13	0.22	0.22	0.07	0.23	0.23	0.09	0.26	0.26
Sat Flow, veh/h	1795	1885	1598	1795	1885	1598	3483	3582	1598	1795	3582	1598
Grp Volume(v), veh/h	186	302	226	110	93	140	96	676	156	132	490	19
Grp Sat Flow(s),veh/h/ln	1795	1885	1598	1795	1885	1598	1742	1791	1598	1795	1791	1598
Q Serve(g_s), s	7.2	10.4	9.0	4.5	3.2	6.0	2.1	14.3	6.7	5.8	9.4	0.7
Cycle Q Clear(g_c), s	7.2	10.4	9.0	4.5	3.2	6.0	2.1	14.3	6.7	5.8	9.4	0.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	404	603	511	233	424	359	239	828	369	168	918	409
V/C Ratio(X)	0.46	0.50	0.44	0.47	0.22	0.39	0.40	0.82	0.42	0.78	0.53	0.05
Avail Cap(c_a), veh/h	404	603	511	233	424	359	239	828	369	168	918	409
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.8	22.0	21.5	32.3	25.3	26.3	35.7	29.1	26.2	35.5	25.6	22.4
Incr Delay (d2), s/veh	3.7	3.0	2.8	6.7	1.2	3.2	4.9	8.7	3.5	29.8	2.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	6.1	8.5	6.5	4.2	2.8	4.5	1.9	11.2	5.1	6.9	7.5	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	30.5	25.0	24.3	38.9	26.5	29.5	40.6	37.9	29.7	65.2	27.9	22.6
LnGrp LOS	C	C	C	D	C	C	D	D	C	E	C	C
Approach Vol, veh/h		714			343			928			641	
Approach Delay, s/veh		26.2			31.7			36.8			35.4	
Approach LOS		C			C			D			D	
Timer - Assigned Phs												
Phs Duration (G+Y+Rc), s	12.0	23.0	14.9	30.1	10.0	25.0	22.5	22.5				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	7.5	18.5	10.4	25.6	5.5	20.5	18.0	18.0				
Max Q Clear Time (g_c+l1), s	7.8	16.3	6.5	12.4	4.1	11.4	9.2	8.0				
Green Ext Time (p_c), s	0.0	1.1	0.1	2.2	0.0	2.2	0.3	0.6				
Intersection Summary												
HCM 6th Ctrl Delay			32.9									
HCM 6th LOS			C									

HCM 6th TWSC
2: N Carson Street & Silver Oak Drive

11/16/2023

Intersection												
Int Delay, s/veh	1.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	49	1	50	16	0	25	46	811	29	40	837	63
Future Vol, veh/h	49	1	50	16	0	25	46	811	29	40	837	63
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	150	-	125	100	-	150	400	-	100	450	-	0
Veh in Median Storage, #	-	1	-	-	1	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	51	1	52	17	0	26	48	845	30	42	872	66

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1475	1927	436	1462	1963	423	938	0	0	875	0	0
Stage 1	956	956	-	941	941	-	-	-	-	-	-	-
Stage 2	519	971	-	521	1022	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	88	66	568	90	62	579	726	-	-	767	-	-
Stage 1	277	335	-	283	340	-	-	-	-	-	-	-
Stage 2	508	329	-	507	312	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	76	58	568	74	55	579	726	-	-	767	-	-
Mov Cap-2 Maneuver	177	158	-	175	152	-	-	-	-	-	-	-
Stage 1	259	317	-	264	318	-	-	-	-	-	-	-
Stage 2	453	307	-	434	295	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	22.6		17.8		0.5		0.4	
HCM LOS	C		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBL	SBT	SBR
Capacity (veh/h)	726	-	-	177	158	568	175	-	579	767	-	-
HCM Lane V/C Ratio	0.066	-	-	0.288	0.007	0.092	0.095	-	0.045	0.054	-	-
HCM Control Delay (s)	10.3	-	-	33.4	27.9	12	27.7	0	11.5	10	-	-
HCM Lane LOS	B	-	-	D	D	B	D	A	B	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-	1.1	0	0.3	0.3	-	0.1	0.2	-	-

HCM 6th Signalized Intersection Summary
 2: N Carson Street & Silver Oak Drive

12/04/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	49	1	50	16	0	25	46	811	29	40	837	63
Future Volume (veh/h)	49	1	50	16	0	25	46	811	29	40	837	63
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	51	1	52	17	0	26	48	845	30	42	872	66
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	478	243	206	473	243	206	498	1769	789	514	1769	789
Arrive On Green	0.13	0.13	0.13	0.13	0.00	0.13	0.50	0.50	0.50	0.50	0.50	0.50
Sat Flow, veh/h	1385	1870	1585	1351	1870	1585	597	3554	1585	634	3554	1585
Grp Volume(v), veh/h	51	1	52	17	0	26	48	845	30	42	872	66
Grp Sat Flow(s),veh/h/ln	1385	1870	1585	1351	1870	1585	597	1777	1585	634	1777	1585
Q Serve(g_s), s	0.8	0.0	0.7	0.3	0.0	0.4	1.4	3.8	0.2	1.1	3.9	0.5
Cycle Q Clear(g_c), s	0.8	0.0	0.7	0.3	0.0	0.4	5.4	3.8	0.2	4.9	3.9	0.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	478	243	206	473	243	206	498	1769	789	514	1769	789
V/C Ratio(X)	0.11	0.00	0.25	0.04	0.00	0.13	0.10	0.48	0.04	0.08	0.49	0.08
Avail Cap(c_a), veh/h	1329	1393	1180	1303	1393	1180	645	2646	1180	670	2646	1180
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	9.5	9.2	9.5	9.3	0.0	9.3	5.8	4.0	3.1	5.6	4.0	3.2
Incr Delay (d2), s/veh	0.1	0.0	0.6	0.0	0.0	0.3	0.1	0.2	0.0	0.1	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.3	0.0	0.4	0.1	0.0	0.2	0.2	0.6	0.0	0.1	0.6	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	9.6	9.2	10.1	9.3	0.0	9.6	5.9	4.2	3.1	5.7	4.3	3.2
LnGrp LOS	A	A	B	A	A	A	A	A	A	A	A	A
Approach Vol, veh/h		104			43			923			980	
Approach Delay, s/veh		9.8			9.5			4.3			4.2	
Approach LOS		A			A			A			A	
Timer - Assigned Phs												
		2		4		6		8				
Phs Duration (G+Y+Rc), s		16.5		7.6		16.5		7.6				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		18.0		18.0		18.0		18.0				
Max Q Clear Time (g_c+l1), s		7.4		2.8		6.9		2.4				
Green Ext Time (p_c), s		4.7		0.2		5.0		0.1				
Intersection Summary												
HCM 6th Ctrl Delay			4.6									
HCM 6th LOS			A									

HCM 6th Signalized Intersection Summary

3: N Carson Street & W College Parkway

11/16/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	160	290	88	166	285	104	180	526	94	150	677	203
Future Volume (veh/h)	160	290	88	166	285	104	180	526	94	150	677	203
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	178	322	98	184	317	116	200	584	104	167	752	226
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	276	397	337	228	667	240	294	1100	491	258	1063	474
Arrive On Green	0.08	0.21	0.21	0.13	0.26	0.26	0.08	0.31	0.31	0.07	0.30	0.30
Sat Flow, veh/h	3483	1885	1598	1795	2582	927	3483	3582	1598	3483	3582	1598
Grp Volume(v), veh/h	178	322	98	184	218	215	200	584	104	167	752	226
Grp Sat Flow(s),veh/h/ln	1742	1885	1598	1795	1791	1718	1742	1791	1598	1742	1791	1598
Q Serve(g_s), s	3.2	10.4	3.3	6.4	6.6	6.8	3.6	8.6	3.1	3.0	12.0	7.4
Cycle Q Clear(g_c), s	3.2	10.4	3.3	6.4	6.6	6.8	3.6	8.6	3.1	3.0	12.0	7.4
Prop In Lane	1.00		1.00	1.00		0.54	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	276	397	337	228	463	444	294	1100	491	258	1063	474
V/C Ratio(X)	0.65	0.81	0.29	0.81	0.47	0.48	0.68	0.53	0.21	0.65	0.71	0.48
Avail Cap(c_a), veh/h	403	530	449	266	562	539	299	1100	491	294	1063	474
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	28.6	24.0	21.2	27.2	20.0	20.1	28.5	18.4	16.4	28.8	20.0	18.4
Incr Delay (d2), s/veh	2.5	6.9	0.5	14.7	0.7	0.8	6.0	1.8	1.0	4.0	4.0	3.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.5	8.8	2.2	6.3	4.8	4.7	3.0	6.4	2.1	2.4	8.9	5.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	31.1	30.9	21.7	41.9	20.8	20.9	34.4	20.2	17.4	32.8	24.0	21.9
LnGrp LOS	C	C	C	D	C	C	C	C	B	C	C	C
Approach Vol, veh/h		598			617			888			1145	
Approach Delay, s/veh		29.5			27.1			23.1			24.9	
Approach LOS		C			C			C			C	
Timer - Assigned Phs												
Phs Duration (G+Y+Rc), s	9.2	24.2	12.6	18.0	9.9	23.5	9.6	21.0				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	5.4	19.1	9.5	18.0	5.5	19.0	7.4	20.1				
Max Q Clear Time (g_c+l1), s	5.0	10.6	8.4	12.4	5.6	14.0	5.2	8.8				
Green Ext Time (p_c), s	0.0	2.8	0.1	1.1	0.0	2.6	0.1	2.0				
Intersection Summary												
HCM 6th Ctrl Delay			25.7									
HCM 6th LOS			C									

HCM 6th Signalized Intersection Summary
 1: N Carson Street & Medical Parkway/Arrowhead Drive

11/16/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	57	114	88	141	334	85	183	384	108	128	587	139
Future Volume (veh/h)	57	114	88	141	334	85	183	384	108	128	587	139
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	66	133	102	164	388	99	213	447	126	149	683	162
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	97	356	302	204	469	397	312	1076	480	188	1129	504
Arrive On Green	0.05	0.19	0.19	0.11	0.25	0.25	0.09	0.30	0.30	0.11	0.32	0.32
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	3456	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	66	133	102	164	388	99	213	447	126	149	683	162
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1728	1777	1585	1781	1777	1585
Q Serve(g_s), s	2.3	3.9	3.5	5.6	12.3	3.1	3.8	6.3	3.8	5.1	10.2	4.9
Cycle Q Clear(g_c), s	2.3	3.9	3.5	5.6	12.3	3.1	3.8	6.3	3.8	5.1	10.2	4.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	97	356	302	204	469	397	312	1076	480	188	1129	504
V/C Ratio(X)	0.68	0.37	0.34	0.80	0.83	0.25	0.68	0.42	0.26	0.79	0.60	0.32
Avail Cap(c_a), veh/h	142	536	455	213	611	518	363	1076	480	213	1129	504
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	29.1	22.1	22.0	27.1	22.2	18.8	27.7	17.5	16.6	27.4	18.1	16.3
Incr Delay (d2), s/veh	8.1	0.6	0.7	18.9	7.2	0.3	4.2	1.2	1.3	16.6	2.4	1.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.1	3.0	2.3	6.0	9.9	2.0	3.0	4.6	2.6	5.3	7.5	3.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	37.2	22.8	22.6	46.0	29.4	19.1	31.9	18.6	17.9	44.1	20.5	18.0
LnGrp LOS	D	C	C	D	C	B	C	B	B	D	C	B
Approach Vol, veh/h		301			651			786			994	
Approach Delay, s/veh		25.9			32.0			22.1			23.6	
Approach LOS		C			C			C			C	
Timer - Assigned Phs												
Phs Duration (G+Y+Rc), s	11.1	23.5	11.7	16.5	10.2	24.4	7.9	20.2				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	7.5	19.0	7.5	18.0	6.6	19.9	5.0	20.5				
Max Q Clear Time (g_c+l1), s	7.1	8.3	7.6	5.9	5.8	12.2	4.3	14.3				
Green Ext Time (p_c), s	0.0	2.5	0.0	0.8	0.1	3.1	0.0	1.4				
Intersection Summary												
HCM 6th Ctrl Delay			25.4									
HCM 6th LOS			C									

HCM 6th TWSC
2: N Carson Street & Silver Oak Drive

11/16/2023

Intersection												
Int Delay, s/veh	2.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	58	0	44	33	0	41	29	667	16	41	765	54
Future Vol, veh/h	58	0	44	33	0	41	29	667	16	41	765	54
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	150	-	125	100	-	150	400	-	100	450	-	0
Veh in Median Storage, #	-	1	-	-	1	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	65	0	49	37	0	46	33	749	18	46	860	61

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1393	1785	430	1337	1828	375	921	0	0	767	0	0
Stage 1	952	952	-	815	815	-	-	-	-	-	-	-
Stage 2	441	833	-	522	1013	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	101	81	573	111	76	623	737	-	-	842	-	-
Stage 1	279	336	-	338	389	-	-	-	-	-	-	-
Stage 2	565	382	-	506	315	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	87	73	573	94	69	623	737	-	-	842	-	-
Mov Cap-2 Maneuver	189	179	-	206	171	-	-	-	-	-	-	-
Stage 1	266	318	-	323	371	-	-	-	-	-	-	-
Stage 2	500	365	-	437	298	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	24.4		17.9		0.4		0.5	
HCM LOS	C		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBL	SBT	SBR
Capacity (veh/h)	737	-	-	189	-	573	206	-	623	842	-	-
HCM Lane V/C Ratio	0.044	-	-	0.345	-	0.086	0.18	-	0.074	0.055	-	-
HCM Control Delay (s)	10.1	-	-	33.8	0	11.9	26.3	0	11.2	9.5	-	-
HCM Lane LOS	B	-	-	D	A	B	D	A	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	1.4	-	0.3	0.6	-	0.2	0.2	-	-

HCM 6th Signalized Intersection Summary
 2: N Carson Street & Silver Oak Drive

12/04/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	58	0	44	35	0	41	29	669	16	39	765	54
Future Volume (veh/h)	58	0	44	35	0	41	29	669	16	39	765	54
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	65	0	49	39	0	46	33	752	18	44	860	61
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	505	285	242	504	285	242	485	1689	753	532	1689	753
Arrive On Green	0.15	0.00	0.15	0.15	0.00	0.15	0.48	0.48	0.48	0.48	0.48	0.48
Sat Flow, veh/h	1360	1870	1585	1356	1870	1585	607	3554	1585	699	3554	1585
Grp Volume(v), veh/h	65	0	49	39	0	46	33	752	18	44	860	61
Grp Sat Flow(s),veh/h/ln	1360	1870	1585	1356	1870	1585	607	1777	1585	699	1777	1585
Q Serve(g_s), s	1.0	0.0	0.7	0.6	0.0	0.6	1.0	3.4	0.1	1.1	4.1	0.5
Cycle Q Clear(g_c), s	1.0	0.0	0.7	0.6	0.0	0.6	5.0	3.4	0.1	4.5	4.1	0.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	505	285	242	504	285	242	485	1689	753	532	1689	753
V/C Ratio(X)	0.13	0.00	0.20	0.08	0.00	0.19	0.07	0.45	0.02	0.08	0.51	0.08
Avail Cap(c_a), veh/h	1310	1392	1180	1307	1392	1180	648	2645	1180	720	2645	1180
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	9.1	0.0	9.0	8.9	0.0	8.9	6.1	4.2	3.4	5.7	4.4	3.5
Incr Delay (d2), s/veh	0.1	0.0	0.4	0.1	0.0	0.4	0.1	0.2	0.0	0.1	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.4	0.0	0.3	0.2	0.0	0.3	0.1	0.6	0.0	0.1	0.7	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	9.2	0.0	9.4	9.0	0.0	9.3	6.2	4.4	3.4	5.8	4.6	3.5
LnGrp LOS	A	A	A	A	A	A	A	A	A	A	A	A
Approach Vol, veh/h		114			85			803			965	
Approach Delay, s/veh		9.3			9.2			4.5			4.6	
Approach LOS		A			A			A			A	
Timer - Assigned Phs												
		2		4		6		8				
Phs Duration (G+Y+Rc), s		16.0		8.2		16.0		8.2				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		18.0		18.0		18.0		18.0				
Max Q Clear Time (g_c+I1), s		7.0		3.0		6.5		2.6				
Green Ext Time (p_c), s		4.2		0.2		5.0		0.2				
Intersection Summary												
HCM 6th Ctrl Delay				5.0								
HCM 6th LOS				A								

HCM 6th Signalized Intersection Summary
 3: N Carson Street & W College Parkway

11/16/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	176	266	133	105	162	83	61	631	81	106	405	103
Future Volume (veh/h)	176	266	133	105	162	83	61	631	81	106	405	103
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	215	324	162	128	198	101	74	770	99	129	494	126
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	298	412	349	163	521	255	206	1100	491	257	1153	514
Arrive On Green	0.09	0.22	0.22	0.09	0.23	0.23	0.06	0.31	0.31	0.07	0.32	0.32
Sat Flow, veh/h	3456	1870	1585	1781	2312	1132	3456	3554	1585	3456	3554	1585
Grp Volume(v), veh/h	215	324	162	128	150	149	74	770	99	129	494	126
Grp Sat Flow(s),veh/h/ln	1728	1870	1585	1781	1777	1667	1728	1777	1585	1728	1777	1585
Q Serve(g_s), s	3.6	9.7	5.2	4.2	4.2	4.5	1.2	11.3	2.7	2.1	6.4	3.4
Cycle Q Clear(g_c), s	3.6	9.7	5.2	4.2	4.2	4.5	1.2	11.3	2.7	2.1	6.4	3.4
Prop In Lane	1.00		1.00	1.00		0.68	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	298	412	349	163	400	375	206	1100	491	257	1153	514
V/C Ratio(X)	0.72	0.79	0.46	0.79	0.38	0.40	0.36	0.70	0.20	0.50	0.43	0.24
Avail Cap(c_a), veh/h	298	569	483	172	559	524	292	1100	491	292	1153	514
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.3	21.7	20.0	26.3	19.4	19.5	26.7	18.0	15.0	26.3	15.7	14.7
Incr Delay (d2), s/veh	8.2	5.0	1.0	20.1	0.6	0.7	1.1	3.7	0.9	1.5	1.2	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	3.1	7.9	3.4	4.6	3.0	3.0	0.9	8.3	1.8	1.6	4.6	2.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	34.6	26.7	21.0	46.4	20.0	20.2	27.8	21.7	16.0	27.8	16.8	15.8
LnGrp LOS	C	C	C	D	B	C	C	C	B	C	B	B
Approach Vol, veh/h		701			427			943			749	
Approach Delay, s/veh		27.8			28.0			21.6			18.5	
Approach LOS		C			C			C			B	
Timer - Assigned Phs												
Phs Duration (G+Y+Rc), s	1	2	3	4	5	6	7	8				
Change Period (Y+Rc), s	8.9	22.8	9.9	17.5	8.0	23.7	9.6	17.8				
Max Green Setting (Gmax), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Q Clear Time (g_c+l1), s	5.0	18.3	5.7	18.0	5.0	18.3	5.1	18.6				
Green Ext Time (p_c), s	4.1	13.3	6.2	11.7	3.2	8.4	5.6	6.5				
	0.0	2.4	0.0	1.4	0.0	2.6	0.0	1.3				
Intersection Summary												
HCM 6th Ctrl Delay				23.3								
HCM 6th LOS				C								

HCM 6th Signalized Intersection Summary
 1: N Carson Street & Medical Parkway/Arrowhead Drive

11/16/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	179	290	217	106	89	134	92	664	150	127	485	18
Future Volume (veh/h)	179	290	217	106	89	134	92	664	150	127	485	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	186	302	226	110	93	140	96	692	156	132	505	19
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	404	603	511	233	424	359	239	828	369	168	918	409
Arrive On Green	0.22	0.32	0.32	0.13	0.22	0.22	0.07	0.23	0.23	0.09	0.26	0.26
Sat Flow, veh/h	1795	1885	1598	1795	1885	1598	3483	3582	1598	1795	3582	1598
Grp Volume(v), veh/h	186	302	226	110	93	140	96	692	156	132	505	19
Grp Sat Flow(s),veh/h/ln	1795	1885	1598	1795	1885	1598	1742	1791	1598	1795	1791	1598
Q Serve(g_s), s	7.2	10.4	9.0	4.5	3.2	6.0	2.1	14.7	6.7	5.8	9.8	0.7
Cycle Q Clear(g_c), s	7.2	10.4	9.0	4.5	3.2	6.0	2.1	14.7	6.7	5.8	9.8	0.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	404	603	511	233	424	359	239	828	369	168	918	409
V/C Ratio(X)	0.46	0.50	0.44	0.47	0.22	0.39	0.40	0.84	0.42	0.78	0.55	0.05
Avail Cap(c_a), veh/h	404	603	511	233	424	359	239	828	369	168	918	409
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.8	22.0	21.5	32.3	25.3	26.3	35.7	29.3	26.2	35.5	25.8	22.4
Incr Delay (d2), s/veh	3.7	3.0	2.8	6.7	1.2	3.2	4.9	9.7	3.5	29.8	2.4	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	6.1	8.5	6.5	4.2	2.8	4.5	1.9	11.6	5.1	6.9	7.7	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	30.5	25.0	24.3	38.9	26.5	29.5	40.6	39.0	29.7	65.2	28.1	22.6
LnGrp LOS	C	C	C	D	C	C	D	D	C	E	C	C
Approach Vol, veh/h		714			343			944			656	
Approach Delay, s/veh		26.2			31.7			37.7			35.4	
Approach LOS		C			C			D			D	
Timer - Assigned Phs												
Phs Duration (G+Y+Rc), s	12.0	23.0	14.9	30.1	10.0	25.0	22.5	22.5				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	7.5	18.5	10.4	25.6	5.5	20.5	18.0	18.0				
Max Q Clear Time (g_c+l1), s	7.8	16.7	6.5	12.4	4.1	11.8	9.2	8.0				
Green Ext Time (p_c), s	0.0	0.9	0.1	2.2	0.0	2.2	0.3	0.6				
Intersection Summary												
HCM 6th Ctrl Delay			33.3									
HCM 6th LOS			C									

HCM 6th TWSC
2: N Carson Street & Silver Oak Drive

11/16/2023

Intersection												
Int Delay, s/veh	2.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	49	1	50	23	0	25	46	818	29	55	837	63
Future Vol, veh/h	49	1	50	23	0	25	46	818	29	55	837	63
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	150	-	125	100	-	150	400	-	100	450	-	0
Veh in Median Storage, #	-	1	-	-	1	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	51	1	52	24	0	26	48	852	30	57	872	66

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1508	1964	436	1499	2000	426	938	0	0	882	0	0
Stage 1	986	986	-	948	948	-	-	-	-	-	-	-
Stage 2	522	978	-	551	1052	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	83	62	568	84	59	577	726	-	-	762	-	-
Stage 1	266	324	-	280	338	-	-	-	-	-	-	-
Stage 2	506	327	-	486	302	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	71	54	568	68	51	577	726	-	-	762	-	-
Mov Cap-2 Maneuver	169	148	-	168	144	-	-	-	-	-	-	-
Stage 1	248	300	-	262	316	-	-	-	-	-	-	-
Stage 2	451	305	-	407	279	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	23.6		20.4		0.5		0.6	
HCM LOS	C		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBL	SBT	SBR
Capacity (veh/h)	726	-	-	169	148	568	168	-	577	762	-	-
HCM Lane V/C Ratio	0.066	-	-	0.302	0.007	0.092	0.143	-	0.045	0.075	-	-
HCM Control Delay (s)	10.3	-	-	35.3	29.5	12	30	0	11.5	10.1	-	-
HCM Lane LOS	B	-	-	E	D	B	D	A	B	B	-	-
HCM 95th %tile Q(veh)	0.2	-	-	1.2	0	0.3	0.5	-	0.1	0.2	-	-

HCM 6th Signalized Intersection Summary
 2: N Carson Street & Silver Oak Drive

12/04/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	49	1	50	25	0	25	46	820	29	53	837	63
Future Volume (veh/h)	49	1	50	25	0	25	46	820	29	53	837	63
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	51	1	52	26	0	26	48	854	30	55	872	66
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	477	249	211	472	249	211	495	1781	795	508	1781	795
Arrive On Green	0.13	0.13	0.13	0.13	0.00	0.13	0.50	0.50	0.50	0.50	0.50	0.50
Sat Flow, veh/h	1385	1870	1585	1351	1870	1585	597	3554	1585	628	3554	1585
Grp Volume(v), veh/h	51	1	52	26	0	26	48	854	30	55	872	66
Grp Sat Flow(s),veh/h/ln	1385	1870	1585	1351	1870	1585	597	1777	1585	628	1777	1585
Q Serve(g_s), s	0.8	0.0	0.7	0.4	0.0	0.4	1.4	3.9	0.2	1.6	4.0	0.5
Cycle Q Clear(g_c), s	0.8	0.0	0.7	0.4	0.0	0.4	5.4	3.9	0.2	5.4	4.0	0.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	477	249	211	472	249	211	495	1781	795	508	1781	795
V/C Ratio(X)	0.11	0.00	0.25	0.06	0.00	0.12	0.10	0.48	0.04	0.11	0.49	0.08
Avail Cap(c_a), veh/h	1305	1367	1159	1280	1367	1159	632	2598	1159	653	2598	1159
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	9.6	9.3	9.6	9.4	0.0	9.4	5.8	4.0	3.1	5.8	4.1	3.2
Incr Delay (d2), s/veh	0.1	0.0	0.6	0.0	0.0	0.3	0.1	0.2	0.0	0.1	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.3	0.0	0.4	0.2	0.0	0.2	0.2	0.6	0.0	0.2	0.6	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	9.7	9.3	10.2	9.5	0.0	9.7	5.9	4.2	3.1	5.9	4.3	3.2
LnGrp LOS	A	A	B	A	A	A	A	A	A	A	A	A
Approach Vol, veh/h		104			52			932			993	
Approach Delay, s/veh		9.9			9.6			4.3			4.3	
Approach LOS		A			A			A			A	
Timer - Assigned Phs												
		2		4		6		8				
Phs Duration (G+Y+Rc), s		16.8		7.8		16.8		7.8				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		18.0		18.0		18.0		18.0				
Max Q Clear Time (g_c+l1), s		7.4		2.8		7.4		2.4				
Green Ext Time (p_c), s		4.7		0.2		4.9		0.1				
Intersection Summary												
HCM 6th Ctrl Delay				4.7								
HCM 6th LOS				A								

HCM 6th Signalized Intersection Summary

3: N Carson Street & W College Parkway

11/16/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	160	290	88	166	285	108	180	528	94	154	679	203
Future Volume (veh/h)	160	290	88	166	285	108	180	528	94	154	679	203
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	178	322	98	184	317	120	200	587	104	171	754	226
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	276	397	337	228	661	245	294	1095	488	263	1063	474
Arrive On Green	0.08	0.21	0.21	0.13	0.26	0.26	0.08	0.31	0.31	0.08	0.30	0.30
Sat Flow, veh/h	3483	1885	1598	1795	2556	949	3483	3582	1598	3483	3582	1598
Grp Volume(v), veh/h	178	322	98	184	220	217	200	587	104	171	754	226
Grp Sat Flow(s),veh/h/ln	1742	1885	1598	1795	1791	1714	1742	1791	1598	1742	1791	1598
Q Serve(g_s), s	3.2	10.4	3.3	6.4	6.7	6.9	3.6	8.7	3.1	3.1	12.0	7.4
Cycle Q Clear(g_c), s	3.2	10.4	3.3	6.4	6.7	6.9	3.6	8.7	3.1	3.1	12.0	7.4
Prop In Lane	1.00		1.00	1.00		0.55	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	276	397	337	228	463	443	294	1095	488	263	1063	474
V/C Ratio(X)	0.65	0.81	0.29	0.81	0.48	0.49	0.68	0.54	0.21	0.65	0.71	0.48
Avail Cap(c_a), veh/h	403	530	449	266	562	538	299	1095	488	299	1063	474
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	28.6	24.0	21.2	27.2	20.1	20.2	28.5	18.5	16.5	28.8	20.1	18.4
Incr Delay (d2), s/veh	2.5	6.9	0.5	14.7	0.8	0.8	6.0	1.9	1.0	4.1	4.0	3.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.5	8.8	2.2	6.3	4.8	4.8	3.0	6.5	2.1	2.5	8.9	5.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	31.1	30.9	21.7	41.9	20.8	21.0	34.4	20.3	17.5	32.8	24.1	21.9
LnGrp LOS	C	C	C	D	C	C	C	C	B	C	C	C
Approach Vol, veh/h		598			621			891			1151	
Approach Delay, s/veh		29.5			27.1			23.2			24.9	
Approach LOS		C			C			C			C	
Timer - Assigned Phs												
Phs Duration (G+Y+Rc), s	9.3	24.1	12.6	18.0	9.9	23.5	9.6	21.0				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	5.5	19.0	9.5	18.0	5.5	19.0	7.4	20.1				
Max Q Clear Time (g_c+l1), s	5.1	10.7	8.4	12.4	5.6	14.0	5.2	8.9				
Green Ext Time (p_c), s	0.0	2.7	0.1	1.1	0.0	2.6	0.1	2.0				
Intersection Summary												
HCM 6th Ctrl Delay			25.7									
HCM 6th LOS			C									

APPENDIX E
PROJECT ACCESS DRIVE PEAK HOUR LOS CALCULATIONS

HCM 6th TWSC
 4: N Carson Street & Project Access Drive

11/15/2023

Intersection						
Int Delay, s/veh	0.1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	12	583	6	0	697
Future Vol, veh/h	0	12	583	6	0	697
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	0	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	13	634	7	0	758

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	-	317	0	0	-
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-
Pot Cap-1 Maneuver	0	679	-	-	0
Stage 1	0	-	-	-	0
Stage 2	0	-	-	-	0
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	-	679	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.4	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBT
Capacity (veh/h)	-	-	679
HCM Lane V/C Ratio	-	-	0.019
HCM Control Delay (s)	-	-	10.4
HCM Lane LOS	-	-	B
HCM 95th %tile Q(veh)	-	-	0.1

HCM 6th TWSC
5: Silver Oak Drive & Project Access Driveway B

11/15/2023

Intersection						
Int Delay, s/veh	1.3					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	14	25	66	0	0	5
Future Vol, veh/h	14	25	66	0	0	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	0	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	15	27	72	0	0	5
Major/Minor	Major1	Major2	Minor2			
Conflicting Flow All	72	0	-	0	129	72
Stage 1	-	-	-	-	72	-
Stage 2	-	-	-	-	57	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1528	-	-	-	865	990
Stage 1	-	-	-	-	951	-
Stage 2	-	-	-	-	966	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	1528	-	-	-	856	990
Mov Cap-2 Maneuver	-	-	-	-	856	-
Stage 1	-	-	-	-	941	-
Stage 2	-	-	-	-	966	-
Approach	EB	WB	SB			
HCM Control Delay, s	2.6	0	8.7			
HCM LOS			A			
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1528	-	-	-	-	990
HCM Lane V/C Ratio	0.01	-	-	-	-	0.005
HCM Control Delay (s)	7.4	-	-	-	0	8.7
HCM Lane LOS	A	-	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	-	-	0

HCM 6th TWSC
 4: N Carson Street & Project Access Drive

11/15/2023

Intersection						
Int Delay, s/veh	0.1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	15	709	7	0	710
Future Vol, veh/h	0	15	709	7	0	710
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	0	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	16	771	8	0	772

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	-	386	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	6.94	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	3.32	-
Pot Cap-1 Maneuver	0	612	-
Stage 1	0	-	-
Stage 2	0	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	612	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBT
Capacity (veh/h)	-	-	612
HCM Lane V/C Ratio	-	-	0.027
HCM Control Delay (s)	-	-	11
HCM Lane LOS	-	-	B
HCM 95th %tile Q(veh)	-	-	0.1

HCM 6th TWSC
 5: Silver Oak Drive & Project Access Driveway B

11/15/2023

Intersection						
Int Delay, s/veh	1.8					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	15	44	31	0	0	7
Future Vol, veh/h	15	44	31	0	0	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	0	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	16	48	34	0	0	8

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	34	0	-	0	114 34
Stage 1	-	-	-	-	34 -
Stage 2	-	-	-	-	80 -
Critical Hdwy	4.12	-	-	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	2.218	-	-	-	3.518 3.318
Pot Cap-1 Maneuver	1578	-	-	-	882 1039
Stage 1	-	-	-	-	988 -
Stage 2	-	-	-	-	943 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1578	-	-	-	873 1039
Mov Cap-2 Maneuver	-	-	-	-	873 -
Stage 1	-	-	-	-	978 -
Stage 2	-	-	-	-	943 -

Approach	EB	WB	SB
HCM Control Delay, s	1.9	0	8.5
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1578	-	-	-	-	1039
HCM Lane V/C Ratio	0.01	-	-	-	-	0.007
HCM Control Delay (s)	7.3	-	-	-	0	8.5
HCM Lane LOS	A	-	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	-	-	0

HCM 6th TWSC
 4: N Carson Street & Project Access Drive

11/16/2023

Intersection

Int Delay, s/veh 0.1

Movement WBL WBR NBT NBR SBL SBT

Lane Configurations

Traffic Vol, veh/h	0	12	681	6	0	802
Future Vol, veh/h	0	12	681	6	0	802
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	0	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	13	740	7	0	872

Major/Minor Minor1 Major1 Major2

Conflicting Flow All	-	370	0	0	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	627	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %			-	-	-	-
Mov Cap-1 Maneuver	-	627	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach WB NB SB

HCM Control Delay, s	10.9	0	0
HCM LOS	B		

Minor Lane/Major Mvmt NBT NBRWBLn1 SBT

Capacity (veh/h)	-	-	627	-
HCM Lane V/C Ratio	-	-	0.021	-
HCM Control Delay (s)	-	-	10.9	-
HCM Lane LOS	-	-	B	-
HCM 95th %tile Q(veh)	-	-	0.1	-

HCM 6th TWSC
5: Silver Oak Drive & Project Access Driveway B

11/16/2023

Intersection						
Int Delay, s/veh	1.3					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	14	29	69	0	0	5
Future Vol, veh/h	14	29	69	0	0	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	0	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	15	32	75	0	0	5
Major/Minor	Major1	Major2	Minor2			
Conflicting Flow All	75	0	-	0	137	75
Stage 1	-	-	-	-	75	-
Stage 2	-	-	-	-	62	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1524	-	-	-	856	986
Stage 1	-	-	-	-	948	-
Stage 2	-	-	-	-	961	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	1524	-	-	-	847	986
Mov Cap-2 Maneuver	-	-	-	-	847	-
Stage 1	-	-	-	-	939	-
Stage 2	-	-	-	-	961	-
Approach	EB	WB	SB			
HCM Control Delay, s	2.4	0	8.7			
HCM LOS				A		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1524	-	-	-	-	986
HCM Lane V/C Ratio	0.01	-	-	-	-	0.006
HCM Control Delay (s)	7.4	-	-	-	0	8.7
HCM Lane LOS	A	-	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	-	-	0

HCM 6th TWSC
 4: N Carson Street & Project Access Drive

11/16/2023

Intersection						
Int Delay, s/veh	0.1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	15	843	7	0	850
Future Vol, veh/h	0	15	843	7	0	850
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	0	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	16	916	8	0	924

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	-	458	0	0	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	550	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	550	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.7	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBT
Capacity (veh/h)	-	-	550
HCM Lane V/C Ratio	-	-	0.03
HCM Control Delay (s)	-	-	11.7
HCM Lane LOS	-	-	B
HCM 95th %tile Q(veh)	-	-	0.1

HCM 6th TWSC
 5: Silver Oak Drive & Project Access Driveway B

11/16/2023

Intersection						
Int Delay, s/veh	1.5					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	15	53	41	0	0	7
Future Vol, veh/h	15	53	41	0	0	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	0	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	16	58	45	0	0	8

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	45	0	-	0	135 45
Stage 1	-	-	-	-	45 -
Stage 2	-	-	-	-	90 -
Critical Hdwy	4.12	-	-	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	2.218	-	-	-	3.518 3.318
Pot Cap-1 Maneuver	1563	-	-	-	859 1025
Stage 1	-	-	-	-	977 -
Stage 2	-	-	-	-	934 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1563	-	-	-	850 1025
Mov Cap-2 Maneuver	-	-	-	-	850 -
Stage 1	-	-	-	-	967 -
Stage 2	-	-	-	-	934 -

Approach	EB	WB	SB
HCM Control Delay, s	1.6	0	8.5
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1563	-	-	-	-	1025
HCM Lane V/C Ratio	0.01	-	-	-	-	0.007
HCM Control Delay (s)	7.3	-	-	-	0	8.5
HCM Lane LOS	A	-	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	-	-	0

APPENDIX F
SIGNAL WARRANT CALCULATIONS

TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS (2009 MUTCD)

MAJOR STREET: **N Carson Street** NB SB # OF APPROACH LANES:

MINOR STREET: **Silver Oak Drive** EB WB # OF APPROACH LANES:

CITY, STATE: **Carson City, Nevada**

COMMENTS: 2023 Existing Traffic Volumes

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N):
 85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N):

THRESHOLD VALUES	MAJOR ST. TWO-WAY TRAFFIC	MINOR ST. TRAFFIC HEAVY LEG	WARRANT 1 - Condition A, Part 1			WARRANT 1 - Condition B, Part 1			WARRANT 1 - Condition A, Part 2			WARRANT 1 - Condition B, Part 2			WARRANT 2 Four-Hour	WARRANT 3 Peak Hour
			MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET		
04:00 AM TO 05:00 AM	91	10	420	140	0	630	70	0	336	112	0	504	56	0	0	
05:00 AM TO 06:00 AM	213	17														
06:00 AM TO 07:00 AM	647	45	Y			Y			Y			Y				
07:00 AM TO 08:00 AM	1,090	74	Y			Y	Y		Y	Y		Y	Y			
08:00 AM TO 09:00 AM	1,140	50	Y			Y			Y			Y				
09:00 AM TO 10:00 AM	1,069	33	Y			Y			Y			Y				
10:00 AM TO 11:00 AM	1,085	40	Y			Y			Y			Y				
11:00 AM TO 12:00 PM	1,168	43	Y			Y			Y			Y				
12:00 PM TO 01:00 PM	1,201	38	Y			Y			Y			Y				
01:00 PM TO 02:00 PM	1,133	40	Y			Y			Y			Y				
02:00 PM TO 03:00 PM	1,247	41	Y			Y			Y			Y				
03:00 PM TO 04:00 PM	1,365	36	Y			Y			Y			Y				
04:00 PM TO 05:00 PM	1,329	37	Y			Y			Y			Y				
05:00 PM TO 06:00 PM	1,262	29	Y			Y			Y			Y				
06:00 PM TO 07:00 PM	648	19	Y			Y			Y			Y				
07:00 PM TO 08:00 PM	433	18	Y			Y			Y			Y				
TOTAL	15,121	570	14	0	0	13	1	1	14	0	0	13	1	0	0	
			8 HOURS NEEDED			8 HOURS NEEDED			8 HOURS NEEDED for both Condition A & B			4 HRS NEEDED			WARRANT 2	WARRANT 3
			NOT SATISFIED			NOT SATISFIED			NOT SATISFIED			NOT SATISFIED			NOT SATISFIED	NOT SATISFIED

TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS (2009 MUTCD)

MAJOR STREET: **N Carson Street** NB SB # OF APPROACH LANES:

MINOR STREET: **Silver Oak Drive** EB WB # OF APPROACH LANES:

CITY, STATE: **Carson City, Nevada**

COMMENTS: 2023 Existing Plus Project Traffic Volumes

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N):

85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N):

THRESHOLD VALUES	MAJOR ST. TWO-WAY TRAFFIC		MINOR ST. TRAFFIC HEAVY LEG		WARRANT 1 - Condition A, Part 1			WARRANT 1 - Condition B, Part 1			WARRANT 1 - Condition A, Part 2			WARRANT 1 - Condition B, Part 2			WARRANT 2		WARRANT 3	
	TO	FROM	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	Four-Hour	Peak Hour	
04:00 AM	05:00 AM	92	420	140		630	70		336	112		504	56							
05:00 AM	06:00 AM	215																		
06:00 AM	07:00 AM	650	Y			Y			Y			Y								
07:00 AM	08:00 AM	1,099	Y			Y	Y	Y	Y			Y	Y	Y	Y	Y		Y		
08:00 AM	09:00 AM	1,150	Y			Y			Y			Y	Y	Y	Y	Y				
09:00 AM	10:00 AM	1,082	Y			Y			Y			Y	Y	Y	Y	Y				
10:00 AM	11:00 AM	1,100	Y			Y			Y			Y	Y	Y	Y	Y				
11:00 AM	12:00 PM	1,184	Y			Y			Y			Y	Y	Y	Y	Y				
12:00 PM	01:00 PM	1,224	Y			Y			Y			Y	Y	Y	Y	Y				
01:00 PM	02:00 PM	1,154	Y			Y			Y			Y	Y	Y	Y	Y				
02:00 PM	03:00 PM	1,266	Y			Y			Y			Y	Y	Y	Y	Y				
03:00 PM	04:00 PM	1,384	Y			Y			Y			Y	Y	Y	Y	Y				
04:00 PM	05:00 PM	1,348	Y			Y			Y			Y	Y	Y	Y	Y				
05:00 PM	06:00 PM	1,288	Y			Y			Y			Y	Y	Y	Y	Y				
06:00 PM	07:00 PM	668	Y			Y			Y			Y	Y	Y	Y	Y				
07:00 PM	08:00 PM	453	Y			Y			Y			Y	Y	Y	Y	Y				
			14	0	0	13	1	1	14	0	0	13	2	2	1	1	0	0	0	0
			15,357	624																
					8 HOURS NEEDED			8 HOURS NEEDED			8 HOURS NEEDED for both Condition A & B			4 HRS NEEDED		WARRANT 2		WARRANT 3		
					NOT SATISFIED			NOT SATISFIED			NOT SATISFIED			NOT SATISFIED		NOT SATISFIED		NOT SATISFIED		

TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS (2009 MUTCD)

MAJOR STREET: **N Carson Street** NB SB # OF APPROACH LANES: **2**

MINOR STREET: **Silver Oak Drive** EB WB # OF APPROACH LANES: **2**

CITY, STATE: **Carson City, Nevada**

COMMENTS: **2050 Background Traffic Volumes**

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N): **N**

85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N): **Y**

THRESHOLD VALUES	MAJOR ST. TWO-WAY TRAFFIC	MINOR ST. TRAFFIC HEAVY LEG	WARRANT 1 - Condition A, Part 1			WARRANT 1 - Condition B, Part 1			WARRANT 1 - Condition A, Part 2			WARRANT 1 - Condition B, Part 2			WARRANT 2 Four-Hour	WARRANT 3 Peak Hour
			MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET		
04:00 AM TO 05:00 AM	106	10	420	140		630	70		336	112		504	56			
05:00 AM TO 06:00 AM	247	18														
06:00 AM TO 07:00 AM	793	74	Y			Y	Y		Y			Y	Y			
07:00 AM TO 08:00 AM	1,356	133	Y			Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
08:00 AM TO 09:00 AM	1,399	95	Y			Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
09:00 AM TO 10:00 AM	1,292	62	Y			Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
10:00 AM TO 11:00 AM	1,307	79	Y			Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
11:00 AM TO 12:00 PM	1,409	83	Y			Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
12:00 PM TO 01:00 PM	1,453	77	Y			Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
01:00 PM TO 02:00 PM	1,379	81	Y			Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
02:00 PM TO 03:00 PM	1,525	84	Y			Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
03:00 PM TO 04:00 PM	1,682	79	Y			Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
04:00 PM TO 05:00 PM	1,695	88	Y			Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
05:00 PM TO 06:00 PM	1,601	64	Y			Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
06:00 PM TO 07:00 PM	765	20	Y			Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
07:00 PM TO 08:00 PM	513	19	Y			Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
TOTAL	18,520	1,065	14	0	0	13	10	10	14	1	1	14	12	6	1	
			8 HOURS NEEDED			8 HOURS NEEDED			8 HOURS NEEDED for both Condition A & B			4 HRS NEEDED				
			NOT SATISFIED			SATISFIED			NOT SATISFIED			SATISFIED			SATISFIED	

TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS (2009 MUTCD)

MAJOR STREET: **N Carson Street** NB SB # OF APPROACH LANES: **2**

MINOR STREET: **Silver Oak Drive** EB WB # OF APPROACH LANES: **2**

CITY, STATE: **Carson City, Nevada**

COMMENTS: **2050 Background Plus Project Volumes**

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N): **N**

85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N): **Y**

THRESHOLD VALUES	MAJOR ST. TWO-WAY TRAFFIC	MINOR ST. TRAFFIC HEAVY LEG	WARRANT 1 - Condition A, Part 1			WARRANT 1 - Condition B, Part 1			WARRANT 1 - Condition A, Part 2			WARRANT 1 - Condition B, Part 2			WARRANT 2 Four-Hour	WARRANT 3 Peak Hour
			MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET		
04:00 AM TO 05:00 AM	107	11	420	140		630	70		336	112		504	56			
05:00 AM TO 06:00 AM	249	20														
06:00 AM TO 07:00 AM	796	80	Y			Y	Y		Y			Y	Y			
07:00 AM TO 08:00 AM	1,365	141	Y	Y		Y	Y	Y	Y	Y		Y	Y	Y		
08:00 AM TO 09:00 AM	1,409	102	Y			Y	Y		Y			Y	Y	Y	Y	
09:00 AM TO 10:00 AM	1,305	62	Y			Y	Y		Y			Y	Y	Y	Y	
10:00 AM TO 11:00 AM	1,322	79	Y			Y	Y		Y			Y	Y	Y	Y	
11:00 AM TO 12:00 PM	1,425	83	Y			Y	Y		Y			Y	Y	Y	Y	
12:00 PM TO 01:00 PM	1,476	77	Y			Y	Y		Y			Y	Y	Y	Y	
01:00 PM TO 02:00 PM	1,400	81	Y			Y	Y		Y			Y	Y	Y	Y	
02:00 PM TO 03:00 PM	1,544	84	Y			Y	Y		Y			Y	Y	Y	Y	
03:00 PM TO 04:00 PM	1,701	79	Y			Y	Y		Y			Y	Y	Y	Y	
04:00 PM TO 05:00 PM	1,714	88	Y			Y	Y		Y			Y	Y	Y	Y	
05:00 PM TO 06:00 PM	1,627	68	Y			Y	Y		Y			Y	Y	Y	Y	
06:00 PM TO 07:00 PM	785	25	Y			Y	Y		Y			Y	Y	Y	Y	
07:00 PM TO 08:00 PM	533	23	Y			Y	Y		Y			Y	Y	Y	Y	
	18,756	1,103	14	1	1	13	10	10	14	1	1	14	12	12	6	
			8 HOURS NEEDED			8 HOURS NEEDED			8 HOURS NEEDED for both Condition A & B			4 HRS NEEDED			2	
			NOT SATISFIED			SATISFIED			NOT SATISFIED			SATISFIED			SATISFIED	

APPENDIX G
ITE TIME OF DAY DISTRIBUTION CALCULATIONS

Hourly Distribution of Entering and Exiting Vehicle Trips by Land Use

Source: ITE Trip Generation Manual , 11th Edition

Land Use Code	220			220		
Land Use	Multifamily Housing (Low-Rise)			Multifamily Housing (Low-Rise)		
Subcategory	Not Close to Rail Transit			Close to Rail Transit		
Setting	General Urban/Suburban			General Urban/Suburban		
Time Period	Weekday			Weekday		
# Data Sites	6			1		
	% of 24-Hour Vehicle Trips			% of 24-Hour Vehicle Trips		
Time	Total	Entering	Exiting	Total	Entering	Exiting
12:00 - 1:00 AM	0.7%	0.9%	0.4%	0.4%	0.4%	0.3%
1:00 - 2:00 AM	0.4%	0.5%	0.3%	0.2%	0.1%	0.2%
2:00 - 3:00 AM	0.4%	0.4%	0.4%	0.1%	0.2%	0.0%
3:00 - 4:00 AM	0.4%	0.4%	0.3%	0.2%	0.1%	0.2%
4:00 - 5:00 AM	0.9%	0.3%	1.4%	0.2%	0.2%	0.1%
5:00 - 6:00 AM	1.6%	0.5%	2.6%	2.4%	0.9%	4.0%
6:00 - 7:00 AM	4.2%	1.4%	6.9%	4.4%	2.0%	6.7%
7:00 - 8:00 AM	6.5%	2.0%	10.8%	7.2%	4.2%	10.3%
8:00 - 9:00 AM	5.8%	3.1%	8.5%	5.2%	3.4%	6.9%
9:00 - 10:00 AM	3.9%	2.9%	4.9%	4.4%	3.1%	5.7%
10:00 - 11:00 AM	3.6%	2.4%	4.8%	3.9%	3.4%	4.4%
11:00 - 12:00 PM	4.3%	3.8%	4.7%	5.4%	6.4%	4.4%
12:00 - 1:00 PM	4.3%	4.5%	4.1%	6.1%	5.8%	6.5%
1:00 - 2:00 PM	4.2%	4.0%	4.4%	4.7%	4.1%	5.4%
2:00 - 3:00 PM	5.2%	5.6%	4.9%	6.8%	7.5%	6.1%
3:00 - 4:00 PM	6.1%	6.9%	5.3%	6.5%	7.6%	5.4%
4:00 - 5:00 PM	7.9%	10.1%	5.6%	9.5%	11.6%	7.5%
5:00 - 6:00 PM	9.5%	11.4%	7.6%	11.2%	13.5%	8.9%
6:00 - 7:00 PM	8.2%	9.7%	6.7%	7.2%	7.7%	6.6%
7:00 - 8:00 PM	6.4%	8.1%	4.7%	6.1%	7.5%	4.7%
8:00 - 9:00 PM	5.9%	7.7%	4.2%	3.2%	4.2%	2.2%
9:00 - 10:00 PM	4.4%	6.0%	2.7%	2.4%	3.3%	1.5%
10:00 - 11:00 PM	3.5%	4.7%	2.4%	1.3%	1.5%	1.0%
11:00 - 12:00 AM	1.9%	2.5%	1.4%	1.1%	1.2%	1.0%

Hourly Distribution of Entering and Exiting Vehicle Trips by Land Use

Source: ITE Trip Generation Manual , 11th Edition

Land Use Code	310			310			310		
Land Use	Hotel			Hotel			Hotel		
Setting	General Urban/Suburban			General Urban/Suburban			General Urban/Suburban		
Time Period	Weekday			Saturday			Sunday		
# Data Sites	1			1			1		
Time	% of 24-Hour Vehicle Trips			% of 24-Hour Vehicle Trips			% of 24-Hour Vehicle Trips		
	Total	Entering	Exiting	Total	Entering	Exiting	Total	Entering	Exiting
	--	--	--	--	--	--	--	--	--
12:00 - 6:00 AM	1.9%	1.8%	1.9%	1.7%	1.2%	2.1%	2.8%	2.5%	3.2%
	--	--	--	--	--	--	--	--	--
6:00 - 7:00 AM	1.5%	0.8%	2.2%	0.5%	0.0%	1.0%	0.9%	0.6%	1.4%
7:00 - 8:00 AM	5.3%	2.4%	8.2%	3.1%	1.6%	4.6%	2.4%	1.2%	3.9%
8:00 - 9:00 AM	4.8%	3.3%	6.3%	5.2%	3.9%	6.3%	4.5%	3.1%	6.2%
9:00 - 10:00 AM	5.8%	4.8%	6.7%	5.2%	4.3%	6.2%	7.4%	8.3%	6.4%
10:00 - 11:00 AM	6.9%	5.9%	7.8%	7.9%	7.8%	8.0%	7.4%	8.5%	6.2%
11:00 - 12:00 PM	7.8%	7.4%	8.1%	8.1%	9.8%	6.5%	12.1%	15.0%	8.7%
12:00 - 1:00 PM	8.3%	10.3%	6.2%	8.5%	7.8%	9.1%	9.4%	8.9%	10.1%
1:00 - 2:00 PM	9.0%	10.7%	7.2%	7.7%	8.0%	7.4%	10.5%	8.7%	12.6%
2:00 - 3:00 PM	7.9%	7.8%	8.0%	11.2%	12.5%	9.9%	7.9%	6.7%	9.4%
3:00 - 4:00 PM	7.6%	8.2%	7.0%	9.2%	8.4%	9.9%	8.6%	9.6%	7.3%
4:00 - 5:00 PM	7.3%	7.1%	7.6%	6.5%	6.4%	6.5%	4.8%	4.4%	5.3%
5:00 - 6:00 PM	7.7%	8.8%	6.5%	4.4%	5.5%	3.3%	5.3%	6.3%	4.1%
6:00 - 7:00 PM	5.1%	5.4%	4.8%	3.1%	4.5%	1.9%	5.1%	6.0%	4.1%
7:00 - 8:00 PM	4.5%	5.8%	3.2%	5.4%	7.0%	3.9%	3.2%	3.5%	3.0%
8:00 - 9:00 PM	3.2%	3.1%	3.2%	3.1%	2.7%	3.4%	2.6%	1.7%	3.7%
9:00 - 10:00 PM	2.4%	2.1%	2.8%	3.2%	1.6%	4.8%	1.9%	2.3%	1.4%
10:00 - 11:00 PM	2.4%	3.1%	1.8%	3.9%	3.7%	4.1%	1.9%	1.5%	2.3%
11:00 - 12:00 AM	1.2%	1.5%	0.9%	2.4%	3.2%	1.5%	1.4%	1.5%	1.1%

Hourly Distribution of Entering and Exiting Vehicle Trips by Land Use
Source: ITE Trip Generation Manual, 11th Edition

Land Use Code	311			311			311			311		
	All Suites Hotel			All Suites Hotel			All Suites Hotel			All Suites Hotel		
Land Use	General Urban/Suburban			Dense Multi-Use Urban			Dense Multi-Use Urban			Dense Multi-Use Urban		
Setting	Weekday			Weekday			Saturday			Sunday		
Time Period	4			1			1			1		
# Data Sites	% of 24-Hour Vehicle Trips											
Time	Total	Entering	Exiting									
12:00 - 1:00 AM	1.6%	2.0%	1.1%	0.1%	0.2%	0.0%	1.7%	3.6%	0.0%	2.3%	4.5%	0.0%
1:00 - 2:00 AM	0.5%	0.6%	0.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.2%	1.1%	1.2%
2:00 - 3:00 AM	0.6%	0.6%	0.6%	0.1%	0.2%	0.0%	0.6%	0.0%	1.1%	0.0%	0.0%	0.0%
3:00 - 4:00 AM	1.0%	1.0%	1.0%	0.1%	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
4:00 - 5:00 AM	0.6%	0.4%	0.9%	0.3%	0.2%	0.4%	0.0%	0.0%	0.0%	0.6%	1.1%	0.0%
5:00 - 6:00 AM	2.1%	0.9%	3.4%	0.6%	0.4%	0.8%	0.6%	1.2%	0.0%	0.0%	0.0%	0.0%
6:00 - 7:00 AM	4.5%	1.6%	7.4%	12.3%	0.9%	23.5%	0.6%	1.2%	0.0%	1.2%	2.2%	0.0%
7:00 - 8:00 AM	5.2%	4.1%	6.3%	12.9%	7.5%	18.1%	1.1%	0.0%	2.2%	1.2%	1.1%	1.2%
8:00 - 9:00 AM	4.9%	3.6%	6.1%	4.8%	3.7%	5.9%	6.3%	2.4%	9.9%	1.2%	1.1%	1.2%
9:00 - 10:00 AM	5.1%	4.3%	5.9%	2.8%	1.5%	4.0%	6.9%	6.0%	7.7%	7.6%	0.0%	15.7%
10:00 - 11:00 AM	4.9%	4.4%	5.4%	2.7%	2.4%	2.9%	6.3%	6.0%	6.6%	10.5%	1.1%	20.5%
11:00 - 12:00 PM	4.5%	4.1%	4.9%	2.8%	2.8%	2.7%	6.9%	2.4%	11.0%	7.0%	2.2%	12.0%
12:00 - 1:00 PM	6.1%	6.0%	6.3%	2.0%	1.1%	2.9%	6.3%	6.0%	6.6%	10.5%	4.5%	16.9%
1:00 - 2:00 PM	4.4%	4.0%	4.7%	2.0%	2.6%	1.5%	3.4%	2.4%	4.4%	4.1%	3.4%	4.8%
2:00 - 3:00 PM	5.8%	5.4%	6.1%	2.1%	3.0%	1.3%	5.1%	6.0%	4.4%	10.5%	15.7%	4.8%
3:00 - 4:00 PM	5.4%	5.4%	5.3%	7.8%	5.2%	10.3%	5.1%	6.0%	4.4%	7.0%	7.9%	6.0%
4:00 - 5:00 PM	6.1%	6.6%	5.6%	5.5%	4.5%	6.5%	9.7%	9.5%	9.9%	16.3%	25.8%	6.0%
5:00 - 6:00 PM	7.7%	9.3%	6.1%	7.7%	11.0%	4.4%	8.0%	9.5%	6.6%	6.4%	9.0%	3.6%
6:00 - 7:00 PM	6.6%	8.7%	4.4%	9.8%	12.7%	6.9%	6.9%	9.5%	4.4%	0.6%	1.1%	0.0%
7:00 - 8:00 PM	6.3%	8.0%	4.6%	8.5%	13.3%	3.8%	5.1%	4.8%	5.5%	2.3%	4.5%	0.0%
8:00 - 9:00 PM	6.2%	7.2%	5.3%	6.0%	10.1%	1.9%	8.6%	13.1%	4.4%	4.1%	4.5%	3.6%
9:00 - 10:00 PM	4.9%	5.7%	4.1%	3.3%	6.2%	0.4%	4.6%	4.8%	4.4%	3.5%	4.5%	2.4%
10:00 - 11:00 PM	2.9%	3.4%	2.3%	2.3%	4.5%	0.2%	3.4%	3.6%	3.3%	1.7%	3.4%	0.0%
11:00 - 12:00 AM	2.1%	2.6%	1.7%	3.6%	6.0%	1.3%	2.9%	2.4%	3.3%	0.6%	1.1%	0.0%

Time	Blended Rate Between 310 and 311			
	Entering Trips	283	Exiting Trips	283
	Entering		Exiting	
	Rate	Trips	Rate	Trips
0:00	1.1%	3	0.7%	2
1:00	0.4%	1	0.3%	1
2:00	0.4%	1	0.4%	1
3:00	0.6%	2	0.6%	2
4:00	0.3%	1	0.5%	2
5:00	0.6%	2	1.8%	5
6:00	1.2%	3	4.8%	14
7:00	3.3%	9	7.3%	21
8:00	3.4%	10	6.2%	18
9:00	4.5%	13	6.3%	18
10:00	5.2%	15	6.6%	19
11:00	5.8%	16	6.5%	18
12:00	8.2%	23	6.3%	18
13:00	7.3%	21	6.0%	17
14:00	6.6%	19	7.1%	20
15:00	6.8%	19	6.1%	17
16:00	6.8%	19	6.6%	19
17:00	9.1%	26	6.3%	18
18:00	7.0%	20	4.6%	13
19:00	6.9%	20	3.9%	11
20:00	5.1%	15	4.3%	12
21:00	3.9%	11	3.5%	10
22:00	3.2%	9	2.0%	6
23:00	2.0%	6	1.3%	4

APPENDIX H
CRASH DATA

HOME 2 SUITES
 NORTH CARSON STREET AND SILVER OAK DRIVE, CARSON CITY NEVADA
 MPR LANDSCAPE PLAN

DRAFTED: G&J
 REVIEWED: G&J

J & A JOB NUMBER:
 21-024-10

PLAN SET:
 FOR REVIEW ONLY

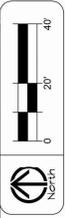


PLAN DATE: 10/09/2023
 REVISIONS:
 # DATE

SCALE: 1:20
 SHEET:

PRELIMINARY LANDSCAPE LEGEND:

-  ORNAMENTAL LANDSCAPE AREA (12,272 SF TOTAL)
-  PROPOSED DECIDUOUS TREES (SEE GENERAL LANDSCAPE AND IRRIGATION NOTES ON THIS SHEET FOR MINIMUM TREE SIZES)
-  PROPOSED EVERGREEN TREES (SEE GENERAL LANDSCAPE AND IRRIGATION NOTES ON THIS SHEET FOR MINIMUM TREE SIZES)



GENERAL LANDSCAPE INFORMATION:

- 1) ALL PLANTING AND IRRIGATION SHALL BE INSTALLED PER DIVISION 1 - LANDSCAPE STANDARDS OF THE CARSON CITY DEVELOPMENTAL CODE.
- 2) ALL LANDSCAPE PLANTER AREAS WITH SHRUBS AND GROUNDCOVER SHALL BE FULLY IRRIGATED.
- 3) ALL ORNAMENTAL LANDSCAPE PLANTERS SHALL RESERVE 4" MINIMUM DEPTH OF GROUND COVER MULCH TOP-DRESSING ROCK OR DOG MULCH.
- 4) FINAL PLANT SELECTION, PLANT QUANTITIES AND LAYOUT WILL BE BASED ON SOIL AND IRRIGATION PRACTICES RELATING TO ALL SITE CONDITIONS AND WATER USAGE. ALL TREES SHALL BE STAGED TO REMAIN UPRIGHT AND PLUMB FOLLOWING INSTALLATION.
- 5) ALL AREAS WILL BE MAINTAINED PER INDUSTRY STANDARDS AND DIVISION 3 - OF THE CARSON CITY DEVELOPMENTAL CODE FOLLOWING INSTALLATION.

GENERAL IRRIGATION INFORMATION:

- 1) ALL ORNAMENTAL LANDSCAPE AREAS SHALL HAVE A COMMERCIAL GRADE IRRIGATION SYSTEM WITH AUTOMATIC CONTROL PER DIVISION 3 - LANDSCAPE STANDARDS OF THE CARSON CITY DEVELOPMENTAL CODE.
- 2) COMMERCIAL IRRIGATION SYSTEM TO BE FULLY FUNCTIONING DRIP CONTROLLER FOR IRRIGATION REGULATION AND DRIP IRRIGATION TO ALL PROPOSED (AND/OR EXISTING) PLANT MATERIAL.
- 3) IRRIGATION SCHEDULE TO BE INSTALLED AND MAINTAINED PER STANDARDS BY A LICENSED IRRIGATION CONTRACTOR.

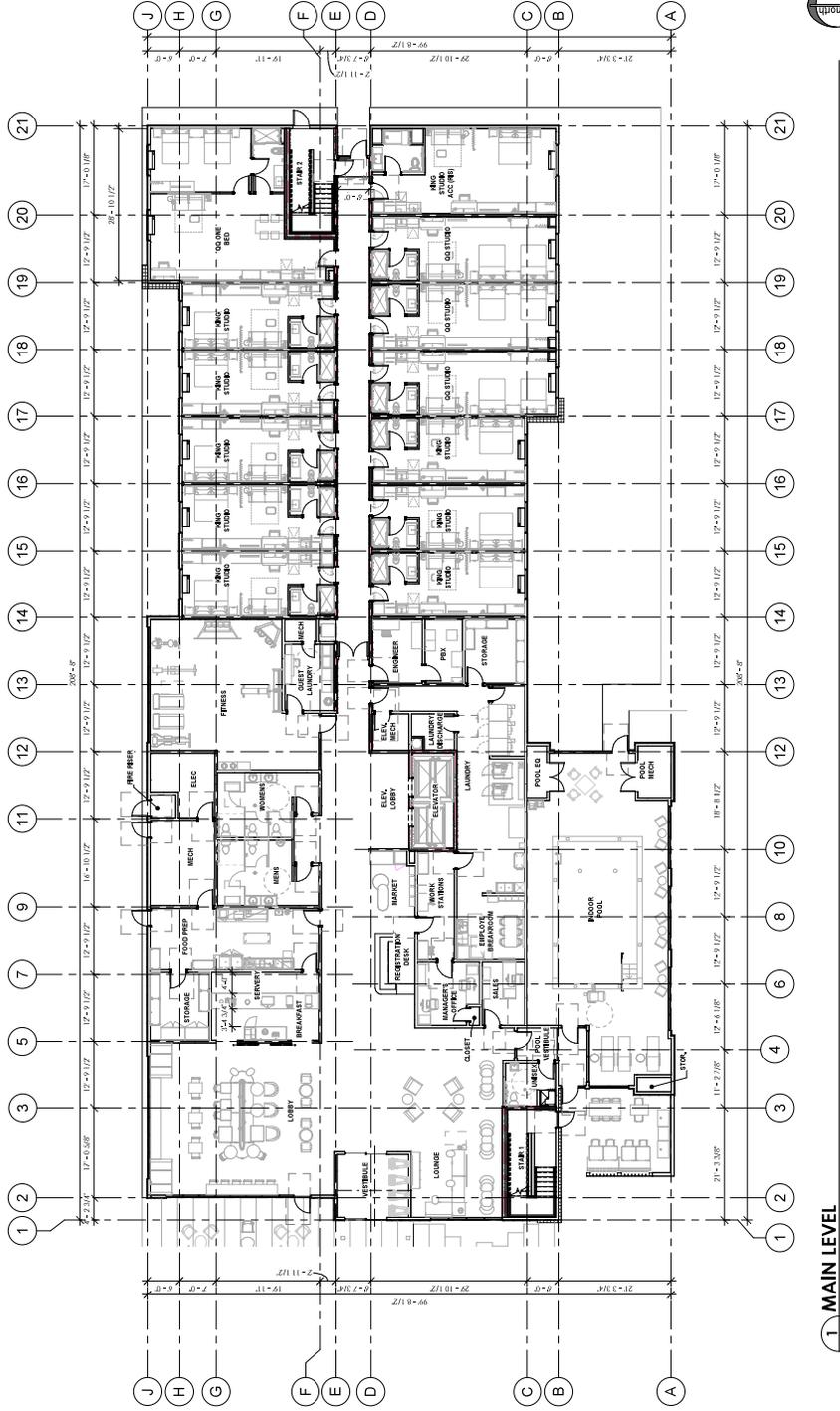
REQUIRED LANDSCAPE INFORMATION:

Area: 12,272 SF
 Zone: 2 - Retail Commercial
 Total Site Area: 2,047 AC (6,167 SF)
 Total Landscape Area Provided: 12,272 SF
 Total Required Trees: 31 total

- One tree for every 400 SF of required landscape area.
- 10% of trees shall be evergreen trees, a minimum of one (1) evergreen tree for every ten (10) parking spaces.
- 10% of trees shall be shade trees, a minimum of one (1) shade tree for every 100 (total) feet of street frontage.

Total Required Shrubs: 184 total
 • 5% (6) shrubs required for each tree placed or retained on the site.

ROOM TYPE MATRIX					
UNIT TYPE	MARK LEVEL	SECOND LEVEL	THIRD LEVEL	CORRIDOR LEVEL	TOTAL
INSU SUITE	8	14	14	14	50
INSU SUITE ZONE	1				1
SUITE SUITE ZONE	3	9	10	9	31
SUITE SUITE ZONE	1				1
SUITE SUITE ZONE	1				2
SUITE SUITE ZONE	1				1
SUITE SUITE ZONE	1				3
SUITE SUITE ZONE	1				1
TOTAL	15	24	24	24	91



1 MAIN LEVEL
SCALE: 3/32" = 1'-0"

02 HOME 2 SUITES - CARSON CITY, NV
MAIN LEVEL FLOOR PLAN

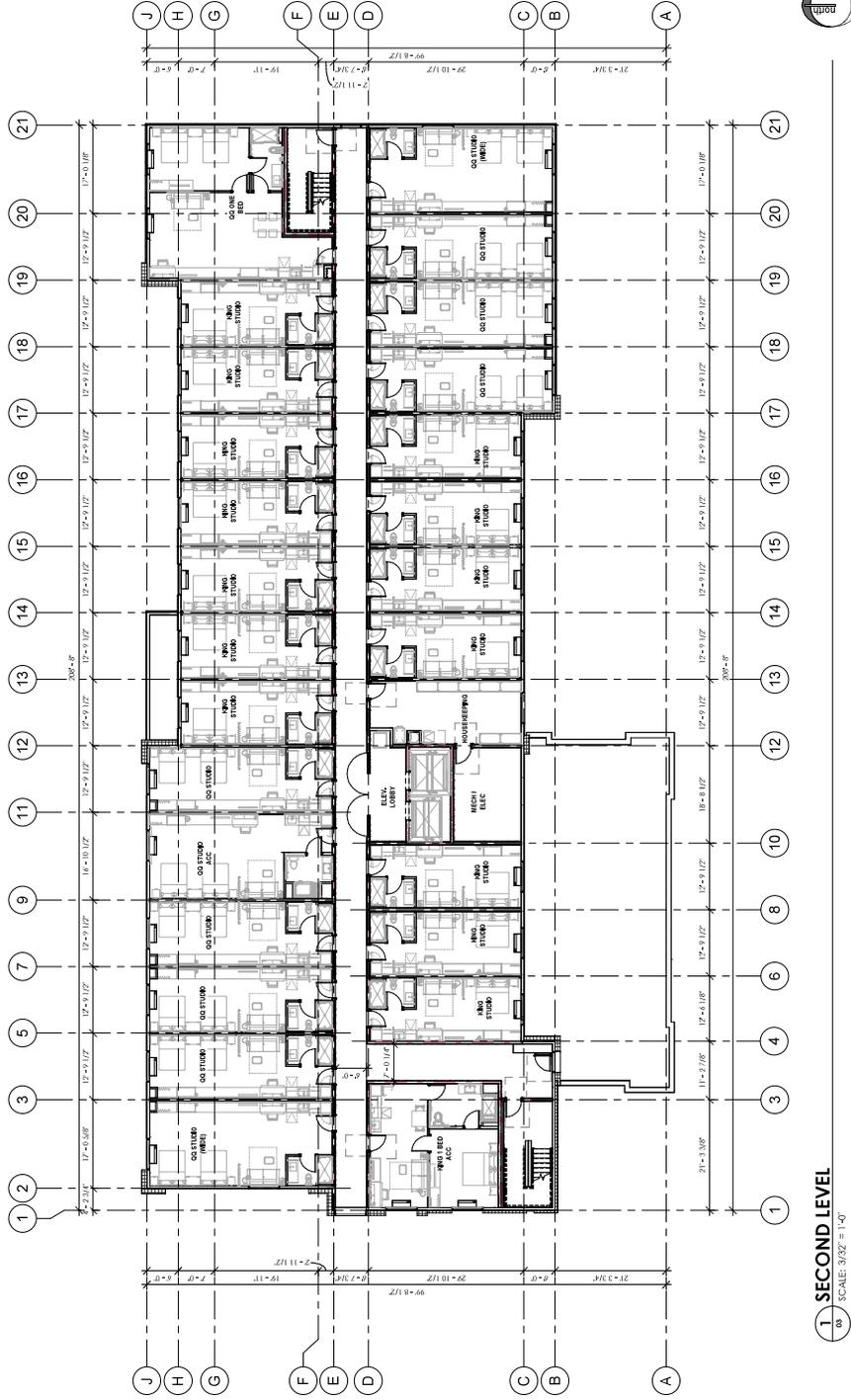
10/11/2023

PROJECT:
HOME 2 SUITES HOTEL
1000 S. WASHINGTON STREET
APR #00276103
NE CORNER OF CARSON ST &
WYOMING ST
CARSON CITY, NEVADA 89706

OWNER:
ASSUMER'S GROUP
1000 S. WASHINGTON STREET
RENO, NEVADA 89502
TEL: 775-790-2177

ARCHITECT:
THE RICHARDSON
DESIGN PARTNERSHIP
1111 W. 15th St., Suite 200
RENO, NEVADA 89502
510 S. 600 E. SLC JT 84102

ROOM TYPE MATRIX				
UNIT TYPE	MARKET LEVEL	SECOND LEVEL	THIRD LEVEL	TOTAL
INSU STUDIO	8	14	14	36
INSU STUDIO ADA	1	1	1	3
STUDIO SUITE	3	9	10	22
STUDIO SUITE ADA	1	1	1	3
ONE BEDROOM INSU SUITE	1	1	1	3
ONE BEDROOM INSU SUITE ADA	1	1	1	3
ONE BEDROOM SUITE	1	1	1	3
ONE BEDROOM SUITE ADA	1	1	1	3
TOTAL	15	26	26	67



1 SECOND LEVEL
SCALE: 3/32" = 1'-0"

03 HOME 2 SUITES - CARSON CITY, NV
SECOND LEVEL FLOOR PLAN

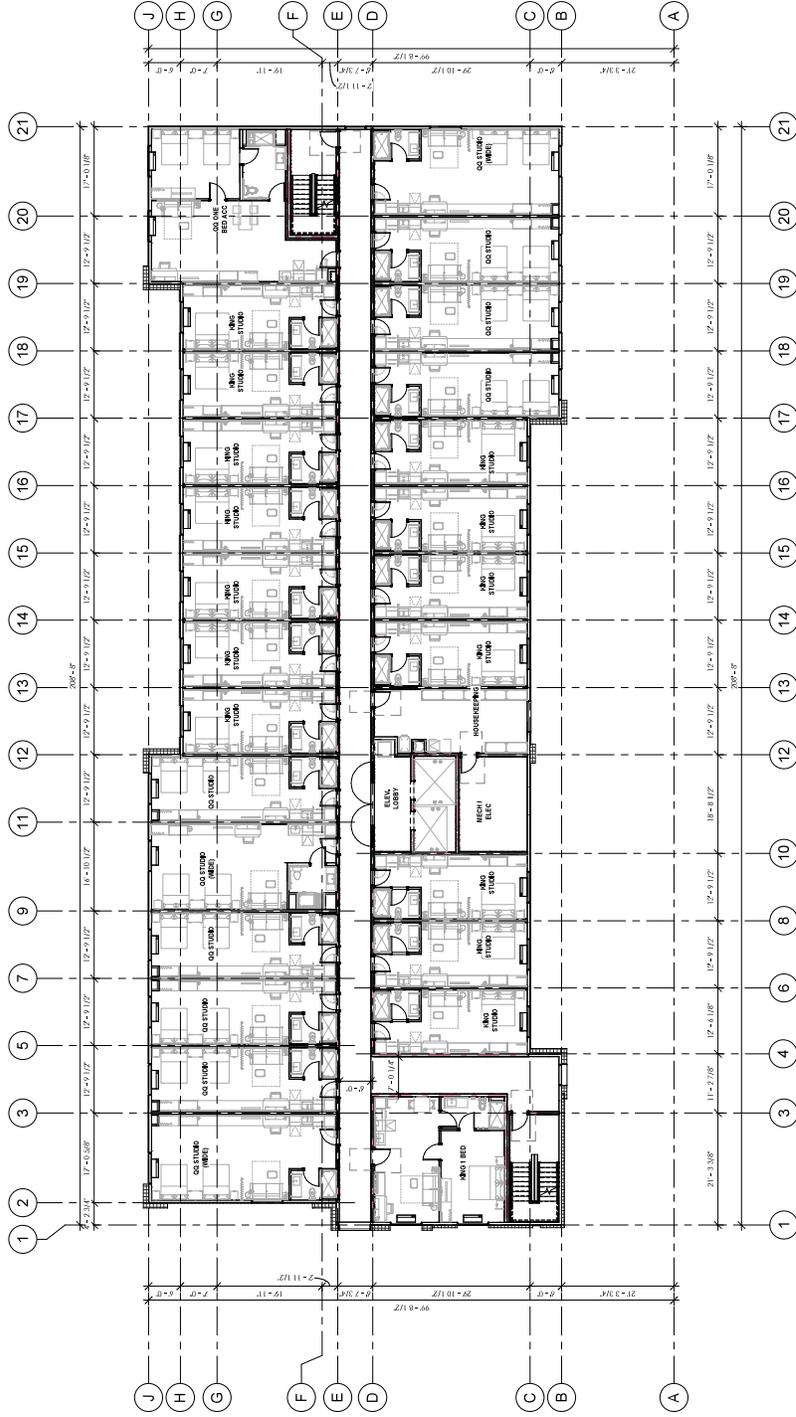
PROJECT:
HOME 2 SUITES HOTEL
1000 S. WASHINGTON STREET
APR #00276103
NE CORNER OF CARSON ST &
CARSON CITY, NEVADA 89706

OWNER:
ASSUMBER'S GROUP
2000 S. WASHINGTON STREET
RENO, NEVADA 89502
TEL: 775-790-2177

ARCHITECT:
THE RICHARDSON
DESIGN PARTNERSHIP
1000 S. WASHINGTON STREET
RENO, NEVADA 89502
TEL: 775-790-2177

10/11/2023

ROOM TYPE MATRIX				
UNIT TYPE	MARKET LEVEL	SECOND LEVEL	THIRD LEVEL	TOTAL
RES. STUDIO	8	14	14	36
RES. STUDIO ADA	1	1	1	3
SUITE/RESIDENTIAL	3	9	10	31
SUITE/RESIDENTIAL ADA	1	1	1	3
ONE BEDROOM RES. ADA	1	1	1	3
TWO BEDROOM RES. ADA	1	1	1	3
ONE BEDROOM RES. ADA	1	1	1	3
ONE BEDROOM RES. ADA	1	1	1	3
TOTAL	15	26	26	67



1 THIRD LEVEL
SCALE: 3/32" = 1'-0"

04 HOME 2 SUITES - CARSON CITY, NV
THIRD LEVEL FLOOR PLAN

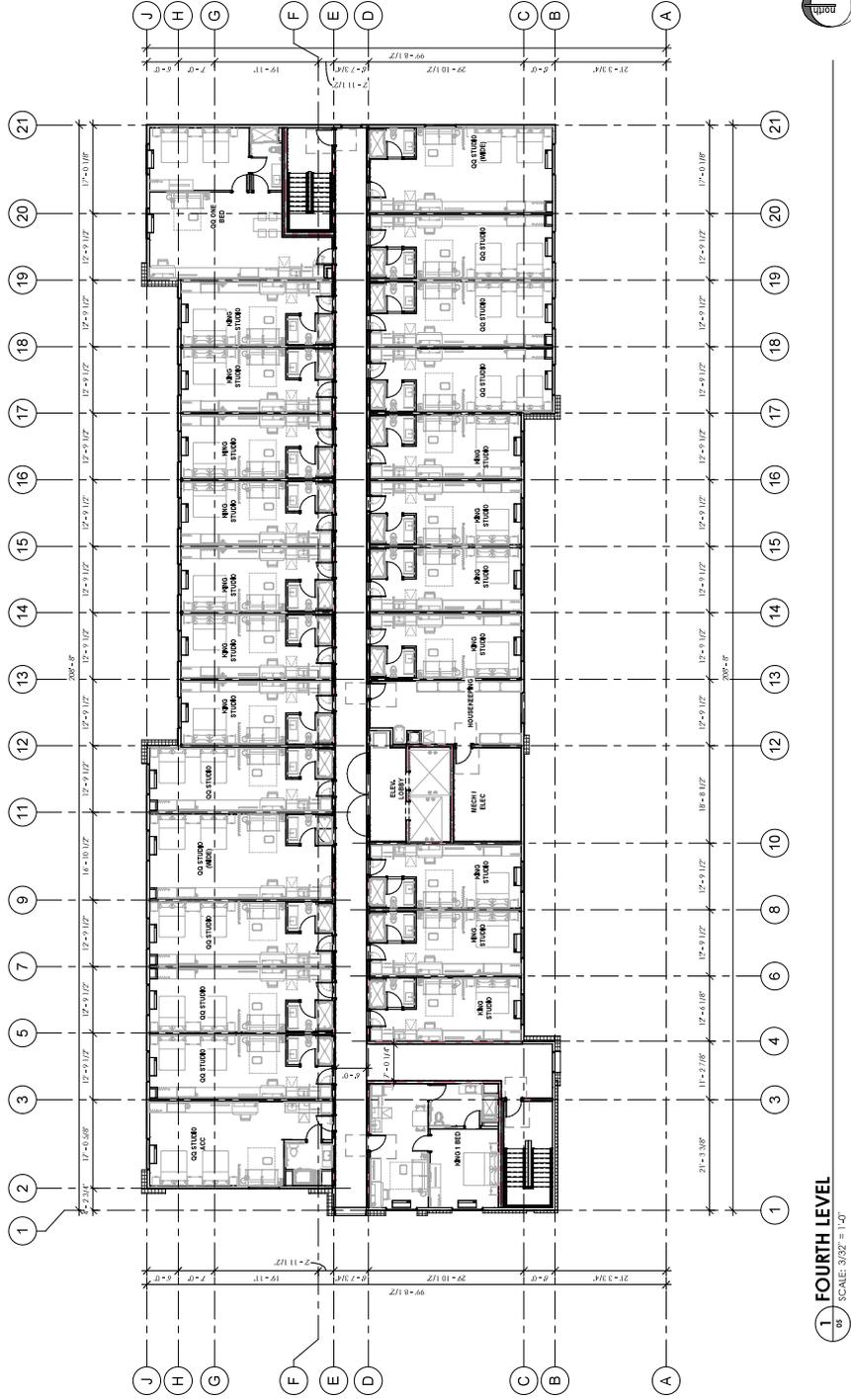
PROJECT:
HOME 2 SUITES HOTEL
300 S. WASHINGTON STREET
APR #00276103
NE CORNER OF CARSON ST &
CARSON CITY, NEVADA 89706

OWNER:
ASSUMBER'S GROUP
300 S. WASHINGTON STREET
RENO, NEVADA 89502
TEL: 775-790-2177

ARCHITECT:
THE RICHARDSON
DESIGN PARTNERSHIP
141 W. 11th St., Suite 200
RENO, NEVADA 89502
TEL: 775-790-2177

10/11/2023

ROOM TYPE MATRIX				
UNIT TYPE	MARKET LEVEL	SECOND LEVEL	THIRD LEVEL	TOTAL
INNS STUDIO	8	14	14	36
INNS STUDIO ADA	1	1	1	3
SUITE SUITES STUDIO	3	9	10	31
SUITE SUITES STUDIO ADA	1	1	1	3
ONE BEDROOM INNS SUITE	1	1	1	3
TWO BEDROOM INNS SUITE	1	1	1	3
ONE BEDROOM ADA SUITE	1	1	1	3
TWO BEDROOM ADA SUITE	1	1	1	3
TOTAL	15	26	26	67



1 FOURTH LEVEL
SCALE: 3/32" = 1'-0"

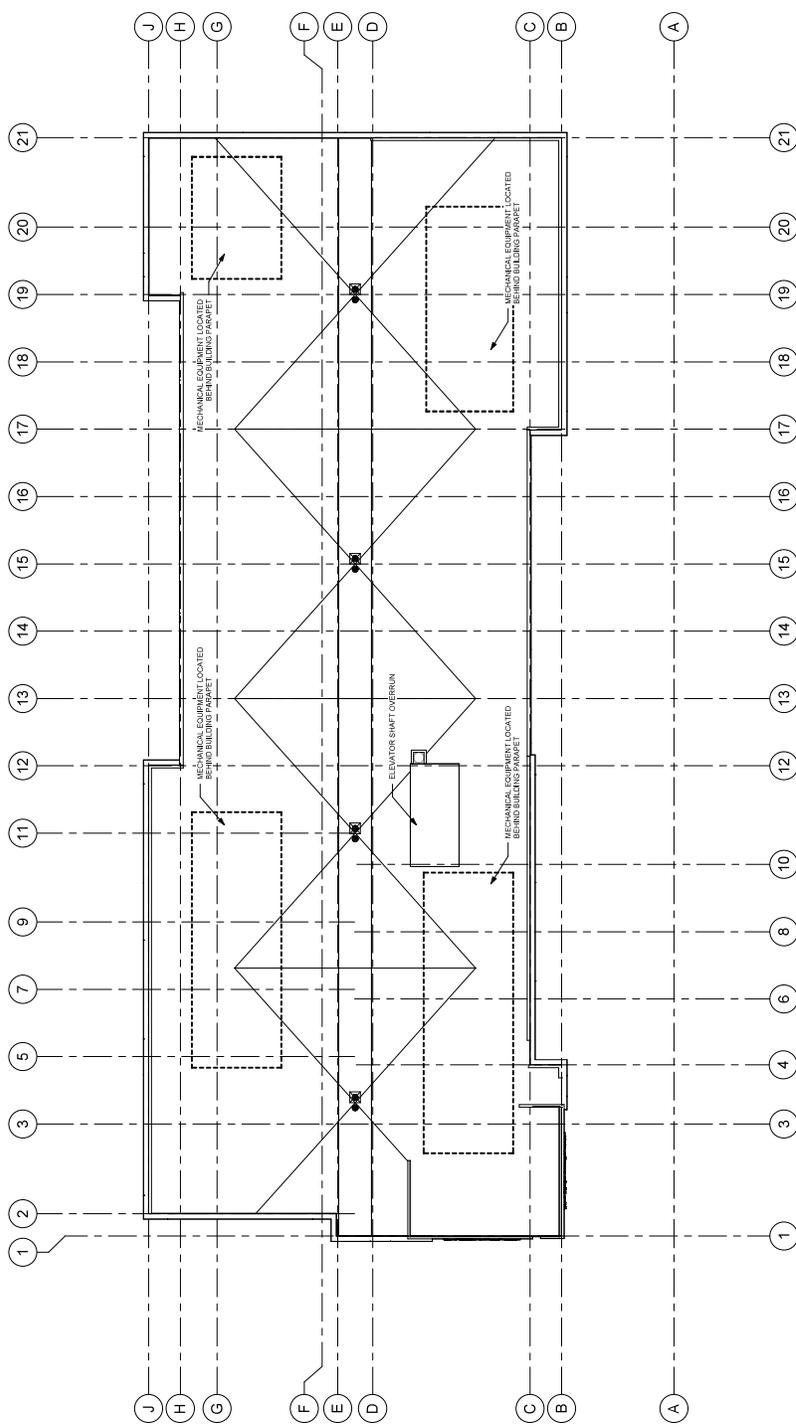
05 HOME 2 SUITES - CARSON CITY, NV
FOURTH LEVEL FLOOR PLAN

PROJECT:
HOME 2 SUITES HOTEL
300 S. WASHINGTON STREET
APR #00276103
NE CORNER OF CARSON ST &
CARSON CITY, NEVADA 89706

OWNER:
ASSUMBER'S GROUP
300 S. WASHINGTON STREET
RENO, NEVADA 89502
TEL: 775-790-2177

ARCHITECT:
THE RICHARDSON
DESIGN PARTNERSHIP
1000 W. 18th St., Suite 200
RENO, NEVADA 89502
TEL: 775-790-2177





1 ROOF PLAN
SCALE: 3/32" = 1'-0"

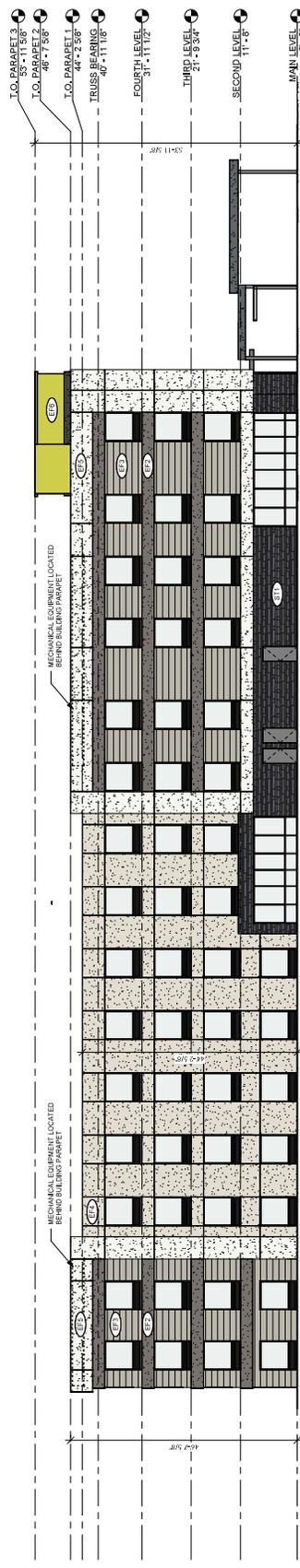
06 HOME 2 SUITES - CARSON CITY, NV
ROOF PLAN

10/11/2023

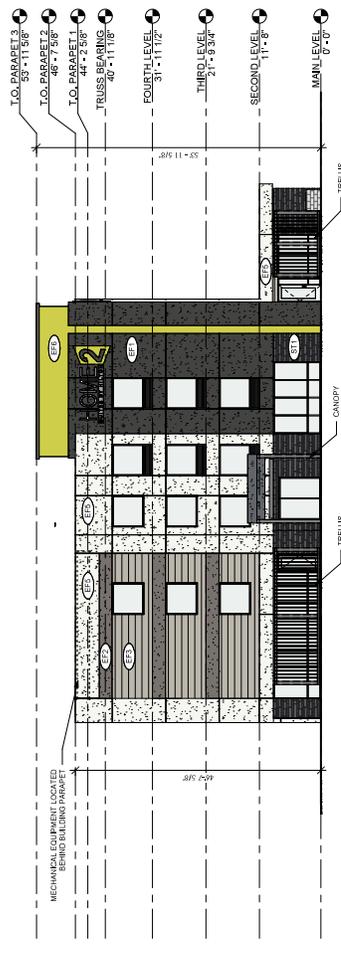
PROJECT:
HOME 2 SUITES HOTEL
3500 S. WILSON STREET
APR #00276103
NE CORNER OF CARSON ST &
WILSON STREET
CARSON CITY, NEVADA 89706

OWNER:
ASSUMBER'S GROUP
3500 WILSON STREET
RENO, NEVADA 89502
TEL: 775-790-2177

ARCHITECT:
THE RICHARDSON
DESIGN PARTNERSHIP
1111 S. WILSON STREET
WILSON, NEVADA 89503
510 S. 600 E. SLC. UT 84102



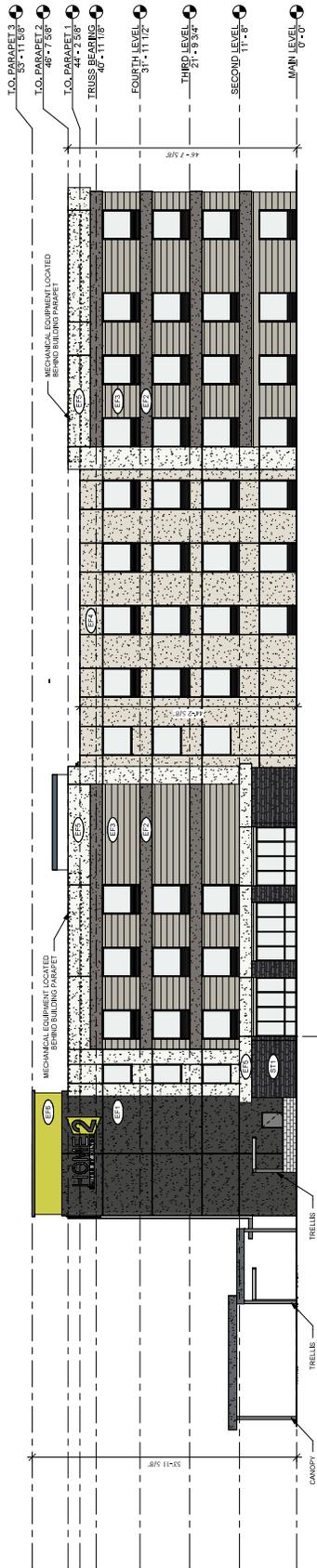
2 NORTH ELEVATION
SCALE: 3/32" = 1'-0"



1 WEST ELEVATION
SCALE: 3/32" = 1'-0"

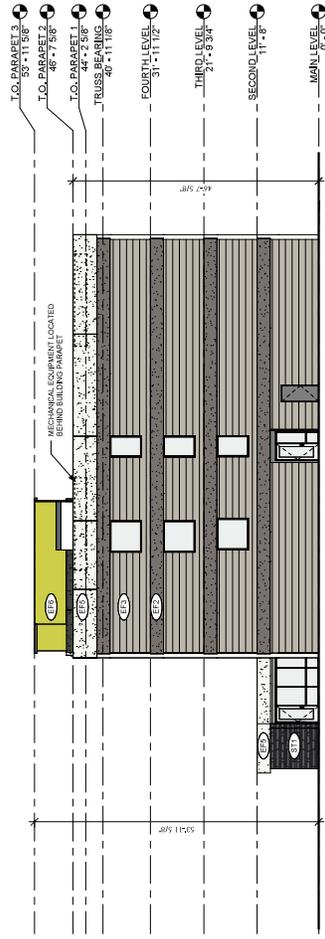
MATERIAL/COLOR LEGEND

(E1)	E.I.F.S. - COLOR TO MATCH SW 7089 (IRON ORE)
(E2)	E.I.F.S. - COLOR TO MATCH SW 7019 (GAUNTLET GRAY)
(E3)	E.I.F.S. - COLOR TO MATCH SW 7016 (MINDFUL GRAY)
(E4)	E.I.F.S. - COLOR TO MATCH SW 7837 (OYSTER WHITE)
(E5)	E.I.F.S. - COLOR TO MATCH SW 7757 (HSH REFLECTIVE WHITE)
(E6)	E.I.F.S. - COLOR TO MATCH BM 398 (FLOWER POWER)
(S1)	STONE VENEER - VERSETTA STONE LEDGESTONE / NORTHERN ASH



2 SOUTH ELEVATION
SCALE: 3/32" = 1'-0"

MATERIAL / COLOR LEGEND	
(EF1)	E.I.F.S. - COLOR TO MATCH SW 7068 (IRON ORE)
(EF2)	E.I.F.S. - COLOR TO MATCH SW 7019 (GAUNTLET GRAY)
(EF3)	E.I.F.S. - COLOR TO MATCH SW 7016 (MINDFUL GRAY)
(EF4)	E.I.F.S. - COLOR TO MATCH SW 7837 (OYSTER WHITE)
(EF5)	E.I.F.S. - COLOR TO MATCH SW 7197 (HIGH REFLECTIVE WHITE)
(EF6)	E.I.F.S. - COLOR TO MATCH BM 388 (FLOWER POWER)
(ST1)	STONE VENEER - VERBETTA STONE LEDGESTONE / NORTHERN ASH



1 EAST ELEVATION
SCALE: 3/32" = 1'-0"

08 HOME 2 SUITES - CARSON CITY, NV
ELEVATIONS

PROJECT:
HOME 2 SUITES HOTEL
3022 S. US HIGHWAY 93
APT # 80276103
NE CORNER OF CARSON ST &
CARSON CITY, NEVADA 89706

OWNER:
JOSHWINE'S SPACET
RENO, NEVADA 89502
TEL: 775-796-2177

ARCHITECT:
THE RICHARDSON
DESIGN PARTNERSHIP
111 W. 1130 S. - CO 03
WYOMING, UT 84103
510 S 800 E, SLC, UT 84102

10/11/2023



09 | HOME 2 SUITES - CARSON CITY, NV
PERSPECTIVE

10/11/2023

PROJECT:
SUNSET SUITES HOTEL
(SPEC & SUE PERMIT)
API # 00276103
NE CORNER OF CARSON ST &
CARSON CITY, NEVADA 89706

OWNER:
JOSWINDEE'S GROUP
2000 W. WASHINGTON STREET
RENO, NEVADA 89502
TEL: 775-790-2177

ARCHITECT:
THE RICHARDSON
DESIGN PARTNERSHIP
1111 W. 13TH ST. #200
WYOMING, NEVADA
510 S 600 E, SLC, UT 84102