A TENTATIVE MAP APPLICATION

FOR

LEARNER LEMMON RESIDENTIAL SUBDIVISION

PHOTO OF SITE LOOKING NORTH FROM
PAN AMERICAN DRIVE NEAR THE SW PROPERTY CORNER

TO BE SUBMITTED TO WASHOE COUNTY PLANNING
OCTOBER 9, 2023

Application for a Tentative Map

For

Learner Lemmon

Prepared For:
LC Learner, LLC
325 Harbour Cove Dr. Suite 219
Sparks, NV 89434

Prepared By:
KRATER CONSULTING GROUP, PC
A Nevada professional corporation
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October 9, 2023

Table of Contents

I. Washoe County Development Application Form

II. Property Owner Affidavit

III. SITE PLAN

IV. Tentative Map – Supplemental Information

V. Tentative Map – Findings

VI. Tentative Map – Application Submittal Requirements

VII. Opportunities & Constraints Analysis in Support of WC Code 110.408.30

VIII. Summary of Neighborhood Meeting

IX. Stamped/Sealed Legal Descriptions

- A. Property Deed for Learner

X. Assessor's Parcel Map (080-461-08)

XI. Proof of Property Tax Payments

XII. Title Report (Original Application Packet Only)

XIII. "Acknowledgment of Water Service" letter

XIV. Preliminary Sewer Study

XV. Preliminary Drainage Report

XVI. Traffic Impact Study

XVII. Geotechnical Report

XVIII. Map Pocket

- A. Tentative Map, 24X36
- B. Preliminary Landscape Plan
- C. Opportunities & Constraints Map

Washoe County Development Application

Your entire application is a public record. If you have a concern about releasing personal information, please contact Planning and Building staff at 775.328.6100.

Project Information	**Staff Assigned Case No.:**

Project Name: Learner Lemmon

Project Description: A tentative map to allow development of an 85 lot single-family residential subdivision on Pan American Drive.

Project Address: 0 Pan American Drive

Project Area (acres or square feet): 19.926 acres

Project Location (with point of reference to major cross streets **AND** area locator):

Southeast corner of Pan American Drive and the future Lear Blvd.

Assessor's Parcel No.(s):	Parcel Acreage:	Assessor's Parcel No.(s):	Parcel Acreage:
080-461-08	19.926		

Indicate any previous Washoe County approvals associated with this application:

Case No.(s). N/A

Applicant Information (attach additional sheets if necessary)

Property Owner:		**Professional Consultant:**	
Name: LEARNER, BRETT H & LEARNER, BRYAN A		Name: Krater Consulting Group, PC	
Address: 1540 ROMA COURT		Address: 1165 Mount Rose Street	
Reno, NV	Zip: 89523	Reno, NV	Zip: 89509
Phone:	Fax:	Phone: 775-815-9561	Fax:
Email:		Email: ken@kraterconsultinggroup.com	
Cell:	Other:	Cell: 775-815-9561	Other:
Contact Person: Brett Learner		Contact Person: Ken Krater	
Applicant/Developer:		**Other Persons to be Contacted:**	
Name: Krater Consulting Group, PC		Name: LC Learner, LLC	
Address: 1165 Mount Rose Street		Address: 325 Harbour Cove Drive #219	
Reno, NV	Zip: 89509	Sparks, NV	Zip: 89434
Phone: 775-815-9561	Fax:	Phone: (949) 322-9959	Fax:
Email: ken@kraterconsultinggroup.com		Email: jholbrook@landcapip.com	
Cell: 775-815-9561	Other:	Cell: (949) 322-9959	Other:
Contact Person: Ken Krater		Contact Person: Jeff Holbrook	

For Office Use Only

Date Received:	Initial:	Planning Area:
County Commission District:		Master Plan Designation(s):
CAB(s):		Regulatory Zoning(s):

IV. Tentative Subdivision Map Application Supplemental Information

(All required information may be separately attached)

1. What is the location (address or distance and direction from nearest intersection)?

Southeast corner of Pan American Drive and Lear Boulevard. Address listed as 0 Pan American Drive.

2. What is the subdivision name (proposed name must not duplicate the name of any existing subdivision)?

Learner Lemmon

3. Density and lot design:

a. Acreage of project site	19.920 (Per Survey, Assessor shows 19.926)
b. Total number of lots	85
c. Dwelling units per acre	4.27 d.u./acre
d. Minimum and maximum area of proposed lots	4,500 sq. ft. min. & 7,750 sq. ft.
e. Minimum width of proposed lots	50 feet
f. Average lot size	4,960 sq. ft.

4. What utility company or organization will provide services to the development:

a. Sewer Service	City of Reno (Per the Division Director of Engineering)
b. Electrical Service	NV Energy
c. Telephone Service	AT&T or Charter/Spectrum
d. LPG or Natural Gas Service	Natural Gas - NV Energy
e. Solid Waste Disposal Service	Waste Management
f. Cable Television Service	AT&T or Charter/Spectrum
g. Water Service	Truckee Meadows Water Authority

5. For common open space subdivisions (Article 408), please answer the following:

   a. Acreage of common open space:

   Reveg, streetscape, retention and common landscape = 4.65 acres.

   b. What development constraints are within the development and how many acres are designated slope, wetlands, faults, springs, and/or ridgelines:

   No development constraints

   c. Range of lot sizes (include minimum and maximum lot size):

   4,500 sq. ft. min. to 7,750 sq. ft. with an average lot size = 4,960 sq. ft.

d. Proposed yard setbacks if different from standard:

Front - 20' to garage & 15' to house. Rear -15 ft. Side yard - 5 feet.

e. Justification for setback reduction or increase, if requested:

Common Open Space Development (See write up, Opportunities & Constraints)

f. Identify all proposed non-residential uses:

None

g. Improvements proposed for the common open space:

Pocket Park with tot lot, tables, and benches & pedestrian trail.

h. Describe or show on the tentative map any public or private trail systems within common open space of the development:

See the attached tentative map

i. Describe the connectivity of the proposed trail system with existing trails or open space adjacent to or near the property:

The trail will connect with both Pan American Drive and Lear Boulevard.

j. If there are ridgelines on the property, how are they protected from development?

No

k. Will fencing be allowed on lot lines or restricted? If so, how?

Rear and side yards only behind the front of the home.

l. Identify the party responsible for maintenance of the common open space:

Homeowner's Association

6. Is the project adjacent to public lands or impacted by "Presumed Public Roads" as shown on the adopted April 27, 1999 Presumed Public Roads (see Washoe County Engineering website at http://www.washoecounty.us/pubworks/engineering.htm). If so, how is access to those features provided?

No

7. Is the parcel within the Truckee Meadows Service Area?

☒ Yes (Washoe County)	☐ No

8. Is the parcel within the Cooperative Planning Area as defined by the Regional Plan?

❑ Yes	X No	If yes, within what city?

9. Has an archeological survey been reviewed and approved by SHPO on the property? If yes, what were the findings?

No, not applicable

10. Indicate the type and quantity of water rights the application has or proposes to have available:

a. Permit #		acre-feet per year	
b. Certificate #		acre-feet per year	
c. Surface Claim #		acre-feet per year	
d. Other #		acre-feet per year	

a. Title of those rights (as filed with the State Engineer in the Division of Water Resources of the Department of Conservation and Natural Resources):

To be purchased from Vidler/TMWA

11. Describe the aspects of the tentative subdivision that contribute to energy conservation:

Homes will comply with the model energy code.

12. Is the subject property in an area identified by Planning and Building as potentially containing rare or endangered plants and/or animals, critical breeding habitat, migration routes or winter range? If so, please list the species and describe what mitigation measures will be taken to prevent adverse impacts to the species:

No (See enclosed development suitability exhibit)

13. If private roads are proposed, will the community be gated? If so, is a public trail system easement provided through the subdivision?

Public Streets and Public Trail system

14. Are there any applicable policies of the adopted area plan in which the project is located that require compliance? If so, which policies and how does the project comply?

Water, sewer, storm water, and noxious weeds are all addressed in this application

15. Are there any applicable area plan modifiers in the Development Code in which the project is located that require compliance? If so, which modifiers and how does the project comply?

Section 110.404.25 Common Open Space Development allows for modification to include a reduction in minimum lot sizes and lot standards as long as the overall density is not increased beyond that permitted in a specific regulatory zone. See the section on opportunities & constraints.

16. Will the project be completed in one phase or is phasing planned? If so, please provide that phasing plan:

Single Phase

17. Is the project subject to Article 424, Hillside Development? If yes, please address all requirements of the Hillside Ordinance in a separate set of attachments and maps.

❑ Yes	☒ No	If yes, include a separate set of attachments and maps.

18. Is the project subject to Article 418, Significant Hydrologic Resources? If yes, please address Special Review Considerations within Section 110.418.30 in a separate attachment.

❑ Yes	☒ No	If yes, include separate attachments.

Grading

Please complete the following additional questions if the project anticipates grading that involves: (1) Disturbed area exceeding twenty-five thousand (25,000) square feet not covered by streets, buildings and landscaping; (2) More than one thousand (1,000) cubic yards of earth to be imported and placed as fill in a special flood hazard area; (3) More than five thousand (5,000) cubic yards of earth to be imported and placed as fill; (4) More than one thousand (1,000) cubic yards to be excavated, whether or not the earth will be exported from the property; or (5) If a permanent earthen structure will be established over four and one-half (4.5) feet high:

19. How many cubic yards of material are you proposing to excavate on site?

20,000 cu. yds. cut/fill.

20. How many cubic yards of material are you exporting or importing? If exporting of material is anticipated, where will the material be sent? If the disposal site is within unincorporated Washoe County, what measures will be taken for erosion control and revegetation at the site? If none, how are you balancing the work on-site?

Estimated Import of 35,000 cu. yds. Per neighborhood input, we plan to pursue the potential to bring fill in from Lear Boulevard via Military Road via a temporary crossing over the major drainage way.

We believe that the import number can be reduced below 20,000 cu. yds. with final design.

21. Can the disturbed area be seen from off-site? If yes, from which directions, and which properties or roadways? What measures will be taken to mitigate their impacts?

No, level ground

22. What is the slope (Horizontal/Vertical) of the cut and fill areas proposed to be? What methods will be used to prevent erosion until the revegetation is established?

3:1, to be planted or revegetated.

23. Are you planning any berms and, if so, how tall is the berm at its highest? How will it be stabilized and/or revegetated?

No

24. Are retaining walls going to be required? If so, how high will the walls be, will there be multiple walls with intervening terracing, and what is the wall construction (i.e. rockery, concrete, timber, manufactured block)? How will the visual impacts be mitigated?

A single retaining wall along Pan American, set back 10' with a max. exposed height around 5.5'

25. Will the grading proposed require removal of any trees? If so, what species, how many, and of what size?

No trees exist on site

26. What type of revegetation seed mix are you planning to use and how many pounds per acre do you intend to broadcast? Will you use mulch and, if so, what type?

See the preliminary landscape plans for details on revegetation and the seed mix planned for the site.

27. How are you providing temporary irrigation to the disturbed area?

No temporary irrigation is planned to avoid erosion issues. A proper seed mix and planting techniques will be used along with fall planting to take advantage of winter moisture to facilitate seed germination and rooting.

28. Have you reviewed the revegetation plan with the Washoe Storey Conservation District? If yes, have you incorporated their suggestions?

No, our team has substantial experience with revegetation in the Washoe County area.

V. TENTATIVE MAP FINDINGS

Section 110.608.25 Findings. Prior to approving an application for a tentative map, the Planning Commission shall find that all of the following are true:

(a) Plan Consistency. That the proposed map is consistent with the Master Plan and any specific plan;

RESPONSE – This Tentative Map is consistent with the supplemental information, findings, and compliance information contained within the attached Master Plan Amendment Application and thus consistent with the Master Plan including the North Valleys Area Plan.

(b) Design or Improvement. That the design or improvement of the proposed subdivision is consistent with the Master Plan and any specific plan;

RESPONSE – This Tentative Map and the subdivision design are consistent with the supplemental information, findings, and compliance information contained within the attached Master Plan Amendment Application and consistent with the Washoe County Master Plan including the North Valleys Area Plan.

(c) Type of Development. That the site is physically suited for the type of development proposed;

RESPONSE – This project is ideally situated on the property with significant buffer areas adjoining the existing single family residential homes to the east and south, a pocket park, trail system, and significant open space to help preserve the character of the area. Planned access to Pan American Drive will limit traffic on Fleetwood Drive between Lear and Budger and traffic volumes on the residential portion of Fleetwood will remain below 2,000 ADT with development of the project. Lemmon Valley Elementary School and Lemmon Valley Park are within walking distance for the children and families that are expected to live in the new homes.

(d) Availability of Services. That the subdivision will meet the requirements of Article 702, Adequate Public Facilities Management System;

RESPONSE – Per the following table, this project has sufficient and adequate access to the Public Facilities Management System.

a. Fire Station	TRUCKEE MEADOWS FIRE STATION 44, 5.4 miles (+/-3 miles upon completion of Lear Blvd)
b. Health Care Facility	Numerous Health Care/Urgent Care Facilities near Lemmon Dr. & US 395
c. Elementary School	Lemmon Valley Elementary School, 0.6 Miles
d. Middle School	O'Brien Middle School, 4.5 Miles
e. High School	North Valley's High School, 4.2 Miles
f. Parks	Lemmon Valley Park (0.5 Miles) & North Valley's Regional Park (3.5 Miles)
g. Library	North Valley's Library, 3.5 Miles
h. Citifare Bus Stop	Adjoins RTC Flex Ride Service area (See attached)

(e) Fish or Wildlife. That neither the design of the subdivision nor any proposed improvements are likely to cause substantial environmental damage, or substantial and avoidable injury to any endangered plant, wildlife or their habitat;

RESPONSE – No endangered plant, wildlife, or associated habitats exists on this site. 5.27 acres of open space will be preserved, and native vegetation will be used where practical. A trail system will traverse said open space to the benefit the public and wildlife.

(f) Public Health. That the design of the subdivision or type of improvement is not likely to cause significant public health problems;

RESPONSE – There are no Public Health Issues associated with this project. Public sewer and water lines will serve the project, adequate traffic facilities exist to accommodate the project and adopted levels of service will be maintained, and all necessary public facilities are within close proximity to the project.

(g) Easements. That the design of the subdivision or the type of improvements will not conflict with easements acquired by the public at large for access through, or use of property within, the proposed subdivision;

RESPONSE – There are no easements affected by this project. Planned trails and pocket parks will benefit the public.

(h) Access. That the design of the subdivision provides any necessary access to surrounding, adjacent lands and provides appropriate secondary access for emergency vehicles;

RESPONSE – Per the attached traffic study, the two proposed three leg intersections on Pan American Drive will provide safe and adequate primary and emergency access to the project. The traffic study shows that the project will not unduly burden area roadways, further supports this finding.

(i) Dedications. That any land or improvements to be dedicated to the County is consistent with the Master Plan; and

RESPONSE – The local streets that are proposed to be dedicated to Washoe County as Public Roadways will comply with all applicable county standards and be in compliance with the Master Plan

(j) Energy. That the design of the subdivision provides, to the extent feasible, for future passive or natural heating or cooling opportunities in the subdivision.

RESPONSE – The level topography and layout of the site with southern and western orientation of the homes and large setbacks from existing homes will allow for significant natural solar heating of the vast majority of homes on the site.

Tentative Subdivision Map

Washoe County Code (WCC) Chapter 110, Article 608, Tentative Subdivision Map, prescribes the rules and procedures for the regulation and approval of tentative subdivision maps. The Planning Commission shall approve, conditionally approve, or deny the tentative parcel map within sixty (60) days of the date that the application is determined to be complete. See WCC 110.608, for further information.

VI. Development Application Submittal Requirements

Applications are accepted on the 8th of each month. If the 8th falls on a non-business day, applications will be accepted on the next business day.

If you are submitting your application online, you may do so at OneNV.us

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XX 1. **Fees:** See Master Fee Schedule. **Most payments can be made directly through the OneNV.us portal.** If you would like to pay by check, please make the check payable to Washoe County and bring your application and payment to the Community Services Department (CSD). The following fees will also need to be paid:

- A fee to the Engineering Department for Technical Plan Check.
- A separate check made payable to the Nevada Division of Environmental Protection ($100 base fee plus $1 per lot) is required upon submittal.
- A separate check made payable to the Nevada Division of Water Resources ($150 base fee plus $1 per lot) is required upon submittal.

XX 2. **Development Application:** A completed Washoe County Development Application form.

XX 3. **Owner Affidavit:** The Owner Affidavit must be signed and notarized by all owners of the property subject to the application request.

XX 4. **Proof of Property Tax Payment:** The applicant must provide a written statement from the Washoe County Treasurer's Office indicating all property taxes for the current quarter of the fiscal year on the land have been paid.

XX 5. **Neighborhood Meeting:** This project may require a Neighborhood Meeting to be held prior to application submittal. Please contact Washoe County Planning at Planning@washoecounty.gov or by phone at 775-328-6100 to discuss requirements.

XX 6. **Application Materials:** The completed Tentative Subdivision Map Application materials.

XX 7. **Title Report:** A preliminary title report, with an effective date of no more than one hundred twenty (120) days of the submittal date, by a title company which provides the following information:

- Name and address of property owners.
- Legal description of property.
- Description of all easements and/or deed restrictions.
- Description of all liens against property.
- Any covenants, conditions and restrictions (CC&Rs) that apply.

XX 8. **Traffic Impact Report:** Traffic impact reports are required whenever the proposed development will create the potential to generate 80 or more weekday peak hour trips as determined using the latest edition of the Institute of Transportation Engineers (ITE) trip generation rates or other such sources as may be accepted by Washoe County Engineering. Projects with less than 200 peak hour trips may not need to perform an impact analysis for future years. Traffic consultants are encouraged to contact Washoe County Engineering staff prior to preparing a traffic impact report.

XX 9. **Development Plan Specifications:**

a. Vicinity map showing the proposed development in relation to the surrounding area with distance to primary and secondary access/egress and in relationship to Interstate 80, Highway 395, I-580, or other major arterials.

b. Date, north arrow, standard engineering scale (e.g. scale 1" = 100', 1" = 200', or 1" = 500') and index with number of each sheet in relation to the total number of sheets.

c. Name of subdivision, applicant, property owner and engineer.

d. General notes as required.

e. Land use data (number of lots, total area, common area, gross density, average lot size, largest and smallest lot at a minimum).

f. Engineer's statement with wet stamp including a note by the project engineer or design professional indicating compliance with all applicable provisions of the Washoe County Development Code.

XX 10. **Map Series (the following at a minimum must be shown):**

a. Lot size with dimensions showing all streets and ingress/egress to the property.

b. Property boundary lines, distances and bearings.

c. Show the location of all existing buildings that will remain (with distances from the property lines and from each other), all existing buildings that will be removed, and site improvements on a base map with existing and proposed topography expressed in intervals of no more than five (5) feet.

d. Show the location and configuration of all existing and proposed wells, septic systems and leach fields, overhead utilities, and water and sewer lines.

e. Show locations of parking, landscaping, signage and lighting (if applicable).

f. Contours (labeled) at five (5) foot intervals or two (2) foot intervals where, in the opinion of the County Engineer, topography is a major factor in the development.

g. Indication of prominent landmarks, areas of unique natural beauty, rock outcroppings, vistas and natural foliage which will be deciding considerations in the design of the development.

h. The cross sections of all right-of-ways, streets, alleys or private access ways within the proposed development, proposed name and approximate grade of each, and approximate radius of all curves and diameter of each cul-de-sac. Plans to mitigate visual impacts of all cuts and fills over five (5) feet in height.

i. The width and approximate location of all existing or proposed easements, whether public or private, for roads, drainage, sewers, irrigation, or public utility purposes.

j. Location and size of any land to be reserved or dedicated for parks, recreation areas, common open space areas, schools, or other public uses.

k. If any portion of the land within the boundary of the development is subject to inundation or storm water overflow, as shown on the adopted Federal Emergency Management Agency's Flood Boundary and Floodway Maps, that fact and the land so affected shall be clearly shown on the map by a prominent note on each sheet, as well as width and direction of flow of each water course within the boundaries of the development.

l. Existing roads, trails, or rights-of-way within the development shall be designated on the map. Topography and existing developments within three hundred (300) feet must also be shown on the map.

m. Location of snow storage areas sufficient to handle snow removed from public and private streets, if applicable.

n. All known areas of potential hazard including, but not limited to, earth slide areas, avalanche areas, or otherwise hazardous slopes, shall be clearly designated on the map. Additionally, active fault lines (post-Holocene) shall be delineated on the map together with lines delineating required building setbacks.

o. Boundary of any wetland areas and the location of any springs within the project site.

p. Emergency access roadway.

q. Building envelopes if a hillside development is proposed and areas that may be fenced and type of fencing to be allowed.

r. Significant Hydrologic Resources. Indicate the critical and sensitive buffer zones according to Article 418 of the Washoe County Development Code.

s. Preliminary landscape plan for all cuts and fill slopes, utility trenches not contained within roadways, entrances, buffer zones and all arterial roadway treatment.

t. Easements over trail systems, if required.

u. Traffic Impact Report (if needed) : Traffic impact reports are required whenever the proposed development project will generate 80 or more weekday peak hour trips as determined using the latest edition of the Institute of Transportation Engineers (ITE) trip generation rates or other such sources as may be accepted by Washoe County Engineering and Capital Projects. Projects with less than 200 peak hour trips may not need to perform an impact analysis for future years. Traffic consultants are encouraged to contact Engineering and Capital Projects staff prior to preparing a traffic impact report.

XX 11. **Grading Plan (in addition to requirements above, if needed):**

a. Location and limits of all work to be done.

b. Existing contours and proposed contours.

c. Existing drainage (natural and man-made) and proposed drainage patterns.

d. Quantities of excavation, fill, and disturbed surface area shall be calculated and shown on the site plan.

e. Quantities of material proposed to be removed from the site must be shown. The proposed disposal area and the disposition of fill must be noted on the site plan.

f. Limiting dimensions of cut and fill.

g. Proposed BMP's (Best Management Practices) for controlling water and wind erosion if a disturbed area is left undeveloped for over thirty (30) days.

h. Walls and terraces with proposed height.

i. A minimum of two (2) cross sections of the project site depicting the major grading as proposed and the relationship of the project site to existing development within two hundred (200) feet.

N/A 12. **Hillside Ordinance:** Applications on properties containing slopes in excess of fifteen (15) percent or greater on twenty (20) percent or more of the site must submit all requirements of Article 424, Hillside Development. The Site Analysis Map, Developable Area Map, Constraint and Mitigation Analysis, and Detailed Contour Analysis are required. Building envelopes, disturbed areas, and areas to remain undisturbed for each created lot shall be shown on the tentative and final map.

XX 13. **Street Names:** A completed "Request to Reserve New Street Name" form (included in application packet). Please print all street names on the tentative map. Note whether they are existing or proposed.

XX 14. **Washoe County Assessor's Office Map:** A site map (labeled Assessor's Site Map) utilizing the Assessor's parcel page(s) as a base, must be submitted showing the development to scale. (The Assessor's pages may be combined and the scale utilized by the Assessor may be altered to show the development in the most graphic method. If so, please note the scale and label accordingly on the submitted site plan.)

XX 15. **Washoe County Health District:** An "Acknowledgment of Water Service" letter from the water purveyor shall be submitted with the tentative subdivision map application. Washoe County Health District will consider the application incomplete without compliance with NAC 445A.666.

XX 16. **Submission Packets:** Three (3) packets and a flash drive. One (1) packet must be labeled "Original" and contain a signed and notarized Owner Affidavit. Any digital documents need to have a resolution of 300 dpi. If materials are unreadable, you will be asked to provide a higher quality copy. The packet shall include one (1) 8.5" x 11" reduction of any applicable site plan, development plan, and/or application map. Labeling on these reproductions should be no smaller than 8 point on the 8.5" x 11" display. Large format sheets should be included in a slide pocket(s). Any specialized reports identified above shall be included as attachments or appendices and be annotated as such.

XX 17. **Special Packets:** In addition to the three (3) packets, the following information in the number specified shall be included with the project submittal:

XX a. **Geotechnical Report:** Three (3) copies of a preliminary geotechnical report prepared by a Nevada registered civil engineer, including soils characteristics sufficient for use in tentative structural design (i.e. street sections, building pads, etc.) and potential geologic hazards.

XX b. **Preliminary Grading, Drainage and Erosion Control Plan:** Three (3) copies of a preliminary grading, drainage, and erosion control plan for the entire project, prepared by a Nevada registered civil engineer, showing existing contours at maximum five (5) foot intervals, approximate street grades, proposed surface drainage, approximate extent of cut and fill slopes, approximate building envelopes and all pad elevations sufficient to convey the impact of grading.

XX c. **Hydrological Report:** Three (3) copies of a hydrological report including such conditions as ground water or seepage conditions, and location of wells and springs, to be prepared by a qualified civil engineer registered with the State of Nevada.

N/A d. **Tree Preservation and Protection Plan:** Three (3) copies of a tree preservation and protection plan, where applicable, shall be made a part of the tentative plat with indication thereon of those trees proposed to be removed, those to remain, and where new trees are to be planted.

XX e. **Preliminary Landscape Plan:** If the subject property is adjacent to an arterial roadway, submit three (3) copies of a preliminary landscape plan for the area along the roadway. The plans shall comply with the provisions of Article 412 of the Development Code. (***Not required but included***)

Notes:

(i) Application and map submittals must comply with all specific criteria as established in the Washoe County Development Code and/or the Nevada Revised Statutes.

(ii) Appropriate map engineering and building architectural scales are subject to the approval of the Planning and Building and/or Engineering and Capital Projects.

(iii) All oversized maps and plans must be folded to a 9” x 12” size.

(iv) Based on the specific nature of the development request, Washoe County reserves the right to specify additional submittal packets, additional information and/or specialized studies that clarify the potential impacts and potential conditions of development in order to minimize or mitigate impacts resulting from the project. No application shall be processed until the information necessary to review and evaluate the proposed project is deemed complete by the Director of Planning and Building.

(v) The Title Report should only be included in the one (1) original packet.

(vi) **Labels:** The applicant is required to submit a list of mailing addresses for every tenant residing in a mobile home park that is within five hundred (500) feet of the proposed project (or within seven hundred fifty (750) feet of the proposed project if the proposed project is a project of regional significance).

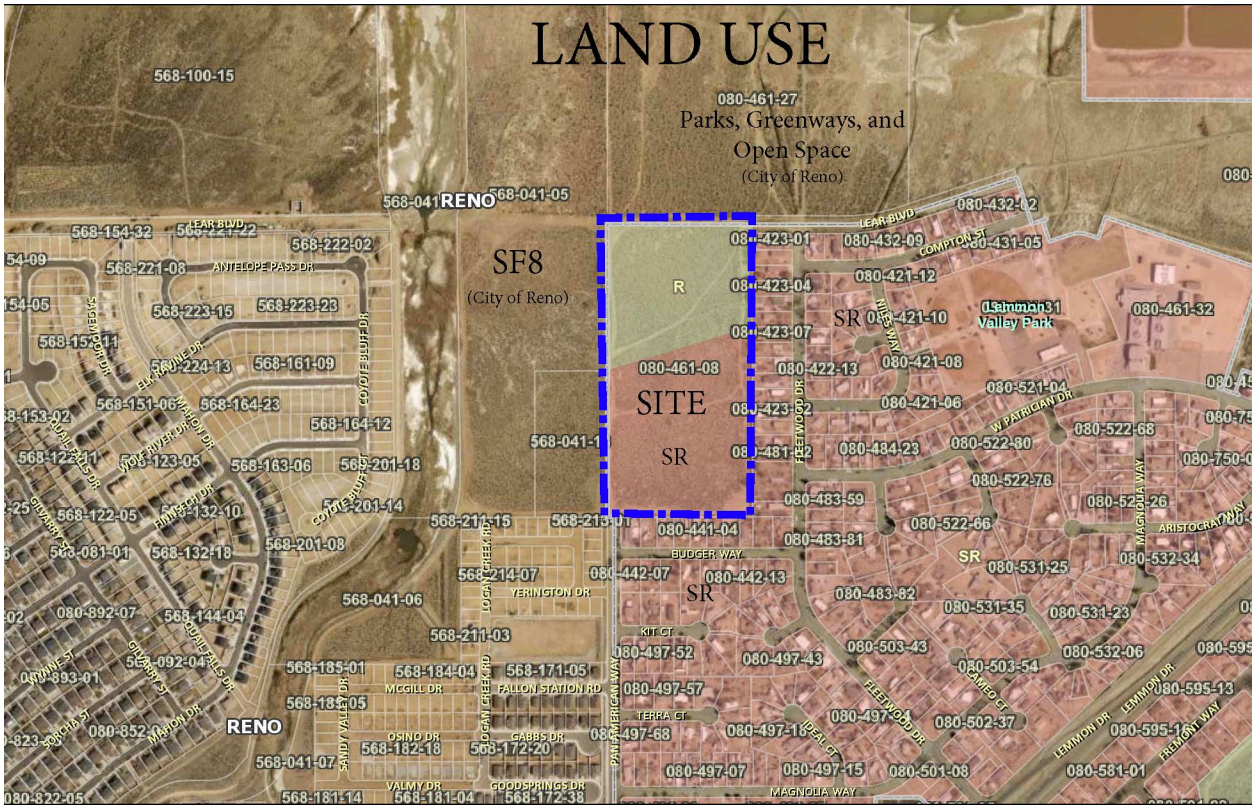
VII. Opportunities and Constraints Analysis

Section 110.408.30 Site Analysis to Determine Common Open Space and Lot Size Variations. A site analysis showing development opportunities and constraints shall be prepared as a key consideration, along with the project design objectives, to determine the total area covered by lots and roads, lot areas, and the total area to be designated as common open space. The site analysis shall include information and maps, including a site opportunities and constraints map, describing all significant physical and contextual features or factors which may affect the development of the property. The elements of the site analysis shall include, as a minimum, the following information:

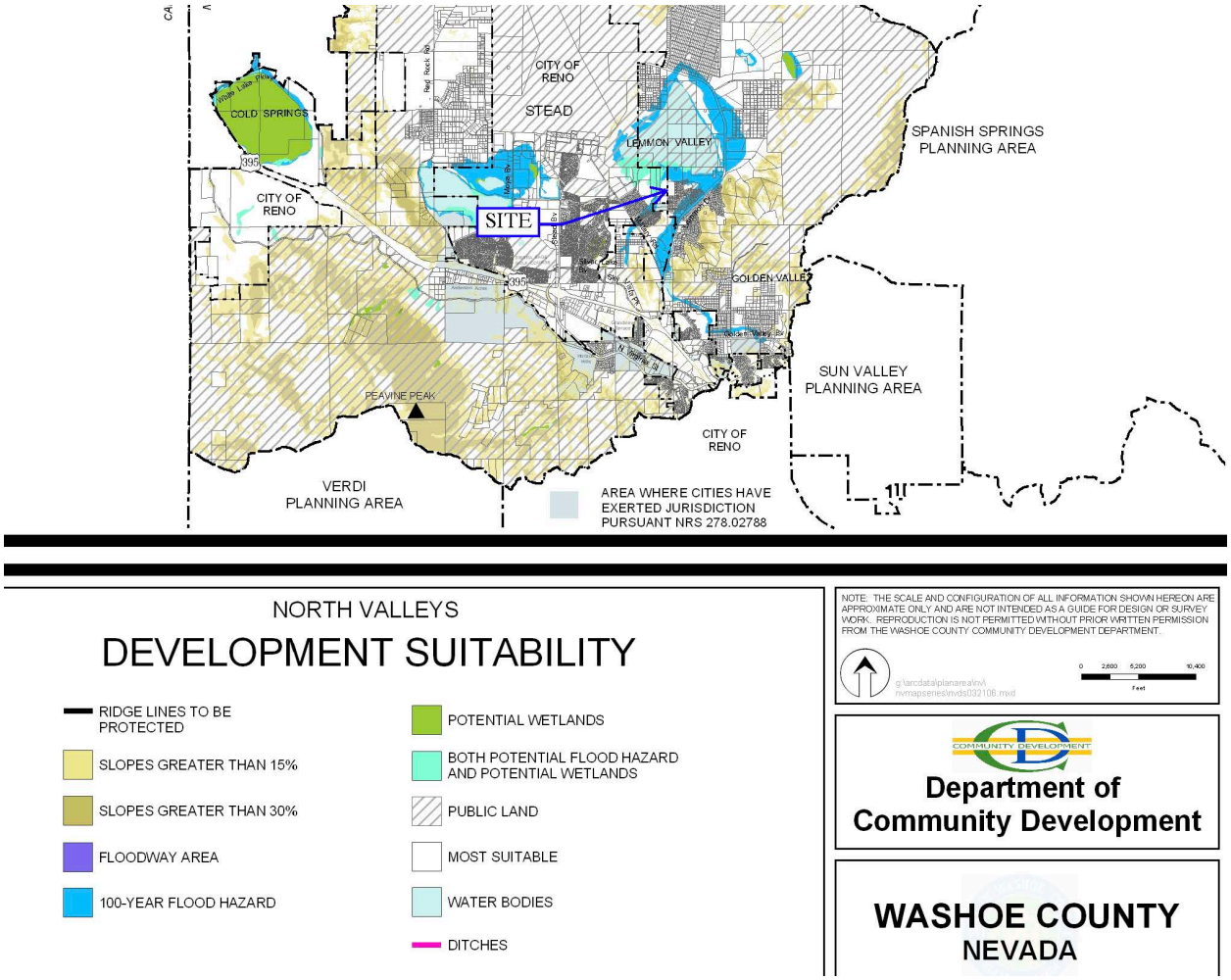
(a) Location Map. A general location map providing the context of location and vicinity of the site.
RESPONSE – See the Highlighted Area Below. The site lies within a built up area.

LOCATION MAP

(b) Land Use. Current and planned land use on the site and adjacent current, planned and approved, but unbuilt land uses. ***RESPONSE – The following exhibits show the current land use designations for the site. The only requested land use change is to amend the North Valleys Area Plan to change the rural designation on the northern 8.568 acres of the site to Suburban Residential, consistent with adjoining land use designations and the fact that no development constraints exist on the site.***



SITE & SURROUNDING LAND USE



DEVELOPMENT SUITABILITY EXHIBIT FROM THE NORTH VALLEYS AREA PLAN

(c) Existing Structures. A description of the location, physical characteristics, condition and proposed use of any existing structures. ***RESPONSE – There are no structures on the site.***

(d) Existing Vegetation. A description of existing vegetation, including limits of coverage, and major tree sizes and types. In the instance of heavily wooded sites, typical tree sizes, types and limits of tree coverage may be substituted. ***RESPONSE – The site is characterized as Chaparral Shrubland with no Trees.***

(e) Prevailing Winds. An analysis of prevailing winds. ***RESPONSE – Prevailing winds are from the West. The site will be buffered from West Winds with the addition of a 12' landscape strip along Pan American Drive to allow Class 4 Large Canopy Trees to be Planted 50' on center.***

(f) Topography. An analysis of slopes on the site using a contour interval of five (5) feet, or at a contour interval appropriate for the site and agreed to by the Director of Community Development. ***RESPONSE –***

See the Tentative Map, Grading Plan, with one foot contour intervals. This is a level site with only 10' of fall across the site draining from south to north for an approximately 1% grade.

(g) Soil. An analysis of the soil characteristics of the site using Soil Conservation Service (SCS) information. ***RESPONSE – Per the Geotechnical Report, the site is mapped in an area of Alluvium of Military Road (Qm). This geologic unit is described as poorly sorted sand to muddy sand derived from the alluvial fan deposits of Peavine Mountain. The soils units encountered in our explorations typically consisted of poorly sorted and interbedded layers and zones of silty sand and silty, clayey sand overlying low to medium plasticity clayey sand and sandy lean clay.***

(h) Natural Drainageways. Identification of natural drainageways on and adjacent to the site. ***RESPONSE – No natural drainage ways or man-made drainage ways exist on the site. A major drainage channel does lie ±800' west of the site. Lemmon Lake (Swan Lake) lies ±1,500 feet north of the site.***

(i) Wetlands and Water Bodies. Identification of existing or potential wetlands and water bodies on the site. ***RESPONSE – Lemmon Lake (Swan Lake) lies ±1,500 feet north of the site.***

(j) Flood Hazards. Identification of existing and potential flood hazards using Federal Emergency Management Agency (FEMA) information. ***RESPONSE – N/A, the site lies in an unshaded Zone X, outside the 100 year and 500-year FEMA flood zones.***

(k) Seismic Hazards. Identification of seismic hazards on or near the site, including location of any Halocene faults. ***RESPONSE – Per the Geotechnical Report, the property lies within an area where faulting can occur, but the nearest fault is sufficiently distant that offsets or additional considerations have not been recommended. Surface rupture is considered unlikely.***

(l) Avalanche Hazards. An analysis of avalanche and other landslide hazards. ***RESPONSE – N/A***

(m) Sensitive Habitat and Migration Routes. An analysis of sensitive habitat areas and migration routes. ***RESPONSE – N/A***

(n) Significant Views. A description and analysis of all on and off-site significant views. ***RESPONSE – There are no significant view associated with this level site but at least one neighbor has commented that they can see the hills and mountains that lie several miles to the west of the site.***

(o) Easements. A description of the type and location of any easements on the site. ***RESPONSE – Minimal easements/no significant easements exist on the site. See the attached title report.***

(p) Utilities. A description of existing or available utilities, and an analysis of appropriate locations for water, power, sanitary sewer and storm water sewer facilities. ***RESPONSE – Overhead power and communication lines lie on the southeast portion of the site that serve the adjoining homes. Electric lines exist where Fleetwood terminates into Lear Boulevard. Gas line exist where Fleetwood terminates into Lear Boulevard and where Budger Way terminates into Pan American Drive. Public water lines exist where Fleetwood terminates into Lear Boulevard and where Budger Way terminates into Pan American Drive.***

A public sewer line exists in Lear Boulevard just west of the site within the major drainageway. We plan to tie into this manhole. Extensive geotechnical testing including percolation testing and groundwater elevation identification was completed and as a result, an infiltration basin will be

located within the southeast portion of the site. Storm water will meter out of the basin and drain through the site to an outlet located at Pan American Drive and Lear Boulevard, back into a natural drainageway.

(q) Appropriate Access Points. An analysis of appropriate access points based upon existing and proposed streets and highways and site opportunities and constraints. ***RESPONSE – See the attached traffic study. The two "T" intersections on Pan American will direct traffic to the south and provide safe and adequate vehicle and pedestrian access to the site.***

(r) Other Information. All other information deemed appropriate and necessary by the Director of Community Development. ***RESPONSE – The project as proposed complies with all aspects of the Washoe County Master Plan, North Valleys Area Plan and Washoe county Development Code. See the attached Opportunities and Constraints Map.***

VIII.

Community Outreach Meeting Summary

Meeting Location: 255 Patrician Dr. Reno NV 89506

Meeting Date/Time: February 22nd 2023, 6:30pm PST

Meeting lead by: Kenneth Krater

Number of attendees: Nine (See attached Sign in sheet)

The meeting started with an introduction of the project and the required notification to the adjacent property owners. Attendees brought up traffic concerns about the new interchange at the freeway at Lemmon Drive and the Freeway. It was noted that timing adjustments may be needed at the interchange.

Next discussed was the property location and location of the the FEMA 100 year flood contour line. The next topic of discussion led into potential building footprints, common area buffers to the east and south adjoining existing homes on Fleetwood and Budger, and associated setbacks from these adjacent properties. The attendees mentioned concern of existing gates in their backyards and access. The retention basin was explained to the attendees and how it is required by code.

A few additional topics that come up after the formal presentation was sewer relocation, traffic in their neighborhoods/school, public use of parks within development and new fence along east and south adjacent properties.

An audio tape of the meeting is included as an attachment in the Neighborhood Meeting portal. Note that due to issues downloading files, there are a total of eight audio files in the portal to capture the entire meeting.

Learner Lemmon – Neighborhood Meeting

SIGN IN SHEET

February 22, 2023 - 6:30 pm

Lemmon Valley Elementary School

Purpose – To Discuss the Proposed Master Plan Amendment, Regulatory Zone Amendment, and Tentative Map applications to entitle the project to allow for development of an 87 lot single family residential subdivision.

NAME	ADDRESS	EMAIL
1. Ken Krater	1165 Mt. Rose St Reno	ken@kraterconsultinggroup.com
2. Jeffrey Hinckley	375 Harbor Cove. DR 375 Sparks	JHinckley@landcapip.com
3. Frank & Diana Bushey	479 Compton St, Reno. NV.	dianabushey@yahoo.com / pastorfrank@fccreno.org
4. Gaye Hollenberger	9581 Fleetwood DR.	gsplsh@gmail.com
5. SUSAN JACKSON	ARISTOCRATWAY	BOUNCEBACK1111@YAHOO.COM
6. Rick Snow	487 W PATRICIAN DR.	
7. Idella Fields	9395 Fleetwood DR	
Mtg. 8. STUART MACKIE		STUSUEM@GMAIL.COM
9. Rhyan Buck		rmetalo1@charter.net

IX.

MAPCA SURVEYS INC.

4.25.2023

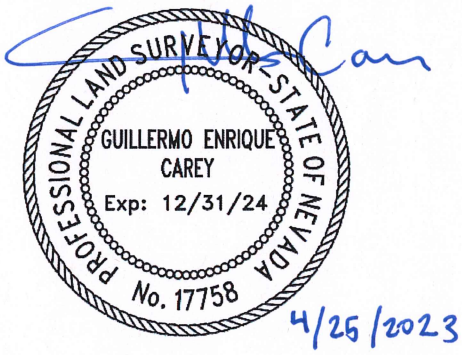
EXHIBIT 'A'

All that certain parcel of land lying solely within the West Half of the Southwest Quarter of Section 34, Township 21 North, Range 19 East, M.D.B.& M., being more particularly described as follows:

Beginning at the West Quarter corner of Section 34, Township 21 North, Range 19 East, M.D.B.& M., said point being further described as the Northwest corner of Valley Village Subdivision No. 1 and 2, as shown on the official plat thereof recorded under Document No. 385697, Official Records of Washoe County; thence along the Northerly boundary of said Valley Village Subdivision South 89º 22' 00" East 658.30 feet; thence North 00º 38' 38" East 369.98 feet to an angle point on the Northerly boundary of said Subdivision; thence leaving said Subdivision and continuing North 00º 38' 38" East 949.71 feet; thence North 89º 10' 30" West 656.00 feet to a point on the Westerly line of said Section 34; thence Southerly along said Westerly Section line South 00º 44' 37" West 1,321.89 feet to the point of beginning.

The above legal description was taken from prior Document No. 4874776.

APN: 080-461-08



LEGAL DESCRIPTION PREPARED BY:
Guillermo Enrique Carey, PLS 17758
MAPCA SURVEYS, INC.
580 Mount Rose Street
Reno, NV 89509

DOC # 4874776
12/19/2018 02:35:26 PM
Requested By
MAUPIN COX & LEGOY
Washoe County Recorder
Lawrence R. Burtness - Recorder
Fee: $41.00 RPTT: $0.00
Page 1 of 2

RPTT: 0

APN: 080-461-08

After recording, mail Deed and
all future tax statements to:
Bryan A. Learner
1540 Roma Court
Reno, NV 89523

GRANT, BARGAIN, AND SALE DEED

Gerald J. Echevarria and Donald L. Muckel, as Co-Trustees of The Brett H. Learner Trust created under The Joseph J. Morrey Grandchildren's Trust Agreement dated December 31, 1996 and The Bryan A. Learner Trust created under The Joseph J. Morrey Grandchildren's Trust Agreement dated December 31, 1996, hereby grant, bargain, and sell an undivided one-half interest (1/2) to Brett H. Learner, a married man, as his sole and separate property, and an undivided one-half interest (1/2) to Bryan A. Learner, a married man, as his sole and separate property, as tenants in common, all that real property located at 0 Pan American Way, Lemmon Valley, Washoe County, Nevada, described as follows:

> All that certain parcel of land lying solely within the West Half of the Southwest Quarter of the Northwest Quarter of Section 34, Township 21 North, Range 19 East, M.D.B.&M., being more particularly described as follows:
>
> Beginning at the West Quarter corner of Section 34, Township 21 North, Range 19 East, M.D.B.&M., said point being further described as the Northwest corner of Valley Village Subdivision No. 1 and No. 2, as shown on the official plat thereof recorded under Document No. 385967, Official Records of Washoe County; thence along the Northerly boundary of said Valley Village Subdivision South 89°22'00" East 658.30 feet; thence North 00°38'38" East 369.98 feet to an angle point on the Northerly boundary of said Subdivision; thence leaving said Subdivision and continuing North 00°38'38" East 949.71 feet; thence North 89°10'30" West 656.00 feet to a point on the Westerly line of said Section 34; thence Southerly along said Westerly Section line South 00°44'37" West 1321.89 feet to the point of beginning.

NOTE: THE ABOVE METES AND BOUNDS DESCRIPTION APPEARED PREVIOUSLY IN THAT CERTAIN INSTRUMENT, RECORDED IN THE OFFICE OF THE COUNTY RECORDER OF WASHOE COUNTY, NEVADA ON MAY 13, 1999 AS DOCUMENT NO. 2339106 OF OFFICIAL RECORDS.

This conveyance is subject to the following liens and encumbrances:

1. All monetary liens and encumbrances of record, if any.

2. General, special, and any supplemental county taxes and assessments not delinquent.

3. Covenants, conditions, restrictions, reservations, easements, and rights-of-way of record, if any.

Together with all tenements, hereditaments, appurtenances, and water rights, if any, thereunto belonging or appertaining, and any reversions, remainders, rents, issues or profits thereof.

Dated this 10th of December, 2018.

The Brett H. Learner Trust
The Bryan A. Learner Trust

By: Gerald J. Echevarria
Gerald J. Echevarria, Co-Trustee

By: Donald L. Muckel
Donald L. Muckel, Co-Trustee

STATE OF NEVADA

COUNTY OF WASHOE

This Grant, Bargain, and Sale Deed was acknowledged before me on December 10, 2018, by Gerald J. Echevarria in his capacity as a Co-Trustee.

Cheryl A. O'Brien
Notary Public

CHERYL A. O'BRIEN
Notary Public - State of Nevada
Appointment Recorded in Washoe County
No: 17-4241-2 - Expires November 27, 2021

STATE OF NEVADA

COUNTY OF ELKO

This Grant, Bargain, and Sale Deed was acknowledged before me on December 10, 2018, by Donald L. Muckel in his capacity as a Co-Trustee.

Notary Public

STEPHANIE KENTOPP
NOTARY PUBLIC
STATE OF NEVADA
APPT. NO. 18-3049-6
MY APPT. EXPIRES JUL. 10, 2022

X.

PORTION OF THE N ½ SECTION 34
T21N - R19E

DIVISION OF LAND MAP #79

28 27 33 34

080-461-17
0.700 ac.

Washoe County
City of Reno

N.82°03'32"W
690.29'
1371.77
787.54
454.79
152.51
200
200
152.51
Co.

PAR. 64
L.M. 79
ANNEX. TM 5151
ORD. 6387

POR. PAR. 63
L.M. 79
ANNEX. TM 5151
ORD. 6387

PAR. 1
P.M. 1172

461

080-461-19
37.206 ac.

27 26 34 35

620.03
080-461-03
5.0 ac.
248.54
254.88
350
62.57
9.38
55.52
470.87
195.56
PAR.2
P.M.1172
PAR.1
P.M.5255
239.17
266.45
080-461-33
3.94 ac.
139.24
PAR.2
P.M.5255
080-461-34
43560 sf
434.12
660
536.50
36.36
668.33
328.17
225.88
321.09
080-461-20
4.922 ac.
ANNEX. TM 5151
ORD. 6387

1321.97
1224.61
750.02
1953.31
Washoe County
City of Reno

080-73

080-461-27
40.002 ac.

60' ROADWAY & PUE

50' ACCESS EASE.

080-461-30
77.444 ac.

568-04

420.77
245.37
554.31
656.0
Reno
Washoe County
LEAR BOULEVARD

080-43

COMPTON ST

610.0
PAR. "P"
R.S. 5589
LEMMON
VALLEY PARK
PAR. "S"
R.S. 5589
080-461-31
11.08 ac.
080-461-32
8.76 ac.
LEMMON VALLEY
ELEMENTARY SCHOOL
080-42

080-461-08
19.926 ac.
SITE

FLEETWOOD DRIVE

SW COR. LOT 114
& SE COR. LOT 25
VALLEY VILLAGE SUBS.
N69°05'00E
977.29
231.58
390.40
546.43
DRIVE
PATRICIAN
WEST

080-52
080-75
080-45
MAGNOLIA WAY
ARISTOCRAT WAY

City of Reno
Washoe County
LEMMON DRIVE
1998.22

080-61

658.30
BUDGER WAY
080-48
080-44
080-54

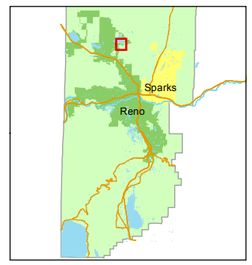
Assessor's Map Number

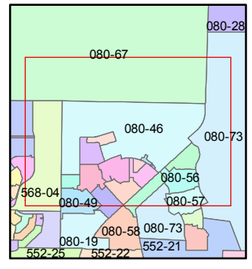
080-46

STATE OF NEVADA
WASHOE COUNTY
ASSESSOR'S OFFICE
Michael E. Clark, Assessor

1001 East Ninth Street
Building D
Reno, Nevada 89512
(775) 328-2231

Feet
0 130 260 390 520
1 inch = 500 feet





created by: EMG 10/09/2014

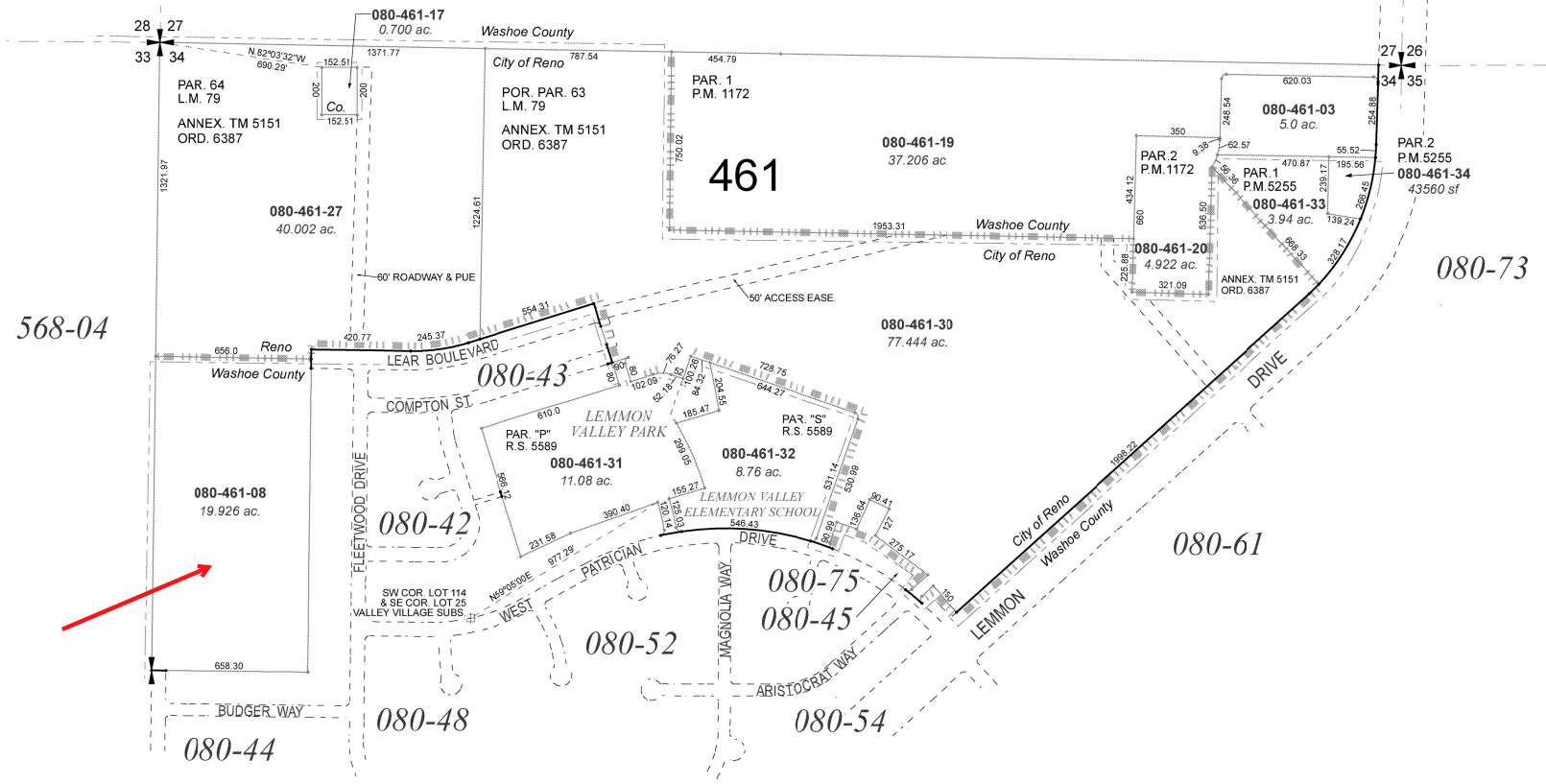
last updated: KSB 4/15/16 JMO 10/19/16

area previously shown on map(s)

NOTE: This map was prepared for the use of the Washoe County Assessor for assessment and illustrative purposes only. It does not represent a survey of the premises. No liability is assumed as to the sufficiency or accuracy of the data delineated hereon.

PORTION OF THE N ½ SECTION 34
T21N - R19E

DIVISION OF LAND MAP #79



Assessor's Map Number

080-46

STATE OF NEVADA

WASHOE COUNTY

ASSESSOR'S OFFICE

Michael E. Clark, Assessor

1001 East Ninth Street
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Reno, Nevada 89512
(775) 328-2231

Feet
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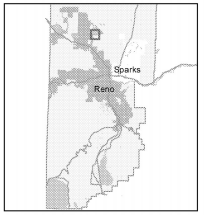
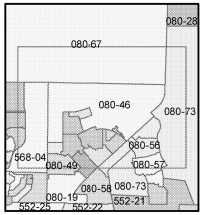
1 inch = 500 feet





created by: EMG 10/09/2014

last updated: KSB 4/15/16 JMO 10/19/16

area previously shown on map(s)

NOTE: This map was prepared for the use of the Washoe County Assessor for assessment and illustrative purposes only. It does not represent a survey of the premises. No liability is assumed as to the sufficiency cr accuracy of the data delineated hereon.

XIII.

TRUCKEE MEADOWS WATER AUTHORITY

Quality. Delivered.

May 2, 2023

Brett H. Learner et al
1540 Roma Ct
Reno, NV 89523

RE: **Lerner Lemmon**
Acknowledgement of Water Service
TMWA Work Order 23-9140

I have reviewed the preliminary plans for the above referenced development (Project) as submitted to the Truckee Meadows Water Authority (TMWA) and have determined that the Project is within TMWA's retail water service area. This letter constitutes an Acknowledgment of Water Service pursuant to NAC 445A.6666, and TMWA hereby acknowledges that TMWA is agreeable to supplying water service to the Project, subject to applicant satisfying certain conditions precedent, including, without limitation, the dedication of water resources, approval of the water supply plan by the local health authority, the execution of a Water Service Agreement, payment of fees, and the construction and dedication of infrastructure in accordance with TMWA's rules and tariffs. This Acknowledgement does not constitute a legal obligation by TMWA to supply water service to the Project and is made subject to all applicable TMWA Rules.

Review of conceptual site plans or tentative maps by TMWA does not constitute an application for service, nor implies a commitment by TMWA for planning, design or construction of the water facilities necessary for service. The extent of required off-site and on-site water infrastructure improvements will be determined upon TMWA receiving a specific development proposal or complete application for service and upon review and approval of a water facilities plan. After submittal of a complete Application for Service, the required facilities, the cost of these facilities, which could be significant, and associated fees will be estimated and will be included as part of the Water Service Agreement for the project. All applicable fees must be paid to TMWA prior to water being delivered to the project.

Sincerely,
Truckee Meadows Water Authority

Timothy Simpson

Timothy Simpson, P.E.
Sr Planning Engineer

GEOTECHNICAL INVESTIGATION

Learner Lemmon

Washoe County, Nevada

Submitted To

Mr. Ted Brown
D.R. Horton
5588 Longely Lane
Reno, NV 89511

Project No.
4092001

September 2021

PROFESSIONAL ENGINEER - STATE OF NEVADA
JUSTIN M. MCDOUGAL
EXP: 12/31/23
CIVIL
No. 24474

PROFESSIONAL ENGINEER - STATE OF NEVADA
JUSTIN M. MCDOUGAL
Exp. 12/31/21
CIVIL
No. 24474
09/28/2021

Justin M. McDougal, PE
PE Number -24474 (NV)

WOOD RODGERS
BUILDING RELATIONSHIPS ONE PROJECT AT A TIME
1361 Corporate Boulevard
Reno, NV 89502
Tel: 775.823.4068
Fax: 775.823.4066

TABLE OF CONTENTS

EXECUTIVE SUMMARY ..... **iii**
1.0 INTRODUCTION **1**
2.0 PROJECT DESCRIPTION **2**
3.0 SITE CONDITIONS **2**
4.0 EXPLORATION **2**
5.0 LABORATORY TESTING **3**
6.0 GEOLOGIC AND GENERAL SOIL AND GROUNDWATER CONDITIONS **4**
7.0 SEISMIC HAZARDS **4**
7.1 Surface Rupture 4
7.2 Liquefaction 5
7.3 Slope Instability 5
8.0 DISCUSSION AND RECOMMENDATIONS **5**
8.1 General Information 5
8.2 Soil Profile Type Amplification Factors 7
8.3 Site Preparation 7
8.4 Grading and Filling 8
8.5 Testing and Observation 9
8.6 Trenching and Excavation 10
8.7 Foundations 10
8.7.1 Standard Spread Foundations 10
8.7.2 Structural Slab-on-Grade Foundations 11
8.8 Retaining Walls 14
8.9 Infiltration Basin 14
8.10 Erosion Control 15
8.11 Site Drainage 15
8.12 Corrosion Potential 16
8.13 Concrete and Concrete Slabs-On Grade 17
8.14 Structural Pavement Sections 18
8.15 Asphalt Concrete Design Life 18
9.0 CONSTRUCTION OBSERVATION AND TESTING SERVICES **19**
10.0 EXPECTATION OF PERFORMANCE **19**
11.0 STANDARD LIMITATION CLAUSE **20**
12.0 REFERENCES **22**

TABLES

Table 1 – Summary of Physical/Mechanical Test Data
Table 2 – Guideline Specification for Imported Structural Fill
Table 3 – Allowable Foundation Bearing Pressures
Table 4 – Structural Slab-on-Grade Design Recommendations
Table 5 – Coefficient of Friction, μ, for 5-inch Slabs
Table 6 – Lateral Earth Pressures
Table 7 – Soil Moisture Profile (TP-2)
Table 8 – Summary of Infiltration Basin Percolation Testing
Table 9 – Structural Pavement Sections

FIGURES

Figure 1 – Project Development Area
Figure 2 – Reno NE Quadrangle Geologic Map

APPENDICES

Appendix A – Geotechnical Plates
A-1a – Vicinity Map
A-1b – Site Map and Approximate Exploration Locations
A-2 – Logs of Test Pits
A-3 – Unified Soil Classification and Key to Soil Descriptions
A-4 – Laboratory Testing Results
A-5 – ReMi Results

Appendix B – ASCE 7 Hazards Report

EXECUTIVE SUMMARY

The overall site, located in Washoe County, Nevada, encompasses an area of approximately 19.9 acres, and based on representative latitude and longitude, is located at 39.6451°N and -119.8459°E, respectively. The site is bordered by undeveloped land to the west and north, and residences to the east and south. Frontage roads extend along the parcel perimeter. Overall, the site slopes downward to the north at an approximate gradient of one percent. Vegetation is light to moderate and typically consists of grasses and brush. Several dirt roads cross the property.

The project consists of developing a single-family residential subdivision. Homes will be one to two-stories, wood-framed construction, supported on standard spread foundations with slab-on-grade flooring or post-tensioned slab-on-grade foundations. Foundation loads are anticipated to be light. An infiltration basin is currently planned for the development to collect and discharge precipitation runoff; preliminary infiltration sites are within the northeast corner of the project and within the east central portion of the project. Public improvements will be designed to Washoe County standards. The development will be phased for a balance of cut and fills with cuts and fills anticipated to approach maximums of 4-feet.

The soils encountered in our explorations typically consisted of silty sand and silty, clayey sand over low to medium plasticity clayey sand and sandy lean clay. Percolation rates within the underlying clay soils (TP-1 and TP -2) were significantly slower than 240 min/in; percolation tests performed within the surficial clayey sands (TP-3) presented rates ranging from 2 to 24 min/in. Within the eastern portion of the project, evidence of groundwater was encountered as shallow as 9.5 feet below the existing ground surface. Seasonal high groundwater was estimated to reach 6.5 feet below ground surface (TP-2). Excavations for utility trenches that approach free water, or that extend to within the zone of influence of free water, will have a greater tendency to slough or cave and must be adequately considered and planned for by the contractor. Wet trench conditions should be adequately planned for.

Public improvements will be designed and constructed in accordance with Washoe County Standards.

Sulfate testing on the native soils resulted in sulfate levels in both the negligible and severe ranges (< 0.01 and 1.3% by weight, respectively). Special concrete provisions are addressed in Section 8.12 of this report.

With incorporation of the site preparation and grading recommendations as presented in this report, it is our opinion the site should adequately support the planned improvements.

1.0 INTRODUCTION

Presented herein are the results of Wood Rodgers' geotechnical exploration, laboratory testing, and associated geotechnical design recommendations for the proposed residential development to be in Washoe County, Nevada. The assessments and recommendations presented in this geotechnical report have been determined, in part, around the surface and subsurface conditions identified by our exploration program which was developed to be consistent with locally accepted industry practices regarding exploratory means and methods for geotechnical investigations of similar projects. The proposed structural elements, topography, grading design, soils, and geology are all unique; therefore, the engineering judgment employed by those in responsible charge of geotechnical design considerations, as defined by the State of Nevada, is considered the established and accepted standard of care for our evaluations and analyses associated with this report.

This report has been prepared in consideration of the applicable provisions set forth in the International Residential Code (IRC, 2018), ASCE 7, and the amendments and modifications adopted by Washoe County. These documents establish the minimum requirements to safeguard the public health, safety and general welfare of the occupants as well as the minimum level of structural integrity, life safety, fire safety and livability for inhabitants of new and existing structures. Geotechnical considerations for public improvements have been formulated around the requirements of the Standard Specifications for Public Works Construction. Performance standards around which our primary recommendations have been framed are based upon the requirements of the referenced documents. Any expectations of performance inconsistent with, outside the purview of, or exceeding the requirements of the referenced documents are subjective and therefore, a function of materials, design, workmanship, and ownership. Unless these expectations of performance are specifically stipulated or quantified herein, they are considered in excess to the scope and design standards of this report.

The objectives of this study were to:

1. Explore, test, and assess general soil, geology, and ground water conditions pertaining to design and construction considerations for the proposed development.
2. Provide recommendations associated with the design and construction of the project, as related to the identified geotechnical conditions and the stipulated design levels and performance standards established herein.

The area covered by this report is shown in Figure 1 and on Plate A-1b (Site Map and Approximate Exploration Locations) in Appendix A. Our study included field exploration, laboratory testing, and engineering analyses to identify the physical and mechanical properties of the various on-site materials. Results of our field exploration and testing programs are included in this report; in consideration of the stated design levels and performance standards, these results form the basis for our conclusions and recommendations.

2.0 PROJECT DESCRIPTION

The project consists of developing a single-family residential subdivision. Homes will be one to two-stories, wood-framed, built on standard spread foundations with slab-on-grade flooring or post-tensioned foundations. Foundation loads are anticipated to be light.

The development will be phased for a balance of cut and fills. Approximately 8-feet of grade differential exists across the site. Therefore, cuts and fills are anticipated to be on the order of 4-feet. An infiltration basin is planned for the development to collect runoff and provide a source for limited regional groundwater recharge.

All street improvements will be designed to Washoe County standards and dedicated to the County. Underground utilities will be provided by a variety of public and private companies.

3.0 SITE CONDITIONS

The overall site, located in Washoe County, Nevada, encompasses an area of approximately 19.9 acres, and based on representative latitude and longitude, is located at 39.6451°N and -119.8459°E, respectively. As shown in Figure 1, the site is bordered by undeveloped land to the west and north, and residences to the east and south. Frontage roads extend along the parcel perimeter.

Overall, the site slopes downward to the north at an average gradient of one percent. Vegetation is light to moderate and typically consists of grasses and brush. Several dirt roads cross the property.

FIGURE 1 - PROJECT DEVELOPMENT AREA

4.0 EXPLORATION

The project was explored in August 2021 by excavating a series of 10 test pits using a Cat 420F backhoe and performing a geophysical Refraction Micro-tremor (ReMi) survey. The approximate locations of the test pits and ReMi geophysical lines are shown in Appendix A on Plate A-1b – Site Map and Approximate Exploration Locations. Maximum depth of test pit advance extended to 12 feet below the existing ground surface. Bulk samples for index testing were collected from representative depths within the soil horizon.

Wood Rodgers' personnel examined and classified soils in the field in general accordance with ASTM D2488 (Description and Identification of Soils). During exploration, representative bulk samples were placed in sealed plastic bags and subsequently returned to our Reno, Nevada laboratory for testing.

Additional soil classifications, as well as verification of the field classifications, were performed in accordance with ASTM D2487 (Unified Soil Classification System [USCS]) upon completion of laboratory testing as described below in the Laboratory Testing section. Logs of the test pits are presented as Plate A-2. A Unified Soil Classification System (USCS) explanatory chart of soil unit symbols and related descriptions has been included as Plate A-3 - Unified Soil Classification and Key to Soil Descriptions.

Shear wave velocity measurements have been relied upon for the development of geotechnical design characterization of soil stiffness. This information also aids in the determination of an appropriate Site Class (IBC, ASCE 7). A V_{S100} = 733 fps was measured; Plate A-5 presents the geophysical profile.

5.0 LABORATORY TESTING

Soil testing performed in the Wood Rodgers' laboratory was conducted in general accordance with the standards and methods described in Volume 4.08 (Soil and Rock; Dimension Stone; Geosynthetics) of the ASTM Standards. Samples of significant soil types were analyzed to determine in-situ moisture contents (ASTM D2216), grain size distributions (ASTM D6913), plasticity indices (ASTM D4318), and R-Value (ASTM D2844). Results of the testing is presented in Appendix A on Plates A-4a through A-4d. Table 1 also presents a summary of test data. Test results were used to classify the soils according the USCS (ASTM D2487) and to verify the field logs which were then updated.

Table 1 - Summary of Physical/Mechanical Test Data

Test Hole	Depth (Ft.)	Moisture (%)	%Gravel (+ #4)*	% Sand (#4-#200)	%Fines (-#200)	Liquid Limit	Plastic Index	R-Value	USCS
ASTM Standard		D2216	D6913			D4318		D2844	D2487
TP-1	1.5-3	7.7	0.4	52.1	47.5	22	4	---	SC-SM
TP-1	3-5	9.6	---	35.1	74.9	31	16	---	CL
TP-4	0-3	---	---	---	---	---	---	42	SM/SC
TP-7	6-7	9.1	1.1	50.5	48.5	25	8	---	SC
TP-8	0.5-3.5	---	---	---	---	---	---	14	SC
TP-9	1.5-4	10.3	3.5	70.5	26.0	22	1	---	SM

Additional testing included soil water characteristic curves for desorption (ASTM D6836) to aid in structural slab design; summary of this data is presented on Plate A-4e. As presented on Plate A-4f, chemical testing was performed to indicate the potential for corrosion to concrete and steel elements.

6.0 GEOLOGIC AND GENERAL SOIL AND GROUNDWATER CONDITIONS

Based on the Reno NE quadrangle Geologic Map (Cordy, 1985), shown in Figure 2, the site is mapped in an area of Alluvium of Military Road (Qm). This geologic unit is described as poorly sorted sand to muddy sand derived from the alluvial fan deposits of Peavine Mountain. The soils units encountered in our explorations typically consisted of poorly sorted and interbedded layers and zones of silty sand and silty, clayey sand overlying low to medium plasticity clayey sand and sandy lean clay.

During our exploration program, free water was evident in TP-1 and TP-3 and was observed as shallow as 9.5 feet below the ground surface in TP-3. Seasonal high groundwater was estimated to reach 6.5 feet below ground surface in the northeast corner of the site.

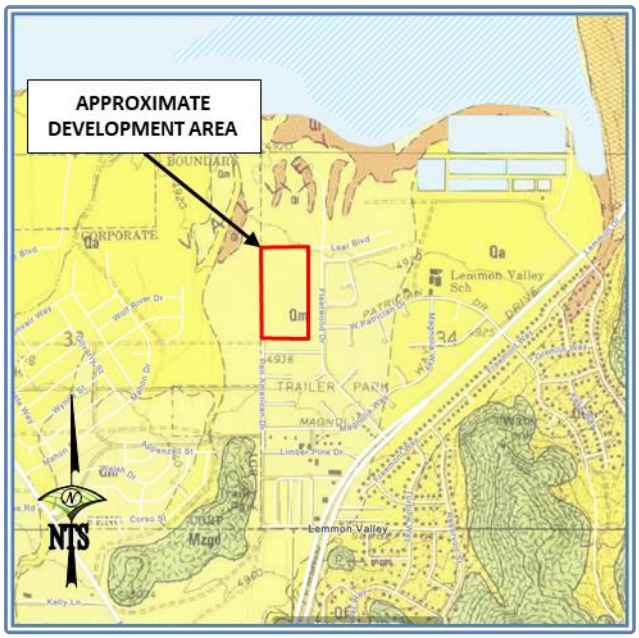


FIGURE 2 - RENO NE QUADRANGLE GEOLOGIC MAP (NBMG, CORDY, 1985)

7.0 SEISMIC HAZARDS

Lemmon Valley lies along the western margin of the Basin and Range physiographic province located between the Virginia Range and the Pah Rah Range to the east and the Carson Range to the west. The Basin and Range province is characterized by a series of valleys bounded by north/south trending mountain ranges, byproducts of the seismically active zones of the Wasatch Front in Utah and the Sierra Nevada Mountains along the California/Nevada border. Faulting and seismic activity are integral to the formation of this series of alternating valleys and mountain ranges. Therefore, the presence of faults, active and inactive, are common in western Nevada.

7.1 Surface Rupture

Criterion for evaluating earthquake faults have been formulated by a professional committee for the State of Nevada Earthquake Safety Council. The guidelines present recommendations that faults with evidence of movement within the past 10,000 years (Holocene time) are considered Holocene active. The United States Geological Survey (USGS) describes faults with evidence of displacement within the last 15,000 years to be considered Latest Quaternary active, faults with movement in the last 130,000 years are considered Late Quaternary active and faults with movement within the last 1.6 million years are considered Undifferentiated Quaternary active. The guidelines recommend that active Holocene faults be offset by occupied structures a minimum of 50 feet. In addition, the guidelines specify that no “critical facilities” shall be placed over a Late Quaternary active fault.

The USGS U.S. Quaternary Faults Map was accessed to review the proximity of any active faults as previously characterized. The closest mapped fault is located approximately 1-mile to the west of the site and is aged as Undifferentiated Quaternary active. The fault is part of the Fred's Mountain fault and is sufficiently distant that offsets or additional considerations have not been recommended. Surface rupture is considered unlikely.

7.2 Liquefaction

Chapter 11 of ASCE 7 presents Seismic Design Criteria for structures; Chapter C11 presents clarifications and detailed requirements for analyzing and designing structures based on the requirements and considerations of Chapter C11. Within Section C11.1.2 Scope, detached wood-frame dwellings, not exceeding two stories above grade plane, and constructed in accordance with the prescriptive provisions of the IRC, are deemed capable of resisting anticipated seismic forces. Exemption 1 further states that detached one-and two-story wood-frame dwellings have performed well even in regions of higher seismicity. Therefore, Chapter C11 stipulates that the IRC adequately provides the level of safety required for buildings. Due to the seismic performance levels reported for single family residences in Chapter C11, liquefaction assessments are not required by the IRC. However, given the geophysical profile (S-wave) measured at the site, final design grades, depth to groundwater, and anticipated general soil profile based on local and regional geology, it is our opinion liquefaction induced settlements would be limited and would occur at a depth where bearing capacity degradation would not occur.

A site-specific liquefaction assessment, including a boring to 50-feet below the existing ground surface, would be required to assess the potential for liquefaction and the resulting potential settlements.

7.3 Slope Instability

The site and surrounding low-lying topography are such that the potential for slope instability at the site due to gravitational or seismic activity is considered low.

8.0 DISCUSSION AND RECOMMENDATIONS

8.1 General Information

The following definitions characterize terms utilized in this report:

- Fine-grained soil possesses more than 40 percent by weight passing the number 200 sieve and exhibits a plasticity index lower than 15.
- Clay soil possesses more than 30 percent passing the number 200 sieve and exhibits a plasticity index greater than 15.
- Granular soil does not meet the above criteria and has a maximum particle size less than 6-inches.

It should be noted these definitions have been formulated around anticipated soil behavior and may not coincide with classifications provided by the Unified Soil Classification System.

The recommendations provided herein, particularly under Site Preparation, Grading and Filling, Foundations, Site Drainage, and Construction Observations and Testing Services are intended to reduce risks of structural distress related to consolidation or expansion of native soils and/or structural fills. These recommendations, along with proper design and construction of the planned structure(s) and associated improvements, work together as a system to improve overall performance. If any aspect of this system is ignored or poorly implemented, the performance of the project will suffer. Any evaluation of the site for the presence of surface or subsurface hazardous substances is beyond the scope of this study. When suspected hazardous substances are encountered during routine geotechnical investigations, they are noted in the exploration logs and reported to the client. No such substances were identified during our exploration.

Recommendations for paved improvements in right-of-way will be consistent with Washoe County standards. Underground utilities will be provided by a variety of public and private companies; trenching and backfill recommendations addressed herein are consistent with OSHA and Washoe County requirements, respectively.

The test pits were advanced at the approximate locations shown on the site map. Each test pit was backfilled upon completion of the field portion of our study, and the backfill was compacted to the extent possible with the equipment on hand. However, the backfill was not compacted to the requirements presented herein under Grading and Filling. If structures, concrete flatwork, pavement, utilities or other improvements are to be located in the vicinity of any of the test pits, the backfill should be removed and re-compacted in accordance with the requirements contained in the soils report. Failure to properly compact backfill could result in excessive settlement of improvements located over test pits.

The site-specific Stormwater Pollution Prevention Plan (SWPPP), as required by the State of Nevada, will be the responsibility of the general contractor and/or owner. Recommendations presented herein regarding moisture conditioning are for the benefit of creating a targeted fill behavior. Moisture conditioning recommendations are not intended to direct the contractor in their means and methods for dust and SWPPP control.

Structural areas referred to in this report include all areas of buildings, concrete slabs, asphalt pavements, as well as pads for any minor structures, fencing or retaining walls. Retained zones and slopes behind retaining structures are considered structural zones. In addition, structural zone shall be considered to extend at a 1:1 (H:V) slope out from the edge of the structural footprint. All compaction requirements presented in this report are relative to ASTM D 1557[1].

[1] • Relative compaction refers to the ratio (percentage of the in-place density of a soil divided by the same soil's maximum dry density) as determined by the ASTM D 1557 laboratory test procedure. Optimum moisture content is the corresponding moisture content of the same soil at its maximum dry density.

8.2 Soil Profile Type Amplification Factors

In accordance with ASCE 7-16 and the Northern Nevada Amendments of the 2012 IRC, Site Class D and Seismic Design Category D2 have been assigned to the project. Seismic design values were determined based on a representative latitude and longitude of 39.6451°N and -119.8459°E, respectively. Per ASCE 7-16, the site's modified Peak Ground Acceleration (PGA_M) to be used for engineering analyses is equal to 0.695g. The ASCE 7 Hazards Report is presented in Appendix B.

8.3 Site Preparation

All vegetation and topsoil are to be cleared and grubbed from structural areas. A minimum stripping depth of 0.3 to 0.5 feet is anticipated. Localized deeper areas may be required in areas where larger brush is encountered.

Vegetation and organic debris should be disposed of offsite or placed in designated non-structural areas (Section 8.1, General Information). If on-site disposal is approved, vegetation could be blended with soil (at a maximum ratio of 1:10 vegetation to soil, by mass) prior to placement in fill areas. Larger organics shall be broken up by the use of a large sheep's foot roller prior to blending with the soil mass. Vegetation shall be thoroughly blended with the soil; concentration of the vegetation must be avoided. Placing large, concentrated layers or zones of vegetation could lead to excessive settlement and subsequent surface depressions.

Based on our explorations, the soils at the site consist of 2 to 9 feet of granular and fine-grained soils overlying low-plasticity clays. These soils when adequately blended, processed, moisture conditioned and compacted will provide adequate foundation support for the proposed improvements. Therefore, no overexcavation and replacement is recommended at this time. However, because the grading plans have not yet been finalized, we request the opportunity to review the final design so that our recommendations can be modified as appropriate.

Prior to receiving structural fill or structural loading, subgrade soils should be moisture conditioned to within 3-percent of optimum moisture content and compacted to not less than 90-percent of the soil's maximum dry density (ASTM D1557) for a minimum depth of 12-inches.

The near surface fine-grained soils encountered on site may pump and or destabilize with moisture contents exceeding optimum. Due care must be exercised by the contractor to assure inclement weather and/or construction water during moisture conditioning or dust control do not result in an excessively wet subgrade. Where encountered, pumping soils may be scarified and allowed to dry or removed and replaced with a layer of compacted structural fill. Depending on extent and severity, other methods of subgrade stabilization are available. For more extensive stabilization measures, the contractor should propose a stabilization protocol that is consistent with their readily available means and methods, and this proposal presented for review, by the owner, the general contractor, and grading inspector. Subgrade

stabilization is a trial-and-error process, and it is recommended that a test section of suitable depth and length be conducted prior to deciding a stabilization course.

For the design considerations presented in this report, subgrade stabilization is considered adequate if the subgrade is firm and relatively unyielding (as approved by the engineer) when proof-rolled with a fully loaded water truck. Subgrade stabilization may not be required for walkways or private improvements subject solely to foot traffic providing the required compaction levels are achieved; however, if/where walkways or private improvements are structurally connected to the building, subgrade stabilization is required.

8.4 Grading and Filling

Granular and fine-grained soil substantially free of vegetation, organic matter and other deleterious material may be used as structural fill. Import structural fill should be substantially free of organic matter, deleterious material, and meet the requirements of Table 2 for on-site use.

Table 2 - Guideline Specification for Import Structural Fill

Sieve Size (ASTM D6913)	Percent by Weight Passing	
6 Inch	100	
4 Inch	90 - 100	
¾ Inch	70 - 100	
No. 40	15 - 70	
No. 200	5 - 30	5 - 50
Maximum Liquid Limit (ASTM D4318)	40	40
Maximum Plasticity Index	15	12
Soluble Sulfate Level (ACI 318, Table 4.3.1)	Negligible	
R-Value within 2-feet of roadbed grade (ASTM D2844)	30 Min.	

Adjustments to the recommended limits presented in Table 2 may be approved upon request on a case-by-case basis to allow the use of other granular, non-expansive material, including rock fill. Any such adjustments must be made and approved by the Geotechnical Engineer, in writing, prior to importing structural fill to the site.

Structural fill to be used in public right of way areas shall meet the requirements of the Standard Specifications for Public Works unless approved and accepted for use by Washoe County. A minimum subgrade R-value (ASTM D2844) of 30 is required for dedicated roadways. Near surface soils presented R-Values ranging from 14 to 42. Therefore, we recommend at least two verification R-Values be performed on the roadbed subgrade prior to placement of the base course.

Mass-graded fills and localized structural fills shall be moisture conditioned to near optimum moisture content, placed in 12-inch maximum loose lifts, and compacted to not less than 90-percent of the soil's maximum dry density (ASTM D1557). If fills are greater than five feet in thickness, the minimum compaction requirement shall be increased to 95 percent. Fill supporting fencing is considered structural fill and the requirements for fill quality and placement shall be observed.

Perimeter landscaping fills (and fills blended with vegetation) shall be limited to nonstructural areas, moisture conditioned, placed in 12-inch maximum loose lifts and compacted to not less than 85-percent of the soil's maximum dry density.

The exterior face of embankments should be constructed with an inclination no steeper than 2H:1V. The surface of the slope should be compacted to the same percent compaction as the body of the fill. This may be accomplished by compacting the surface of the embankment as it is constructed or by overbuilding the fill and cutting back to its compacted core. The cut away material should then be placed and compacted in designated fill areas rather than left at the base of the slope. Minor variations in slope gradient due to sculpting or landscaping of the slope face should not be considered inconsistent with the recommendations of this report or adverse to the ultimate performance of the global stability of the overall slope.

8.5 Testing and Observation

Verification of fills should be performed by a firm that is AMRL accredited in ASTM E329. Special inspection of fill soils is required during mass grading of the development; the Special Inspector should be ICC certified in soils or NAQTC certified in Sampling and Density disciplines. The special inspector shall verify and document that placement of rockfill (if any) is consistent with the grading and placement requirements indicated in the Grading and Filling section of this report.

Density testing of fills should be in accordance with ASTM D6938 (Standard Test Methods for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods) or ASTM D1556 (Standard Test Method for Density and Unit Weight of Soil in Place by Sand-Cone Method) unless rock fill is approved which will then be subject to performance based full time field observation. Subgrade, structural fill, nonstructural fill, bedding and backfill shall be density tested by the appropriate means and methods.

For soils meeting ASTM gradations that allow for density testing by nuclear methods, testing frequency shall be as prescribed herein. Subgrade should be density tested approximately every 500 square yards. Fill should be density tested once for every 1,000 square yards per lift of material placed during mass grading and one test per 300 feet of footing trenches or overexcavation of footings. Bedding and backfill should be density tested per foot of thickness, the more restrictive of one test between manholes or valves, or one test every 500 lineal feet, including laterals. One density test should be performed for each 500 square yards or per each lift for smaller, localized fill zones. Full time construction observation is required for mass graded fills and for any rock fill placement. The testing frequency should be increased

if the contractor is having difficulty achieving and maintaining the required moisture levels. Nonstructural fills should be density tested for every 2,000 yards or for every 2-feet of fill for smaller, localized fill zones.

8.6 Trenching and Excavation

Regulations amended in Part 1926, Volume 54, Number 209 of the Federal Register (Table B-1, October 31, 1989) require that the temporary sidewall slopes be limited to maintain trench stability. Minimum sidewall slopes and acceptable trench configurations are also presented in the referenced register. Based on the results of our exploration program, it is our opinion that the bulk of the native site soils appear to be predominately Type C, although variations exist. All fills should be considered Type C unless directed otherwise by the contractor's person of knowledge trained in OSHA requirements and trench safety. All trenching should be performed and stabilized in accordance with local, state, and OSHA standards. Bank stability is the responsibility of the contractor or contractor's qualified representative who is present at the site, able to observe changes in ground conditions, and has control over personnel and equipment.

Trench bedding and backfill shall be consistent with the requirements of the Standard Specifications for Public Works and the requirements of the private utilities. Based on our testing program, the on-site soils tested do not meet the requirements of Class E backfill; importing Class E material or use of an alternative material, approved by Washoe County, will be required.

Seepage was encountered in two explorations as shallow as 9.5 feet, with seasonal groundwater anticipated to encroach as shallow as 6.5 feet below ground surface. Excavations for utility trenches that approach free water, or that extend to within the zone of influence of free water, will have a greater tendency to slough or cave and must be adequately considered and planned for by the contractor. Wet trench conditions should be adequately planned for.

8.7 Foundations

8.7.1 Standard Spread Foundations

Provided the foundation soils have been prepared in accordance with the recommendations of this report, the bearing values presented in Table 3 may be used for design.

Table 3 - Allowable Foundation Bearing Pressures

Loading Condition	Maximum Net Allowable Bearing Pressure (PSF)[1]
Dead Load Plus Full Time Live Load	2,500
Dead Load Plus Live Loads, Plus Transient Wind or Seismic Loads	3,325

[1] Net allowable bearing pressure is that pressure at the base of the footing in excess of the adjacent overburden pressure.

For frost protection, footings should be founded at least two feet below adjacent outside or unheated interior finish grades. Interior footings not located within frost prone areas should be founded at least 12 inches below surrounding ground or slab level for confinement. Regardless of loading, individual pad foundations and continuous spread foundations should be at least 18 and 12 inches wide, respectively, or as required by code. The minimum footing sizes recommended are based on the ability to develop bearing capacity.

Lateral loads, such as wind or seismic, may be resisted by passive soil pressure and friction on the bottom of the footing. Coefficients of base friction of 0.40 are typical to structural fills. Design values for active and passive equivalent fluid pressures of 37 and 350 pounds per square foot per foot of depth, respectively, can be utilized. However, in designing for passive pressure, the upper one foot of the soil profile should not be included unless confined by a concrete slab or pavement. These design values are based on spread footings bearing on native granular soils, native fine-grained soils, or structural fill and backfilled with structural fill.

If loose, soft, wet, or disturbed soils are encountered at the foundation subgrade, these soils should be removed to expose suitable foundation soils, and the resulting over-excavation backfilled with compacted structural fill. The base of all excavations should be near optimum moisture and free of loose or disturbed materials at the time of concrete placement.

Total settlement for the residences is anticipated to be on the order of ¾-inch, or less. Differential settlement between foundations with similar loads and sizes is anticipated to be half of the total settlement experienced over 40-feet.

8.7.2 Structural Slab-on-Grade Foundations

The design values presented in Table 4 have been developed for use when considering design of structural foundations. The design profile relied upon to develop the values in Table 4 have been based on our August 2021 exploration and anticipated grading. Ground water was modeled at or near 6 ½ feet.

Table 4 - Structural Slab-on-Grade Design Recommendations

Design Values	Condition	Center Lift	Edge Lift
Post-Tensioning Institute (PTI) (Turn Down ≤ 2-feet)	Edge Moisture Variation - e_m (ft.)	9.0	4.9
	Differential Soil Movement - y_m (in.)	-0.65	0.80

Post-construction settlement of the slab foundation, not including the contributions due to edge and center lifts is modeled to approach ¼ to ½-inch. If significant time passes between preparing this geotechnical report and constructing foundations, or if fill is imported to the site that is not considered structural, it is important that additional analysis be performed to verify the design values.

Soil chlorides shall be mitigated per Section 4.3.2.2 – Soil Chlorides from the referenced PTI manual. Test results obtained during our investigation have been attached with this report in Appendix A.

Per the requirements of the Northern Nevada Amendments to the IRC, turn downs for structural slabs must extend to a minimum depth of 2-feet below finished adjacent exterior grade or be designed to resist the effects of frost-heave (such as insulation as presented in ASCE 32). It should be pointed out, however, that potential movement due to frost-heave would be in addition to edge-lift caused by clay activity and, therefore, the design edge-lift value should consider the cumulative effects of the two influences. In addition, the 2018 Northern Nevada Code Amendments require that deflection calculations "*would need to show that the maximum combined frost and expansive soil heaving, as localized at slab edges, with resultant non-uniformly distributed deflections, as well as whole slab deflections would not result in super structure racking or excessive truss, roof, or wall frame movement*." Minimum slab thickness and recommended turndowns should be established by the Structural Engineer.

An allowable bearing value of 1,500 pounds per square foot may be utilized for design. This value may be increased by a factor of 1.33 when considering wind or seismic loading. An uncorrected k-value of 120 pci may be used for design.

Some floor coverings, such as tile or linoleum, are sensitive to moisture that can be transmitted through slabs. Floor coverings should be installed in accordance with the manufacturer's recommendations including restrictions related to maximum vapor transmission rates. The preferred slab profile has been selected to consist of a 15-mil moisture vapor retarder such as Stego Wrap covered by a minimum two-inch Type 2 Class B aggregate base course placed near optimum moisture content and compacted by at least three complete passes with a vibroplate. A sand layer or size No. 67 concrete aggregate is not recommended for direct slab support.

Per Figure R6.2 (PTI DC10.5-12), Table 5 presents recommended coefficients of friction, μ, for first and average subsequent movements based on the design slab support profile. If location of the polyethylene sheeting significantly impacts the design or tensioning protocol, we recommend placement of the vapor retarder be indicated as a special inspection item.

Table 5 - Coefficient of Friction, μ, for 5-inch Slabs

Material	First Movement	Average Subsequent Movements
Aggregate Base	1.95	1.37
Structural Fill	1.72	0.88
Polyethylene Sheeting[1]	0.88	0.55

[1]For normal construction practice, μ = 0.75

Post-tensioned foundations, when compared to conventionally reinforced slabs, are expected to deform. The flexibility of the slab distributes localized soil movement to a more uniform slab shape; however, it is important that other consultants be cognizant of this behavior so that their products and design can be made compatible with a flexible foundation system. Typically, roof trusses, load concentrations, architectural features spanning between the active and non-active zones, non-flexible exterior siding, brittle floor coverings, areas that slope to drain, and utility connections warrant closer scrutiny.

Post-construction practices must be incorporated to help ensure the successful performance of the structural slabs. To help minimize movements in soils due to post-construction factors, not climate related, the following maintenance procedures are required:

- Uniform landscaping should be provided adjacent to the perimeter of the foundation, and excellent drainage provided and maintained away from the residence. It is strongly recommended that only drip irrigation, if any, be installed within five feet of foundations. Never allow water to pond adjacent to the structure.
- Recommended positive drainage is a minimum of six inches of fall in ten feet (5%), and impervious surfaces within ten feet of the building foundation should be sloped a minimum of two percent away from the foundation.
- Water should be applied in a uniform, systematic manner as equally as possible on all sides of the residence to keep the soil moist. Areas without ground cover may require more moisture due to the potential for increased evaporation.
- Soaker hoses, if used, should be placed a minimum of five feet away from foundation edges. Sprinklers should not be allowed to spray directly on building foundations.
- Trees should not be planted within 10 feet of the structure.
- Check gutters and downspouts to be sure they are clear, and water discharges a minimum of five feet from foundation.
- The foundation perimeter should be observed during extreme hot and dry periods to help ensure that adequate watering is being provided to prevent the soil from separating from the foundation.

It is strongly recommended that a yearly survey of foundations is conducted and any maintenance necessary to improve drainage and prevent ponding of water adjacent to these structures is performed. This is especially important during the first ten years after construction because that is usually when the most severe adjustment between the new foundation and supporting soil occurs. Following the above listed procedures should help limit detrimental foundation movement caused by expansive soils. These recommendations should be provided to homeowners and any landscape contractors to prevent adverse grading, watering or planting to occur. It is further recommended that Landscape contracts contain specific language regarding the necessity of maintaining code grading requirements as well as planting and watering conditions presented herein.

8.8 Retaining Walls

Recommended lateral earth pressures for consideration in the design of retaining structures, supporting level grade and less than 6-feet of granular or fine-grained insitu soils or fill are presented in Table 6. The values presented in Table 6 do not consider hydrostatic pressures or surcharge loading. Traffic loading should be modeled by increasing the wall backfill load by an additional height of two feet. Unless confined by slab or pavement, the surface foot of soil should be ignored when considering passive resistance. If retaining walls retain sloping backfill or more than six feet of soil, the values presented in Table 6 will need to be revisited.

Table 6 - Lateral Earth Pressures

Condition	Active (psf/f)	Passive (psf/f)	At Rest (psf)
Level Backfill	37	350	55

Excessive retaining wall pressures can be developed due to heavy compaction equipment proximate to the wall during backfill placement. Large vibratory compaction should be avoided for retaining wall backfill placed within ten feet of the back face of wall. Small vibratory trench compactors will be suitable for compaction directly behind the wall. Backfill behind retaining structures should be compacted to not less than 90 percent of the soils' maximum dry density. French drains, encased in a drainage gravel backfill layer wrapped in geotextile such as Mirafi 140 N, or a pre-manufactured drain system such as Tensar ® DC1200 should be utilized if buildup of hydrostatic pressure is possible. Soil preparation for retaining wall foundations and allowable bearing capacities shall be consistent with the Site Preparation, Grading and Filling, and Standard Spread Foundations sections of this report.

8.9 Infiltration Basin

Table 7 – Soil Moisture Profile (TP-2)

Sample	Depth	%m	%S
0.25 - 1	0.5	1.24	2.9
1 - 2.75	1.9	9.2	21.7
3 - 5	4	9.6	22.6
6 - 7.5	6.75	22.8	53.7
9.5 - 11.0	9.75	41.6	97.9
8 - 12	10	42.3	100.0

During our exploration program, estimated seasonal high groundwater elevation was investigated. No specific geomorphologic markers were identified within the soil profile; however, variations in moisture content with depth offered insights. Table 7 presents a summary of soil moisture test data determined from TP-2. Knowing that soil moisture at or below where groundwater manifested would be near saturation, the degree of saturation was calculated based on moisture contents from the soil profile. Degree of saturation was graphed vs. depth and groundwater was approximated to be 8.0-feet (based on an 80% saturation level). Height of capillary rise was calculated to be on the order of 1.5-feet, which would place the near saturated wetting front at a depth of 6.5-feet (Elevation 4921.5 feet).

Two locations were identified for percolation testing: the northeast corner (TP-1 & TP-2) and eastside-central (TP-3). Percolation testing was performed to aid in the vetting of an infiltration basin location and to provide an assessment of potential infiltration rates. Table 8 presents a summary of percolation test results.

Table 8 - Summary of Infiltration Basin Percolation Testing

Location	[1]Depth to Test (Ft)	USCS	[2]Depth to Observed Free Water (Ft)	Percolation Rate (min/in)
TP-1	3.5	CL	NE	480
TP-1	5.5	CL	NE	480
TP-2	3	CL	11.5	480
TP-2	6	CL	11.5	480
TP-3	3.5	SC	9.5	24
TP-3	5	SC	9.5	2.1

[1] Depth to Test references the bottom of the percolation hole.
[2] TP-2 and TP-3 remained open overnight. TP-1 was backfilled below percolation testing depths after logging.

8.10 Erosion Control

Erosion potential is dependent on numerous factors involving grain size distribution, cohesion, moisture content, slope angle and the velocity of the water or wind on the ground surface. Erosion protection should be in accordance with the City of Reno Public Works Design Manual. Revegetation of disturbed areas subject to sheet flows or concentrated flows less than five feet per second is recommended. Areas that have concentrated flows with velocities greater than five feet per second should incorporate riprap or other mechanical stabilization.

Temporary (during construction) and permanent (after construction) erosion control will be required for all disturbed areas. In compliance with all applicable city, county, state and federal regulations the contractor shall prevent dust from being generated during construction, and the contractor shall submit an acceptable dust control plan prior to starting site preparation or earthwork. The project specifications should include an indemnification of the Owner and Engineer by the Contractor for any dust generation during the construction period. The owner will be responsible for mitigation of dust after acceptance of the project.

8.11 Site Drainage

Adequate surface drainage must be constructed and maintained away from the structures. The permanent finish slopes away from structures should be constructed to allow water to drain away quickly from and prevent any ponding of water adjacent to the structure per code requirements. Runoff

should be collected within permanent drainage paths that can convey water off the property or to designated collection facilities. A system of roof gutters and downspouts are recommended to collect roof drainage and direct it away from foundations.

Foundation and stem wall backfill should be densified to at least 90 percent relative compaction in accordance with the requirements given in the Grading and Filling Section. Compacting the backfill material decreases permeability and reduces the amount of irrigation and storm water available to enter under floor areas.

8.12 Corrosion Potential

Sulfate testing on the native soils resulted in sulfate levels in both the negligible and severe ranges (< 0.01 and 1.3% by weight, respectively). Because the site will be mass graded, sulfate concentrations will be mixed and blended resulting in a buffering of sulfate concentrations. However, because sulfates are soluble, over the life of the development they can go into solution during irrigation and precipitation and concentrate and redeposit in evaporative zones. Therefore, we recommend concrete for the project (flatwork, curbs, ditches and structures) be designed to offer resistance for a severe sulfate exposure potential. For severe exposure potential the Standard Specifications for Public Works Construction (SSPWC, 2016) recommends concrete that meets the requirements of Section 337.10.01.03 Freeze-Thaw Cycles, Salt and Sulfates:

- Type II cement with at least 25% fly ash,
- A specified minimum 28-day compressive strength of 4,000 psi,
- Air entrainment (6%)
- A maximum water to cementitious ratio of 0.45.

It should be noted, locally, this mix of Section 337.10.01.03 is also considered adequate for mitigating the effects of concrete exposed to external sources of chlorides (Exposure Class C2).

ACI also presents recommendations for concrete in contact with sulfate laden soils. However, ACI recommends the use of Type V cement for severe exposure levels. Type V cement is not always readily available in the project area. If the design team decides to rely on ACI when specifying sulfate resistant concrete, the option to use Type II cement with at least 25% fly ash should be considered.

Chloride levels varied from < 5mg/Kg to 100 mg/Kg (EPA 9056). The requirements of ACI 318-11, Table 4.2.1 regarding corrosion potential due to the presence of chlorides are more stringent than those requirements of SSPWC. We recommend following the requirements of ACI for more critical flatwork such as post-tensioned slabs.

Test report summaries presenting chloride and sulfate concentration levels may be reviewed in Appendix A (Plate A-4f).

8.13 Concrete and Concrete Slabs-On Grade

A 4-inch minimum compacted aggregate base course (Type 2, Class B, Standard Specifications for Public Works Construction) compacted to 95-percent relative compaction is recommended beneath interior or exterior concrete slabs-on-grade subject solely to foot traffic. The recommended base course section should be increased to 6-inches where vehicle traffic is anticipated. Dedicated and public easement improvements shall be constructed in accordance with Washoe County standards and the Standard Specifications for Public Works Construction.

Proper curing, finishing, control joints and reinforcing should be provided to minimize any damage resulting from shrinkage including cracks and slab curling. Western Nevada is a region with absorptive aggregates and exceptionally low relative humidity. As a consequence, concrete flatwork will shrink and curl in a manner which is not typical of many other US regions. Proper site preparation and placement of reinforcement are imperative to the performance of slab-on-grade improvements. Joint spacing, locally, is typically on 10-to-12-foot centers for large slabs and no more than five feet for sidewalks. Cracking that occurs within the slab-on-grade floors will often reflect through overlying improvements even if adequate substrate preparation has occurred. Special considerations, as specified in ACI 318, should be given to concrete placed and cured during windy, low humidity, hot or cold (including freezing) weather conditions.

Wood Rodgers does not practice in the field of moisture vapor transmission evaluation/mitigation. Therefore, if a vapor retarder system more rigorous than the requirements of the IRC is desired, we recommend that a qualified person/firm be engaged/consulted with to evaluate the general and specific moisture vapor transmission paths and any impact on the proposed construction. This person/firm should provide recommendations for mitigation of potential adverse impact of moisture vapor transmission on various components of the structure as deemed appropriate. If special conditions do not exist, Wood Rodgers typically recommends a moisture vapor retarder, consisting of Stego Wrap (15 mil), or equal, to be placed beneath the aggregate base course as part of the moisture vapor system.

Conventional concrete slab-on-grade recommendations presented herein are intended to reduce the potential for cracking of slabs as a result of differential movement and reducing slab curling. However, even with the incorporation of the recommendations presented herein, slabs-on-grade will still exhibit some cracking and curling. The occurrence of concrete shrinkage cracks is independent of the soil supporting characteristics. Their occurrence may be reduced and/or controlled by limiting the amount of water within the mix (water cement ratio of 0.45 or less), the incorporation of crack control joints and proper concrete placing and curing practices including ACI 318 provisions for areas subject to freeze thaw conditions. The use of mid-range plasticizers should be considered to reduce the need to add water by the contractor.

8.14 Structural Pavement Sections

Table 9 presents the recommended minimum structural pavement sections for the development based on planned use. Our structural pavement sections were based on a minimum R-Value of 30. If necessary, structural pavement sections may be re-evaluated by the geotechnical engineer based on final grading and measured subgrade R-Values. In no instance will the specified section be less than the County minimum. Aggregate base used to support pedestrian and flexible or concrete pavements should be compacted to a minimum of 95% relative compaction.

Table 9 - Structural Pavement Sections

Condition	Pavement Thickness (In.)	Pavement Type[1]	Type II Class B Base Course Thickness (In.)[2]
Dedicated Local Roads	4	2" Type 3 + Lime / 2" Type 2	6

[1] Per the Standard Specifications for Public Works Construction

Roadway construction shall be in accordance with the approved plans, the Standard Specifications for Public Works Construction. Roadway subgrade shall be prepared in accordance with the requirements of this report. The Contractor should submit a pavement mix design to the Owner or Engineer, for approval, at least five working days prior to paving. When pavement is placed directly adjacent to concrete flatwork, the finish compacted grade of the pavement should be at least ½ of an inch higher than the edge of adjacent concrete surface to allow adequate compaction of the pavement without damaging the concrete.

8.15 Asphalt Concrete Design Life

Maintenance is mandatory to ensure long-term pavement performance and to meet or exceed the assumed 20-year design life. Maintenance refers to any activity performed on the pavement that is intended to preserve its original service life or load-carrying capacity. Examples of maintenance activities include patching, crack or joint sealing, and seal coats. If these maintenance activities are ignored or deferred, premature failure of the pavement will occur.

Premature failure of asphaltic concrete frequently occurs adjacent to poorly graded ponding areas and/or landscape areas. Failures may occur due to excessive precipitation, irrigation and landscaping water infiltrating into the subgrade soils causing subgrade failure. As such, in areas where saturation of the subgrade soils beneath asphaltic pavement may occur, we strongly recommend the owner/project manager include provisions by design for a subdrain system to eliminate the potential for saturation of subgrade soils. The subdrain system should discharge into a permanent drainage area that will not impede drainage flow to cause the system to back-up and/or clog. Appropriate maintenance procedures should be implemented to ensure the subdrain system does not plug and allow for proper drainage of surface and subsurface water beneath paved areas. Subdrain location and configuration should be evaluated once final grading and landscaping plans have been prepared. If the ultimate traffic exceeds the anticipated levels, it may be necessary to reevaluate and overlay the pavement at some time in the future.

It is recommended that the use of PG 64-28 NV (polymerized asphalt oil) be considered by the owner as we have found that it substantially reduces cracking due to thermal stresses prevalent in the freeze thaw environment. The savings in long term maintenance of the pavement including crack sealing is in our opinion worth the extra expense. However, this asphalt oil recommendation should be considered optional in that it is relative to frequency of maintenance only and does not affect structural calculations.

The cost associated with proper maintenance is generally much less than the cost for reconstruction due to the premature failure of the pavement. Therefore, since pavement quality is an integral consideration in the formulation of our design recommendations, we strongly recommend the owner/project manager implement a pavement management program.

9.0 CONSTRUCTION OBSERVATION AND TESTING SERVICES

The recommendations presented in this report are based on the assumption that the contractors perform their work as required by the project documents and that owner/project manager provides sufficient field-testing and construction review during each phase of construction. Prior to construction, the owner/project manager should schedule a pre-construction conference including, but not limited to representatives of the owner, architect, civil engineer, the general contractor, earthwork and materials subcontractors, building official, and geotechnical engineer. It is the owner's/project manager responsibility to set-up this meeting and contact all responsible parties. The conference will allow parties to review the project plans, specifications, scheduling and recommendations presented in this report, and discuss applicable material quality and mix design requirements. Quality control reports should be submitted to the owner/project manager for review and distributed to the appropriate parties. It is essential that any changes or revisions to project plans be provided to Wood Rodgers in a timely fashion to ensure contractor compliance and avoid construction delays or the need to remove completed work.

During construction, Wood Rodgers Incorporated should have the opportunity to provide sufficient on-site observation of site preparation and grading, over-excavation, fill placement, foundation installation, and paving. These observations would allow us to document the geotechnical conditions are in fact just as anticipated and that the contractor's work meets with the criteria in the approved plans and specifications. Verification of horizontal and vertical control must be provided by whoever was responsible for establishing those boundaries and constructing associated improvements.

10.0 EXPECTATION OF PERFORMANCE

The planned structures will incorporate a standard slab on grade foundation with perimeter footings extending to a minimum depth of 24 inches below finished exterior grade or a post-tensioned structural slab-on-grade foundation. The site will be mass graded, cut to fill, with on-site soils. Therefore, the potential exists that soils within various building pads may fall outside the specified limits of Import Structural Fill (Table 2). This deviation should not be considered a failure to adhere to construction documents but should be considered a limitation to mass-grading when a natural, virgin material is used

for a fill source. These inherent variations should not be considered to comprise a non-conformity with the project specifications unless the Weighted Plasticity (% -#200 x PI) exceeds 6.5 for 80-percent of the fill profile.

Western Nevada is a region with absorptive aggregates and exceptionally low relative humidity. As a consequence, concrete flatwork will shrink and curl in a manner which is not typical of other US regions. Proper sub-grade preparation and placement of reinforcement are imperative. Typical joint spacing, regionally, is on 10-to-12-foot centers. Cracking that occurs within the slab on grade will often reflect through overlying improvements even if adequate substrate preparation has occurred.

Single family residential construction results in a complex composite of steel, concrete, lumber, and earth. Each element responds differently to loading and as a consequence cracking and distortion occur. Occurrence of cracking or distortion is not in and of itself evidence of the structure failing to meet a reasonable standard or level of performance. Repair of unsightly, non-structural, cracks should be considered part of the homeowner maintenance program. Cracks that continue to reappear or widen or propagate may be indicative of extenuating issues that require redress. Our design protocols and recommended construction testing procedures rely upon ASTM Standards and Guidelines; therefore, any subsequent studies to evaluate completed product or construction practices shall be in accordance with ASTM E 141 AND shall employ the same testing means and methods available at the time of construction. Where access or testing limits do not allow continuity in testing methods, a correlation program must be performed that establishes that the testing and evaluation methods employed by the reviewing agency present results consistent with and comparable to the test methods prescribed by this report and employed during construction. Failure to follow these prescribed protocols would result in test data being compromised when compared to ASTM standards and requirements. In addition, failure to follow the referenced statistical and sampling ASTM assessment protocols would result in a forensic assessment program rife with inconsistencies and variations which would result in the forensic investigation failing to meet the level of precision necessary to accurately evaluate the site conditions.

11.0 STANDARD LIMITATION CLAUSE

This report has been prepared in accordance with generally accepted local geotechnical practices. The analyses and recommendations submitted are based upon field exploration performed at the specific locations identified and the conditions encountered, as discussed in our report. No guarantee or warranty as to the continuity of soil conditions between exploration points is implied or intended. Therefore, this report does not reflect soil variations that may become evident during the construction period, at which time re-evaluation of the recommendations may be necessary. Final plans and specifications should be reviewed by the design engineer responsible for this geotechnical report to determine if they have been prepared in accordance with the recommendations contained in this report prior to submitting to the building department for review. It is the owner's/project manager responsibility to provide the plans and specifications to the engineer. We recommend our firm be retained to perform construction observation in all phases of the project related to geotechnical factors to document compliance with our

recommendations. The owner/project manager is responsible for distribution of this geotechnical report to all designers and contractors whose work is related to geotechnical factors.

It is the contractor's responsibility for the grading and construction of the designed improvements. This responsibility includes the means, methods, techniques, sequence, and procedures of construction and safety of construction at the site. All construction shall conform to the requirements of the most recently adopted version of the Standard Specifications for Public Works Construction and the requirements of Washoe County, Nevada. Failure to inspect the work shall not relieve the contractor from his obligation to perform sound and reliable work as described herein and as described in the Standard Specifications for Public Works Construction.

This report is issued with the understanding that it is the responsibility of the owner or their representative to ensure that the information and recommendations contained herein are brought to the attention of the design team for the project and incorporated into the plans and specifications, and that the necessary steps are taken to see that the contractor and subcontractors carry out such recommendations in the field.

In the event of changes in the design, location, or ownership of the project after presentation of this report, our recommendations should be reviewed and possibly modified by the Geotechnical Engineer. If the Geotechnical Engineer is not accorded the privilege of making this recommended review, we can assume no responsibility for misinterpretation or misapplication of our recommendations or their validity in the event changes have been made in the original design concept without our prior review. The engineer makes no other warranties, either expressed or implied, as to the professional advice provided under the terms of this agreement and included in this report.

This report was prepared by Wood Rodgers, Inc. for the benefit of D.R. Horton and their duly assigned agents or other responsible parties. The material in it reflects Wood Rodgers' best judgment in light of the information available to it at the time of preparation. Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. Wood Rodgers accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made by third parties or actions based on this report without consultation with Wood Rodgers and written approval for such actions.

12.0 REFERENCES

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APPENDIX A
GEOTECHNICAL PLATES

Image Reference: Google Earth, Imagery Date: 10/23/2020, Accessed 8/13/2021

WOOD RODGERS
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VICINITY MAP

Geotechnical Investigation
LEARNER LEMMON
D.R. HORTON
WASHOE COUNTY, NV

Project No.: 4092001
Date: 08/12/21

PLATE A-1a

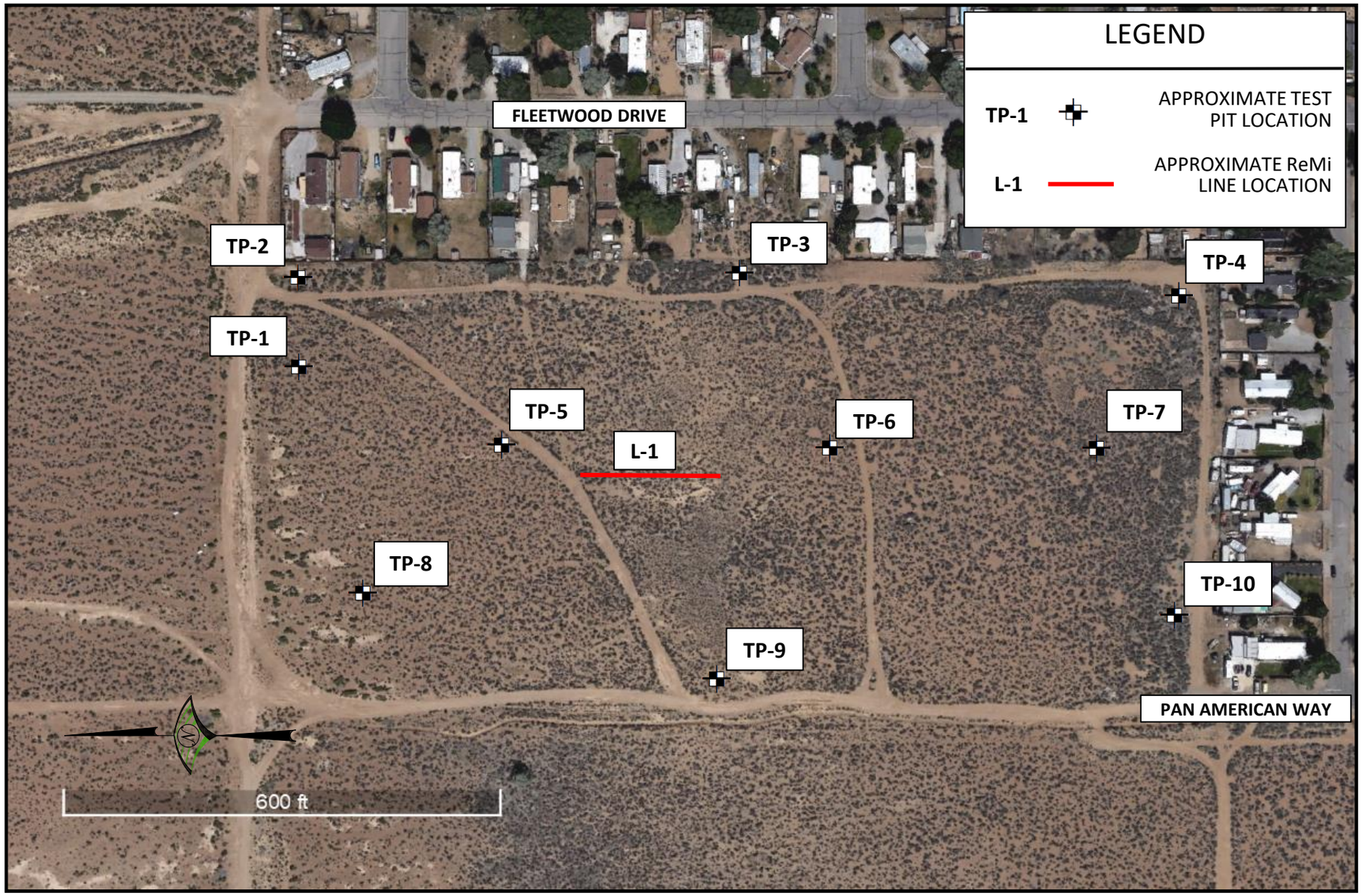

Image Reference: Google Earth, Imagery Date: 10/23/2020, Accessed 8/12/2021

WOOD RODGERS
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SITE MAP AND APPROXIMATE EXPLORATION LOCATIONS

Geotechnical Investigation
LEARNER LEMMON
D.R. HORTON
WASHOE COUNTY, NV

Project No.: 4092001
Date: 08/12/21

Plate A-1b

Wood Rodgers Inc.
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Telephone: 775-823-4068
Fax: 775-823-4066

TEST PIT NUMBER TP-1

CLIENT D.R. Horton
PROJECT NAME Learner Lemmon
PROJECT NUMBER 4092001
PROJECT LOCATION Washoe County, Nevada
DATE STARTED 8/4/21 **COMPLETED** 8/4/21
GROUND ELEVATION 4928 ft **TEST PIT SIZE** 24 inches
EXCAVATION CONTRACTOR Joy Engineering
GROUND WATER LEVELS:
EXCAVATION METHOD CAT 420F Backhoe
AT TIME OF EXCAVATION --- NO FREE WATER ENCOUNTERED
LOGGED BY Seth Barton **CHECKED BY** Justin McDougal
AT END OF EXCAVATION --- NO FREE WATER ENCOUNTERED
NOTES: Elevations: Washoe County Regional Mapping System
AFTER EXCAVATION --- NO FREE WATER ENCOUNTERED

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	R-VALUE	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
0		TOPSOIL, (SM)	GB 1A									
		SILTY SAND, (SM) medium dense, dry, light brown, nonplastic	GB 1B					7.7	22	18	4	47.5
		SILTY, CLAYEY SAND, (SC-SM) very dense, slightly moist, brown, slightly plastic	GB 1C					9.6	31	15	16	64.9
5		SANDY LEAN CLAY, (CL) very stiff, moist, dark brown, medium plasticity, white specs/veins										
		SANDY LEAN CLAY, (CL) very stiff, moist to very moist, brown, medium plasticity, white specs/veins	GB 1D									
10		LEAN CLAY, (CL) very stiff, very moist, gray brown, medium plasticity	GB 1E									

Bottom of Test Pit at 12.0 Feet.

Soil Percolation Recorded Measurements

1.Depth to test : ***3.5'***
2.Time of 1st saturation to 12" ***10:22*** *Date :* ***8/4/2021***
If 12" of water drains from hole in 10 mins or less, refill to 12".
3.Time of 2nd saturation : ***10:33***
4.If 2nd filling drains in less than 10 mins, begin 1 hour test with 10 mins or less reading intervals.
5.If either filling exceeds 10 mins to drain from hole,begin a 4-hr pre-soak.
Return between 16 - 24 hrs to start test.

Date of percolation test : ***8/5/2021***

Hole # : ***PH-A*** *Diameter :* ***8"*** *Depth :* ***12"*** *Soil Type :* **CL**

Reading	Time Start	Time Finish	Water Level Start	Water Level Finish	Elapsed Time min	Water Fall (in)
1	8:12	8:42	6"	6 3/16"	30	3/16"
2	8:43	9:13	6"	6 1/16"	30	1/16"
3	9:14	9:44	6"	6 1/16"	30	1/16"
4						
5						
6						
7						

Stabilized Rate : **480** Min/inch
Tested by: **J. Beadell**
Checked by : **J. McDougal**

Soil Percolation Recorded Measurements

1.Depth to test : ***5.5'***

2.Time of 1st saturation to 12" ***10:22*** *Date :* ***8/4/2021***

If 12" of water drains from hole in 10 mins or less, refill to 12".

3.Time of 2nd saturation : ***10:32***

4.If 2nd filling drains in less than 10 mins, begin 1 hour test with 10 mins or less reading intervals.

5.If either filling exceeds 10 mins to drain from hole,begin a 4-hr pre-soak.

Return between 16 - 24 hrs to start test.

Date of percolation test : ***8/5/2021***

Hole # : ***PH-B*** *Diameter :* ***8"*** *Depth :* ***12"*** *Soil Type :* ***CL***

Reading	Time		Water Level		Elapsed	Water
	Start	Finish	Start	Finish	Time min	Fall (in)
1	8:22	8:52	6"	6"	30	0"
2	8:53	9:23	6"	6 1/16"	30	1/16"
3	9:24	9:54	6"	6 1/16"	30	1/16"
4						
5						
6						
7						

Stabilized Rate : **480** Min/inch

Tested by: **J. Beadell**

Checked by : **J. McDougal**

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TEST PIT NUMBER TP-2

CLIENT D.R. Horton
PROJECT NAME Learner Lemmon
PROJECT NUMBER 4092001
PROJECT LOCATION Washoe County, Nevada
DATE STARTED 8/4/21 **COMPLETED** 8/4/21
GROUND ELEVATION 4928 ft **TEST PIT SIZE** 24 inches
EXCAVATION CONTRACTOR Joy Engineering
GROUND WATER LEVELS:
EXCAVATION METHOD CAT 420F Backhoe
AT TIME OF EXCAVATION ---
LOGGED BY Seth Barton **CHECKED BY** Justin McDougal
AT END OF EXCAVATION ---
NOTES: Elevations: Washoe County Regional Mapping System
24hrs AFTER EXCAVATION 11.50 ft / Elev 4916.50 ft

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	R-VALUE	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
0		TOPSOIL, (SM)	GB 2A					1.2				
		SILTY SAND, (SM) medium dense, dry, light brown, nonplastic	GB 2B					9.2				
		CLAYEY SAND, (SC) very dense, slightly moist, brown, low plasticity										
5		SANDY LEAN CLAY, (CL) very stiff, moist to very moist, brown, medium plasticity, white specs	GB 2C					22.8				
		SANDY LEAN CLAY, (CL) very stiff, very moist, gray brown, medium to high plasticity, white granular pockets	GB 2D					42.3				
10			GB 2E					41.6				

Bottom of Test Pit at 12.0 Feet.

Soil Percolation Recorded Measurements

1.Depth to test : ***3'***
2.Time of 1st saturation to 12" ***11:22*** *Date :* ***8/4/2021***
If 12" of water drains from hole in 10 mins or less, refill to 12".
3.Time of 2nd saturation : ***11:32***
4.If 2nd filling drains in less than 10 mins, begin 1 hour test with 10 mins or less reading intervals.
5.If either filling exceeds 10 mins to drain from hole,begin a 4-hr pre-soak.
Return between 16 - 24 hrs to start test.

Date of percolation test : ***8/5/2021***

Hole # : ***PH-C*** *Diameter :* ***8"*** *Depth :* ***12"*** *Soil Type :* ***CL***

Reading	Time		Water Level		Elapsed	Water
	Start	Finish	Start	Finish	Time min	Fall (in)
1	9:57	10:27	6"	6 2/16"	30	2/16"
2	10:28	10:58	6"	6 1/16"	30	1/16"
3	10:59	11:29	6"	6 1/16"	30	1/16"
4						
5						
6						
7						

Stabilized Rate : **480** Min/inch

Tested by: **J. Beadell**
Checked by : **J. McDougal**

Plate A-2ba

Soil Percolation Recorded Measurements

1.Depth to test : ***6'***
2.Time of 1st saturation to 12" ***11:22*** *Date :* ***8/4/2021***
If 12" of water drains from hole in 10 mins or less, refill to 12".
3.Time of 2nd saturation : ***11:32***
4.If 2nd filling drains in less than 10 mins, begin 1 hour test with 10 mins or less reading intervals.
5.If either filling exceeds 10 mins to drain from hole,begin a 4-hr pre-soak.
Return between 16 - 24 hrs to start test.

Date of percolation test : ***8/5/2021***

Hole # : ***PH-D*** *Diameter :* ***8"*** *Depth :* ***12"*** *Soil Type :* ***CL***

Reading	*Time*		*Water Level*		*Elapsed*	*Water*
	Start	*Finish*	*Start*	*Finish*	*Time min*	*Fall (in)*
1	10:12	10:42	6"	6"	30	0"
2	10:43	11:13	6"	6 1/16"	30	1/16"
3	11:14	11:44	6"	6 1/16"	30	1/16"
4						
5						
6						
7						

Stabilized Rate : **480** Min/inch

Tested by: **J. Beadell**
Checked by : **J. McDougal**

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TEST PIT NUMBER TP-3

CLIENT D.R. Horton
PROJECT NAME Learner Lemmon
PROJECT NUMBER 4092001
PROJECT LOCATION Washoe County, Nevada
DATE STARTED 8/4/21 **COMPLETED** 8/4/21
GROUND ELEVATION 4932 ft **TEST PIT SIZE** 24 inches
EXCAVATION CONTRACTOR Joy Engineering
GROUND WATER LEVELS:
EXCAVATION METHOD CAT 420F Backhoe
AT TIME OF EXCAVATION ---
LOGGED BY Seth Barton **CHECKED BY** Justin McDougal
AT END OF EXCAVATION ---
NOTES: Elevations: Washoe County Regional Mapping System
24hrs AFTER EXCAVATION 9.50 ft / Elev 4922.50 ft

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	R-VALUE	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
0		TOPSOIL, (SM)										
		SILTY, CLAYEY SAND, (SC-SM) medium dense, dry, light brown, slightly plastic	GB 3A									
		CLAYEY SAND, (SC) very dense, moist, brown, low plasticity	GB 3B									
5			GB 3C									
		SANDY LEAN CLAY, (CL) very stiff, moist to very moist, gray brown, medium plasticity, white specs										
			GB 3D									
10												

Bottom of Test Pit at 10.0 Feet.

Soil Percolation Recorded Measurements

1.Depth to test : ***3.5'***
2.Time of 1st saturation to 12" ***12:02*** *Date :* ***8/4/2021***
If 12" of water drains from hole in 10 mins or less, refill to 12".
3.Time of 2nd saturation : ***12:12***
4.If 2nd filling drains in less than 10 mins, begin 1 hour test with 10 mins or less reading intervals.
5.If either filling exceeds 10 mins to drain from hole,begin a 4-hr pre-soak.
Return between 16 - 24 hrs to start test.

Date of percolation test : ***8/5/2021***

Hole # : ***PH-E*** *Diameter :* ***8"*** *Depth :* ***12"*** *Soil Type :* ***SC***

Reading	Time		Water Level		Elapsed	Water
	Start	Finish	Start	Finish	Time min	Fall (in)
1	9:14	9:44	6"	7 12/16"	30	1 12/16"
2	9:46	10:16	6"	7 6/16"	30	1 6/16"
3	10:16	10:46	6"	7 7/16"	30	1 7/16"
4	10:46	11:16	6"	7 5/16"	30	1 5/16"
5	11:16	11:46	6"	7 4/16"	30	1 4/16"
6						
7						

Stabilized Rate : **24** Min/inch

Tested by: **S. Barton**
Checked by : **J. McDougal**

Soil Percolation Recorded Measurements

1.Depth to test : ***5'***
2.Time of 1st saturation to 12" ***12:02*** *Date :* ***8/4/2021***
If 12" of water drains from hole in 10 mins or less, refill to 12".
3.Time of 2nd saturation : ***12:12***
4.If 2nd filling drains in less than 10 mins, begin 1 hour test with 10 mins or less reading intervals.
5.If either filling exceeds 10 mins to drain from hole,begin a 4-hr pre-soak.
Return between 16 - 24 hrs to start test.

Date of percolation test : ***8/5/2021***

Hole # : ***PH-F*** *Diameter :* ***8"*** *Depth :* ***12"*** *Soil Type :* ***SC***

Reading	*Time*		*Water Level*		*Elapsed*	*Water*
	Start	*Finish*	*Start*	*Finish*	*Time min*	*Fall (in)*
1	9:28	9:33	6"	9 10/16"	5	3 10/16"
2	9:35	9:40	6"	9 6/16"	5	3 6/16"
3	9:43	9:47	6"	9 1/16"	5	3 1/16"
4	9:48	9:53	6"	8 9/16"	5	2 9/16"
5	9:55	10:00	6"	8 8/16"	5	2 8/16"
6	10:01	10:06	6"	8 7/16"	5	2 7/16"
7	10:06	10:11	6"	8 6/16"	5	2 6/16"

Stabilized Rate : **2.1** Min/inch

Tested by: **S. Barton**
Checked by : **J. McDougal**

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Reno, NV 89502
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TEST PIT NUMBER TP-4

CLIENT D.R. Horton
PROJECT NAME Learner Lemmon
PROJECT NUMBER 4092001
PROJECT LOCATION Washoe County, Nevada
DATE STARTED 8/4/21 **COMPLETED** 8/4/21
GROUND ELEVATION 4934 ft **TEST PIT SIZE** 24 inches
EXCAVATION CONTRACTOR Joy Engineering
GROUND WATER LEVELS:
EXCAVATION METHOD CAT 420F Backhoe
AT TIME OF EXCAVATION --- NO FREE WATER ENCOUNTERED
LOGGED BY Seth Barton **CHECKED BY** Justin McDougal
AT END OF EXCAVATION --- NO FREE WATER ENCOUNTERED
NOTES: Elevations: Washoe County Regional Mapping System
AFTER EXCAVATION --- NO FREE WATER ENCOUNTERED

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	R-VALUE	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
0.0		SILTY SAND, (SM)	GB 4A									
		SILTY, CLAYEY SAND, (SC-SM) medium dense, dry, light brown, slightly plastic	GB 4B									
2.5		CLAYEY SAND, (SC) medium dense, slightly moist, brown, low plasticity	GB 4C									
5.0		CLAYEY SAND, (SC) slightly moist to moist, low plasticity	GB 4D									
7.5		SANDY LEAN CLAY, (CL) very stiff, very moist, gray brown, medium plasticity	GB 4E									
10.0		Bottom of Test Pit at 10.0 Feet.										

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TEST PIT NUMBER TP-5

CLIENT D.R. Horton
PROJECT NAME Learner Lemmon
PROJECT NUMBER 4092001
PROJECT LOCATION Washoe County, Nevada
DATE STARTED 8/4/21 **COMPLETED** 8/4/21
GROUND ELEVATION 4930 ft **TEST PIT SIZE** 24 inches
EXCAVATION CONTRACTOR Joy Engineering
GROUND WATER LEVELS:
EXCAVATION METHOD CAT 420F Backhoe
AT TIME OF EXCAVATION --- NO FREE WATER ENCOUNTERED
LOGGED BY Seth Barton **CHECKED BY** Justin McDougal
AT END OF EXCAVATION --- NO FREE WATER ENCOUNTERED
NOTES: Elevations: Washoe County Regional Mapping System
AFTER EXCAVATION --- NO FREE WATER ENCOUNTERED

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	R-VALUE	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
0.0		TOPSOIL, (SM)										
		SILTY SAND, (SM) medium dense, dry, light brown, nonplastic, slightly cemented	GB 5A									
		CLAYEY SAND, (SC) very dense, slightly moist, brown and white, low to medium plasticity										
2.5		SILTY, CLAYEY SAND, (SC-SM) very dense, slightly moist, brown, slightly plastic	GB 5B									
5.0		LEAN CLAY WITH SAND, (CL) very stiff, very moist, gray brown, medium plasticity										
7.5			GB 5C									
		LEAN CLAY, (CL) very stiff, very moist, gray white, medium plasticity										
10.0												

Bottom of Test Pit at 11.0 Feet.

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TEST PIT NUMBER TP-6

CLIENT D.R. Horton
PROJECT NAME Learner Lemmon
PROJECT NUMBER 4092001
PROJECT LOCATION Washoe County, Nevada
DATE STARTED 8/4/21 **COMPLETED** 8/4/21
GROUND ELEVATION 4932 ft **TEST PIT SIZE** 24 inches
EXCAVATION CONTRACTOR Joy Engineering
GROUND WATER LEVELS:
EXCAVATION METHOD CAT 420F Backhoe
AT TIME OF EXCAVATION --- NO FREE WATER ENCOUNTERED
LOGGED BY Seth Barton **CHECKED BY** Justin McDougal
AT END OF EXCAVATION --- NO FREE WATER ENCOUNTERED
NOTES: Elevations: Washoe County Regional Mapping System
AFTER EXCAVATION --- NO FREE WATER ENCOUNTERED

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	R-VALUE	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
0.0		TOPSOIL, (SM)										
		SILTY SAND, (SM) medium dense, dry, light brown, nonplastic	GB 6A									
2.5		CLAYEY SAND, (SC) very dense, moist, brown, low plasticity	GB 6B									
5.0		LEAN CLAY, (CL) very stiff, moist to very moist, gray brown white, medium plasticity	GB 6C									
7.5												
10.0												

Bottom of Test Pit at 11.0 Feet.

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TEST PIT NUMBER TP-7

CLIENT D.R. Horton
PROJECT NAME Learner Lemmon
PROJECT NUMBER 4092001
PROJECT LOCATION Washoe County, Nevada
DATE STARTED 8/4/21 **COMPLETED** 8/4/21
GROUND ELEVATION 4936 ft **TEST PIT SIZE** 24 inches
EXCAVATION CONTRACTOR Joy Engineering
GROUND WATER LEVELS:
EXCAVATION METHOD CAT 420F Backhoe
AT TIME OF EXCAVATION --- NO FREE WATER ENCOUNTERED
LOGGED BY Seth Barton **CHECKED BY** Justin McDougal
AT END OF EXCAVATION --- NO FREE WATER ENCOUNTERED
NOTES: Elevations: Washoe County Regional Mapping System
AFTER EXCAVATION --- NO FREE WATER ENCOUNTERED

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	R-VALUE	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
0.0		TOPSOIL, (SM)										
		SILTY SAND, (SM) medium dense, dry, brown, nonplastic	GB 7A					2.4				
		CLAYEY SAND, (SC) very dense, slightly moist to moist, brown, low plasticity, white specs						6.5				
2.5			SH 7B									
5.0												
			GB 7C					9.1	25	17	8	48.5
7.5												
10.0												

Bottom of Test Pit at 10.0 Feet.

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TEST PIT NUMBER TP-8

CLIENT D.R. Horton
PROJECT NAME Learner Lemmon
PROJECT NUMBER 4092001
PROJECT LOCATION Washoe County, Nevada
DATE STARTED 8/4/21 **COMPLETED** 8/4/21
GROUND ELEVATION 4928 ft **TEST PIT SIZE** 24 inches
EXCAVATION CONTRACTOR Joy Engineering
GROUND WATER LEVELS:
EXCAVATION METHOD CAT 420F Backhoe
AT TIME OF EXCAVATION --- NO FREE WATER ENCOUNTERED
LOGGED BY Seth Barton **CHECKED BY** Justin McDougal
AT END OF EXCAVATION --- NO FREE WATER ENCOUNTERED
NOTES: Elevations: Washoe County Regional Mapping System
AFTER EXCAVATION --- NO FREE WATER ENCOUNTERED

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	R-VALUE	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
0.0		TOPSOIL, (SM)										
		SILTY, CLAYEY SAND, (SC-SM) very dense, slightly moist, brown, slightly plastic	GB 8B									
		CLAYEY SAND, (SC) medium dense, slightly moist, brown, medium plasticity	GB 8A GB 8C									
2.5												
		LEAN CLAY WITH SAND, (CL) very stiff, very moist, gray white, medium plasticity	GB 8D				91.5					
5.0			GB 8E									
7.5												
		LEAN CLAY, (CL) very stiff, very moist, gray white, medium plasticity										
10.0			GB 8F									

Bottom of Test Pit at 11.0 Feet.

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TEST PIT NUMBER TP-9

CLIENT D.R. Horton
PROJECT NAME Learner Lemmon
PROJECT NUMBER 4092001
PROJECT LOCATION Washoe County, Nevada
DATE STARTED 8/4/21 **COMPLETED** 8/4/21
GROUND ELEVATION 4931 ft **TEST PIT SIZE** 24 inches
EXCAVATION CONTRACTOR Joy Engineering
GROUND WATER LEVELS:
EXCAVATION METHOD CAT 420F Backhoe
AT TIME OF EXCAVATION --- NO FREE WATER ENCOUNTERED
LOGGED BY Seth Barton **CHECKED BY** Justin McDougal
AT END OF EXCAVATION --- NO FREE WATER ENCOUNTERED
NOTES: Elevations: Washoe County Regional Mapping System
AFTER EXCAVATION --- NO FREE WATER ENCOUNTERED

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	R-VALUE	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
0.0		TOPSOIL, (SM)										
		CLAYEY SAND, (SC) medium dense, slightly moist, light brown, low plasticity	GB 9B									
		SILTY SAND, (SM) very dense, light brown, slightly plastic	GB 9A									
2.5			GB 9C					10.3	22	21	1	26.0
5.0												
7.5		LEAN CLAY WITH SAND, (CL) very stiff, moist to very moist, gray white, medium plasticity	GB 9D									
10.0												

Bottom of Test Pit at 10.0 Feet.

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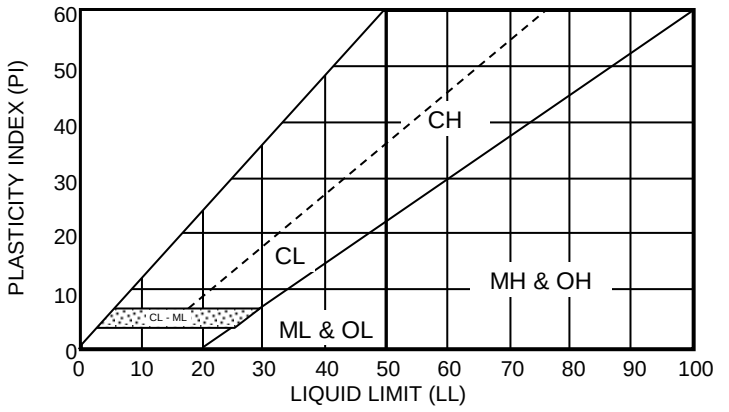
TEST PIT NUMBER TP-10

CLIENT D.R. Horton
PROJECT NAME Learner Lemmon
PROJECT NUMBER 4092001
PROJECT LOCATION Washoe County, Nevada
DATE STARTED 8/4/21 **COMPLETED** 8/4/21
GROUND ELEVATION 4936 ft **TEST PIT SIZE** 24 inches
EXCAVATION CONTRACTOR Joy Engineering
GROUND WATER LEVELS:
EXCAVATION METHOD CAT 420F Backhoe
AT TIME OF EXCAVATION --- NO FREE WATER ENCOUNTERED
LOGGED BY Seth Barton **CHECKED BY** Justin McDougal
AT END OF EXCAVATION --- NO FREE WATER ENCOUNTERED
NOTES: Elevations: Washoe County Regional Mapping System
AFTER EXCAVATION --- NO FREE WATER ENCOUNTERED

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	R-VALUE	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
0.0		TOPSOIL, (SM)										
		SILTY, CLAYEY SAND, (SC-SM) medium dense, dry, light brown	GB 10A									
		CLAYEY SAND, (SC) medium dense to very dense, slightly moist, brown white, low plasticity										
2.5												
5.0												
7.5			GB 10B									
		Moist										
10.0												

Bottom of Test Pit at 10.0 Feet.

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
				GP	POORLY GRADED GRAVELS WITH OR WITHOUT SAND, LITTLE OR NO FINES
		GRAVELS WITH OVER 12% 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
				SP	POORLY GRADED SAND WITH OR WITHOUT GRAVEL, LITTLE OR NO FINES
		SANDS WITH OVER 12% 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			ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTS WITH SANDS AND GRAVELS
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY CLAYS WITH SANDS AND GRAVELS, LEAN CLAYS
				OL	ORGANIC SILTS OR CLAYS OF LOW PLASTICITY
	SILT AND CLAY LIQUID LIMIT GREATER THAN 50%			MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOLID, ELASTIC SILTS
				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

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1361 Corporate Boulevard, Reno, NV 89502
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UNIFIED SOIL CLASSIFICATION AND KEY TO SOIL DESCRIPTIONS

Geotechnical Investigation
LEARNER LEMMON
D.R. HORTON
WASHOE COUNTY, NV

Project No.: 4092001
Date: 08/12/21

PLATE A-3

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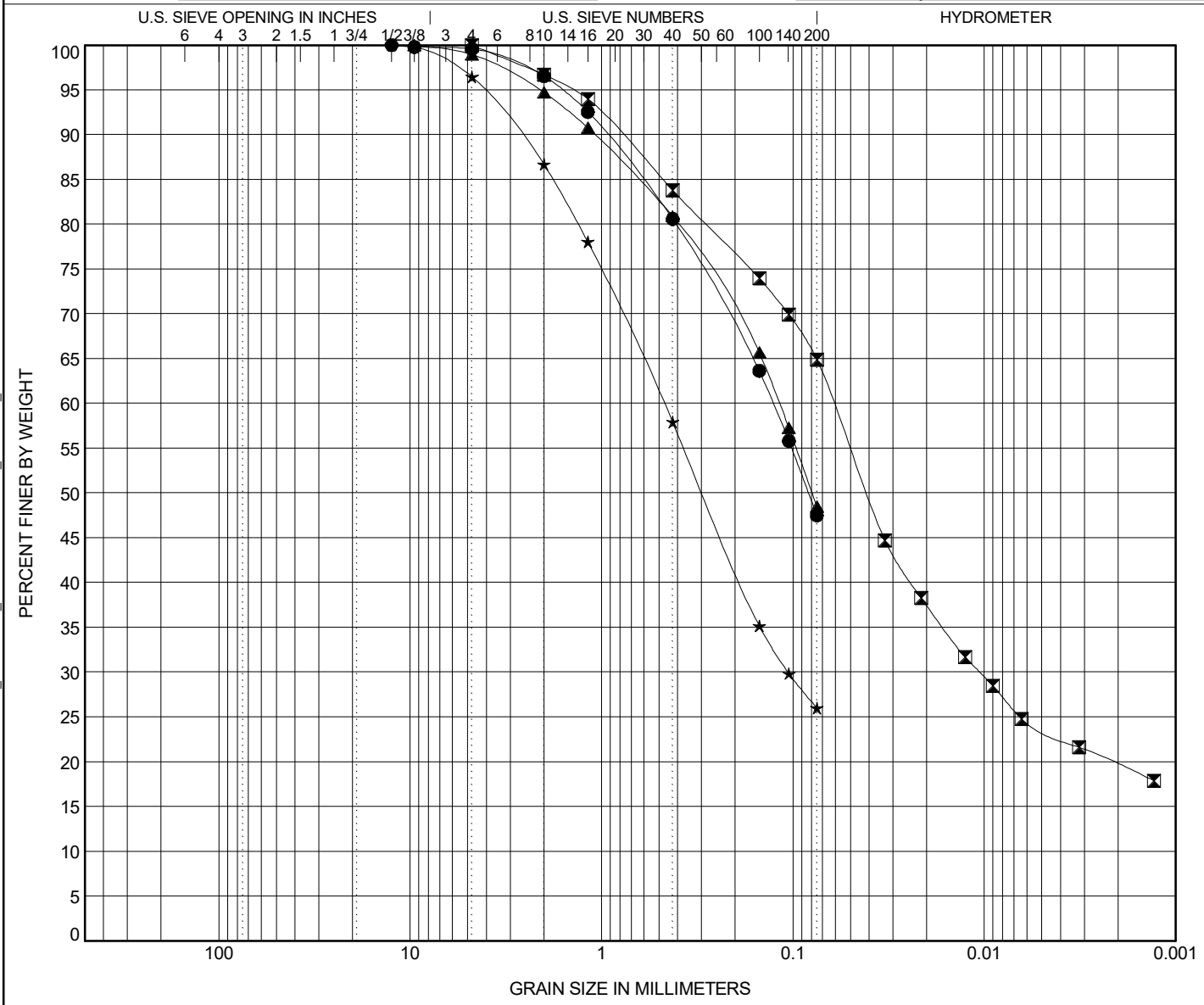
Reno NV 89521
Telephone: 775-823-4068
Fax: 775-823-4066

GRAIN SIZE DISTRIBUTION

CLIENT D.R. Horton **PROJECT NAME** Learner Lemmon

PROJECT NUMBER 4092001 **PROJECT LOCATION** Washoe County, Nevada



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	TEST PIT	MID-DEPTH	Classification	LL	PL	PI	Cc	Cu
●	TP-1	1.5	SILTY, CLAYEY SAND(SC-SM)	22	18	4		
⊠	TP-1	3.0	SANDY LEAN CLAY(CL)	31	15	16		
▲	TP-7	6.0	CLAYEY SAND(SC)	25	17	8		
★	TP-9	1.5	SILTY SAND(SM)	22	21	1		

	TEST PIT	MID-DEPTH	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	TP-1	1.5	12.5	0.127			0.4	52.1	47.5	
⊠	TP-1	3.0	4.75	0.061	0.011			35.1	41.3	23.6
▲	TP-7	6.0	9.5	0.118			1.1	50.5	48.5	
★	TP-9	1.5	12.5	0.472	0.106		3.5	70.5	26.0	

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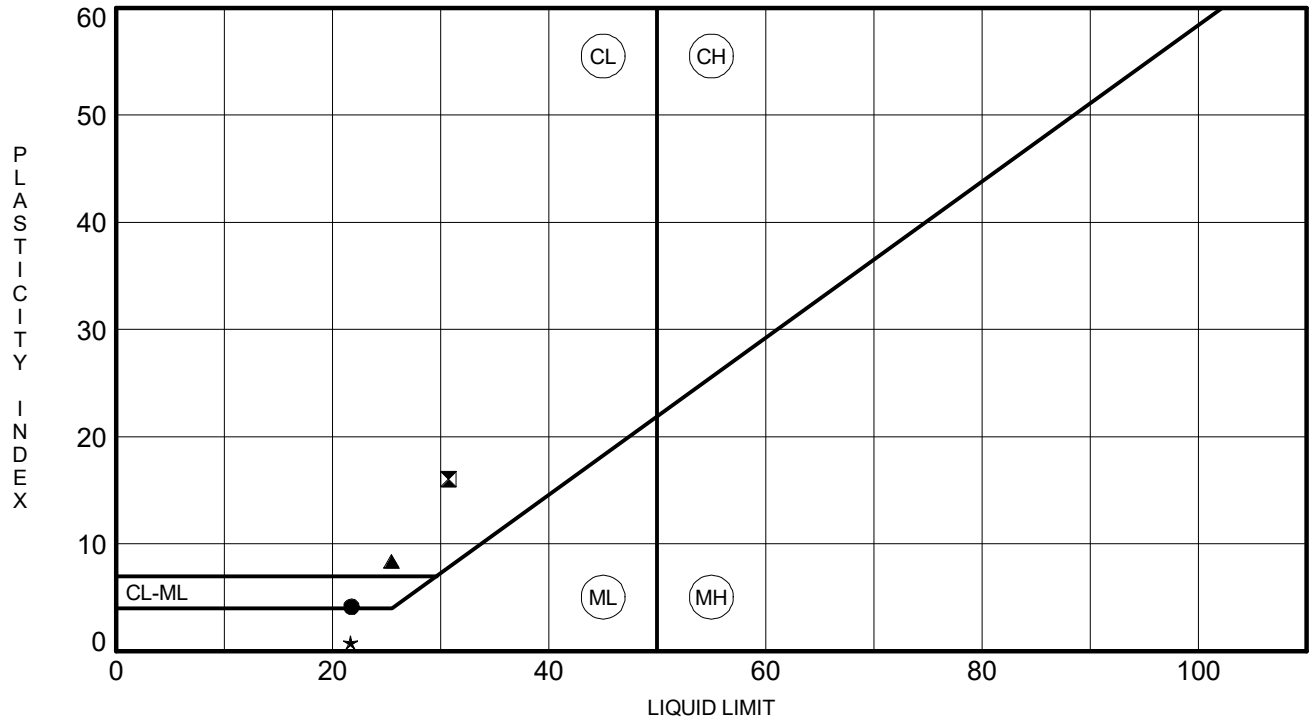
ATTERBERG LIMITS' RESULTS

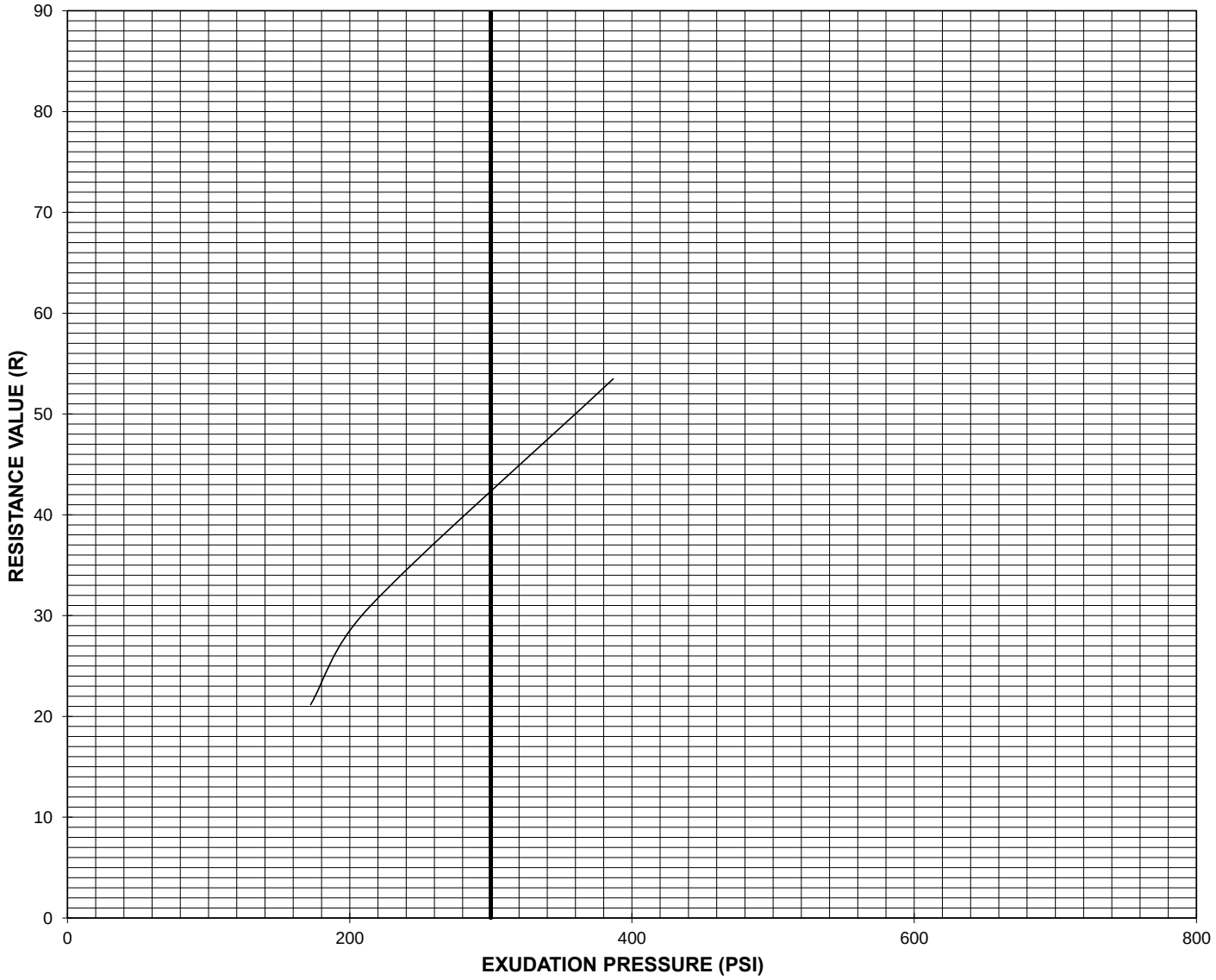
CLIENT D.R. Horton **PROJECT NAME** Learner Lemmon

PROJECT NUMBER 4092001 **PROJECT LOCATION** Washoe County, Nevada



	TEST PIT	MID-DEPTH	LL	PL	PI	Fines	Classification
●	**TP-1**	**1.5**	**22**	**18**	**4**	**47.5**	**SILTY, CLAYEY SAND(SC-SM)**
⧓	**TP-1**	**3.0**	**31**	**15**	**16**	**64.9**	**SANDY LEAN CLAY(CL)**
▲	**TP-7**	**6.0**	**25**	**17**	**8**	**48.5**	**CLAYEY SAND(SC)**
★	**TP-9**	**1.5**	**22**	**21**	**1**	**26.0**	**SILTY SAND(SM)**

R-Value and Expansion Pressure of Compacted Soils AASHTO T190 / ASTM D2844



Lab Log #	Sample Source	Material	Expansion Pressure (psf) @ 300 (psi)	R-Value @ 300 (psi)
6027	TP - 4 @ 0' - 3'	Silty, Clayey Sand (SC-SM)	0	42

POINT #	WATER CONTENT (%)	DRY DENSITY (PCF)	EXUDATION PRESS. (PSI)	EXPANSION PRESS. (PSF)	RESISTANCE VALUE (R)
1	15.7	115.8	172	0	21
2	14.8	116.1	213	0	31
3	14.2	116.4	387	0	53
4					
5					

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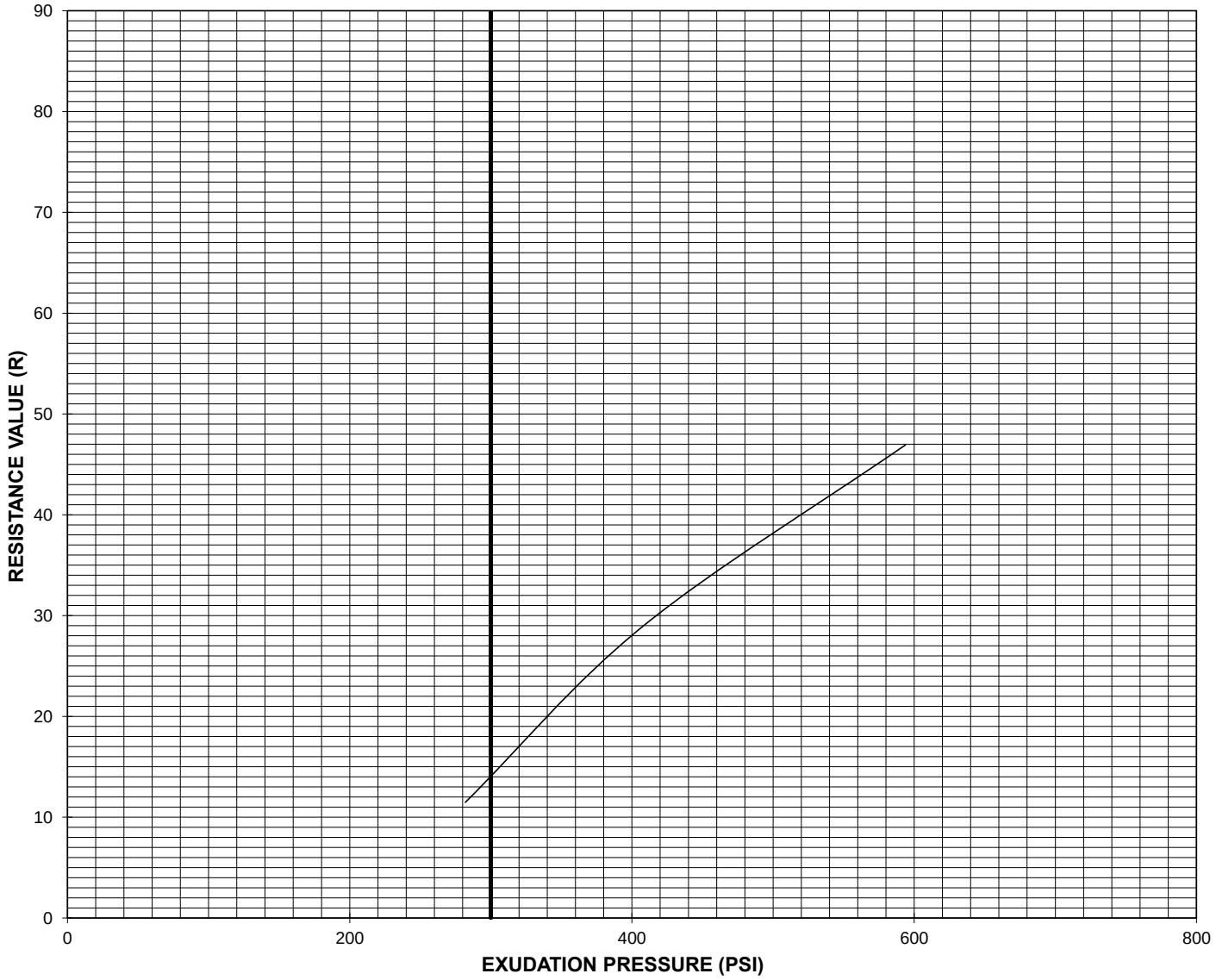
Reno, NV 89502
Tel: 775.823.4068
Fax: 775.823.4066

Learner Lemmon

AASHTO ACCREDITED

TESTED BY	JOB NUMBER	APPROVED	DATE	REVISED	DATE
BL	4092001		8/18/2021		

R-Value and Expansion Pressure of Compacted Soils AASHTO T190 / ASTM D2844



Lab Log #	Sample Source	Material	Expansion Pressure (psf) @ 300 (psi)	R-Value @ 300 (psi)
6027	TP - 8 @ 0.5' - 3.5'	Clayey Sand (SC)	0	14

POINT #	WATER CONTENT (%)	DRY DENSITY (PCF)	EXUDATION PRESS. (PSI)	EXPANSION PRESS. (PSF)	RESISTANCE VALUE (R)
1	13.5	119.1	594	0	47
2	14.7	117.7	408	0	29
3	15.4	116.0	282	0	11
4					
5					

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Tel: 775.823.4068
Fax: 775.823.4066

Learner Lemmon

AASHTO ACCREDITED

TESTED BY	JOB NUMBER	APPROVED	DATE	REVISED	DATE
BL	4092001		8/18/2021		

Summary of Water Potential

Sample Number	Moisture Content (%, g/g)	Water Potential (-cm water)	Water Potential (pF)
TP-1 @ 3'-5' (4.9%)	4.85	261,069	5.42
TP-1 @ 3'-5' (12.8%)	12.79	23,149	4.36
TP-1 @ 3'-5' (20.9%)	20.86	12,849	4.11

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WATER POTENTIAL TESTING RESULTS

Geotechnical Investigation
LEARNER LEMMON
D.R. HORTON
WASHOE COUNTY, NV
Project No.: 4092001
Date: 08/12/21

PLATE A-4e

SilverState Analytical Laboratories
Sierra Environmental Monitoring
Silver State Labs-Reno
1135 Financial Blvd
Reno, NV 89502
(775) 857-2400 FAX: (888) 398-7002
www.ssalabs.com

Analytical Report

Workorder#: 21080478
Date Reported: 8/23/2021

Client: Wood Rodgers
Project Name: Learner Lemmon Prj# 4092001 / TP-7 @ 2-4'
PO #: LAB 3961

Sampled By: Client

Laboratory Accreditation Number: NV015/CA2990

Laboratory ID	Client Sample ID	Date/Time Sampled	Date Received
21080478-01	TP-7 @ 2-4'	08/09/2021 12:00	8/10/2021

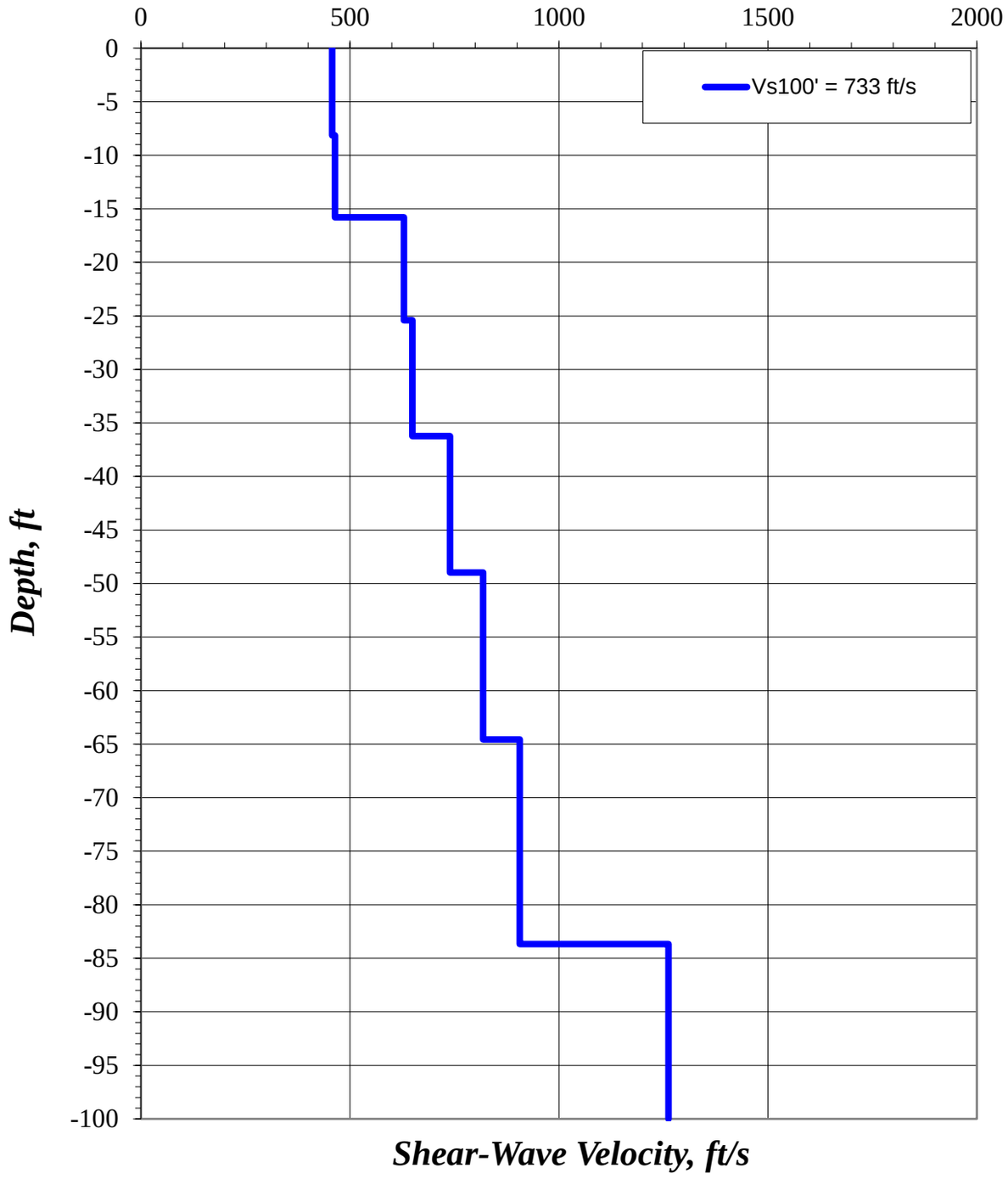
Parameter	Method	Result	Units	PQL	Analyst	Date/Time Analyzed	Data Flag
Chloride	EPA 9056	< 5	mg/Kg	5	CW	08/16/2021 23:54	
Oxidation-Reduction Potential	SM 2580B	472	mV		AC	08/20/2021 12:33	
pH	SW-846 9045D	7.72	pH Units		AC	08/18/2021 14:29	
pH Temperature	SW-846 9045D	21.0	°C		AC	08/18/2021 14:29	
Resistivity	AASHTO T288	2300	Ohms-cm		SR	08/17/2021 11:12	
Sodium	ASTM D2791	< 0.01	%	0.01	AC	08/20/2021 8:37	
Sodium Sulfate as Na2SO4	Calculation	< 0.01	%	0.01	AC	08/20/2021 10:21	
Sulfate	SM4500 SO4E	< 0.01	%	0.01	AC	08/23/2021 9:07	
Sulfide	AWWA C105	Negative	POS/NEG		AC	08/17/2021 16:00	

Laboratory Accreditation Number: NV015/CA2990

Laboratory ID	Client Sample ID	Date/Time Sampled	Date Received
21080478-02	TP-5 @ 1-2.5'	08/09/2021 12:00	8/10/2021

Parameter	Method	Result	Units	PQL	Analyst	Date/Time Analyzed	Data Flag
Chloride	EPA 9056	100	mg/Kg	50	CW	08/17/2021 0:22	
Oxidation-Reduction Potential	SM 2580B	488	mV		AC	08/20/2021 12:33	
pH	SW-846 9045D	7.37	pH Units		AC	08/18/2021 14:29	
pH Temperature	SW-846 9045D	21.0	°C		AC	08/18/2021 14:29	
Resistivity	AASHTO T288	280	Ohms-cm		SR	08/17/2021 11:12	
Sodium	ASTM D2791	< 0.01	%	0.01	AC	08/20/2021 8:37	
Sodium Sulfate as Na2SO4	Calculation	< 0.01	%	0.01	AC	08/20/2021 10:21	
Sulfate	SM4500 SO4E	1.3	%	0.01	AC	08/23/2021 9:07	
Sulfide	AWWA C105	Negative	POS/NEG		AC	08/17/2021 16:00	

Learner Lemmon, 165': Vs Model



WOOD RODGERS
1361 Corporate Boulevard, Reno, NV 89502
Phone 775.823.4068 Fax 775.823.4066

L1 - S-WAVE ReMi RESULTS

Geotechnical Investigation
LEARNER LEMMON
D.R. HORTON
WASHOE COUNTY, NV

Project No.: 4092001
Date: 08/12/21

PLATE A-5

APPENDIX B
ASCE 7 HAZARDS REPORT

ASCE 7 Hazards Report

Address:
No Address at This Location

Standard:	ASCE/SEI 7-16	**Elevation:**	4928.89 ft (NAVD 88)
Risk Category:	II	**Latitude:**	39.6451
Soil Class:	D - Stiff Soil	**Longitude:**	-119.8459

Seismic

Site Soil Class: D - Stiff Soil

Results:

S_S :	1.484	S_{D1} :	N/A
S_1 :	0.503	T_L :	6
F_a :	1	PGA :	0.632
F_v :	N/A	PGA_M :	0.695
S_{MS} :	1.484	F_{PGA} :	1.1
S_{M1} :	N/A	I_e :	1
S_{DS} :	0.989	C_v :	1.397

Ground motion hazard analysis may be required. See ASCE/SEI 7-16 Section 11.4.8.

Data Accessed: Tue Aug 17 2021

Date Source: USGS Seismic Design Maps

The ASCE 7 Hazard Tool is provided for your convenience, for informational purposes only, and is provided “as is” and without warranties of any kind. The location data included herein has been obtained from information developed, produced, and maintained by third party providers; or has been extrapolated from maps incorporated in the ASCE 7 standard. While ASCE has made every effort to use data obtained from reliable sources or methodologies, ASCE does not make any representations or warranties as to the accuracy, completeness, reliability, currency, or quality of any data provided herein. Any third-party links provided by this Tool should not be construed as an endorsement, affiliation, relationship, or sponsorship of such third-party content by or from ASCE.

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In using this Tool, you expressly assume all risks associated with your use. Under no circumstances shall ASCE or its officers, directors, employees, members, affiliates, or agents be liable to you or any other person for any direct, indirect, special, incidental, or consequential damages arising from or related to your use of, or reliance on, the Tool or any information obtained therein. To the fullest extent permitted by law, you agree to release and hold harmless ASCE from any and all liability of any nature arising out of or resulting from any use of data provided by the ASCE 7 Hazard Tool.

PROJECT LIMITS

LEAR BLVD

S89°04'07"E 655.92'

PAN AMERICAN WAY

080-461-08

FLEETWOOD DR

S89°21'56"E 658.20'

S89°14'11"E 840.06'

BUDGER WAY

NOTES

EXISTING VEGETATION: CHAPARRAL SHRUBLAND, NO TREES.
TOPOGRAPHY: LEVEL SITE WITH 10' OF FALL ACROSS SITE DRIANING FROM SOUTH TO NORTH
SIGNIFICANT VIEWS: NONE
EASEMENT: MINIMAL/ NO SIGNIFICANT EASEMENTS
ACCESS POINT: OFF OF PAN AMERICAN DRIVE

*The project as proposed complies with all aspects of the Washoe County Master Plan, North Valleys Area Plan, and Wahoe County Devlopment Code.

LEGEND

EXISTING LAND USE: RURAL DESIGNATION

EXISTING LAND USE: SUBURBAN RESIDENTIAL

PREVAILING WINDS FROM WEST

0 30 60 120 FEET

REGISTERED LANDSCAPE ARCHITECT MELISSA RUTH 1105 Expires: 06/30/23 STATE OF NEVADA

CALA

LEARNER LEMMON OPPORTUNITY AND CONSTRAINTS MAP

Washoe County, Nevada

CALLANDER PROJECT NUMBER: 23019 | DATE: 05.04.2023 | CALLANDER ASSOCIATES

L3

TRAFFIC IMPACT STUDY

LEARNER-LEMMON SINGLE-FAMILY

RENO, NV

APN: 080-461-08

Prepared for:
LC Learner, LLC.
31103 Rancho Viejo Road, Suite D3099
San Juan Capistrano, CA 92675

Prepared by:
Kimley»Horn

March 2023 (Revised November 2023)
192349000

TRAFFIC IMPACT STUDY

FOR

LEARNER-LEMMON SINGLE-FAMILY

Prepared for:
LC Learner, LLC
27132B Paseo Espada, Suite 1226
San Juan Capistrano, CA 92675

Prepared by:
Kimley-Horn and Associates, Inc.
7900 Rancharrah Parkway
Suite 100
Reno, Nevada 89511
(775) 787-7552

192349000

EXECUTIVE SUMMARY

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

The proposed single-family residential development is to be generally located at the southeast corner of Pan American Way and the future Lear Boulevard on approximately 19.93 Acres within APN 080-461-08 in Reno, Nevada. Upon completion, the buildout of the proposed development is anticipated to consist of 87 detached single-family residential buildings.

Regional access to the residential development is expected to be provided via US-395. Primary access to the project site is anticipated to be from Lemmon Drive. Direct access to the site is planned to be provided by two (2) full access drives located on Pan American Way.

The Washoe County scope of study dated January 27, 2023, identified four (4) intersections for full analysis:

- Fleetwood Drive and Lemmon Drive (two-stage intersection)
- Fleetwood Drive and Budger Way
- Budger Way and Pan American Way
- Fleetwood Drive and Lear Boulevard

The scope from Washoe County is included in **Appendix A**. The study area intersections and project access drives are shown in **Figure E-1**.

Full buildout of the development is anticipated to generate approximately 61 AM peak hour trips and approximately 84 PM peak hour trips to the surrounding street network.

The proposed 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 drives onto Pan American Drive.
- 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.

Figure E-1 – Project Access Drives and Study Area Intersections

Source: NearMap

TABLE OF CONTENTS

EXECUTIVE SUMMARY I
1. INTRODUCTION 1
2. EXISTING CONDITIONS 3
2.1. Study Area Intersections 3
2.2. Existing Lane Configurations and Control 3
2.3. Existing Turning Movements 3
3. FUTURE CONDITIONS 6
3.1. 2026 Background Lane Configuration and Control 6
3.2. 2026 Buildout Background Traffic 6
3.3. Project Trip Generation 10
3.4. Project Trip Distribution 10
3.5. Traffic Assignment 10
3.6. 2026 Background Plus Project Traffic Volumes 11
4. TRAFFIC IMPACT ANALYSIS 16
4.1. Analysis Methodology 16
4.2. Key Intersection Operational Analysis 16
5. CRASH DATA SUMMARY 18
6. CONCLUSIONS/RECOMMENDATIONS 19

LIST OF FIGURES

Figure E-1 – Project Access Drives and Study Area Intersections ii
Figure 1 – Vicinity Map 2
Figure 2 – Existing Lane Configurations and Traffic Control 4
Figure 3 – 2023 Existing Peak Hour Traffic Volumes 5
Figure 4 – 2026 Background Plus Project Lane Configuration and Traffic Control 7
Figure 5 – 2026 Background Peak Hour Traffic Volumes 8
Figure 6 – 2050 Background Peak Hour Traffic Volumes 9
Figure 7 – Project Trip Distribution 12
Figure 8 – Project Traffic Assignment 13
Figure 9 – 2026 Background Plus Project Peak Hour Traffic Volumes 14
Figure 10 – 2050 Background Plus Project Peak Hour Traffic Volumes 15

LIST OF TABLES

Table 1 – Peak Hour Turning Movement Count Dates 3
Table 2 – 2050 Growth Rate Summary 6
Table 3 – Trip Generation 10
Table 4 – Level of Service Definitions 16
Table 5 – Key Intersection Peak Hour LOS Analysis 17
Table 6 – Crash Data Summary 18

LIST OF APPENDICES

Appendix A Scope of Study

Appendix B Count Data

Appendix C Trip Generation Calculations

Appendix D Key Intersection Peak Hour LOS Calculations

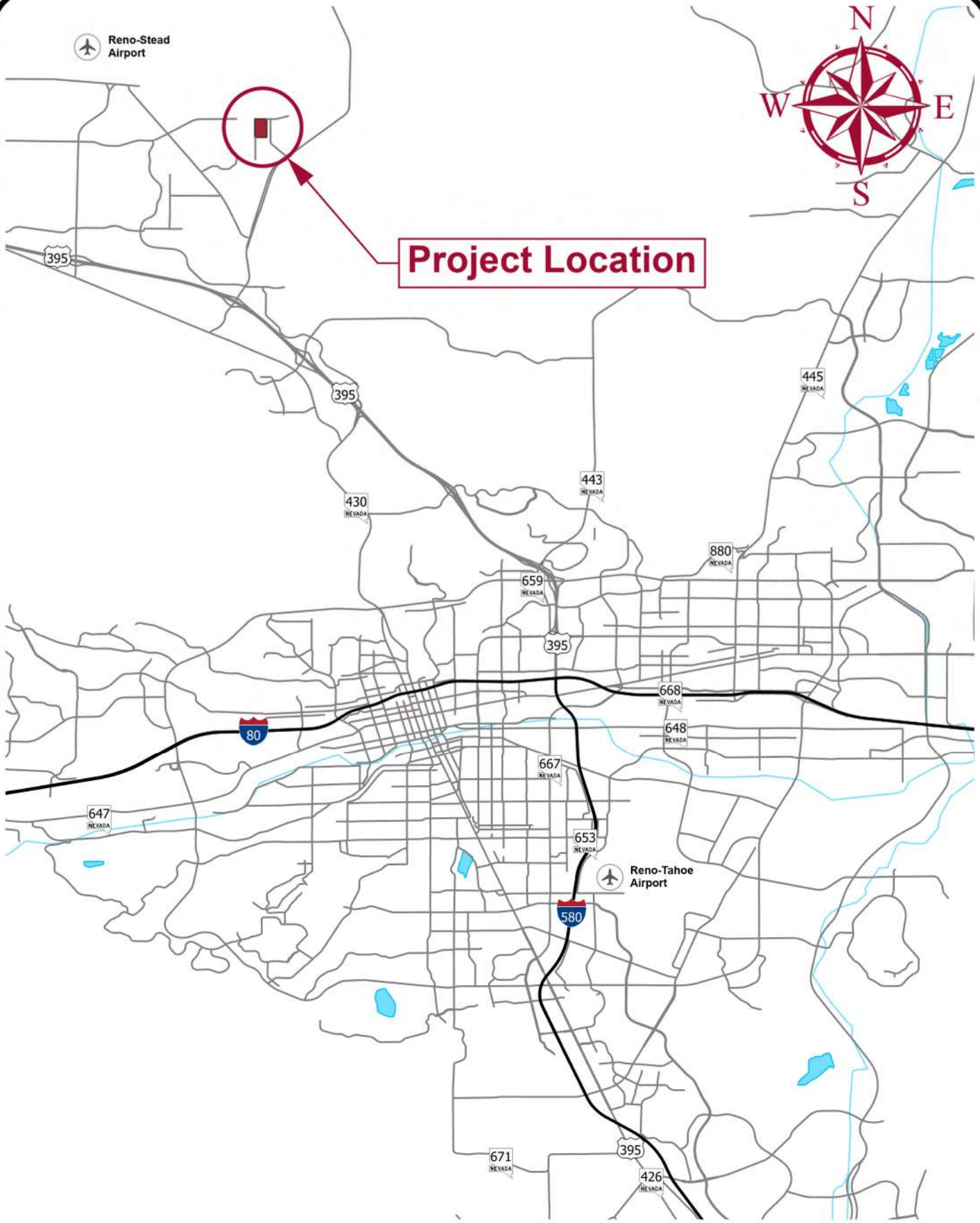
Appendix E Site Plan

1. INTRODUCTION

Kimley-Horn and Associates, Inc. has been retained by LC Learner, LLC to prepare a traffic impact study for a single-family residential development. 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 single-family residential development is to be generally located at the southeast corner of Pan American Way and the future Lear Boulevard on approximately 19.93 Acres within APN 080-461-08 in Reno, Nevada. Upon completion, the buildout of the proposed development is anticipated to consist of 87 detached single-family residential buildings. A site plan for the proposed development is located in **Appendix G**. The location of the project site with respect to the City of Reno is shown on **Figure 1**.

Regional access to the development is expected to be provided via US-395. Primary access to the project site is anticipated to be from Lemmon Drive. Direct access to the site is planned to be provided by two (2) full access drives located on Pan American Way.



Learner-Lemmon Single-Family Vicinity Map

Figure 1

2. EXISTING CONDITIONS

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

2.1. Study Area Intersections

The Washoe County scope dated January 27, 2023, identified four (4) intersections for full analysis:

- Fleetwood Drive and Lemmon Drive (two-stage intersection)
- Fleetwood Drive and Budger Way
- Budger Way and Pan American Way
- Fleetwood Drive and Lear Boulevard

The location for the single-family residential project is currently undeveloped. The area surrounding the project site is composed primarily of residential and commercial uses. The location of the project site, study area intersections and existing land uses are shown on **Figure E-1**.

2.2. Existing Lane Configurations and Control

Regional access to the development is expected to be provided via US-395. Primary access to the project site is anticipated to be from Lemmon Drive. Direct access to the site is planned to be provided by two (2) full access drives located on Pan American Way. Existing speed limits, lane configuration, and traffic control at the time of this study are illustrated in **Figure 2**.

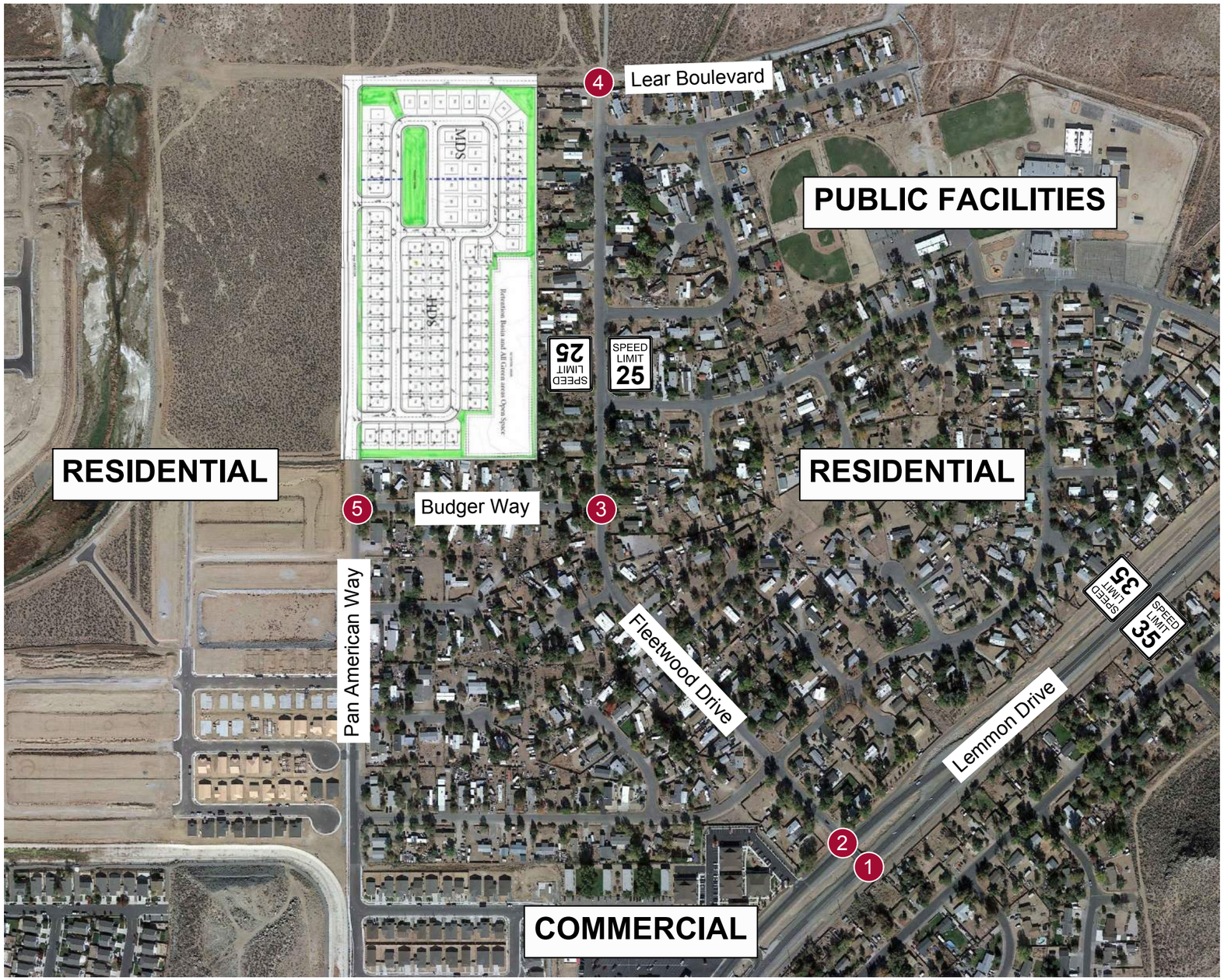
2.3. Existing Turning Movements

AM and PM peak hour turning movement data was field counted on February 2, 2023, 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 – Peak Hour Turning Movement Count Dates

Intersection	Count Date
Fleetwood Drive and Lemmon Drive (#1, #2)	Thursday, February 2, 2023
Fleetwood Drive and Budger Way (#3)	Thursday, February 2, 2023
Budger Way and Pan American Way (#4)	Thursday, February 2, 2023
Fleetwood Drive and Lear Boulevard (#5)	Thursday, February 2, 2023

Figure 3 illustrates the 2023 existing peak hour traffic volumes.



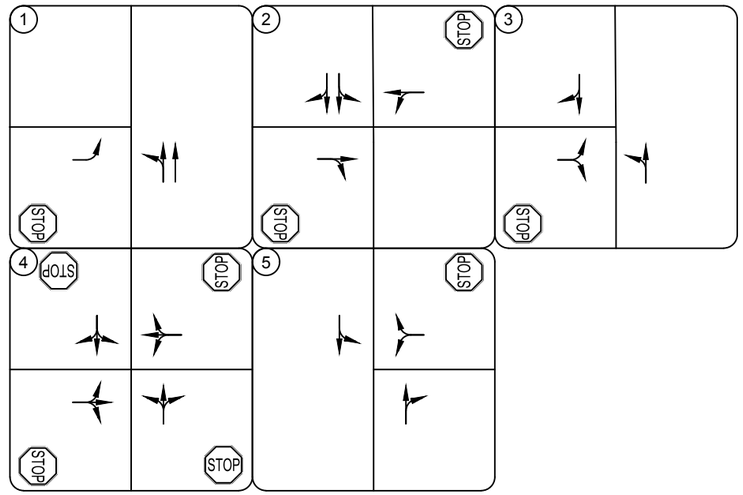
Study Area Intersections

1. Fleetwood Drive and Lemmon Drive Northbound
2. Fleetwood Drive and Lemmon Derive Southbound
3. Fleetwood Drive and Budger Way
4. Fleetwood Drive and Lear Boulevard
5. Budger Way and Pan American Way

North

NTS

2023 Existing Lane Configuration and Control



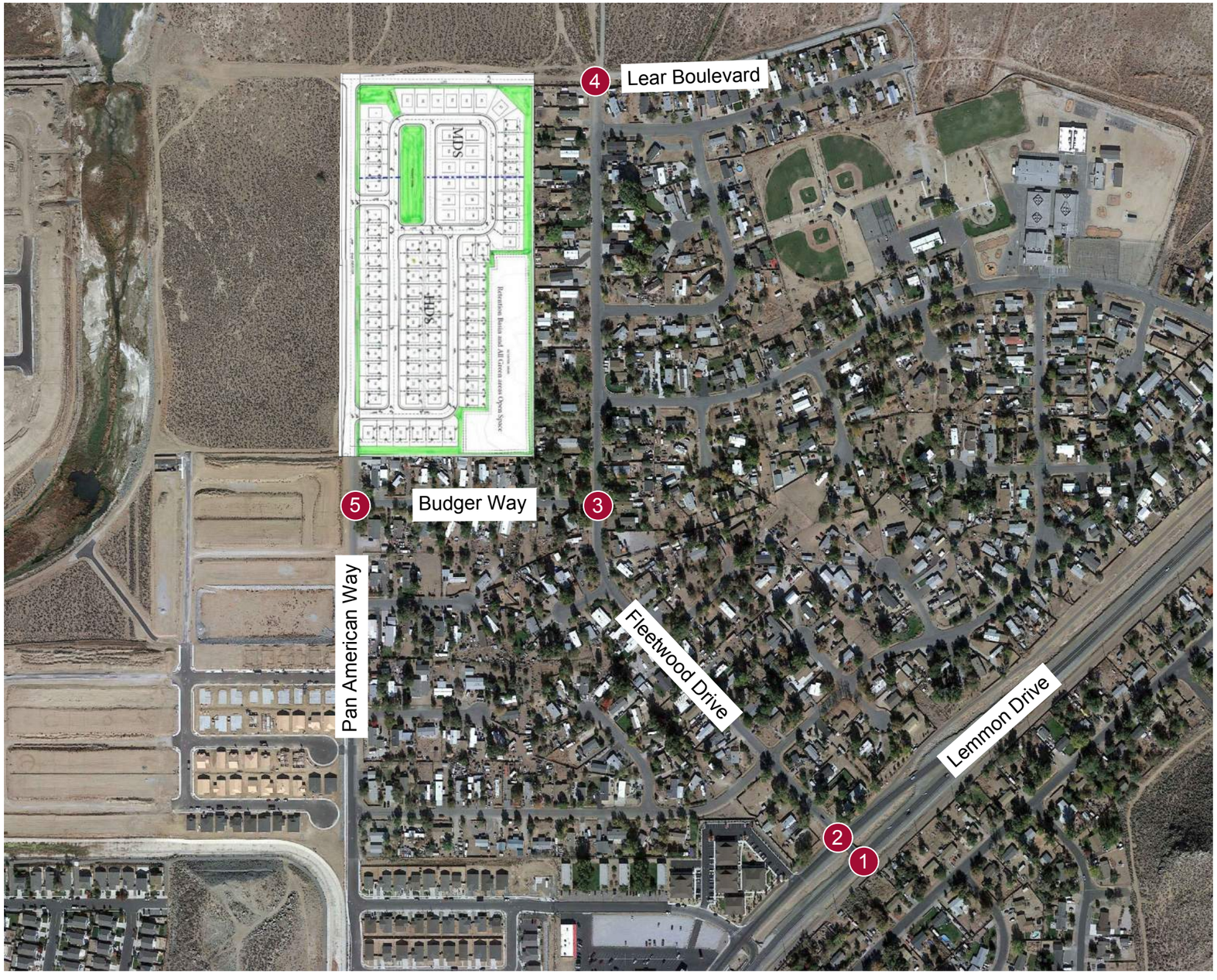
Legend

- Study Area Key Intersection
- Existing Approach
- Stop Controlled Intersection
- Roadway Speed Limit
- Signal Controlled Intersection

Lemmon Learner Single Family
Study Area, 2023 Exiting Lane Configuration and Traffic Control

Figure 2

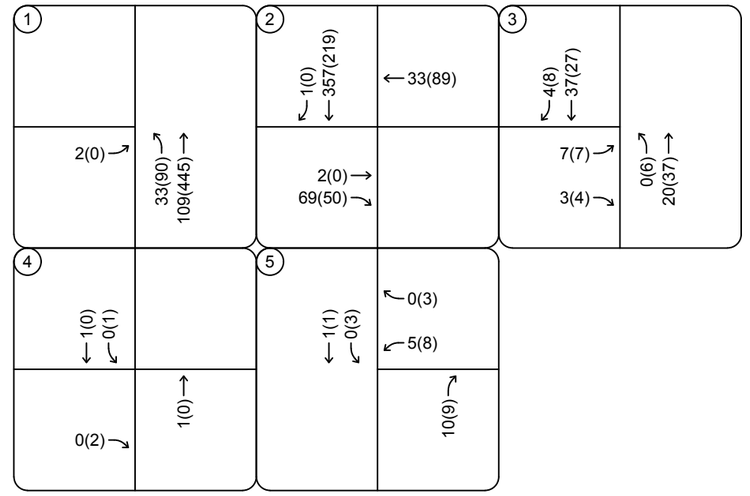
Kimley»Horn ©2023



North

NTS

2023 Existing Peak Hour Traffic Volumes



Legend

1	Study Area Key Intersection
←XX(XX)	AM(PM) Peak Hour Traffic Volumes

Lemmon Learner Single Family
2023 Existing Peak Hour Traffic Volumes

Figure 3

Kimley»Horn ©2023

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. 2026 Background Lane Configuration and Control

Regional access to the development is expected to be provided via US-395. Primary access to the project site is anticipated to be from Lemmon Drive. Direct access to the site is planned to be provided by two (2) full access drives located on Pan American Way. Expected speed limits, lane configuration, and traffic control in 2026 are expected remain the same as the 2023 existing speed limits, lane configuration and traffic control illustrated in **Figure 2** with the exception of the project access drives which are illustrated in **Figure 4**.

3.2. 2026 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. The closest Nevada Department of Transportation (NDOT) count station (0310926) has recently shown negative growth. To provide a conservative analysis, existing year (2023) peak hour traffic volumes were grown for three (3) years at a 2 percent (2%) annual growth rate to obtain future background traffic volumes in 2026 when the proposed development is anticipated to be fully completed. The 2026 background peak hour traffic volumes at the key intersections are illustrated in **Figure 5**.

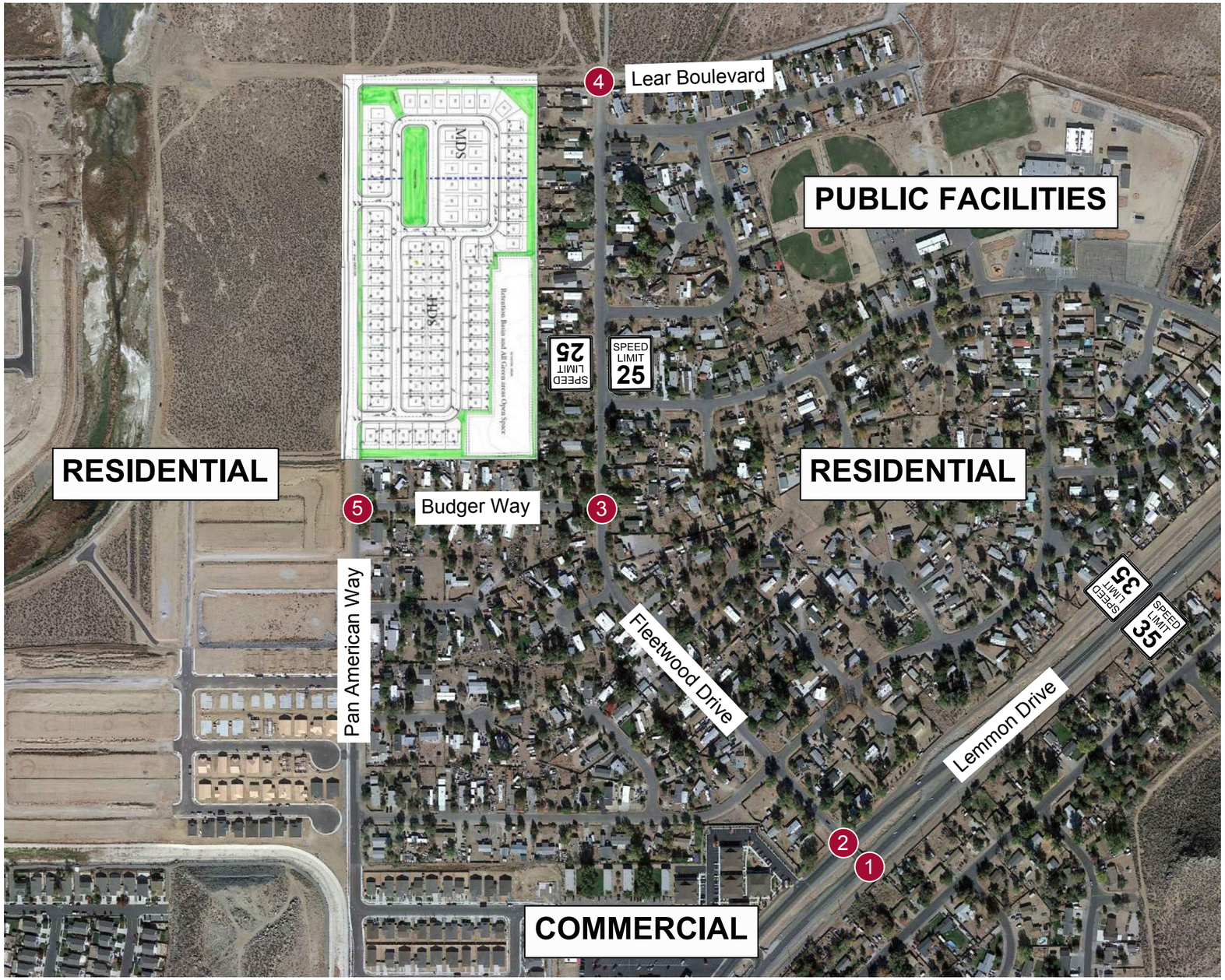
3.3. 2050 Buildout Background Traffic

Forecasted traffic volumes for the 2050 year were obtained using the Regional Transportation Commission – Washoe (RTC) Travel Demand Model 2050 Model Output. Traffic volumes were obtained for 2025 and 2050 for Lemmon Drive at Patrician Drive 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 2**. The 2050 background peak hour traffic volumes at the key intersections are illustrated in **Figure 6**.

Table 2 – 2050 Growth Rate Summary

Intersection Location	Approach	2025 Volumes (Vehicles)	2050 Volumes (Vehicles)	Annual Growth Rate
Fleetwood Drive and Lemmon Drive (#1, #2)	Northbound	5,838	7,693	1.39%
	Southbound	5,838	7,693	1.39%

Source: RTC Washoe Travel Demand Model



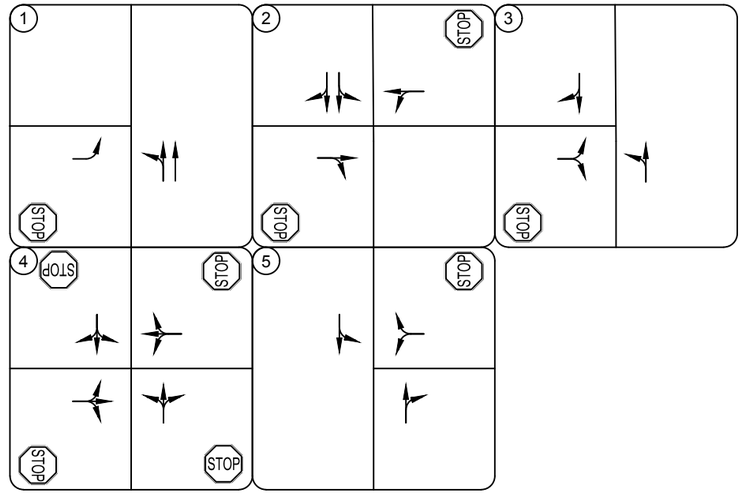
Study Area Intersections

1. Fleetwood Drive and Lemmon Drive Northbound
2. Fleetwood Drive and Lemmon Derive Southbound
3. Fleetwood Drive and Budger Way
4. Fleetwood Drive and Lear Boulevard
5. Budger Way and Pan American Way

North

NTS

2026 Background Lane Configuration and Control



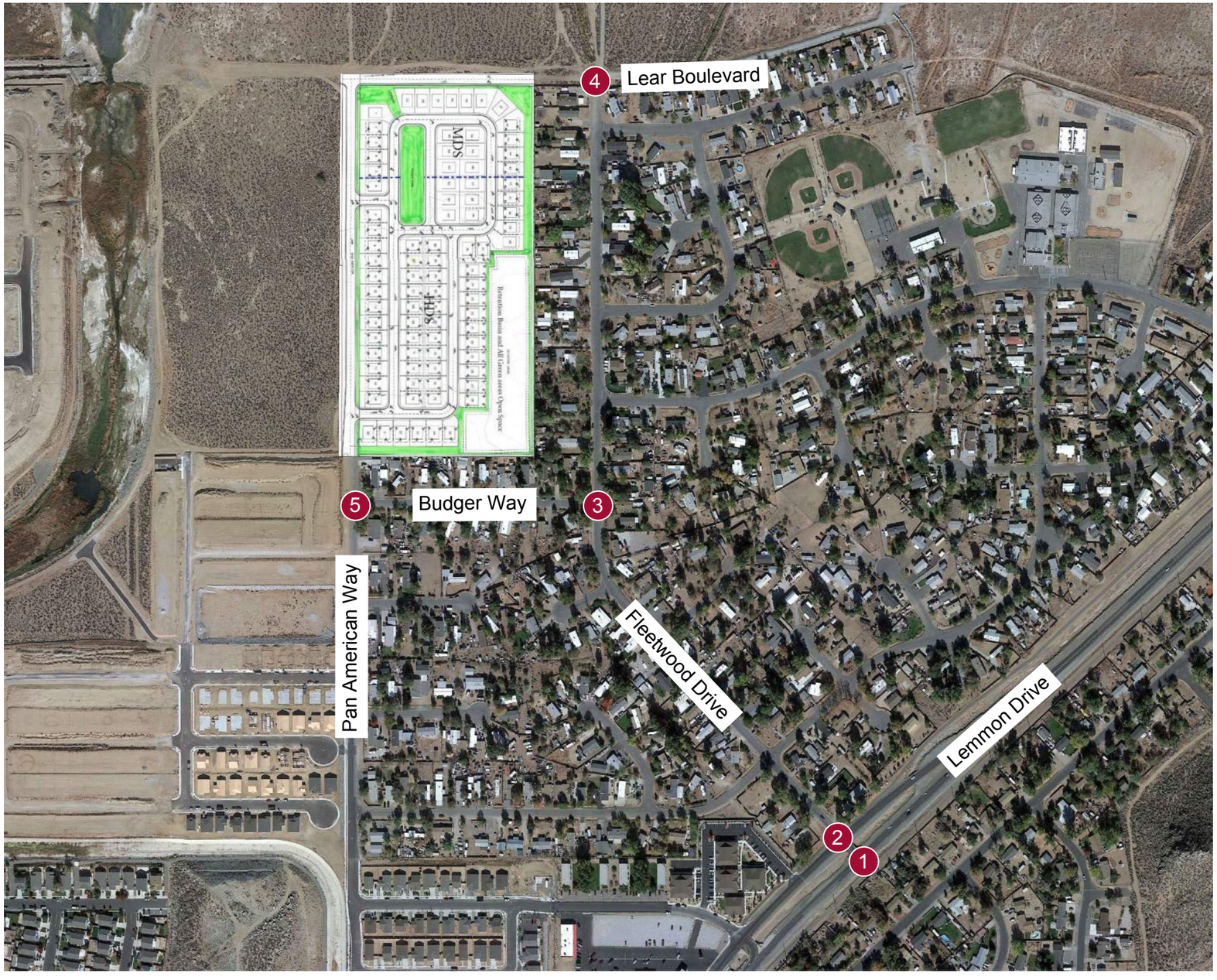
Legend

- 1 — Study Area Key Intersection
- Existing Approach
- STOP — Stop Controlled Intersection
- SPEED LIMIT 25 — Roadway Speed Limit

Learner Lemmon Single Family
2026 Background Plus Project Lane Configuration and Traffic Control

Figure 4

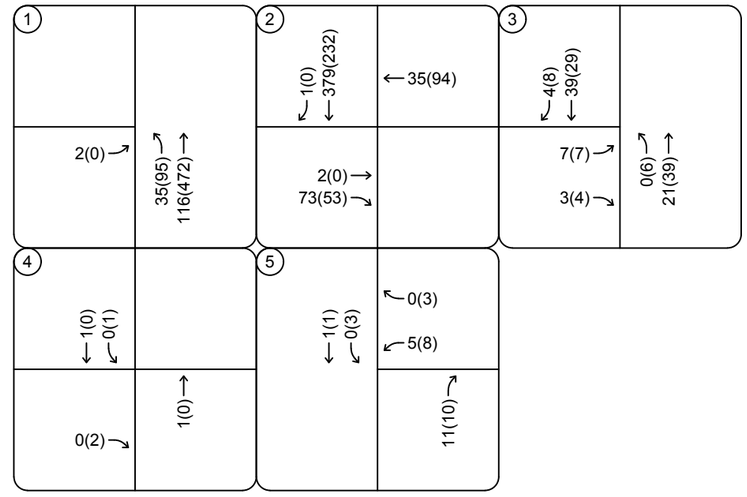
Kimley»Horn ©2023



North

NTS

2026 Background Peak Hour Traffic Volumes



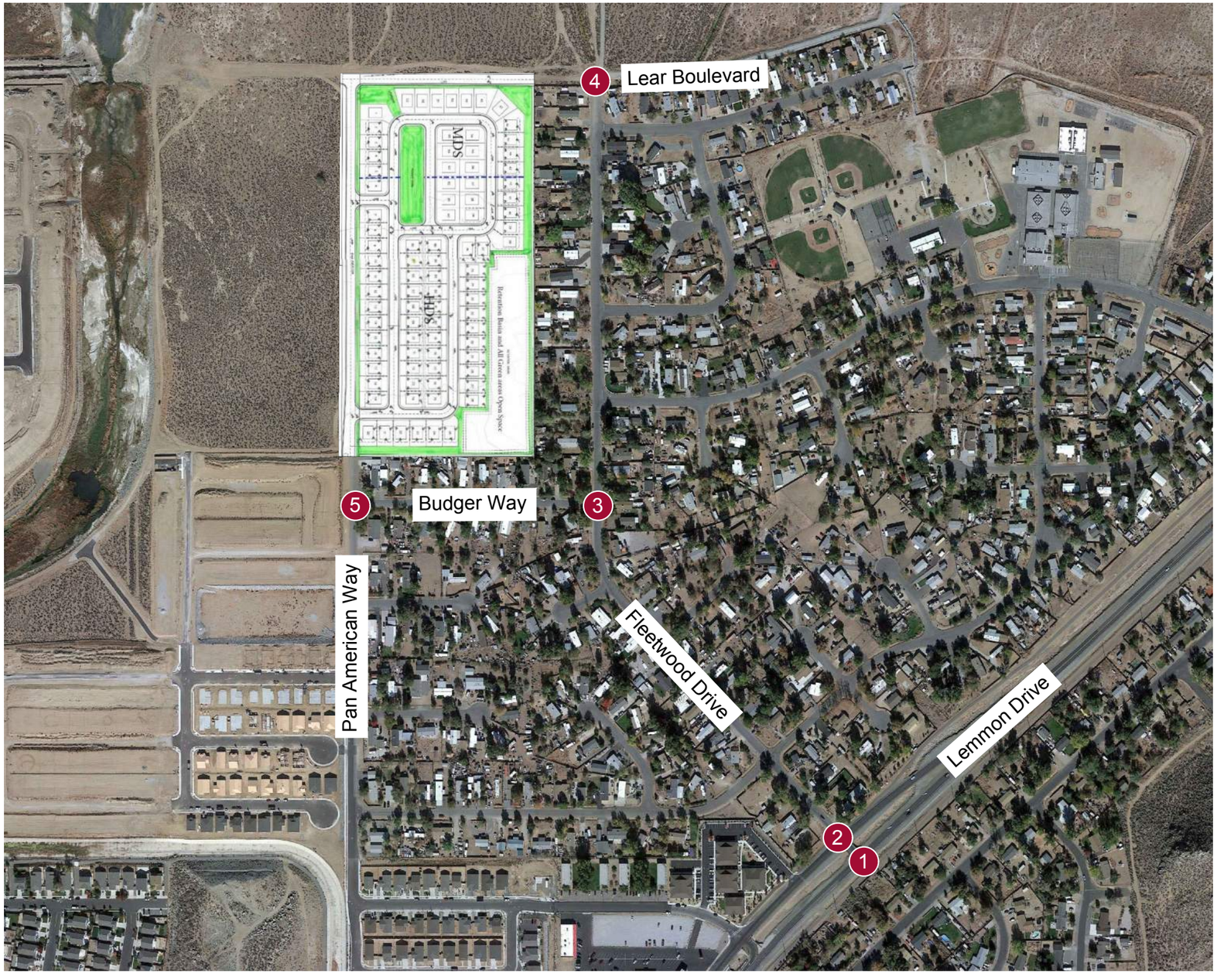
Legend

1	Study Area Key Intersection
A	Project Access Drive
←XX(XX)	AM(PM) Peak Hour Traffic Volumes

Learner Lemmon Single Family
2026 Background Peak Hours Traffic Volumes

Figure 5

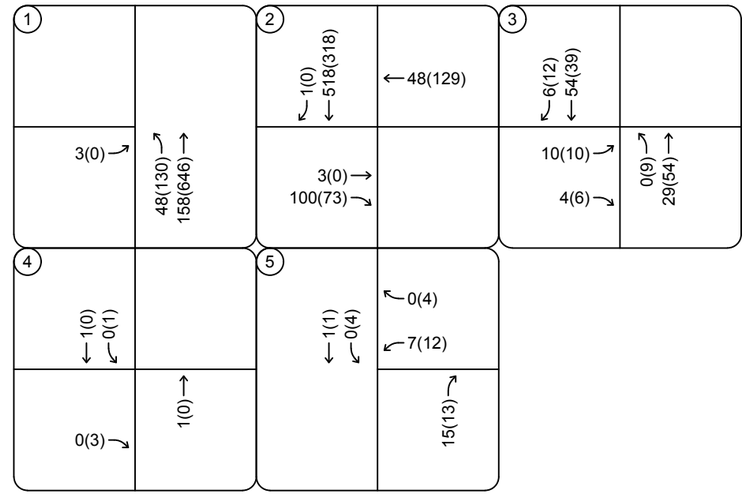
Kimley»Horn ©2023



North

NTS

2050 Background Project Peak Hour Volumes



Legend

1	Study Area Key Intersection
A	Project Access Drive
←XX(XX)	AM(PM) Peak Hour Traffic Volumes

Learner Lemmon Single Family
2050 Background Peak Hour Volumes

Figure 6

Kimley»Horn ©2023

3.4. Project Trip Generation

For purposes of estimating the number of new trips that are anticipated to be generated by the proposed residential development, the Institute of Transportation Engineers (ITE) Trip Generation Manual, 11th Edition (ITE Land Use Codes 210 – Single-Family Detached Housing 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.

The project is expected to consist of 87 single-family residential lots. **Table 3** summarizes the estimated project trips. The proposed development is anticipated to generate 242 AM and 256 PM peak hour trips. Calculations are provided in **Appendix D**.

Table 3 – Trip Generation

ITE Code	Description	Dwelling Units	AM Peak Hour			PM Peak Hour			Total Daily Trips
			In	Out	Total	In	Out	Total	
210	Single-Family Detached Housing	87	15	46	61	52	30	82	820
Total			**15**	**46**	**61**	**52**	**30**	**82**	**820**

Source: ITE Trip Generation Manual, 11th Edition

3.5. Project Trip Distribution

The study area street network characteristics, including the existing traffic patterns, expected street network, and access to regional facilities 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 7** shows the project trip distribution at the study area intersections and the project access drive. It should be noted that distribution prepared in this study is conservative. It is possible that a portion of traffic will ingress and egress via Limber Pine Drive, which would result in levels of service (LOS) comparable to or better than shown in this report.

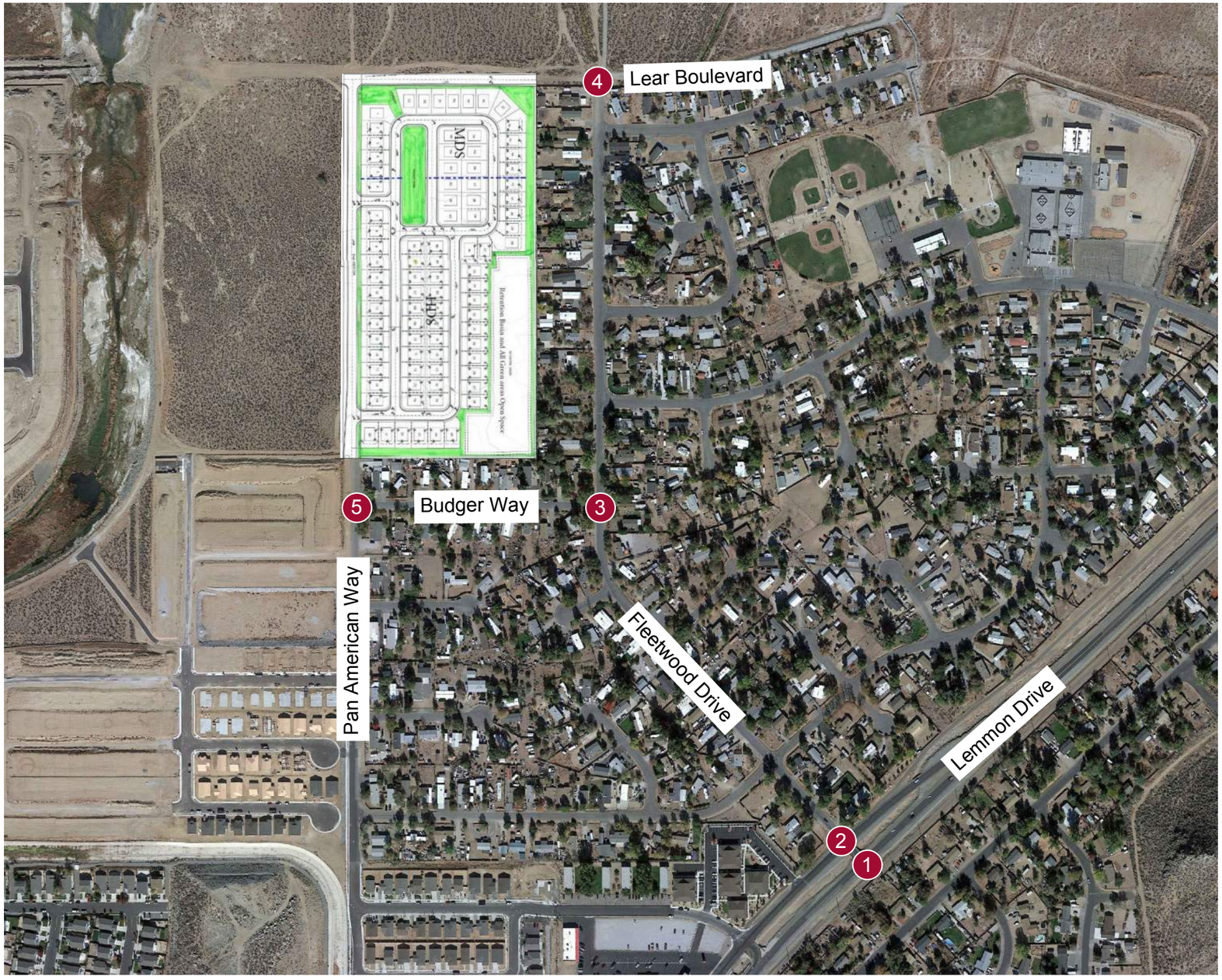
3.6. Traffic Assignment

Assignment of project traffic was obtained by applying the developed trip distribution in **Figure 7** to the estimated traffic generation in **Table 3**. Project traffic assignment is illustrated in **Figure 8** for the study area intersections and the project access drive.

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.

3.7. Background Plus Project Traffic Volumes

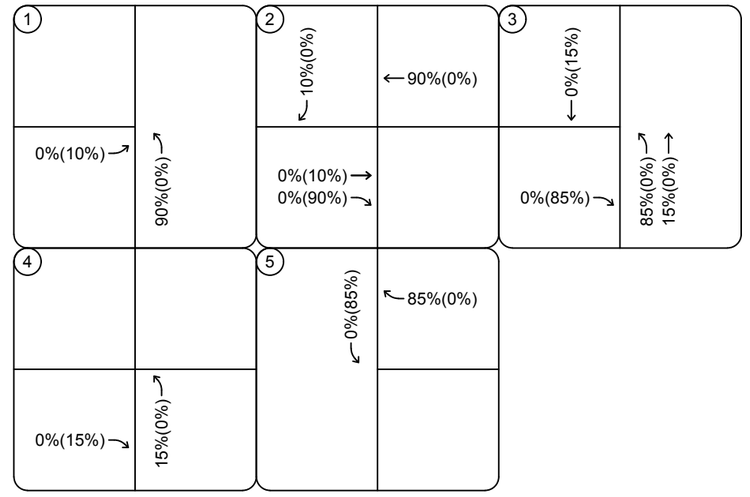
The project generated traffic volumes in **Figure 8** were added to the 2026 background traffic volumes in **Figure 9** and 2050 background traffic volumes in **Figure 10** to represent estimated traffic conditions for full project development. The 2026 and 2050 background plus project peak hour traffic volumes for the study area intersections and the project access drive are illustrated in **Figure 9** and **Figure 10**, respectively. Assuming that traffic on Fleetwood Drive is generated exclusively by single-family residential traffic, based on peak hour turning movement counts it is estimated that with the inclusion of this project the ADT on Fleetwood Drive will not exceed 2,000 immediately south of Budger Way.



North

NTS

Project Trip Distribution



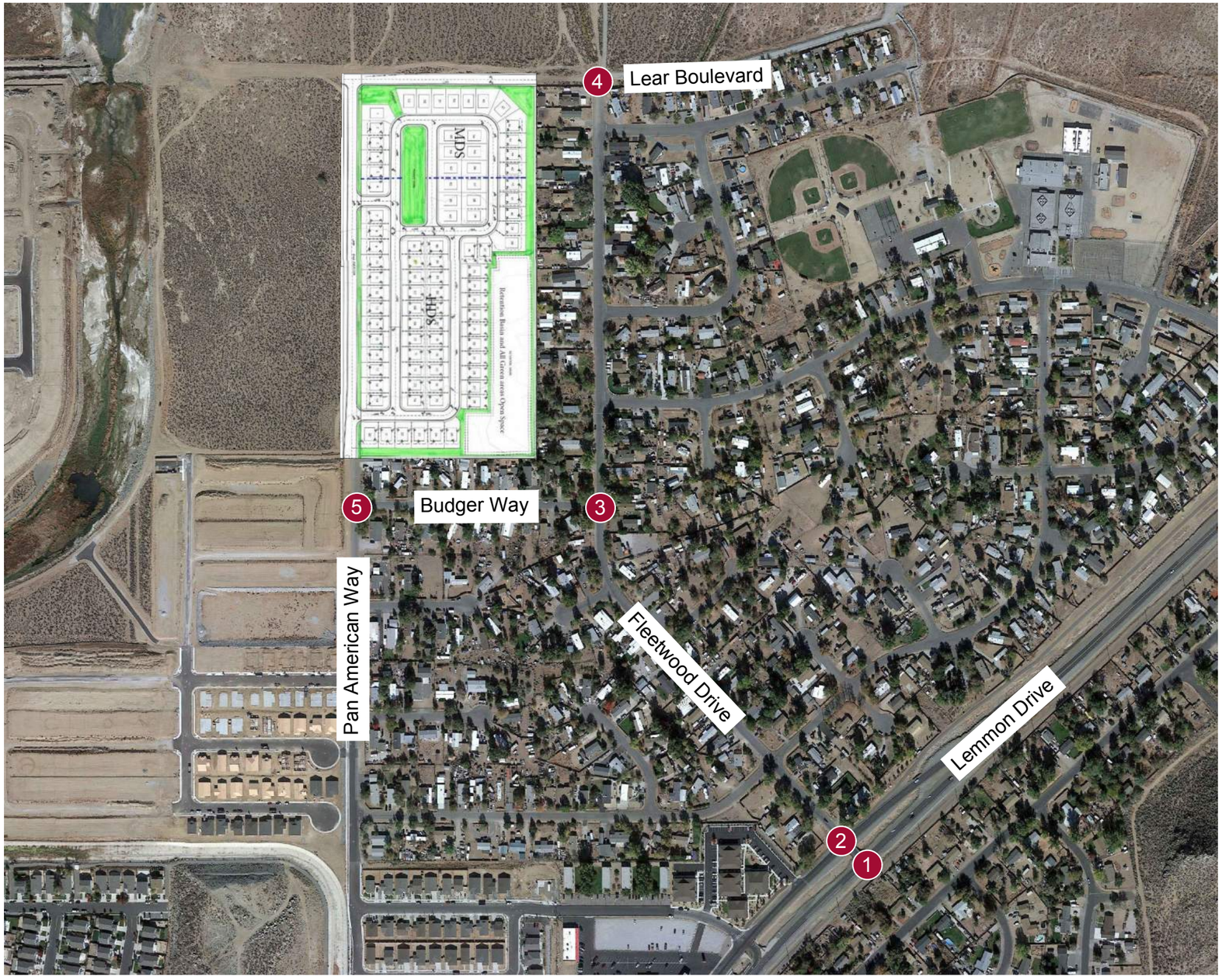
Legend

1	Study Area Key Intersection
←XX%(XX%)	In(Out) Peak Hour Trip Distribution
←XX%→	Global Peak Hour Trip Distribution

Learner Lemmon Single Family
Project Trip Distribution

Figure 7

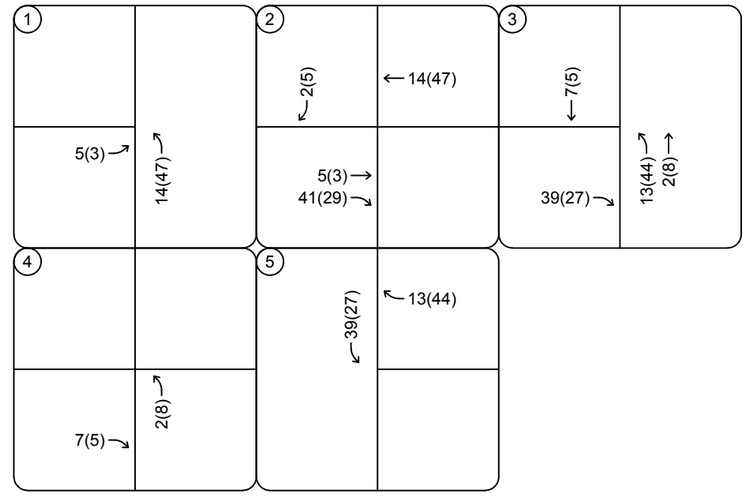
Kimley»Horn ©2023



North

NTS

Project Traffic Assignment



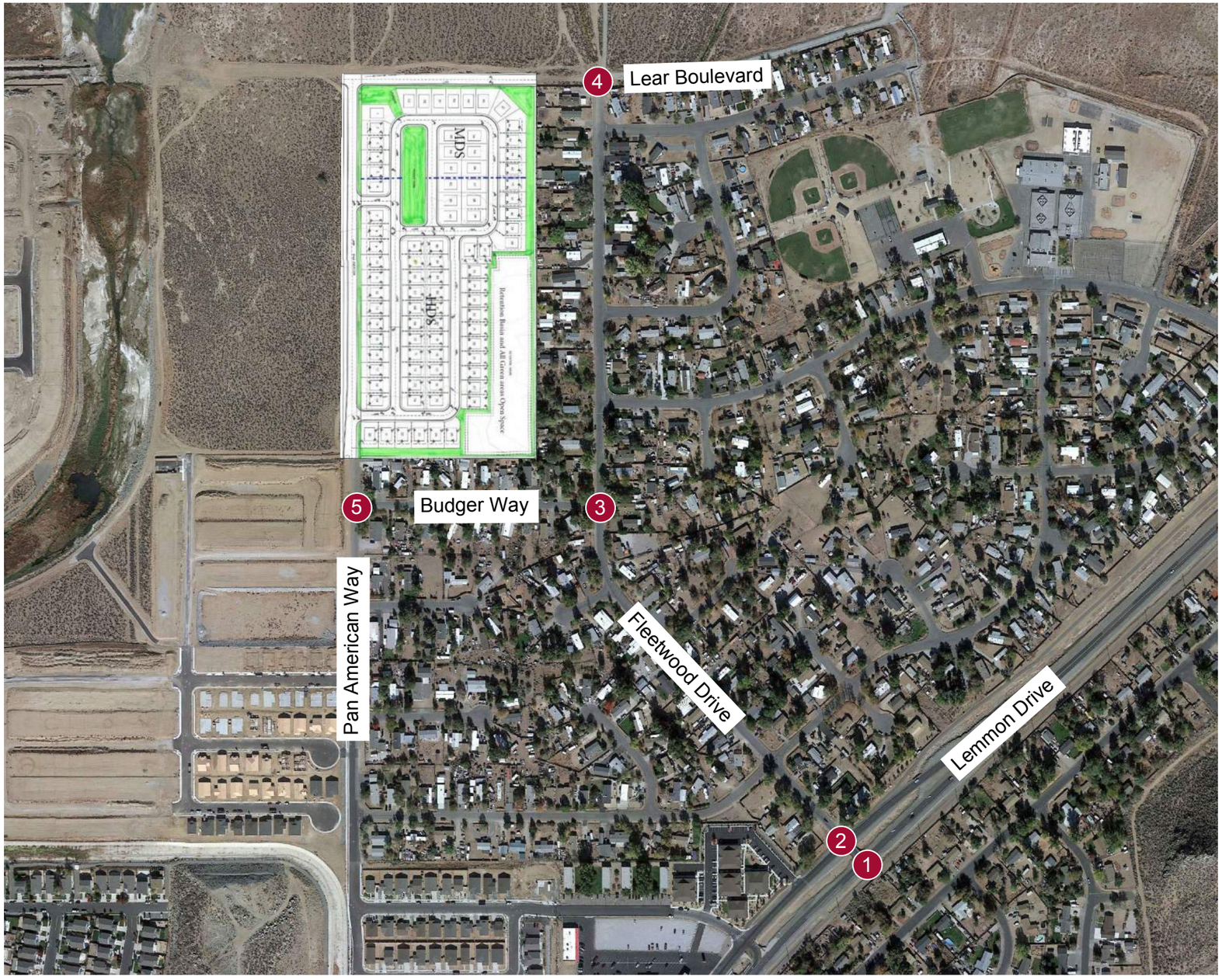
Legend

1	Study Area Key Intersection
A	Project Access Drive
←XX(XX)	AM(PM) Peak Hour Traffic Volumes

Learner Lemmon Single Family
Project Traffic Assignment

Figure 8

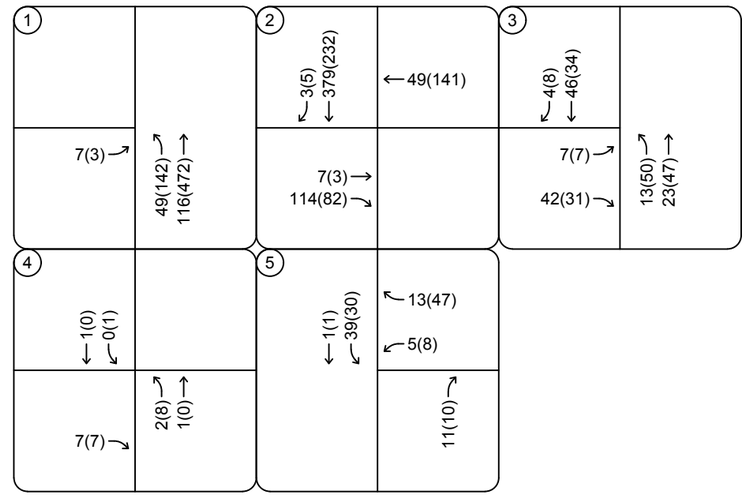
Kimley»Horn ©2023



North

NTS

2026 Background Plus Project Peak Hour Volumes



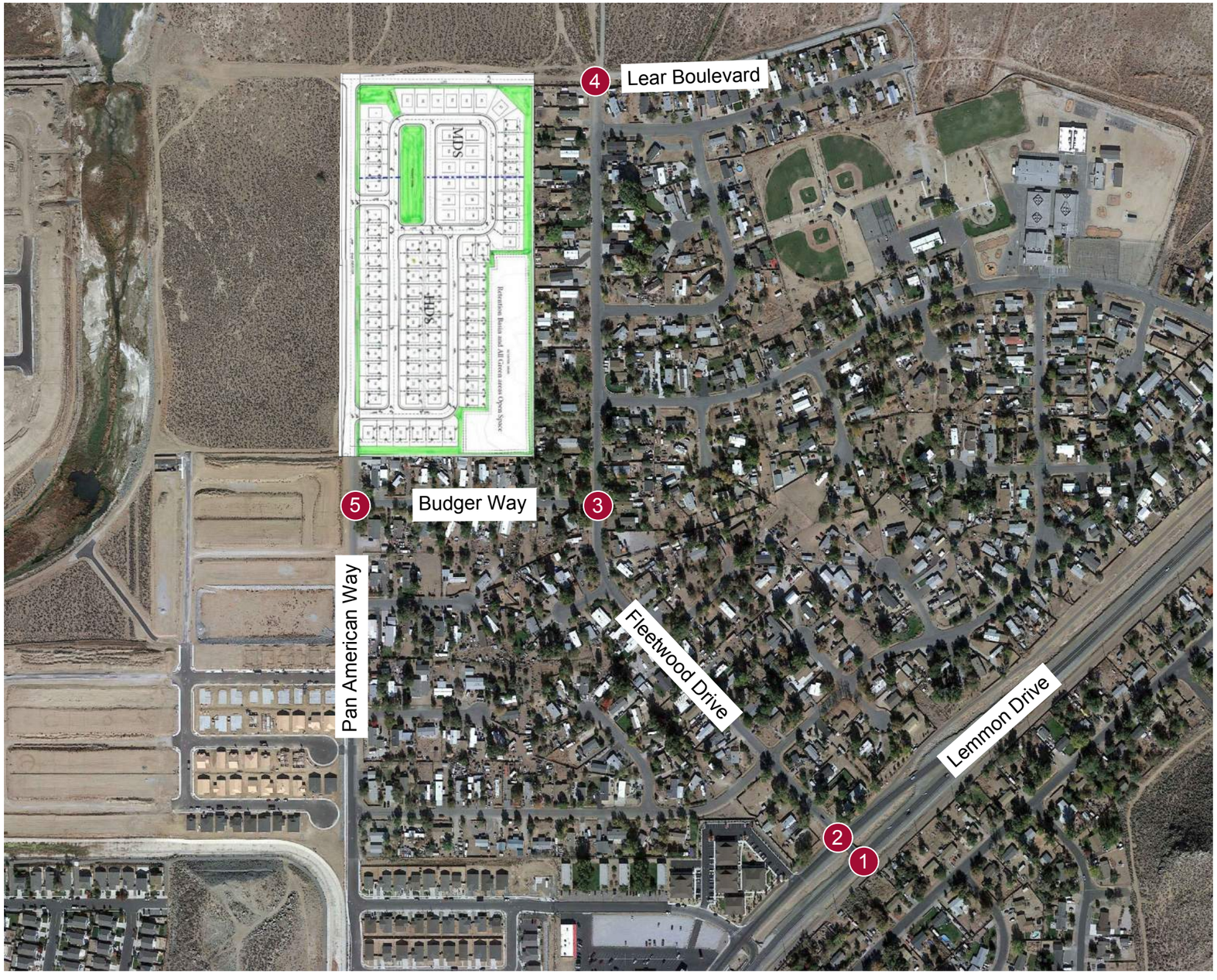
Legend

1	Study Area Key Intersection
A	Project Access Drive
←XX(XX)	AM(PM) Peak Hour Traffic Volumes

Learner Lemmon Single Family
2026 Background Plus Project Peak Hour Volumes

Figure 9

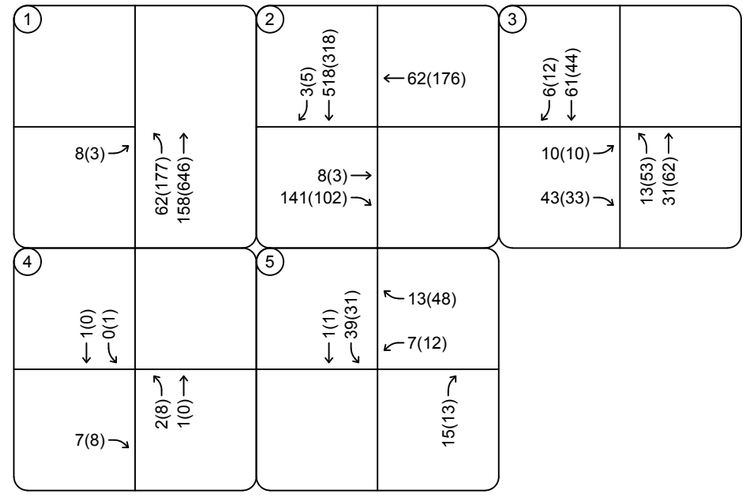
Kimley»Horn ©2023



North

NTS

2050 Background Plus Project Peak Hour Volumes



Legend

1	Study Area Key Intersection
A	Project Access Drive
←XX(XX)	AM(PM) Peak Hour Traffic Volumes

Learner Lemmon Single Family
2050 Background Plus Project Peak Hour Volumes

Figure 10

Kimley»Horn ©2023

4. TRAFFIC IMPACT ANALYSIS

Traffic analyses for 2023 existing, 2026 background, 2026 background 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 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 4** shows the definition of LOS for intersections.

Table 4 – 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.

4.2. Key Intersection Operational Analysis

Calculations for the LOS at the key intersections are provided in **Appendix E**. The 2022 existing analysis is based on the lane geometry and intersection control shown in **Figure 2**. The 2025 background, 2025 background plus project, 2050 background, 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 5**.

Table 5 – Key Intersection Peak Hour LOS Analysis

Intersection	2023 Existing		2026 Background*		2026 Background Plus Project		2050 Background		2050 Background Plus Project	
	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
	Delay (LOS)	Delay (LOS)	Delay (LOS)	Delay (LOS)	Delay (LOS)	Delay (LOS)	Delay (LOS)	Delay (LOS)	Delay (LOS)	Delay (LOS)
Fleetwood Drive and Lemmon Drive (#1) Two-Way Stop Control Eastbound	9.3 (A)	0.0 (A)	9.3 (A)	0.0 (A)	9.5 (A)	13.4 (B)	9.7 (A)	0.0 (A)	9.9 (A)	15.9 (C)
Fleetwood Drive and Lemmon Drive (#2) Two-Way Stop Control Eastbound Westbound	10.0 (B) 12.2 (B)	9.3 (A) 11.6 (B)	10.1 (B) 12.5 (B)	9.3 (A) 11.8 (B)	10.7 (B) 12.7 (B)	9.6 (A) 12.6 (B)	11.2 (B) 14.7 (B)	9.8 (A) 13.7 (B)	11.9 (A) 15.1 (C)	10.2 (B) 15.1 (C)
Fleetwood Drive and Budget Way (#3) Two-Way Stop Control Eastbound	8.9 (A)	8.8 (A)	8.9 (A)	8.8 (A)	9.0 (A)	8.9 (A)	9.1 (A)	9.0 (A)	9.2 (A)	9.1 (A)
Fleetwood Drive and Lear Boulevard (#4) All-Way Stop Control	7.0 (A)	6.7 (A)	7.0 (A)	6.7 (A)	6.7 (A)	6.9 (A)	7.0 (A)	6.6 (A)	6.7 (A)	6.9 (A)
Budger Way and Pan American Way (#5) Two-Way Stop Control Westbound	8.6 (A)	8.6 (A)	8.6 (A)	8.6 (A)	8.8 (A)	8.8 (A)	8.6 (A)	8.7 (A)	8.9 (A)	8.9 (A)

The key intersections are expected to operate at acceptable LOS (as defined by Washoe County) under 2023 existing, 2026 background, and 2026 background plus project scenarios. Additionally, all roadway segments between the study area intersections are expected to operate at acceptable LOS (LOS values as adopted by Washoe County). This includes the following roadways:

1. Fleetwood Drive between Lemmon Drive and Lear Boulevard
2. Budger Way between Pan American Court and Fleetwood Drive

5. CRASH DATA SUMMARY

Crash data was requested for the four (4) existing study intersections from the NDOT Safety Engineering Division for the most recent four-year period (January 1, 2016 – January 1, 2020). The crash data for the study intersections is summarized in **Table 6.** The intersection crashes include those crashes on both the major and minor streets of the key intersections during the three-year analysis period.

Table 6 – Crash Data Summary

Int. Num.	Intersection Name	Total Crashes	Property Damage Only	Injury	Fatal
1 & 2	Fleetwood Drive and Lemmon Drive	**2**	2 (100%)	0 (0%)	0 (0%)
3	Fleetwood Drive and Budger Way	**0**	0 (0%)	0 (0%)	0 (0%)
4	Fleetwood Drive and Lear Boulevard	**0**	0 (0%)	0 (0%)	0 (0%)
5	Budger Way and Pan American Way	**0**	0 (0%)	0 (0%)	0 (0%)
Total		**2**	**2 (100%)**	**0 (0%)**	**0 (0%)**

A total of two (2) crashes were recorded at the four (4) intersections in the most recent four-year period. Those two crashes resulted in two (2) property damage only crashes (100%), zero injury crashes (0%), and zero (0) fatal crashes. Less than five (5) crashes occurred at every study intersection and no additional study is warranted.

6. CONCLUSIONS/RECOMMENDATIONS

The proposed development 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 drives onto Pan American Drive.
- 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

SCOPE OF STUDY

From: Giacomin, David <david.giacomin@kimley-horn.com>
Sent: Thursday, January 26, 2023 2:41 PM
To: Fink, Mitchell <MFink@washoecounty.gov>
Subject: Traffic Study Scope Request

[NOTICE: This message originated outside of Washoe County -- DO NOT CLICK on links or open attachments unless you are sure the content is safe.]

Hey Mitch,

I have another traffic scope request for you.

We are working on a proposed residential development located north of Budger Way with access along a proposed extension of Pan American Court. The project is located within APN 080-461-08. Full buildout of the development is anticipated to consist of 87 single-family detached houses. According to the ITE Trip Generation Manual, 11th Edition (ITE Land Use Code 210 – Single-Family Detached Housing) the proposed development is anticipated to generate 820 daily trips, 61 AM peak hour trips, and 82 PM peak hour trips. A preliminary subdivision map (and associated assessor map) is attached for your reference.

Per Section 110.340.50 of the Washoe County Development Code, a traffic report is required if the proposed use will generate 80 or more peak hour trips (per ITE).

Can you please confirm the following intersections to be studied (7-9AM, 4-6PM):

- Budger Way and Pan American Court
- Budger Way and Fleetwood Drive
- Lemmon Drive and Fleetwood Drive

Thank you,

David J Giacomin, P.E., PTOE, RSP_1
Kimley-Horn | 7900 Rancharrah Parkway, Suite 100, Reno, NV 89511
Direct: 775 200 1981 | Mobile: 651 497 8220
Connect with us: Twitter | LinkedIn | Facebook | YouTube

Tang, Alex

From: Giacomin, David
Sent: Monday, January 30, 2023 2:51 PM
To: Fink, Mitchell
Subject: RE: Traffic Study Scope Request

Mitch,

I have confirmed that the project will connect Lear to Fleetwood. As such here is the final list of off-site intersections (in addition to project access drives) that we will include in analysis and collect turning movement counts at:

- Budger Way and Pan American Way
- Budger Way and Fleetwood Drive
- Lemmon Drive and Fleetwood Drive
- Fleetwood Drive and Lear Boulevard

Thank you,

David J Giacomin, P.E., PTOE, RSP$_1$
Kimley-Horn | 7900 Rancharrah Parkway, Suite 100, Reno, NV 89511
Direct: 775 200 1981 | Mobile: 651 497 8220

From: Fink, Mitchell <MFink@washoecounty.gov>
Sent: Friday, January 27, 2023 2:56 PM
To: Giacomin, David <david.giacomin@kimley-horn.com>
Subject: RE: Traffic Study Scope Request

Hi David,

Your proposed intersection evaluations below for the traffic study for the Learner Lemmon Project are acceptable. Please incorporate the project ingress/egress locations onto Pan American as well. I don't recall if Lear Blvd. is going to be developed to Fleetwood Dr. as part of this project. If it is please add the intersection at Lear Blvd. and Fleetwood Dr. to be evaluated.

- Budger Way and Pan American Way
- Budger Way and Fleetwood Drive
- Lemmon Drive and Fleetwood Drive

Thank you.

Mitchell Fink, P.E. | Licensed Engineer
Community Services Department | Engineering & Capital Projects Division
mfink@washoecounty.gov| Office: 775.328.2050
1001 E. 9th Street, Reno, NV 89512
For additional information, email engineering@washoecounty.gov or call 775.328.2040

**Have some kudos to share about a Community Services Department employee or experience? Email allstars@washoecounty.gov*

APPENDIX B

COUNT DATA

Fleetwood Drive and Lemmon Drive - TMC

Thu Feb 2, 2023
Full Length (7 AM-9 AM, 4 PM-6 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1035399, Location: 39.639458, -119.840831

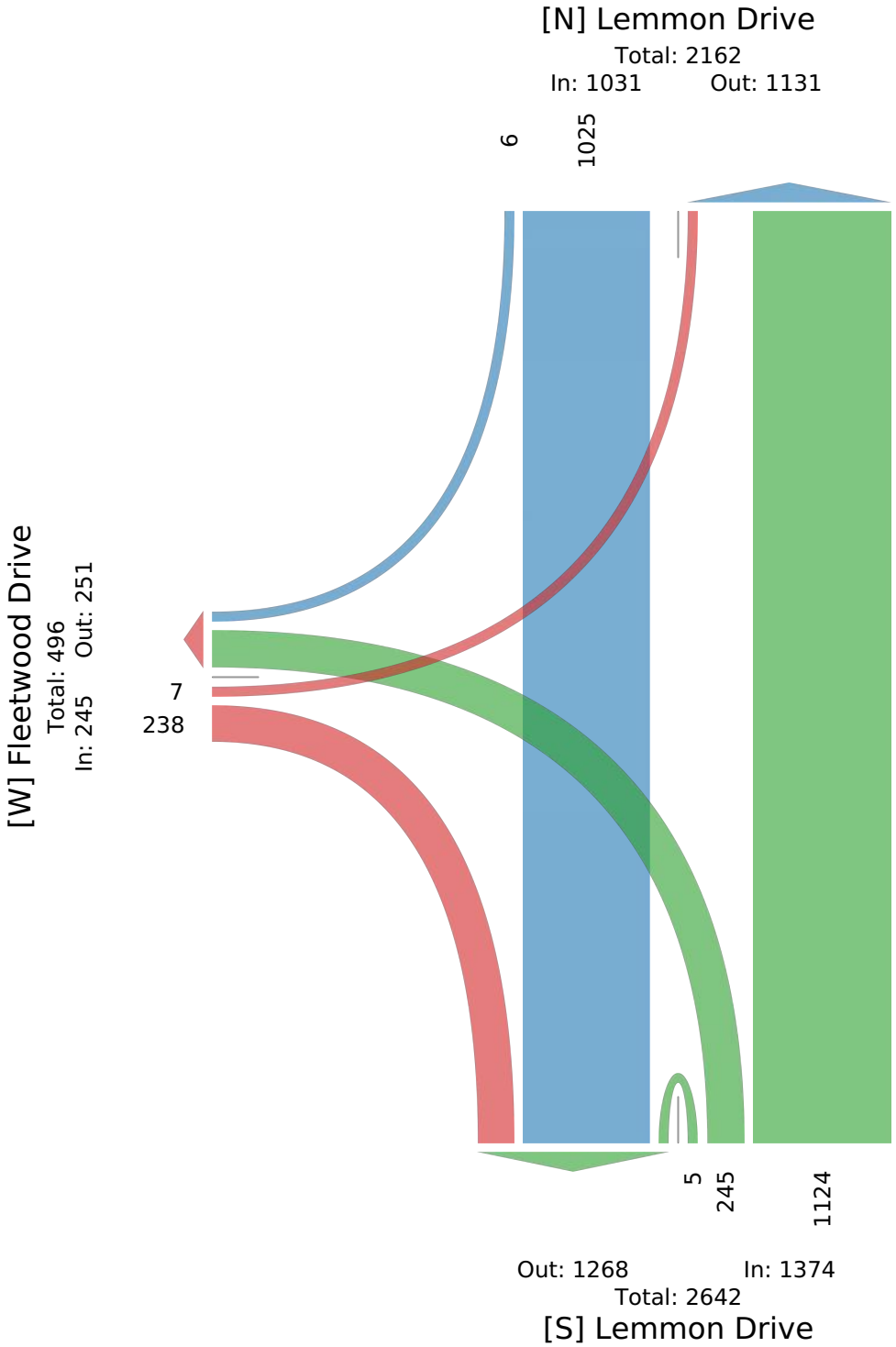
Provided by: Kimley-Horn and Associates, Inc.
767 Eustis Street, Suite 100, Saint Paul, MN, 55114, US

Leg	Lemmon Drive				Lemmon Drive				Fleetwood Drive				
Direction	Northbound				Southbound				Eastbound				
Time	T	L	U	**App**	R	T	U	**App**	R	L	U	**App**	**Int**
2023-02-02 7:00AM	17	9	0	**26**	0	95	0	**95**	25	0	0	**25**	**146**
7:15AM	22	4	0	**26**	0	97	0	**97**	18	0	0	**18**	**141**
7:30AM	35	11	0	**46**	1	97	0	**98**	13	1	0	**14**	**158**
7:45AM	35	9	0	**44**	0	68	0	**68**	13	1	0	**14**	**126**
Hourly Total	109	33	0	**142**	1	357	0	**358**	69	2	0	**71**	**571**
8:00AM	30	7	0	**37**	1	56	0	**57**	17	1	0	**18**	**112**
8:15AM	32	6	0	**38**	0	70	0	**70**	12	0	0	**12**	**120**
8:30AM	47	7	0	**54**	0	60	0	**60**	17	1	0	**18**	**132**
8:45AM	76	19	0	**95**	3	61	0	**64**	15	1	0	**16**	**175**
Hourly Total	185	39	0	**224**	4	247	0	**251**	61	3	0	**64**	**539**
9:00AM	0	1	0	**1**	0	0	0	**0**	0	0	0	**0**	**1**
Hourly Total	0	1	0	**1**	0	0	0	**0**	0	0	0	**0**	**1**
4:00PM	111	18	0	**129**	0	43	0	**43**	8	0	0	**8**	**180**
4:15PM	136	37	0	**173**	0	48	0	**48**	11	0	0	**11**	**232**
4:30PM	106	18	0	**124**	0	59	0	**59**	13	0	0	**13**	**196**
4:45PM	92	16	1	**109**	0	69	0	**69**	18	0	0	**18**	**196**
Hourly Total	445	89	1	**535**	0	219	0	**219**	50	0	0	**50**	**804**
5:00PM	94	18	2	**114**	1	43	0	**44**	18	0	0	**18**	**176**
5:15PM	95	15	0	**110**	0	53	0	**53**	18	2	0	**20**	**183**
5:30PM	112	26	1	**139**	0	55	0	**55**	9	0	0	**9**	**203**
5:45PM	84	24	1	**109**	0	51	0	**51**	13	0	0	**13**	**173**
Hourly Total	385	83	4	**472**	1	202	0	**203**	58	2	0	**60**	**735**
6:00PM	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	**0**
Hourly Total	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	**0**
Total	1124	245	5	**1374**	6	1025	0	**1031**	238	7	0	**245**	**2650**
% Approach	81.8%	17.8%	0.4%	**-**	0.6%	99.4%	0%	**-**	97.1%	2.9%	0%	**-**	-
% Total	42.4%	9.2%	0.2%	**51.8%**	0.2%	38.7%	0%	**38.9%**	9.0%	0.3%	0%	**9.2%**	-
Lights	1107	241	5	**1353**	5	1006	0	**1011**	234	7	0	**241**	2605
% Lights	98.5%	98.4%	100%	**98.5%**	83.3%	98.1%	0%	**98.1%**	98.3%	100%	0%	**98.4%**	98.3%
Articulated Trucks	2	0	0	**2**	0	1	0	**1**	0	0	0	**0**	3
% Articulated Trucks	0.2%	0%	0%	**0.1%**	0%	0.1%	0%	**0.1%**	0%	0%	0%	**0%**	0.1%
Buses and Single-Unit Trucks	15	4	0	**19**	1	18	0	**19**	4	0	0	**4**	42
% Buses and Single-Unit Trucks	1.3%	1.6%	0%	**1.4%**	16.7%	1.8%	0%	**1.8%**	1.7%	0%	0%	**1.6%**	1.6%

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

Fleetwood Drive and Lemmon Drive - TMC
Thu Feb 2, 2023
Full Length (7 AM-9 AM, 4 PM-6 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1035399, Location: 39.639458, -119.840831

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



Fleetwood Drive and Lemmon Drive - TMC

Thu Feb 2, 2023
AM Peak (7 AM - 8 AM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1035399, Location: 39.639458, -119.840831

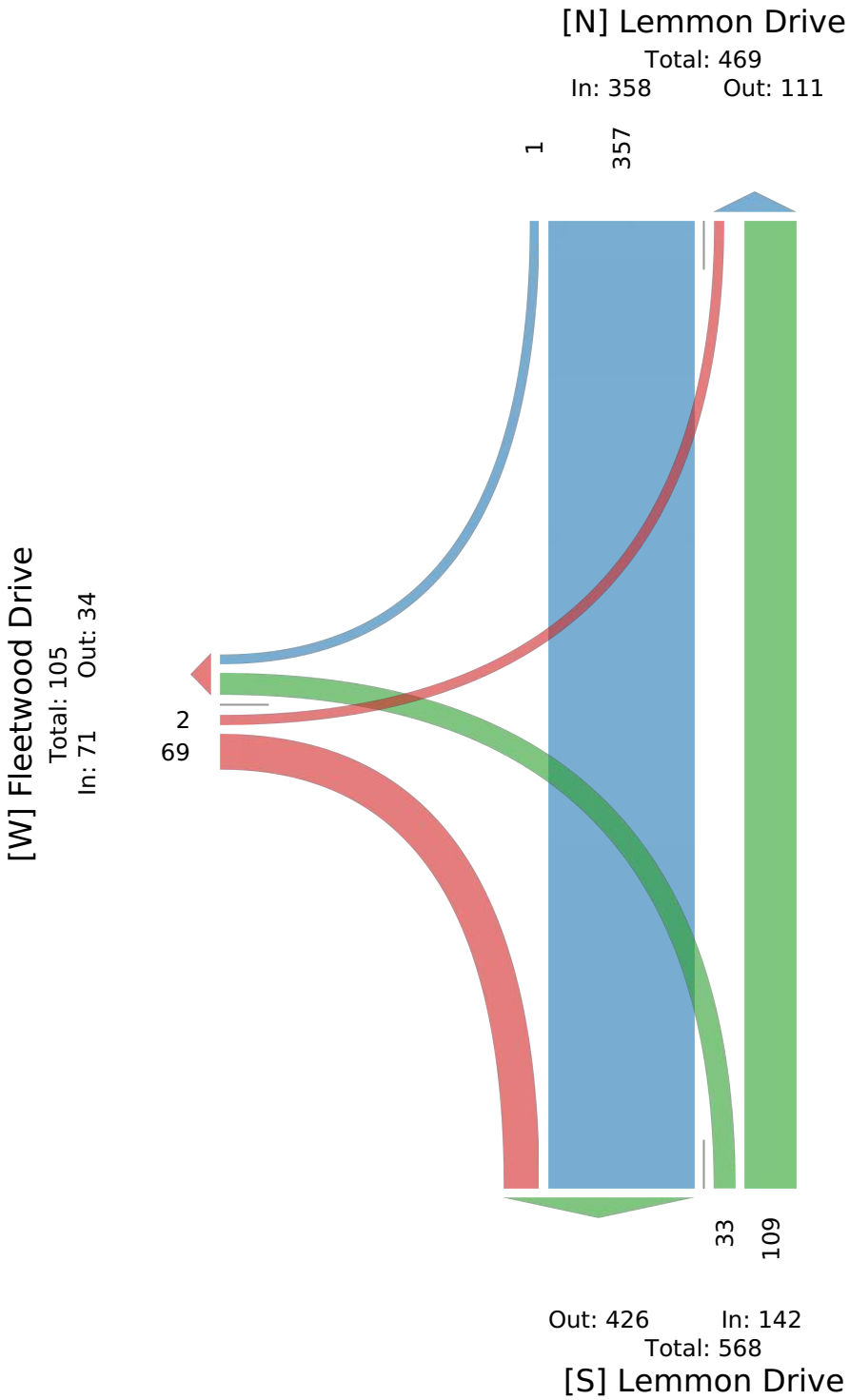
Provided by: Kimley-Horn and Associates, Inc.
767 Eustis Street, Suite 100, Saint Paul, MN, 55114, US

Leg	Lemmon Drive				Lemmon Drive				Fleetwood Drive				
Direction	Northbound				Southbound				Eastbound				
Time	T	L	U	**App**	R	T	U	**App**	R	L	U	**App**	**Int**
2023-02-02 7:00AM	17	9	0	**26**	0	95	0	**95**	25	0	0	**25**	**146**
7:15AM	22	4	0	**26**	0	97	0	**97**	18	0	0	**18**	**141**
7:30AM	35	11	0	**46**	1	97	0	**98**	13	1	0	**14**	**158**
7:45AM	35	9	0	**44**	0	68	0	**68**	13	1	0	**14**	**126**
Total	109	33	0	**142**	1	357	0	**358**	69	2	0	**71**	**571**
% Approach	76.8%	23.2%	0%	**-**	0.3%	99.7%	0%	**-**	97.2%	2.8%	0%	**-**	-
% Total	19.1%	5.8%	0%	**24.9%**	0.2%	62.5%	0%	**62.7%**	12.1%	0.4%	0%	**12.4%**	-
PHF	0.779	0.750	-	**0.772**	0.250	0.920	-	**0.913**	0.690	0.500	-	**0.710**	0.903
Lights	101	31	0	**132**	1	354	0	**355**	67	2	0	**69**	556
% Lights	92.7%	93.9%	0%	**93.0%**	100%	99.2%	0%	**99.2%**	97.1%	100%	0%	**97.2%**	97.4%
Articulated Trucks	2	0	0	**2**	0	0	0	**0**	0	0	0	**0**	2
% Articulated Trucks	1.8%	0%	0%	**1.4%**	0%	0%	0%	**0%**	0%	0%	0%	**0%**	0.4%
Buses and Single-Unit Trucks	6	2	0	**8**	0	3	0	**3**	2	0	0	**2**	13
% Buses and Single-Unit Trucks	5.5%	6.1%	0%	**5.6%**	0%	0.8%	0%	**0.8%**	2.9%	0%	0%	**2.8%**	2.3%

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

Fleetwood Drive and Lemmon Drive - TMC
Thu Feb 2, 2023
AM Peak (7 AM - 8 AM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1035399, Location: 39.639458, -119.840831

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



Fleetwood Drive and Lemmon Drive - TMC

Thu Feb 2, 2023
PM Peak (4 PM - 5 PM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1035399, Location: 39.639458, -119.840831

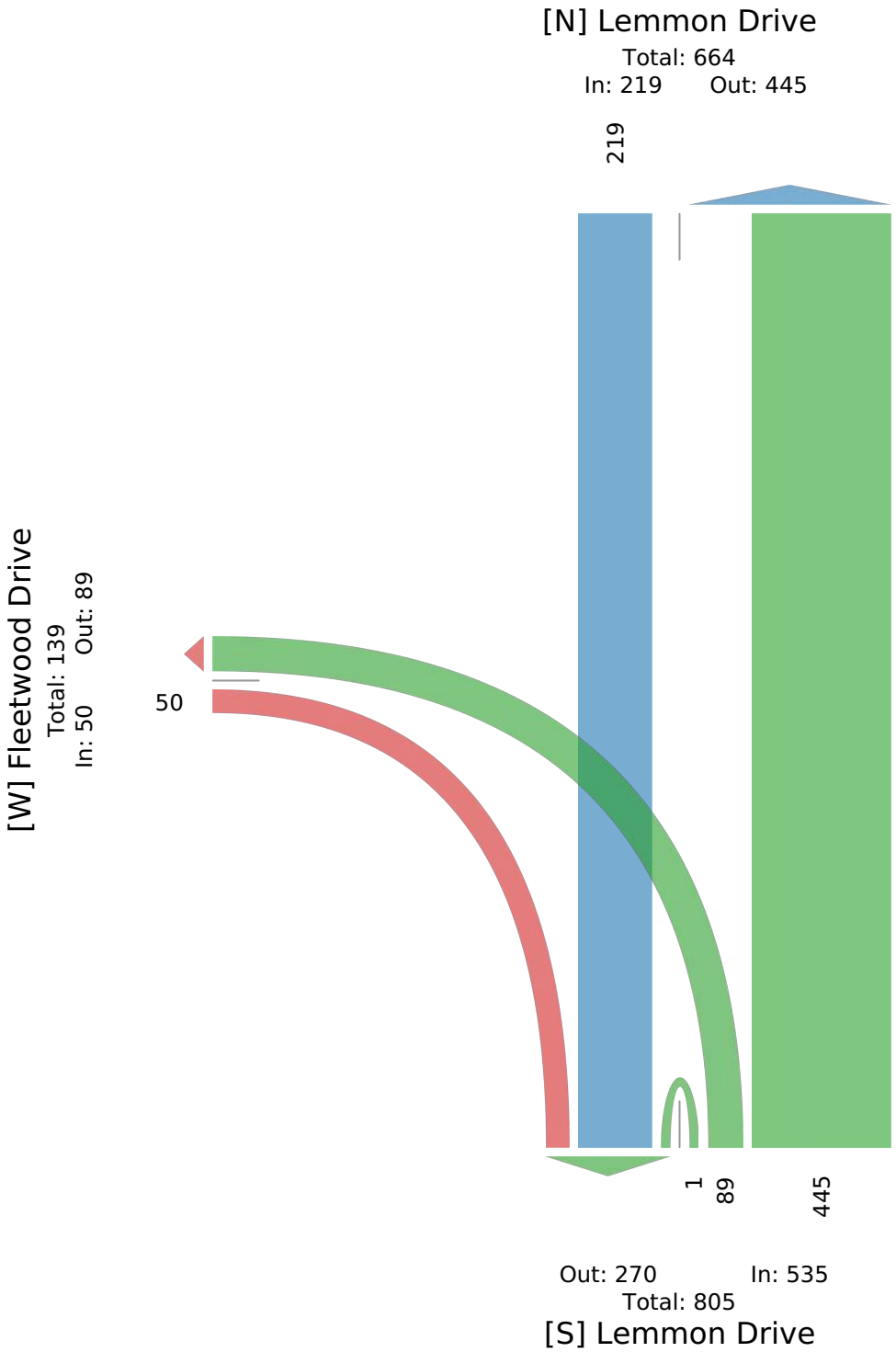
Provided by: Kimley-Horn and Associates, Inc.
767 Eustis Street, Suite 100, Saint Paul, MN, 55114, US

Leg	Lemmon Drive				Lemmon Drive				Fleetwood Drive				
Direction	Northbound				Southbound				Eastbound				
Time	T	L	U	**App**	R	T	U	**App**	R	L	U	**App**	**Int**
2023-02-02 4:00PM	111	18	0	**129**	0	43	0	**43**	8	0	0	**8**	**180**
4:15PM	136	37	0	**173**	0	48	0	**48**	11	0	0	**11**	**232**
4:30PM	106	18	0	**124**	0	59	0	**59**	13	0	0	**13**	**196**
4:45PM	92	16	1	**109**	0	69	0	**69**	18	0	0	**18**	**196**
Total	445	89	1	**535**	0	219	0	**219**	50	0	0	**50**	**804**
% Approach	83.2%	16.6%	0.2%	**-**	0%	100%	0%	**-**	100%	0%	0%	**-**	-
% Total	55.3%	11.1%	0.1%	**66.5%**	0%	27.2%	0%	**27.2%**	6.2%	0%	0%	**6.2%**	-
PHF	0.818	0.601	0.250	**0.773**	-	0.793	-	**0.793**	0.694	-	-	**0.694**	0.866
Lights	442	87	1	**530**	0	215	0	**215**	49	0	0	**49**	794
% Lights	99.3%	97.8%	100%	**99.1%**	0%	98.2%	0%	**98.2%**	98.0%	0%	0%	**98.0%**	98.8%
Articulated Trucks	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%
Buses and Single-Unit Trucks	3	2	0	**5**	0	4	0	**4**	1	0	0	**1**	10
% Buses and Single-Unit Trucks	0.7%	2.2%	0%	**0.9%**	0%	1.8%	0%	**1.8%**	2.0%	0%	0%	**2.0%**	1.2%

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

Fleetwood Drive and Lemmon Drive - TMC
Thu Feb 2, 2023
PM Peak (4 PM - 5 PM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1035399, Location: 39.639458, -119.840831

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



Fleetwood Drive and Budger Way - TMC

Thu Feb 2, 2023
Full Length (7 AM-9 AM, 4 PM-6 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1035397, Location: 39.642744, -119.843968

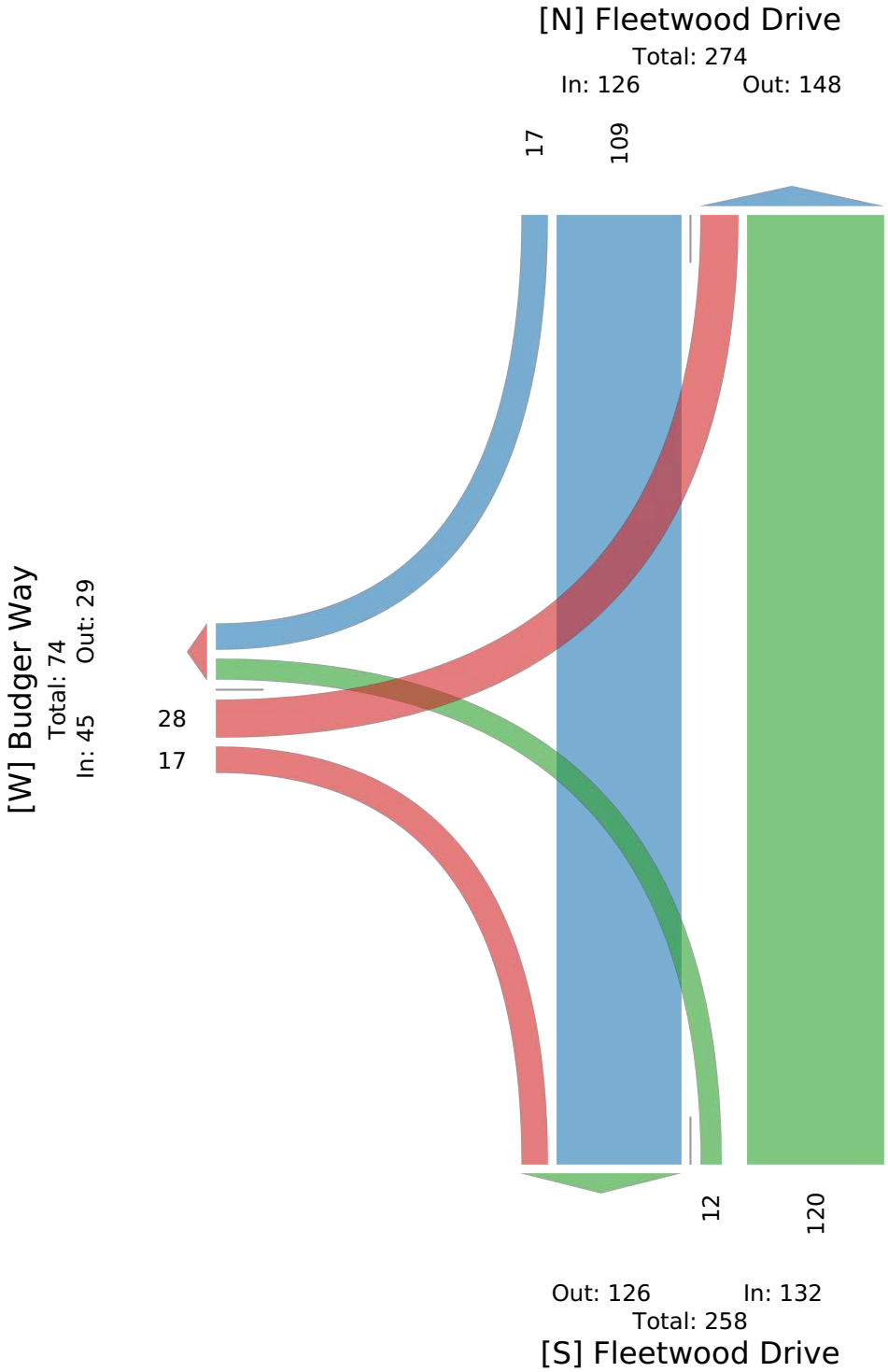
Provided by: Kimley-Horn and Associates, Inc.
767 Eustis Street, Suite 100, Saint Paul, MN, 55114, US

Leg	Fleetwood Drive				Fleetwood Drive				Budger Way				
Direction	Northbound				Southbound				Eastbound				
Time	T	L	U	**App**	R	T	U	**App**	R	L	U	**App**	**Int**
2023-02-02 7:00AM	6	0	0	**6**	0	12	0	**12**	1	2	0	**3**	**21**
7:15AM	5	0	0	**5**	3	13	0	**16**	2	3	0	**5**	**26**
7:30AM	4	0	0	**4**	1	6	0	**7**	0	2	0	**2**	**13**
7:45AM	5	0	0	**5**	0	6	0	**6**	0	0	0	**0**	**11**
Hourly Total	20	0	0	**20**	4	37	0	**41**	3	7	0	**10**	**71**
8:00AM	3	1	0	**4**	0	6	0	**6**	0	4	0	**4**	**14**
8:15AM	3	0	0	**3**	1	3	0	**4**	2	1	0	**3**	**10**
8:30AM	2	0	0	**2**	0	7	0	**7**	2	0	0	**2**	**11**
8:45AM	14	1	0	**15**	1	7	0	**8**	0	4	0	**4**	**27**
Hourly Total	22	2	0	**24**	2	23	0	**25**	4	9	0	**13**	**62**
9:00AM	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	**0**
Hourly Total	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	**0**
4:00PM	7	1	0	**8**	0	5	0	**5**	0	0	0	**0**	**13**
4:15PM	14	2	0	**16**	1	5	0	**6**	4	1	0	**5**	**27**
4:30PM	5	1	0	**6**	1	8	0	**9**	0	2	0	**2**	**17**
4:45PM	8	1	0	**9**	5	6	0	**11**	1	3	0	**4**	**24**
Hourly Total	34	5	0	**39**	7	24	0	**31**	5	6	0	**11**	**81**
5:00PM	8	2	0	**10**	0	5	0	**5**	2	0	0	**2**	**17**
5:15PM	8	1	0	**9**	0	10	0	**10**	1	4	0	**5**	**24**
5:30PM	13	2	0	**15**	3	6	0	**9**	0	0	0	**0**	**24**
5:45PM	15	0	0	**15**	1	4	0	**5**	2	2	0	**4**	**24**
Hourly Total	44	5	0	**49**	4	25	0	**29**	5	6	0	**11**	**89**
6:00PM	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	**0**
Hourly Total	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	**0**
Total	120	12	0	**132**	17	109	0	**126**	17	28	0	**45**	**303**
% Approach	90.9%	9.1%	0%	**-**	13.5%	86.5%	0%	**-**	37.8%	62.2%	0%	**-**	-
% Total	39.6%	4.0%	0%	**43.6%**	5.6%	36.0%	0%	**41.6%**	5.6%	9.2%	0%	**14.9%**	-
Lights	120	11	0	**131**	17	106	0	**123**	17	27	0	**44**	298
% Lights	100%	91.7%	0%	**99.2%**	100%	97.2%	0%	**97.6%**	100%	96.4%	0%	**97.8%**	98.3%
Articulated Trucks	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%
Buses and Single-Unit Trucks	0	1	0	**1**	0	3	0	**3**	0	1	0	**1**	5
% Buses and Single-Unit Trucks	0%	8.3%	0%	**0.8%**	0%	2.8%	0%	**2.4%**	0%	3.6%	0%	**2.2%**	1.7%

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

Fleetwood Drive and Budger Way - TMC
Thu Feb 2, 2023
Full Length (7 AM-9 AM, 4 PM-6 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1035397, Location: 39.642744, -119.843968

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



Fleetwood Drive and Budger Way - TMC

Thu Feb 2, 2023
AM Peak (7 AM - 8 AM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1035397, Location: 39.642744, -119.843968

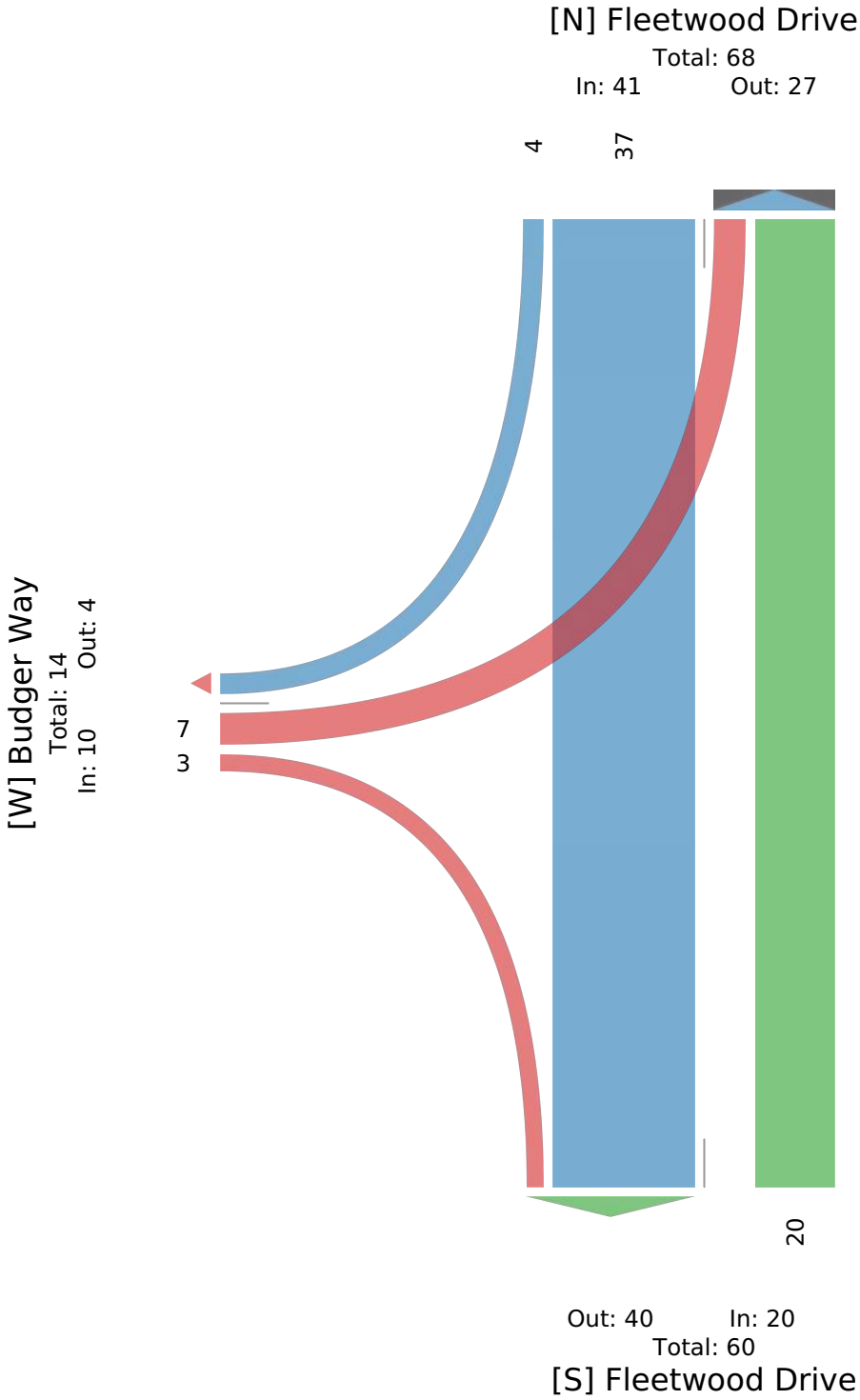
Provided by: Kimley-Horn and Associates, Inc.
767 Eustis Street, Suite 100, Saint Paul, MN, 55114, US

Leg / Direction	Fleetwood Drive Northbound				Fleetwood Drive Southbound				Budger Way Eastbound				
Time	T	L	U	**App**	R	T	U	**App**	R	L	U	**App**	**Int**
2023-02-02 7:00AM	6	0	0	**6**	0	12	0	**12**	1	2	0	**3**	**21**
7:15AM	5	0	0	**5**	3	13	0	**16**	2	3	0	**5**	**26**
7:30AM	4	0	0	**4**	1	6	0	**7**	0	2	0	**2**	**13**
7:45AM	5	0	0	**5**	0	6	0	**6**	0	0	0	**0**	**11**
Total	20	0	0	**20**	4	37	0	**41**	3	7	0	**10**	**71**
% Approach	100%	0%	0%	**-**	9.8%	90.2%	0%	**-**	30.0%	70.0%	0%	**-**	-
% Total	28.2%	0%	0%	**28.2%**	5.6%	52.1%	0%	**57.7%**	4.2%	9.9%	0%	**14.1%**	-
PHF	0.833	-	-	**0.833**	0.333	0.712	-	**0.641**	0.375	0.583	-	**0.500**	0.683
Lights	20	0	0	**20**	4	36	0	**40**	3	7	0	**10**	70
% Lights	100%	0%	0%	**100%**	100%	97.3%	0%	**97.6%**	100%	100%	0%	**100%**	98.6%
Articulated Trucks	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%
Buses and Single-Unit Trucks	0	0	0	**0**	0	1	0	**1**	0	0	0	**0**	1
% Buses and Single-Unit Trucks	0%	0%	0%	**0%**	0%	2.7%	0%	**2.4%**	0%	0%	0%	**0%**	1.4%

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

Fleetwood Drive and Budger Way - TMC
Thu Feb 2, 2023
AM Peak (7 AM - 8 AM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1035397, Location: 39.642744, -119.843968

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



Fleetwood Drive and Budger Way - TMC

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

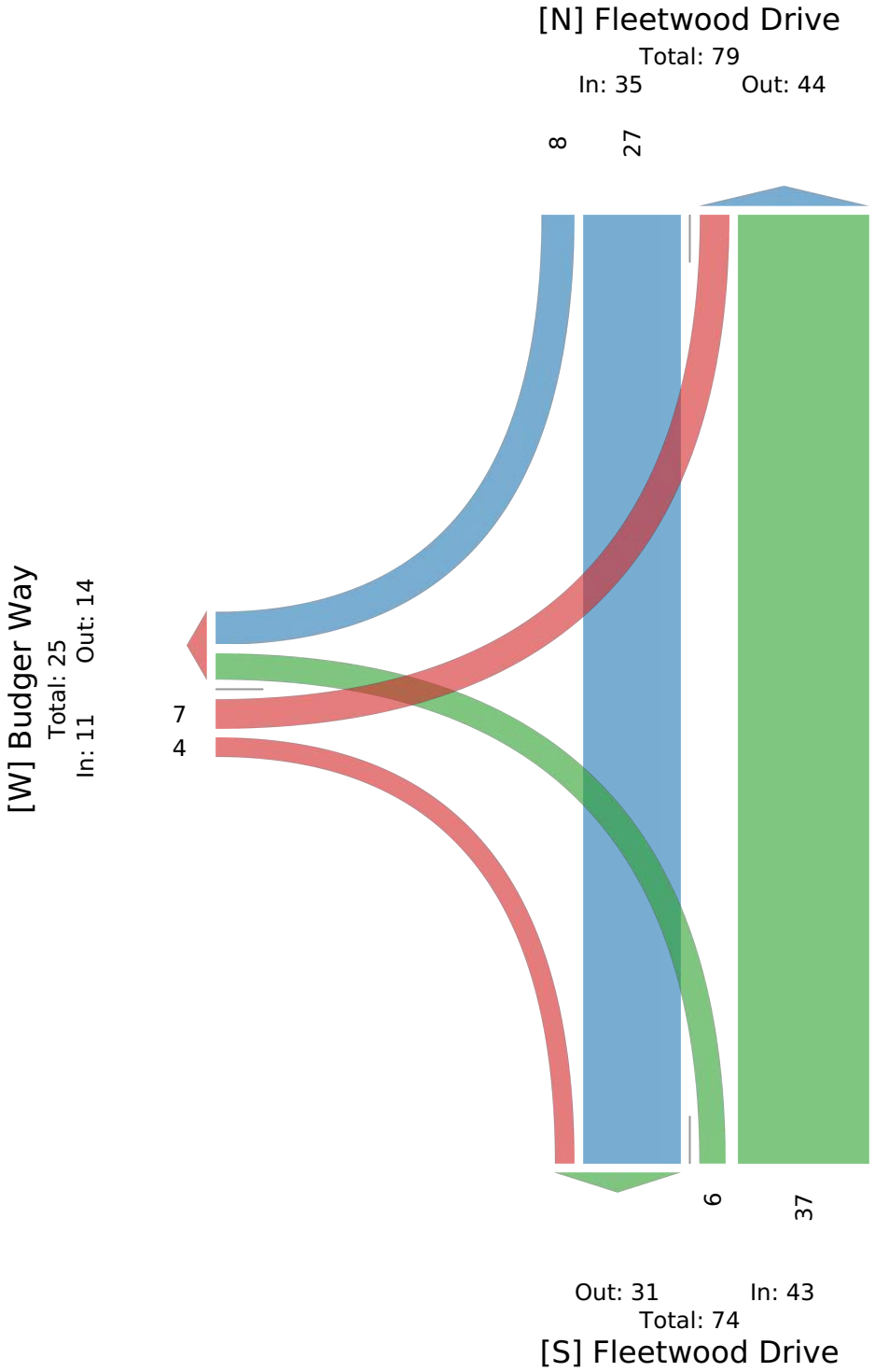
Thu Feb 2, 2023
PM Peak (4:45 PM - 5:45 PM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1035397, Location: 39.642744, -119.843968

Leg Direction	Fleetwood Drive Northbound				Fleetwood Drive Southbound				Budger Way Eastbound				
Time	T	L	U	**App**	R	T	U	**App**	R	L	U	**App**	**Int**
2023-02-02 4:45PM	8	1	0	**9**	5	6	0	**11**	1	3	0	**4**	**24**
5:00PM	8	2	0	**10**	0	5	0	**5**	2	0	0	**2**	**17**
5:15PM	8	1	0	**9**	0	10	0	**10**	1	4	0	**5**	**24**
5:30PM	13	2	0	**15**	3	6	0	**9**	0	0	0	**0**	**24**
Total	37	6	0	**43**	8	27	0	**35**	4	7	0	**11**	**89**
% Approach	86.0%	14.0%	0%	**-**	22.9%	77.1%	0%	**-**	36.4%	63.6%	0%	**-**	-
% Total	41.6%	6.7%	0%	**48.3%**	9.0%	30.3%	0%	**39.3%**	4.5%	7.9%	0%	**12.4%**	-
PHF	0.712	0.750	-	**0.717**	0.400	0.675	-	**0.795**	0.500	0.438	-	**0.550**	0.927
Lights	37	6	0	**43**	8	27	0	**35**	4	7	0	**11**	89
% Lights	100%	100%	0%	**100%**	100%	100%	0%	**100%**	100%	100%	0%	**100%**	100%
Articulated Trucks	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%
Buses and Single-Unit Trucks	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	0
% Buses and Single-Unit Trucks	0%	0%	0%	**0%**	0%	0%	0%	**0%**	0%	0%	0%	**0%**	0%

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

Fleetwood Drive and Budger Way - TMC
Thu Feb 2, 2023
PM Peak (4:45 PM - 5:45 PM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1035397, Location: 39.642744, -119.843968

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



Budger Way and Pan American Way - TMC

Thu Feb 2, 2023
Full Length (4 PM-6 PM, 7 AM-9 AM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1035396, Location: 39.642752, -119.846954

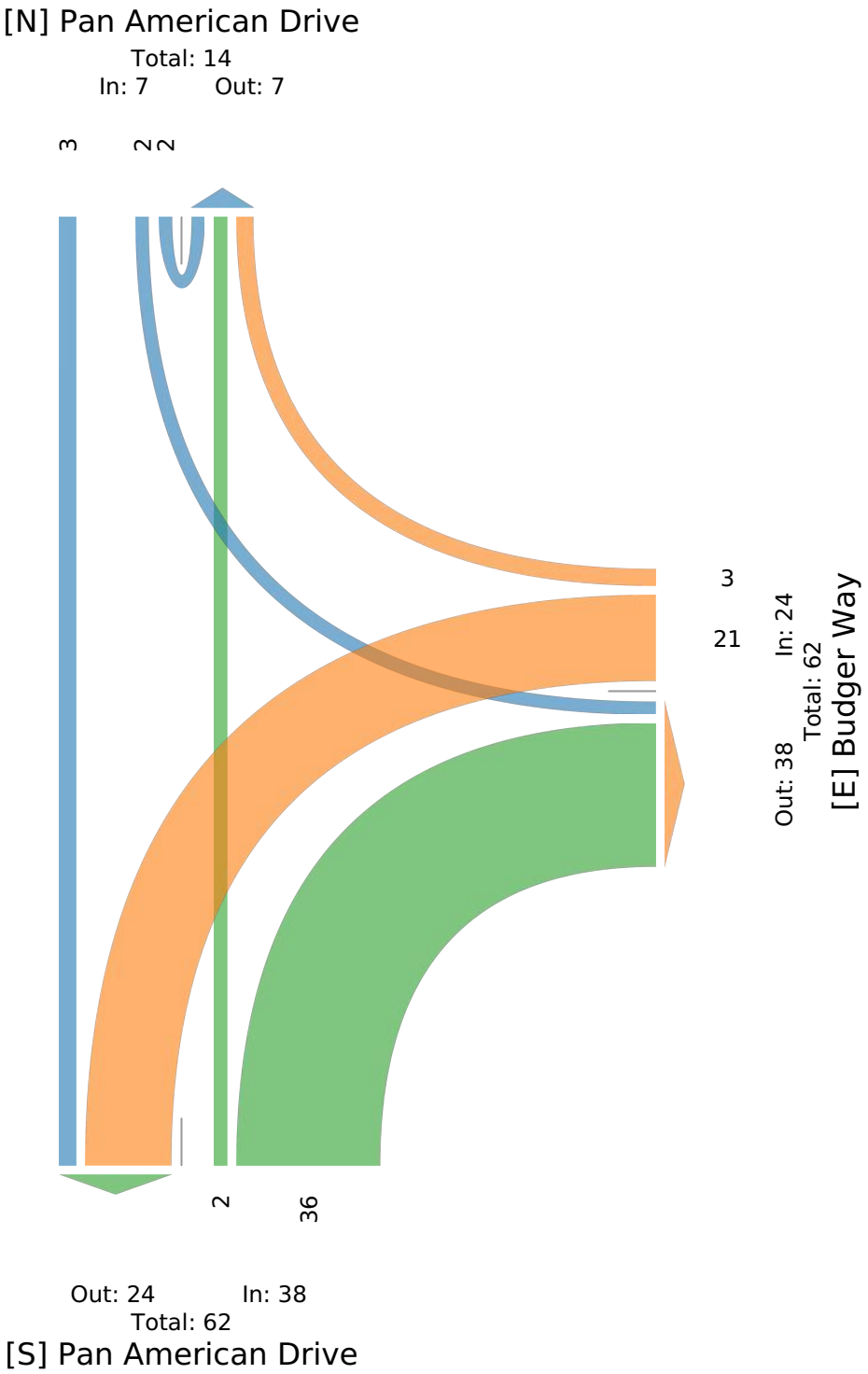
Provided by: Kimley-Horn and Associates, Inc.
767 Eustis Street, Suite 100, Saint Paul, MN, 55114, US

Leg	Pan American Drive				Pan American Drive				Budger Way				
Direction	Northbound				Southbound				Westbound				
Time	R	T	U	**App**	T	L	U	**App**	R	L	U	**App**	**Int**
2023-02-02 7:00AM	1	0	0	**1**	0	0	0	**0**	0	1	0	**1**	**2**
7:15AM	4	0	0	**4**	0	0	0	**0**	0	3	0	**3**	**7**
7:30AM	2	0	0	**2**	0	0	0	**0**	0	0	0	**0**	**2**
7:45AM	0	0	0	**0**	0	0	0	**0**	0	1	0	**1**	**1**
Hourly Total	7	0	0	**7**	0	0	0	**0**	0	5	0	**5**	**12**
8:00AM	4	0	0	**4**	1	0	0	**1**	0	1	0	**1**	**6**
8:15AM	2	0	0	**2**	0	0	0	**0**	0	1	0	**1**	**3**
8:30AM	2	0	0	**2**	0	0	0	**0**	0	0	0	**0**	**2**
8:45AM	3	0	0	**3**	0	0	0	**0**	0	2	0	**2**	**5**
Hourly Total	11	0	0	**11**	1	0	0	**1**	0	4	0	**4**	**16**
9:00AM	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	**0**
Hourly Total	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	**0**
4:00PM	1	0	0	**1**	1	0	2	**3**	1	0	0	**1**	**5**
4:15PM	3	0	0	**3**	0	1	0	**1**	1	1	0	**2**	**6**
4:30PM	3	0	0	**3**	0	0	0	**0**	0	1	0	**1**	**4**
4:45PM	2	0	0	**2**	0	0	0	**0**	1	6	0	**7**	**9**
Hourly Total	9	0	0	**9**	1	1	2	**4**	3	8	0	**11**	**24**
5:00PM	1	0	0	**1**	0	0	0	**0**	0	0	0	**0**	**1**
5:15PM	4	1	0	**5**	0	1	0	**1**	0	0	0	**0**	**6**
5:30PM	1	1	0	**2**	0	0	0	**0**	0	2	0	**2**	**4**
5:45PM	3	0	0	**3**	1	0	0	**1**	0	2	0	**2**	**6**
Hourly Total	9	2	0	**11**	1	1	0	**2**	0	4	0	**4**	**17**
6:00PM	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	**0**
Hourly Total	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	**0**
Total	36	2	0	**38**	3	2	2	**7**	3	21	0	**24**	**69**
% Approach	94.7%	5.3%	0%	**-**	42.9%	28.6%	28.6%	**-**	12.5%	87.5%	0%	**-**	-
% Total	52.2%	2.9%	0%	**55.1%**	4.3%	2.9%	2.9%	**10.1%**	4.3%	30.4%	0%	**34.8%**	-
Lights	35	2	0	**37**	3	2	2	**7**	3	20	0	**23**	67
% Lights	97.2%	100%	0%	**97.4%**	100%	100%	100%	**100%**	100%	95.2%	0%	**95.8%**	97.1%
Articulated Trucks	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%
Buses and Single-Unit Trucks	1	0	0	**1**	0	0	0	**0**	0	1	0	**1**	2
% Buses and Single-Unit Trucks	2.8%	0%	0%	**2.6%**	0%	0%	0%	**0%**	0%	4.8%	0%	**4.2%**	2.9%

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

Budger Way and Pan American Way - TMC
Thu Feb 2, 2023
Full Length (4 PM-6 PM, 7 AM-9 AM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1035396, Location: 39.642752, -119.846954

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



Budger Way and Pan American Way - TMC

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

Thu Feb 2, 2023
AM Peak (7:15 AM - 8:15 AM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1035396, Location: 39.642752, -119.846954

Leg Direction	Pan American Drive Northbound				Pan American Drive Southbound				Budger Way Westbound				
Time	R	T	U	**App**	T	L	U	**App**	R	L	U	**App**	**Int**
2023-02-02 7:15AM	4	0	0	**4**	0	0	0	**0**	0	3	0	**3**	**7**
7:30AM	2	0	0	**2**	0	0	0	**0**	0	0	0	**0**	**2**
7:45AM	0	0	0	**0**	0	0	0	**0**	0	1	0	**1**	**1**
8:00AM	4	0	0	**4**	1	0	0	**1**	0	1	0	**1**	**6**
Total	10	0	0	**10**	1	0	0	**1**	0	5	0	**5**	**16**
% Approach	100%	0%	0%	**-**	100%	0%	0%	**-**	0%	100%	0%	**-**	-
% Total	62.5%	0%	0%	**62.5%**	6.3%	0%	0%	**6.3%**	0%	31.3%	0%	**31.3%**	-
PHF	0.625	-	-	**0.625**	0.250	-	-	**0.250**	-	0.417	-	**0.417**	0.571
Lights	10	0	0	**10**	1	0	0	**1**	0	5	0	**5**	16
% Lights	100%	0%	0%	**100%**	100%	0%	0%	**100%**	0%	100%	0%	**100%**	100%
Articulated Trucks	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%
Buses and Single-Unit Trucks	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	0
% Buses and Single-Unit Trucks	0%	0%	0%	**0%**	0%	0%	0%	**0%**	0%	0%	0%	**0%**	0%

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

Budger Way and Pan American Way - TMC
Thu Feb 2, 2023
AM Peak (7:15 AM - 8:15 AM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1035396, Location: 39.642752, -119.846954

Provided by: Kimley-Horn and Associates, Inc.
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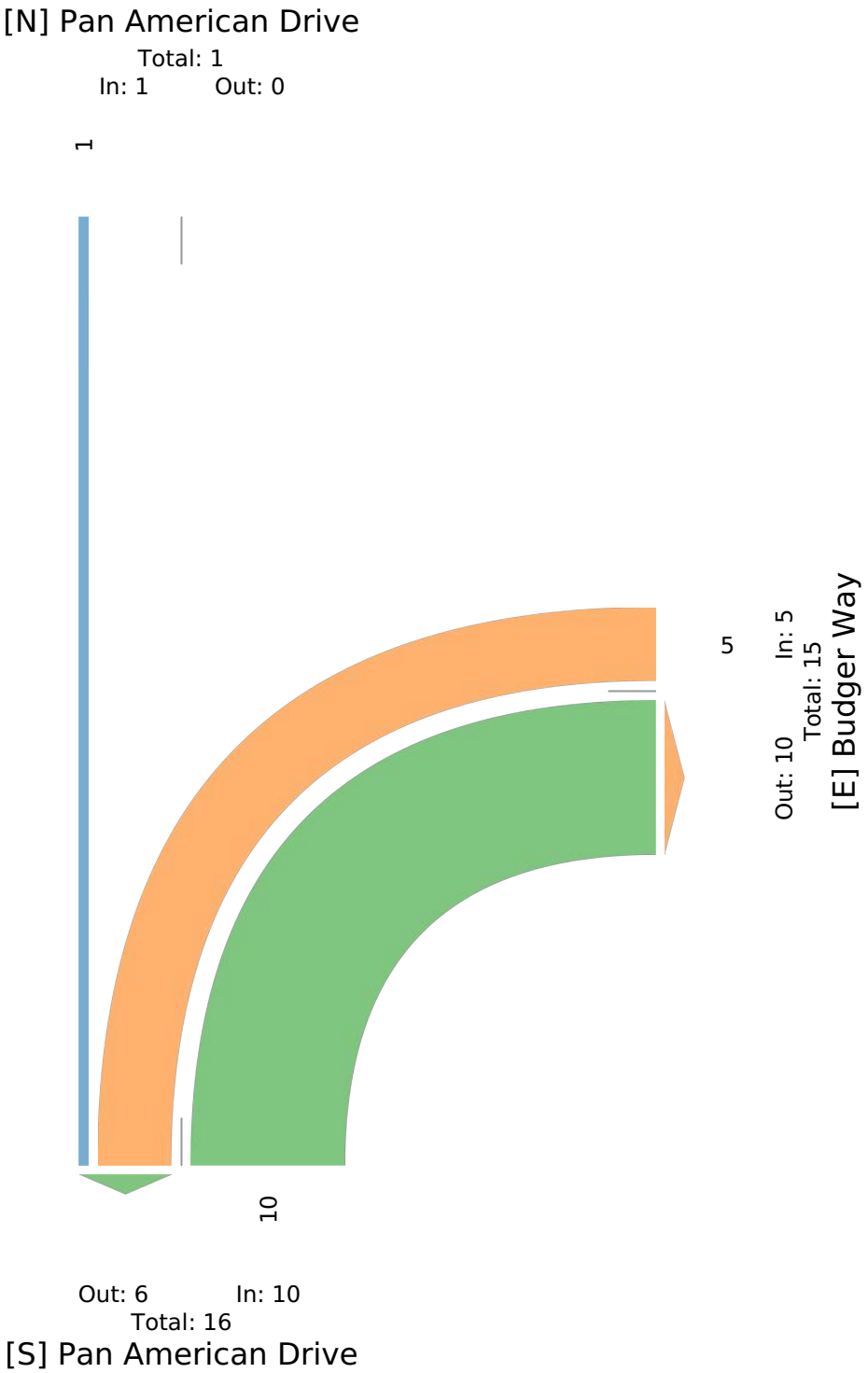

Budger Way and Pan American Way - TMC

Thu Feb 2, 2023
PM Peak (4 PM - 5 PM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1035396, Location: 39.642752, -119.846954

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

Leg	Pan American Drive				Pan American Drive				Budger Way				
Direction	Northbound				Southbound				Westbound				
Time	R	T	U	**App**	T	L	U	**App**	R	L	U	**App**	**Int**
2023-02-02 4:00PM	1	0	0	**1**	1	0	2	**3**	1	0	0	**1**	**5**
4:15PM	3	0	0	**3**	0	1	0	**1**	1	1	0	**2**	**6**
4:30PM	3	0	0	**3**	0	0	0	**0**	0	1	0	**1**	**4**
4:45PM	2	0	0	**2**	0	0	0	**0**	1	6	0	**7**	**9**
Total	9	0	0	**9**	1	1	2	**4**	3	8	0	**11**	**24**
% Approach	100%	0%	0%	**-**	25.0%	25.0%	50.0%	**-**	27.3%	72.7%	0%	**-**	-
% Total	37.5%	0%	0%	**37.5%**	4.2%	4.2%	8.3%	**16.7%**	12.5%	33.3%	0%	**45.8%**	-
PHF	0.750	-	-	**0.750**	0.250	0.250	0.250	**0.333**	0.750	0.333	-	**0.393**	0.667
Lights	9	0	0	**9**	1	1	2	**4**	3	8	0	**11**	24
% Lights	100%	0%	0%	**100%**	100%	100%	100%	**100%**	100%	100%	0%	**100%**	100%
Articulated Trucks	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%
Buses and Single-Unit Trucks	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	0
% Buses and Single-Unit Trucks	0%	0%	0%	**0%**	0%	0%	0%	**0%**	0%	0%	0%	**0%**	0%

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

Budger Way and Pan American Way - TMC
Thu Feb 2, 2023
PM Peak (4 PM - 5 PM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1035396, Location: 39.642752, -119.846954

Provided by: Kimley-Horn and Associates, Inc.
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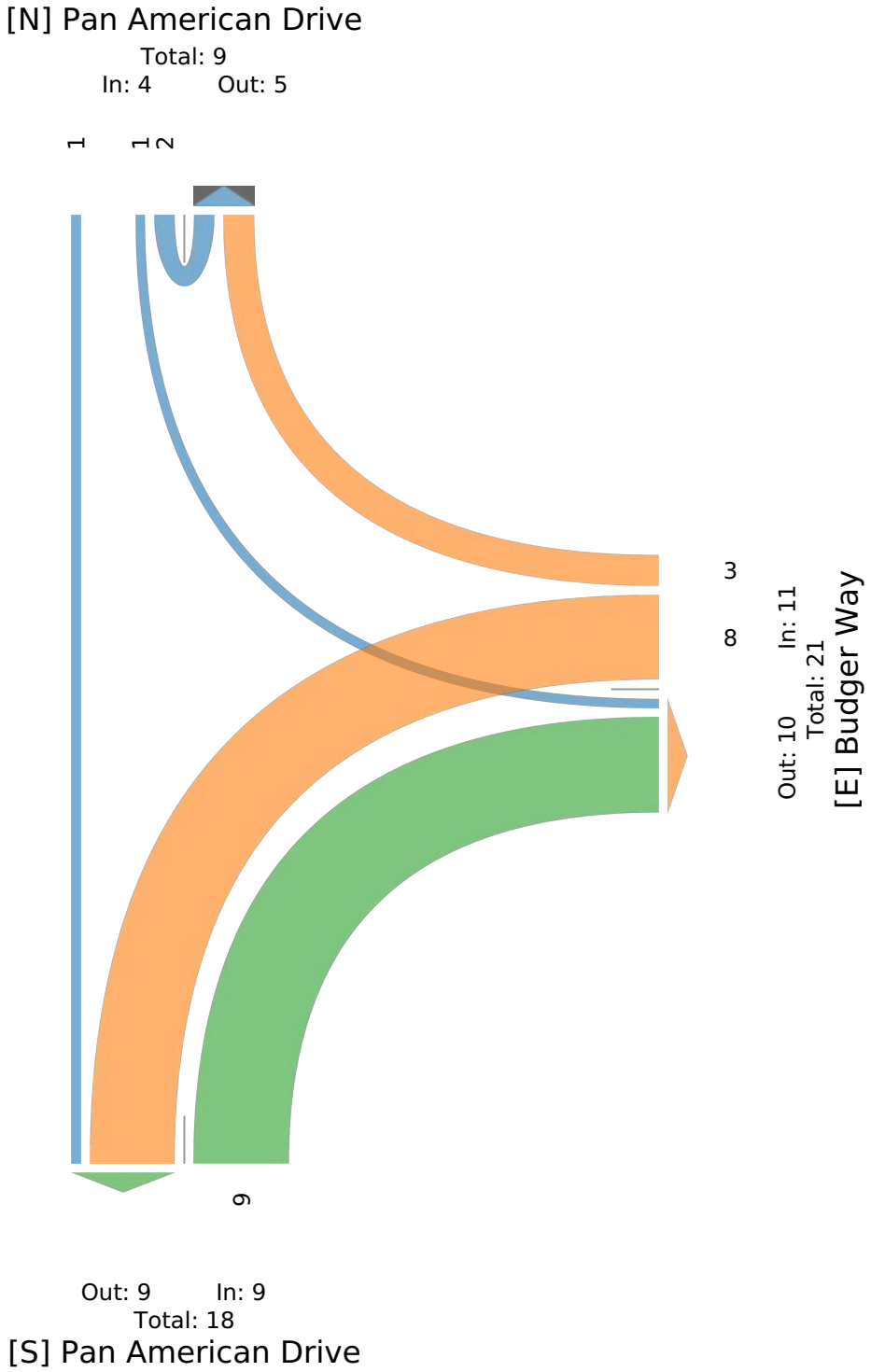

Fleetwood Drive and Lear Boulevard - TMC

Thu Feb 2, 2023
Full Length (7 AM-9 AM, 4 PM-6 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1035398, Location: 39.646782, -119.843895

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

Leg	Fleetwood Drive					Fleetwood Drive					Lear Boulevard					Lear Boulevard					
Direction	Northbound					Southbound					Eastbound					Westbound					
Time	R	T	L	U	**App**	R	T	L	U	**App**	R	T	L	U	**App**	R	T	L	U	**App**	**Int**
2023-02-02 7:00AM	0	0	0	0	**0**	0	0	0	0	**0**	0	0	0	0	**0**	0	0	0	0	**0**	**0**
7:15AM	0	0	0	0	**0**	0	0	0	0	**0**	0	0	0	0	**0**	0	0	0	0	**0**	**0**
7:30AM	0	0	0	0	**0**	0	0	0	0	**0**	0	0	0	0	**0**	0	0	0	0	**0**	**0**
7:45AM	0	0	0	0	**0**	0	0	0	0	**0**	0	0	0	0	**0**	0	0	0	0	**0**	**0**
Hourly Total	0	0	0	0	**0**	0	0	0	0	**0**	0	0	0	0	**0**	0	0	0	0	**0**	**0**
8:00AM	0	1	0	0	**1**	0	1	0	0	**1**	0	0	0	0	**0**	0	0	0	0	**0**	**2**
8:15AM	0	0	0	0	**0**	0	0	0	0	**0**	0	0	0	0	**0**	0	0	0	0	**0**	**0**
8:30AM	0	0	0	0	**0**	0	0	0	0	**0**	0	0	0	0	**0**	0	0	0	0	**0**	**0**
8:45AM	0	0	0	0	**0**	0	0	0	0	**0**	0	0	0	0	**0**	0	0	0	0	**0**	**0**
Hourly Total	0	1	0	0	**1**	0	1	0	0	**1**	0	0	0	0	**0**	0	0	0	0	**0**	**2**
9:00AM	0	0	0	0	**0**	0	0	0	0	**0**	0	0	0	0	**0**	0	0	0	0	**0**	**0**
Hourly Total	0	0	0	0	**0**	0	0	0	0	**0**	0	0	0	0	**0**	0	0	0	0	**0**	**0**
4:00PM	0	0	0	0	**0**	0	0	0	0	**0**	0	0	0	0	**0**	0	0	0	0	**0**	**0**
4:15PM	0	0	0	0	**0**	0	1	0	0	**1**	0	0	0	0	**0**	0	0	0	0	**0**	**1**
4:30PM	0	0	0	0	**0**	0	0	0	0	**0**	0	0	0	0	**0**	0	0	0	0	**0**	**0**
4:45PM	0	0	0	0	**0**	0	0	0	0	**0**	0	0	0	0	**0**	0	0	0	0	**0**	**0**
Hourly Total	0	0	0	0	**0**	0	1	0	0	**1**	0	0	0	0	**0**	0	0	0	0	**0**	**1**
5:00PM	0	0	0	0	**0**	0	0	0	0	**0**	2	0	0	0	**2**	0	0	0	0	**0**	**2**
5:15PM	0	0	0	0	**0**	0	0	0	0	**0**	0	0	0	0	**0**	0	0	0	0	**0**	**0**
5:30PM	0	0	0	0	**0**	0	0	0	0	**0**	0	0	0	0	**0**	0	0	0	0	**0**	**0**
5:45PM	0	0	0	0	**0**	0	0	0	0	**0**	0	0	0	0	**0**	0	0	0	0	**0**	**0**
Hourly Total	0	0	0	0	**0**	0	0	0	0	**0**	2	0	0	0	**2**	0	0	0	0	**0**	**2**
6:00PM	0	0	0	0	**0**	0	0	0	0	**0**	0	0	0	0	**0**	0	0	0	0	**0**	**0**
Hourly Total	0	0	0	0	**0**	0	0	0	0	**0**	0	0	0	0	**0**	0	0	0	0	**0**	**0**
Total	0	1	0	0	**1**	0	2	0	0	**2**	2	0	0	0	**2**	0	0	0	0	**0**	**5**
% Approach	0%	100%	0%	0%	**-**	0%	100%	0%	0%	**-**	100%	0%	0%	0%	**-**	0%	0%	0%	0%	**-**	-
% Total	0%	20.0%	0%	0%	**20.0%**	0%	40.0%	0%	0%	**40.0%**	40.0%	0%	0%	0%	**40.0%**	0%	0%	0%	0%	**0%**	-
Lights	0	1	0	0	**1**	0	2	0	0	**2**	2	0	0	0	**2**	0	0	0	0	**0**	5
% Lights	0%	100%	0%	0%	**100%**	0%	100%	0%	0%	**100%**	100%	0%	0%	0%	**100%**	0%	0%	0%	0%	**-**	100%
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%
Buses and Single-Unit 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%	0%	0%	0%	**0%**	0%	0%	0%	0%	**0%**	0%	0%	0%	0%	**0%**	0%	0%	0%	0%	**-**	0%

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

Fleetwood Drive and Lear Boulevard - TMC
Thu Feb 2, 2023
Full Length (7 AM-9 AM, 4 PM-6 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1035398, Location: 39.646782, -119.843895

Provided by: Kimley-Horn and Associates, Inc.
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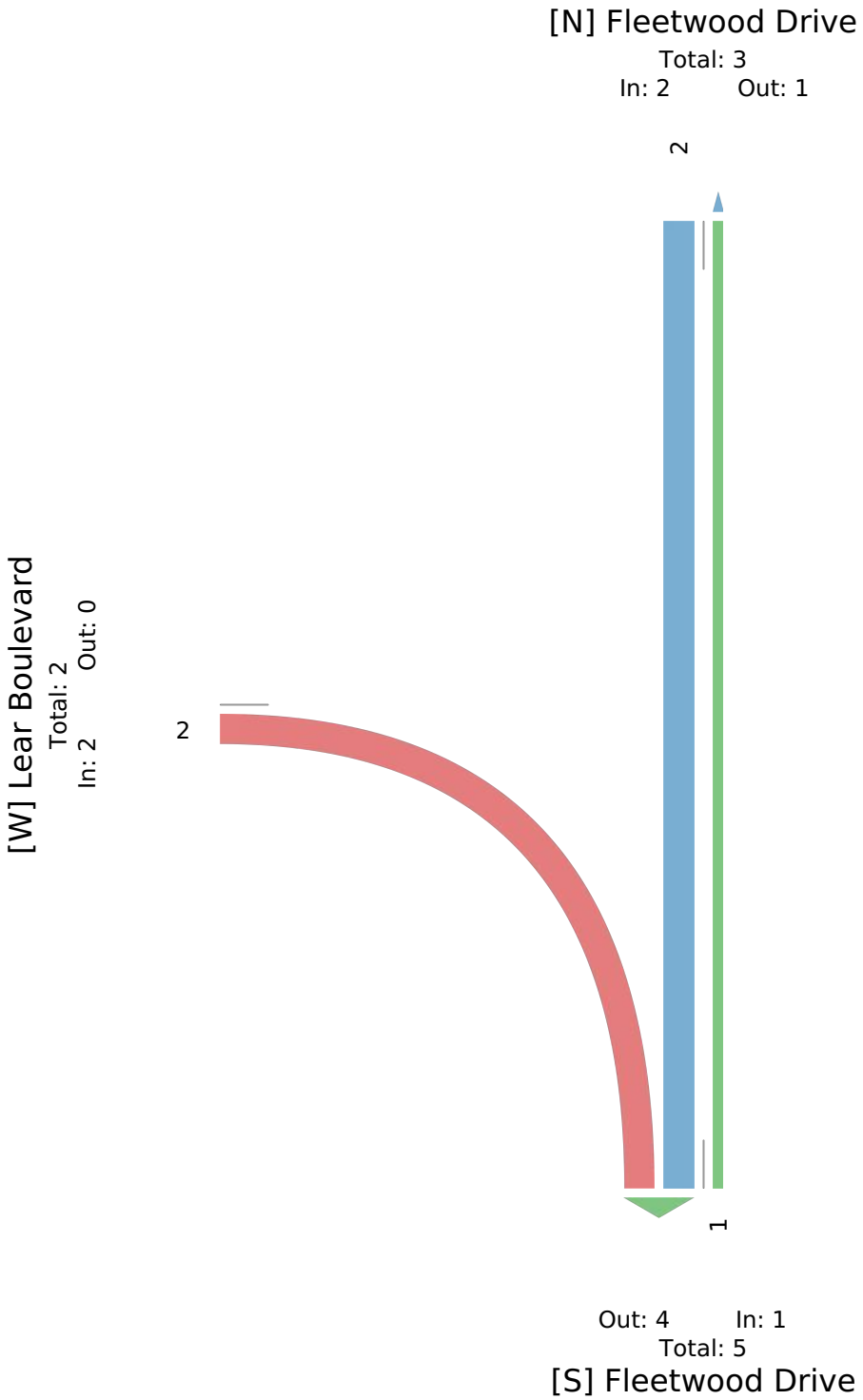

Fleetwood Drive and Lear Boulevard - TMC

Thu Feb 2, 2023
AM Peak (8 AM - 9 AM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1035398, Location: 39.646782, -119.843895

Provided by: Kimley-Horn and Associates, Inc.
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Leg Direction	Fleetwood Drive Northbound					Fleetwood Drive Southbound					Lear Boulevard Eastbound					Lear Boulevard Westbound					
Time	R	T	L	U	**App**	R	T	L	U	**App**	R	T	L	U	**App**	R	T	L	U	**App**	**Int**
2023-02-02 8:00AM	0	1	0	0	**1**	0	1	0	0	**1**	0	0	0	0	**0**	0	0	0	0	**0**	**2**
8:15AM	0	0	0	0	**0**	0	0	0	0	**0**	0	0	0	0	**0**	0	0	0	0	**0**	**0**
8:30AM	0	0	0	0	**0**	0	0	0	0	**0**	0	0	0	0	**0**	0	0	0	0	**0**	**0**
8:45AM	0	0	0	0	**0**	0	0	0	0	**0**	0	0	0	0	**0**	0	0	0	0	**0**	**0**
Total	0	1	0	0	**1**	0	1	0	0	**1**	0	0	0	0	**0**	0	0	0	0	**0**	**2**
% Approach	0%	100%	0%	0%	**-**	0%	100%	0%	0%	**-**	0%	0%	0%	0%	**-**	0%	0%	0%	0%	**-**	-
% Total	0%	50.0%	0%	0%	**50.0%**	0%	50.0%	0%	0%	**50.0%**	0%	0%	0%	0%	**0%**	0%	0%	0%	0%	**0%**	-
PHF	-	0.250	-	-	**0.250**	-	0.250	-	-	**0.250**	-	-	-	-	**-**	-	-	-	-	**-**	0.250
Lights	0	1	0	0	**1**	0	1	0	0	**1**	0	0	0	0	**0**	0	0	0	0	**0**	2
% Lights	0%	100%	0%	0%	**100%**	0%	100%	0%	0%	**100%**	0%	0%	0%	0%	**-**	0%	0%	0%	0%	**-**	100%
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%
Buses and Single-Unit 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%	0%	0%	0%	**0%**	0%	0%	0%	0%	**0%**	0%	0%	0%	0%	**-**	0%	0%	0%	0%	**-**	0%

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

Fleetwood Drive and Lear Boulevard - TMC

Thu Feb 2, 2023
AM Peak (8 AM - 9 AM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1035398, Location: 39.646782, -119.843895

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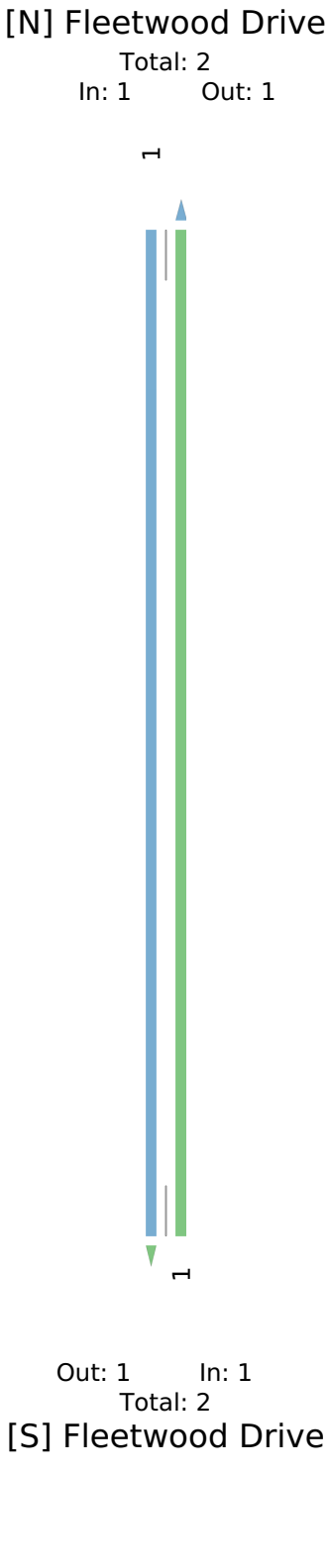


Fleetwood Drive and Lear Boulevard - TMC

Thu Feb 2, 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: 1035398, Location: 39.646782, -119.843895

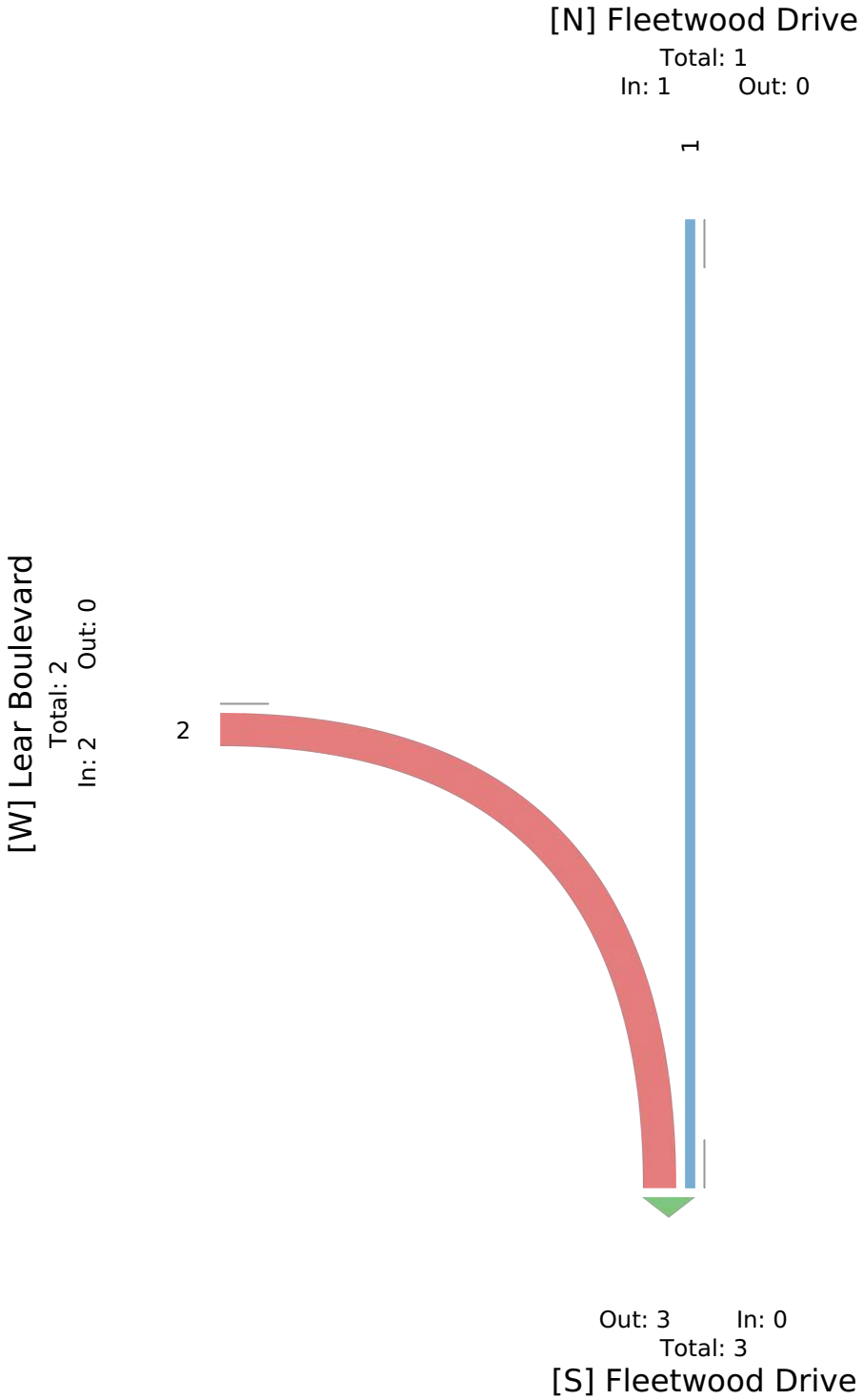
Provided by: Kimley-Horn and Associates, Inc.
767 Eustis Street, Suite 100, Saint Paul, MN, 55114, US

Leg	Fleetwood Drive					Fleetwood Drive					Lear Boulevard					Lear Boulevard					
Direction	Northbound					Southbound					Eastbound					Westbound					
Time	R	T	L	U	**App**	R	T	L	U	**App**	R	T	L	U	**App**	R	T	L	U	**App**	**Int**
2023-02-02 4:15PM	0	0	0	0	**0**	0	1	0	0	**1**	0	0	0	0	**0**	0	0	0	0	**0**	**1**
4:30PM	0	0	0	0	**0**	0	0	0	0	**0**	0	0	0	0	**0**	0	0	0	0	**0**	**0**
4:45PM	0	0	0	0	**0**	0	0	0	0	**0**	0	0	0	0	**0**	0	0	0	0	**0**	**0**
5:00PM	0	0	0	0	**0**	0	0	0	0	**0**	2	0	0	0	**2**	0	0	0	0	**0**	**2**
Total	0	0	0	0	**0**	0	1	0	0	**1**	2	0	0	0	**2**	0	0	0	0	**0**	**3**
% Approach	0%	0%	0%	0%	**-**	0%	100%	0%	0%	**-**	100%	0%	0%	0%	**-**	0%	0%	0%	0%	**-**	-
% Total	0%	0%	0%	0%	**0%**	0%	33.3%	0%	0%	**33.3%**	66.7%	0%	0%	0%	**66.7%**	0%	0%	0%	0%	**0%**	-
PHF	-	-	-	-	**-**	-	0.250	-	-	**0.250**	0.250	-	-	-	**0.250**	-	-	-	-	**-**	0.375
Lights	0	0	0	0	**0**	0	1	0	0	**1**	2	0	0	0	**2**	0	0	0	0	**0**	3
% Lights	0%	0%	0%	0%	**-**	0%	100%	0%	0%	**100%**	100%	0%	0%	0%	**100%**	0%	0%	0%	0%	**-**	100%
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%
Buses and Single-Unit 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%	0%	0%	0%	**-**	0%	0%	0%	0%	**0%**	0%	0%	0%	0%	**0%**	0%	0%	0%	0%	**-**	0%

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

Fleetwood Drive and Lear Boulevard - TMC
Thu Feb 2, 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: 1035398, Location: 39.646782, -119.843895

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



APPENDIX C

TRIP GENERATION CALCULATIONS

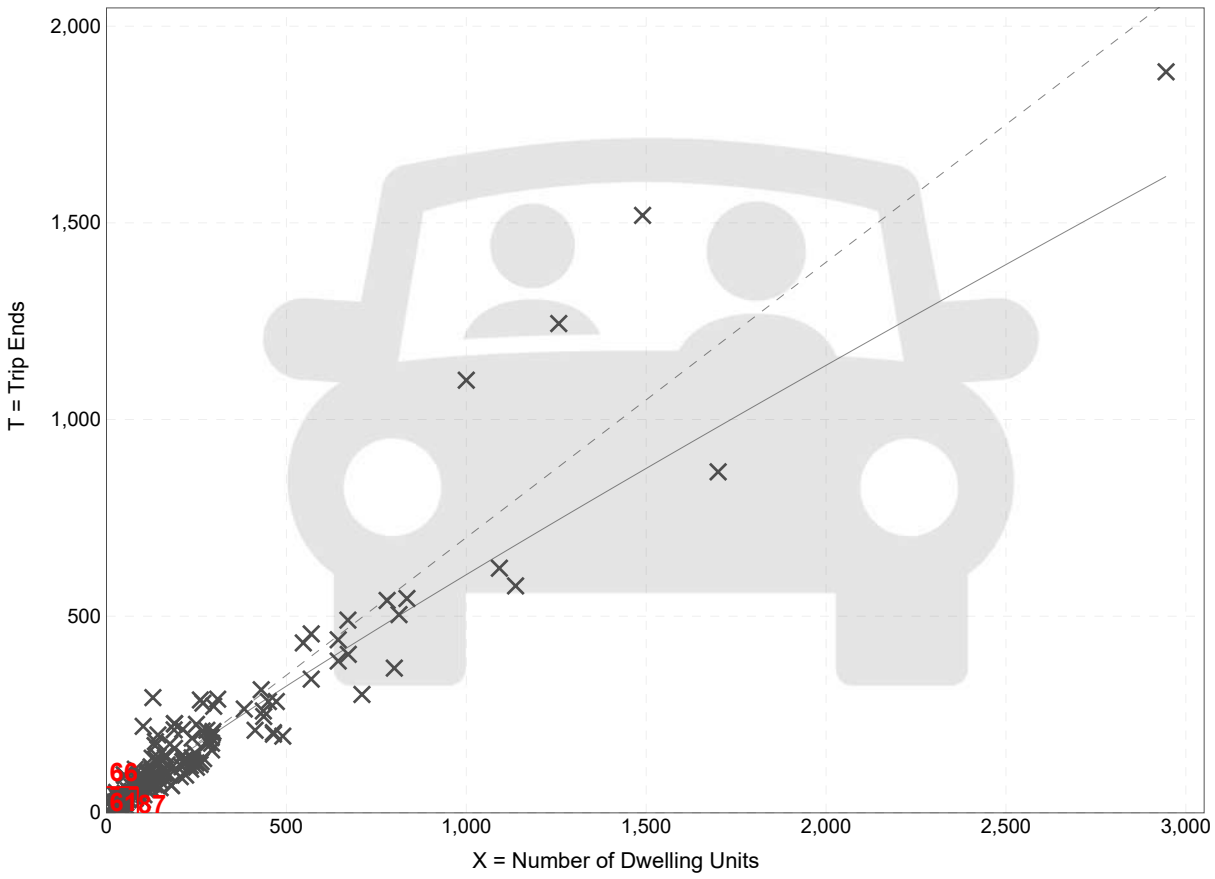
Single-Family Detached Housing
(210)

Vehicle Trip Ends vs:	**Dwelling Units**
On a:	**Weekday,**
	Peak Hour of Adjacent Street Traffic,
	One Hour Between 7 and 9 a.m.
Setting/Location:	**General Urban/Suburban**
Number of Studies:	192
Avg. Num. of Dwelling Units:	226
Directional Distribution:	25% entering, 75% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.70	0.27 - 2.27	0.24

Data Plot and Equation



Fitted Curve Equation: Ln(T) = 0.91 Ln(X) + 0.12 **R^2= 0.90**

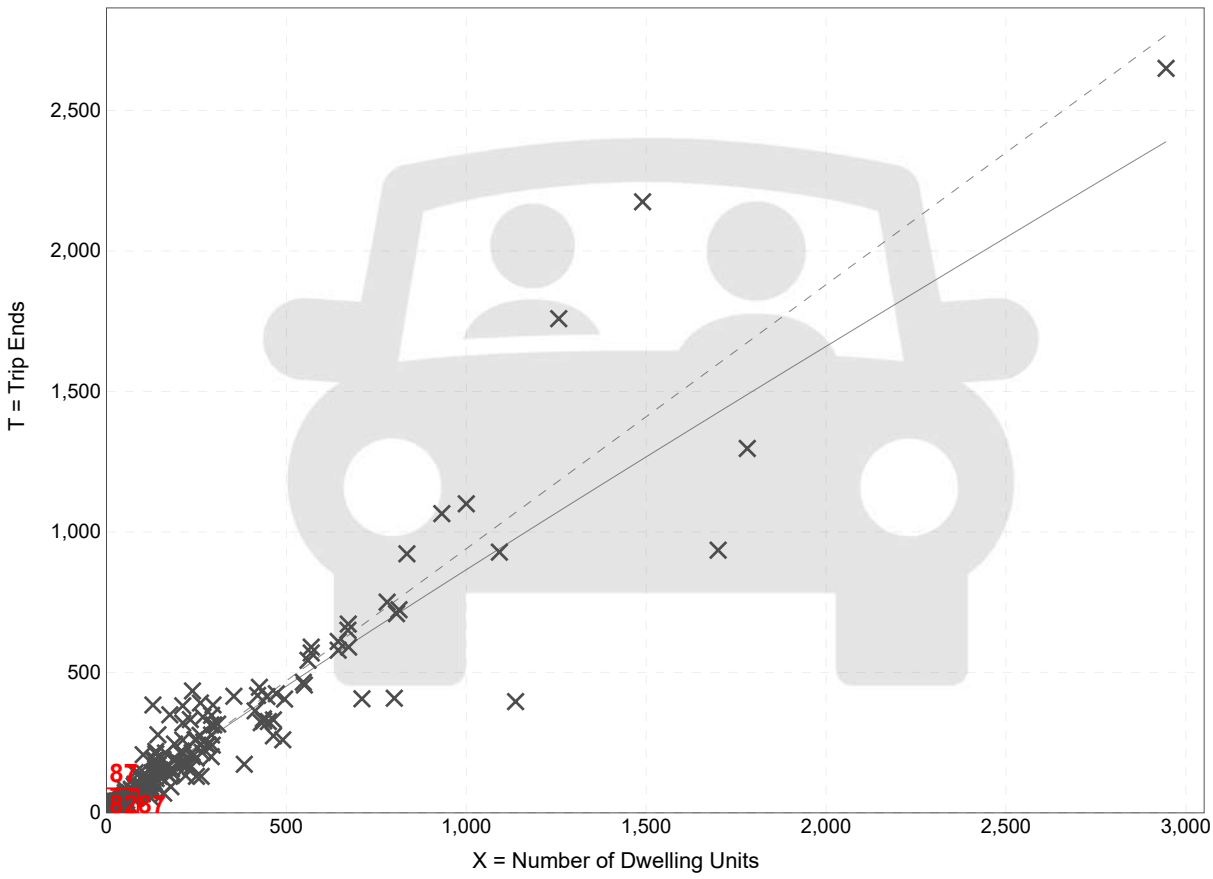
Single-Family Detached Housing
(210)

Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.
Setting/Location: **General Urban/Suburban**
Number of Studies: 208
Avg. Num. of Dwelling Units: 248
Directional Distribution: 63% entering, 37% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.94	0.35 - 2.98	0.31

Data Plot and Equation



Fitted Curve Equation: Ln(T) = 0.94 Ln(X) + 0.27

R^2= 0.92

Single-Family Detached Housing
(210)

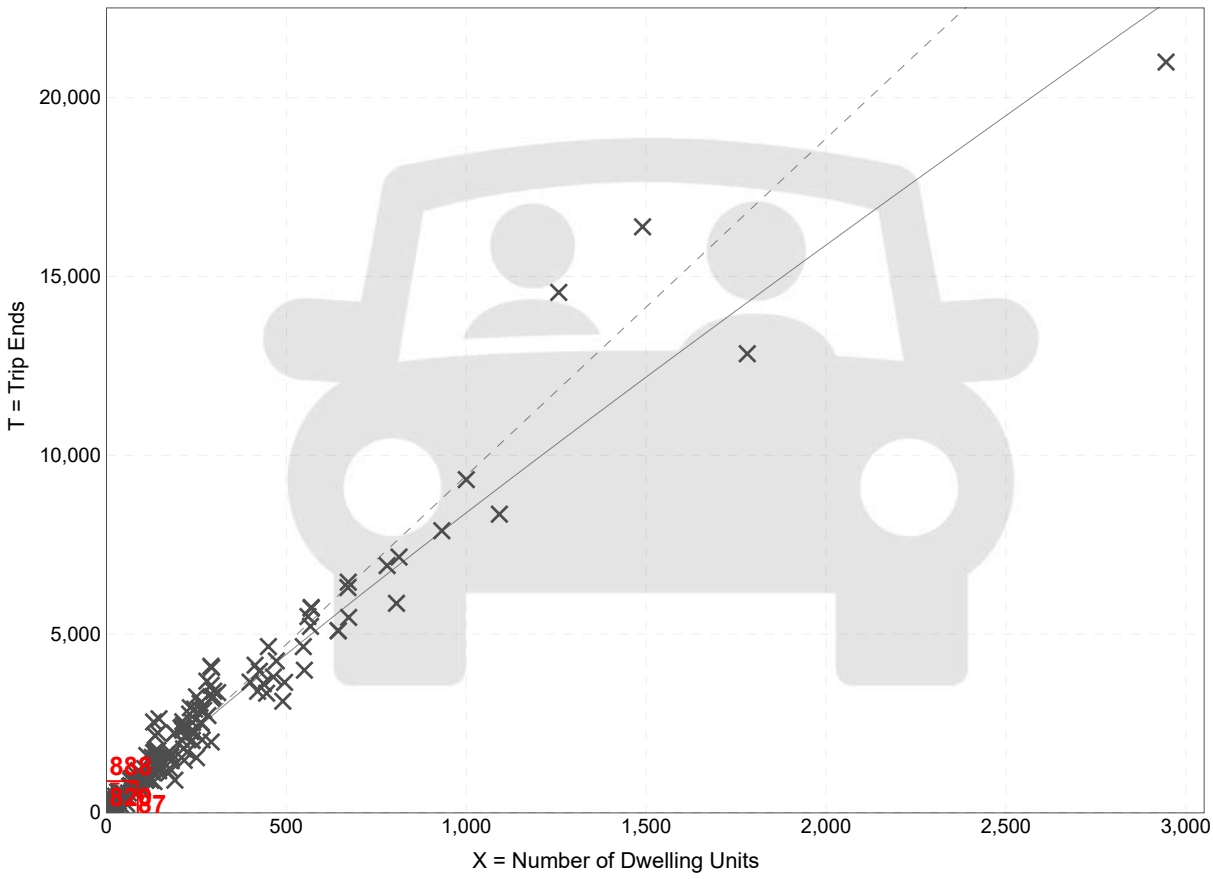
Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday**

Setting/Location: **General Urban/Suburban**
Number of Studies: 174
Avg. Num. of Dwelling Units: 246
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
9.43	4.45 - 22.61	2.13

Data Plot and Equation



Fitted Curve Equation: Ln(T) = 0.92 Ln(X) + 2.68

R^2= 0.95

APPENDIX D

KEY INTERSECTION PEAK HOUR LOS CALCULATIONS

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	2	0	33	109	0	0
Future Vol, veh/h	2	0	33	109	0	0
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	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	0	37	121	0	0

Major/Minor	Minor2		Major1	
Conflicting Flow All	135	-	0	0
Stage 1	0	-	-	-
Stage 2	135	-	-	-
Critical Hdwy	6.84	-	4.14	-
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-
Follow-up Hdwy	3.52	-	2.22	-
Pot Cap-1 Maneuver	845	0	-	-
Stage 1	-	0	-	-
Stage 2	877	0	-	-
Platoon blocked, %				-
Mov Cap-1 Maneuver	845	-	-	-
Mov Cap-2 Maneuver	845	-	-	-
Stage 1	-	-	-	-
Stage 2	877	-	-	-

Approach	EB	NB
HCM Control Delay, s	9.3	
HCM LOS	A	

Minor Lane/Major Mvmt	NBL	NBT	EBLn1
Capacity (veh/h)	-	-	845
HCM Lane V/C Ratio	-	-	0.003
HCM Control Delay (s)	-	-	9.3
HCM Lane LOS	-	-	A
HCM 95th %tile Q(veh)	-	-	0

Intersection	
Int Delay, s/veh	2.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	2	69	0	33	0	0	0	0	0	357	1
Future Vol, veh/h	0	2	69	0	33	0	0	0	0	0	357	1
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	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	2	77	0	37	0	0	0	0	0	397	1

Major/Minor	Minor2			Minor1					Major2		
Conflicting Flow All	-	398	199	200	398	-			0	0	0
Stage 1	-	398	-	0	0	-			-	-	-
Stage 2	-	0	-	200	398	-			-	-	-
Critical Hdwy	-	6.54	6.94	7.54	6.54	-			4.14	-	-
Critical Hdwy Stg 1	-	5.54	-	-	-	-			-	-	-
Critical Hdwy Stg 2	-	-	-	6.54	5.54	-			-	-	-
Follow-up Hdwy	-	4.02	3.32	3.52	4.02	-			2.22	-	-
Pot Cap-1 Maneuver	0	538	809	741	538	0			-	-	-
Stage 1	0	601	-	-	-	0			-	-	-
Stage 2	0	-	-	783	601	0			-	-	-
Platoon blocked, %										-	-
Mov Cap-1 Maneuver	-	538	809	668	538	-			-	-	-
Mov Cap-2 Maneuver	-	538	-	668	538	-			-	-	-
Stage 1	-	601	-	-	-	-			-	-	-
Stage 2	-	-	-	706	601	-			-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	10	12.2	0
HCM LOS	B	B	

Minor Lane/Major Mvmt	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	798	538	-	-	-
HCM Lane V/C Ratio	0.099	0.068	-	-	-
HCM Control Delay (s)	10	12.2	0	-	-
HCM Lane LOS	B	B	A	-	-
HCM 95th %tile Q(veh)	0.3	0.2	-	-	-

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	7	3	0	20	37	4
Future Vol, veh/h	7	3	0	20	37	4
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	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	68	68	68	68	68	68
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	10	4	0	29	54	6

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	86	57	60	0	-	0
Stage 1	57	-	-	-	-	-
Stage 2	29	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	915	1009	1544	-	-	-
Stage 1	966	-	-	-	-	-
Stage 2	994	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	915	1009	1544	-	-	-
Mov Cap-2 Maneuver	915	-	-	-	-	-
Stage 1	966	-	-	-	-	-
Stage 2	994	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.9	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1544	-	941	-	-
HCM Lane V/C Ratio	-	-	0.016	-	-
HCM Control Delay (s)	0	-	8.9	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Intersection Delay, s/veh	7
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	0	0	0	0	1	0	0	1	0
Future Vol, veh/h	0	0	0	0	0	0	0	1	0	0	1	0
Peak Hour Factor	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	0	0	0	4	0	0	4	0
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	0	0	7	7
HCM LOS	-	-	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	0%	0%	0%	0%
Vol Thru, %	100%	100%	100%	100%
Vol Right, %	0%	0%	0%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	1	0	0	1
LT Vol	0	0	0	0
Through Vol	1	0	0	1
RT Vol	0	0	0	0
Lane Flow Rate	4	0	0	4
Geometry Grp	1	1	1	1
Degree of Util (X)	0.004	0	0	0.004
Departure Headway (Hd)	3.937	3.95	3.95	3.937
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	914	0	0	914
Service Time	1.937	1.95	1.95	1.937
HCM Lane V/C Ratio	0.004	0	0	0.004
HCM Control Delay	7	7	7	7
HCM Lane LOS	A	N	N	A
HCM 95th-tile Q	0	0	0	0

Intersection	
Int Delay, s/veh	2.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	0	0	10	0	1
Future Vol, veh/h	5	0	0	10	0	1
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	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	57	57	57	57	57	57
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	9	0	0	18	0	2

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	11	9	0	0	18	0
Stage 1	9	-	-	-	-	-
Stage 2	2	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	1009	1073	-	-	1599	-
Stage 1	1014	-	-	-	-	-
Stage 2	1021	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	1009	1073	-	-	1599	-
Mov Cap-2 Maneuver	1009	-	-	-	-	-
Stage 1	1014	-	-	-	-	-
Stage 2	1021	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.6	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	1009	1599	-
HCM Lane V/C Ratio	-	-	0.009	-	-
HCM Control Delay (s)	-	-	8.6	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	0	0	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	0	90	445	0	0
Future Vol, veh/h	0	0	90	445	0	0
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	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	103	511	0	0

Major/Minor	Minor2		Major1	
Conflicting Flow All	462	-	0	0
Stage 1	0	-	-	-
Stage 2	462	-	-	-
Critical Hdwy	6.84	-	4.14	-
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-
Follow-up Hdwy	3.52	-	2.22	-
Pot Cap-1 Maneuver	528	0	-	-
Stage 1	-	0	-	-
Stage 2	601	0	-	-
Platoon blocked, %				-
Mov Cap-1 Maneuver	528	-	-	-
Mov Cap-2 Maneuver	528	-	-	-
Stage 1	-	-	-	-
Stage 2	601	-	-	-

Approach	EB	NB
HCM Control Delay, s	0	
HCM LOS	A	

Minor Lane/Major Mvmt	NBL	NBT	EBLn1
Capacity (veh/h)	-	-	-
HCM Lane V/C Ratio	-	-	-
HCM Control Delay (s)	-	-	0
HCM Lane LOS	-	-	A
HCM 95th %tile Q(veh)	-	-	-

Intersection	
Int Delay, s/veh	4.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	50	1	89	0	0	0	0	0	219	0
Future Vol, veh/h	0	0	50	1	89	0	0	0	0	0	219	0
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	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	57	1	102	0	0	0	0	0	252	0

Major/Minor	Minor2			Minor1					Major2		
Conflicting Flow All	-	252	126	126	252	-			0	0	0
Stage 1	-	252	-	0	0	-			-	-	-
Stage 2	-	0	-	126	252	-			-	-	-
Critical Hdwy	-	6.54	6.94	7.54	6.54	-			4.14	-	-
Critical Hdwy Stg 1	-	5.54	-	-	-	-			-	-	-
Critical Hdwy Stg 2	-	-	-	6.54	5.54	-			-	-	-
Follow-up Hdwy	-	4.02	3.32	3.52	4.02	-			2.22	-	-
Pot Cap-1 Maneuver	0	650	901	835	650	0			-	-	-
Stage 1	0	697	-	-	-	0			-	-	-
Stage 2	0	-	-	865	697	0			-	-	-
Platoon blocked, %										-	-
Mov Cap-1 Maneuver	-	650	901	782	650	-			-	-	-
Mov Cap-2 Maneuver	-	650	-	782	650	-			-	-	-
Stage 1	-	697	-	-	-	-			-	-	-
Stage 2	-	-	-	810	697	-			-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	9.3	11.6	0
HCM LOS	A	B	

Minor Lane/Major Mvmt	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	901	651	-	-	-
HCM Lane V/C Ratio	0.064	0.159	-	-	-
HCM Control Delay (s)	9.3	11.6	0	-	-
HCM Lane LOS	A	B	A	-	-
HCM 95th %tile Q(veh)	0.2	0.6	-	-	-

Intersection	
Int Delay, s/veh	1.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	7	4	6	37	27	8
Future Vol, veh/h	7	4	6	37	27	8
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	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	8	4	6	40	29	9

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	86	34	38	0	-	0
Stage 1	34	-	-	-	-	-
Stage 2	52	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	915	1039	1572	-	-	-
Stage 1	988	-	-	-	-	-
Stage 2	970	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	911	1039	1572	-	-	-
Mov Cap-2 Maneuver	911	-	-	-	-	-
Stage 1	984	-	-	-	-	-
Stage 2	970	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.8	1	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1572	-	954	-	-
HCM Lane V/C Ratio	0.004	-	0.012	-	-
HCM Control Delay (s)	7.3	0	8.8	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Intersection Delay, s/veh	6.7
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	2	0	0	0	0	0	0	1	0	0
Future Vol, veh/h	0	0	2	0	0	0	0	0	0	1	0	0
Peak Hour Factor	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	5	0	0	0	0	0	0	3	0	0
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	6.4	0	0	7.2
HCM LOS	A	-	-	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	0%	0%	0%	100%
Vol Thru, %	100%	0%	100%	0%
Vol Right, %	0%	100%	0%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	0	2	0	1
LT Vol	0	0	0	1
Through Vol	0	0	0	0
RT Vol	0	2	0	0
Lane Flow Rate	0	5	0	3
Geometry Grp	1	1	1	1
Degree of Util (X)	0	0.005	0	0.003
Departure Headway (Hd)	3.946	3.338	3.942	4.144
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	0	1078	0	869
Service Time	1.946	1.34	1.944	2.144
HCM Lane V/C Ratio	0	0.005	0	0.003
HCM Control Delay	6.9	6.4	6.9	7.2
HCM Lane LOS	N	A	N	A
HCM 95th-tile Q	0	0	0	0

Intersection	
Int Delay, s/veh	4.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	8	3	0	9	3	1
Future Vol, veh/h	8	3	0	9	3	1
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	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	67	67	67	67	67	67
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	12	4	0	13	4	1

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	16	7	0	0	13	0
Stage 1	7	-	-	-	-	-
Stage 2	9	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	1002	1075	-	-	1606	-
Stage 1	1016	-	-	-	-	-
Stage 2	1014	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	1000	1075	-	-	1606	-
Mov Cap-2 Maneuver	1000	-	-	-	-	-
Stage 1	1016	-	-	-	-	-
Stage 2	1012	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.6	0	5.4
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	1019	1606	-
HCM Lane V/C Ratio	-	-	0.016	0.003	-
HCM Control Delay (s)	-	-	8.6	7.2	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0	0	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	2	0	35	116	0	0
Future Vol, veh/h	2	0	35	116	0	0
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	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	0	39	129	0	0

Major/Minor	Minor2		Major1	
Conflicting Flow All	143	-	0	0
Stage 1	0	-	-	-
Stage 2	143	-	-	-
Critical Hdwy	6.84	-	4.14	-
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-
Follow-up Hdwy	3.52	-	2.22	-
Pot Cap-1 Maneuver	835	0	-	-
Stage 1	-	0	-	-
Stage 2	869	0	-	-
Platoon blocked, %				-
Mov Cap-1 Maneuver	835	-	-	-
Mov Cap-2 Maneuver	835	-	-	-
Stage 1	-	-	-	-
Stage 2	869	-	-	-

Approach	EB	NB
HCM Control Delay, s	9.3	
HCM LOS	A	

Minor Lane/Major Mvmt	NBL	NBT	EBLn1
Capacity (veh/h)	-	-	835
HCM Lane V/C Ratio	-	-	0.003
HCM Control Delay (s)	-	-	9.3
HCM Lane LOS	-	-	A
HCM 95th %tile Q(veh)	-	-	0

Intersection	
Int Delay, s/veh	2.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	2	73	0	35	0	0	0	0	0	379	1
Future Vol, veh/h	0	2	73	0	35	0	0	0	0	0	379	1
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	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	2	81	0	39	0	0	0	0	0	421	1

Major/Minor	Minor2			Minor1					Major2		
Conflicting Flow All	-	422	211	212	422	-			0	0	0
Stage 1	-	422	-	0	0	-			-	-	-
Stage 2	-	0	-	212	422	-			-	-	-
Critical Hdwy	-	6.54	6.94	7.54	6.54	-			4.14	-	-
Critical Hdwy Stg 1	-	5.54	-	-	-	-			-	-	-
Critical Hdwy Stg 2	-	-	-	6.54	5.54	-			-	-	-
Follow-up Hdwy	-	4.02	3.32	3.52	4.02	-			2.22	-	-
Pot Cap-1 Maneuver	0	522	794	726	522	0			-	-	-
Stage 1	0	587	-	-	-	0			-	-	-
Stage 2	0	-	-	770	587	0			-	-	-
Platoon blocked, %										-	-
Mov Cap-1 Maneuver	-	522	794	650	522	-			-	-	-
Mov Cap-2 Maneuver	-	522	-	650	522	-			-	-	-
Stage 1	-	587	-	-	-	-			-	-	-
Stage 2	-	-	-	689	587	-			-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	10.1	12.5	0
HCM LOS	B	B	

Minor Lane/Major Mvmt	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	783	522	-	-	-
HCM Lane V/C Ratio	0.106	0.074	-	-	-
HCM Control Delay (s)	10.1	12.5	0	-	-
HCM Lane LOS	B	B	A	-	-
HCM 95th %tile Q(veh)	0.4	0.2	-	-	-

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	7	3	0	21	39	4
Future Vol, veh/h	7	3	0	21	39	4
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	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	68	68	68	68	68	68
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	10	4	0	31	57	6

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	91	60	63	0	-	0
Stage 1	60	-	-	-	-	-
Stage 2	31	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	909	1005	1540	-	-	-
Stage 1	963	-	-	-	-	-
Stage 2	992	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	909	1005	1540	-	-	-
Mov Cap-2 Maneuver	909	-	-	-	-	-
Stage 1	963	-	-	-	-	-
Stage 2	992	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.9	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1540	-	936	-	-
HCM Lane V/C Ratio	-	-	0.016	-	-
HCM Control Delay (s)	0	-	8.9	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Intersection Delay, s/veh	7
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	0	0	0	0	1	0	0	1	0
Future Vol, veh/h	0	0	0	0	0	0	0	1	0	0	1	0
Peak Hour Factor	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	0	0	0	4	0	0	4	0
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	0	0	7	7
HCM LOS	-	-	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	0%	0%	0%	0%
Vol Thru, %	100%	100%	100%	100%
Vol Right, %	0%	0%	0%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	1	0	0	1
LT Vol	0	0	0	0
Through Vol	1	0	0	1
RT Vol	0	0	0	0
Lane Flow Rate	4	0	0	4
Geometry Grp	1	1	1	1
Degree of Util (X)	0.004	0	0	0.004
Departure Headway (Hd)	3.937	3.95	3.95	3.937
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	914	0	0	914
Service Time	1.937	1.95	1.95	1.937
HCM Lane V/C Ratio	0.004	0	0	0.004
HCM Control Delay	7	7	7	7
HCM Lane LOS	A	N	N	A
HCM 95th-tile Q	0	0	0	0

Intersection	
Int Delay, s/veh	2.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	0	0	11	0	1
Future Vol, veh/h	5	0	0	11	0	1
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	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	57	57	57	57	57	57
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	9	0	0	19	0	2

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	12	10	0	0	19	0
Stage 1	10	-	-	-	-	-
Stage 2	2	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	1008	1071	-	-	1597	-
Stage 1	1013	-	-	-	-	-
Stage 2	1021	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	1008	1071	-	-	1597	-
Mov Cap-2 Maneuver	1008	-	-	-	-	-
Stage 1	1013	-	-	-	-	-
Stage 2	1021	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.6	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	1008	1597	-
HCM Lane V/C Ratio	-	-	0.009	-	-
HCM Control Delay (s)	-	-	8.6	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	0	0	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	0	95	472	0	0
Future Vol, veh/h	0	0	95	472	0	0
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	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	109	543	0	0

Major/Minor	Minor2		Major1	
Conflicting Flow All	490	-	0	0
Stage 1	0	-	-	-
Stage 2	490	-	-	-
Critical Hdwy	6.84	-	4.14	-
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-
Follow-up Hdwy	3.52	-	2.22	-
Pot Cap-1 Maneuver	507	0	-	-
Stage 1	-	0	-	-
Stage 2	581	0	-	-
Platoon blocked, %				-
Mov Cap-1 Maneuver	507	-	-	-
Mov Cap-2 Maneuver	507	-	-	-
Stage 1	-	-	-	-
Stage 2	581	-	-	-

Approach	EB	NB
HCM Control Delay, s	0	
HCM LOS	A	

Minor Lane/Major Mvmt	NBL	NBT	EBLn1
Capacity (veh/h)	-	-	-
HCM Lane V/C Ratio	-	-	-
HCM Control Delay (s)	-	-	0
HCM Lane LOS	-	-	A
HCM 95th %tile Q(veh)	-	-	-

Intersection	
Int Delay, s/veh	4.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	53	0	94	0	0	0	0	0	232	0
Future Vol, veh/h	0	0	53	0	94	0	0	0	0	0	232	0
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	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	61	0	108	0	0	0	0	0	267	0

Major/Minor	Minor2			Minor1					Major2		
Conflicting Flow All	-	267	134	134	267	-			0	0	0
Stage 1	-	267	-	0	0	-			-	-	-
Stage 2	-	0	-	134	267	-			-	-	-
Critical Hdwy	-	6.54	6.94	7.54	6.54	-			4.14	-	-
Critical Hdwy Stg 1	-	5.54	-	-	-	-			-	-	-
Critical Hdwy Stg 2	-	-	-	6.54	5.54	-			-	-	-
Follow-up Hdwy	-	4.02	3.32	3.52	4.02	-			2.22	-	-
Pot Cap-1 Maneuver	0	638	890	824	638	0			-	-	-
Stage 1	0	687	-	-	-	0			-	-	-
Stage 2	0	-	-	855	687	0			-	-	-
Platoon blocked, %										-	-
Mov Cap-1 Maneuver	-	638	890	768	638	-			-	-	-
Mov Cap-2 Maneuver	-	638	-	768	638	-			-	-	-
Stage 1	-	687	-	-	-	-			-	-	-
Stage 2	-	-	-	796	687	-			-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	9.3	11.8	0
HCM LOS	A	B	

Minor Lane/Major Mvmt	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	890	638	-	-	-
HCM Lane V/C Ratio	0.068	0.169	-	-	-
HCM Control Delay (s)	9.3	11.8	0	-	-
HCM Lane LOS	A	B	A	-	-
HCM 95th %tile Q(veh)	0.2	0.6	-	-	-

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	7	4	6	39	29	8
Future Vol, veh/h	7	4	6	39	29	8
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	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	8	4	6	42	31	9

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	90	36	40	0	-	0
Stage 1	36	-	-	-	-	-
Stage 2	54	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	910	1037	1570	-	-	-
Stage 1	986	-	-	-	-	-
Stage 2	969	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	906	1037	1570	-	-	-
Mov Cap-2 Maneuver	906	-	-	-	-	-
Stage 1	982	-	-	-	-	-
Stage 2	969	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.8	1	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1570	-	950	-	-
HCM Lane V/C Ratio	0.004	-	0.012	-	-
HCM Control Delay (s)	7.3	0	8.8	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Intersection Delay, s/veh	6.7
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	2	0	0	0	0	0	0	1	0	0
Future Vol, veh/h	0	0	2	0	0	0	0	0	0	1	0	0
Peak Hour Factor	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	5	0	0	0	0	0	0	3	0	0
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	6.4	0	0	7.2
HCM LOS	A	-	-	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	0%	0%	0%	100%
Vol Thru, %	100%	0%	100%	0%
Vol Right, %	0%	100%	0%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	0	2	0	1
LT Vol	0	0	0	1
Through Vol	0	0	0	0
RT Vol	0	2	0	0
Lane Flow Rate	0	5	0	3
Geometry Grp	1	1	1	1
Degree of Util (X)	0	0.005	0	0.003
Departure Headway (Hd)	3.946	3.338	3.942	4.144
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	0	1078	0	869
Service Time	1.946	1.34	1.944	2.144
HCM Lane V/C Ratio	0	0.005	0	0.003
HCM Control Delay	6.9	6.4	6.9	7.2
HCM Lane LOS	N	A	N	A
HCM 95th-tile Q	0	0	0	0

Intersection	
Int Delay, s/veh	4.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	8	3	0	10	3	1
Future Vol, veh/h	8	3	0	10	3	1
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	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	67	67	67	67	67	67
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	12	4	0	15	4	1

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	17	8	0	0	15	0
Stage 1	8	-	-	-	-	-
Stage 2	9	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	1001	1074	-	-	1603	-
Stage 1	1015	-	-	-	-	-
Stage 2	1014	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	999	1074	-	-	1603	-
Mov Cap-2 Maneuver	999	-	-	-	-	-
Stage 1	1015	-	-	-	-	-
Stage 2	1012	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.6	0	5.4
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	1018	1603	-
HCM Lane V/C Ratio	-	-	0.016	0.003	-
HCM Control Delay (s)	-	-	8.6	7.3	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0	0	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	7	0	49	116	0	0
Future Vol, veh/h	7	0	49	116	0	0
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	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	8	0	54	129	0	0

Major/Minor	Minor2		Major1	
Conflicting Flow All	173	-	0	0
Stage 1	0	-	-	-
Stage 2	173	-	-	-
Critical Hdwy	6.84	-	4.14	-
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-
Follow-up Hdwy	3.52	-	2.22	-
Pot Cap-1 Maneuver	800	0	-	-
Stage 1	-	0	-	-
Stage 2	840	0	-	-
Platoon blocked, %				-
Mov Cap-1 Maneuver	800	-	-	-
Mov Cap-2 Maneuver	800	-	-	-
Stage 1	-	-	-	-
Stage 2	840	-	-	-

Approach	EB	NB
HCM Control Delay, s	9.5	
HCM LOS	A	

Minor Lane/Major Mvmt	NBL	NBT	EBLn1
Capacity (veh/h)	-	-	800
HCM Lane V/C Ratio	-	-	0.01
HCM Control Delay (s)	-	-	9.5
HCM Lane LOS	-	-	A
HCM 95th %tile Q(veh)	-	-	0

Intersection	
Int Delay, s/veh	3.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	7	114	0	49	0	0	0	0	0	379	3
Future Vol, veh/h	0	7	114	0	49	0	0	0	0	0	379	3
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	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	8	127	0	54	0	0	0	0	0	421	3

Major/Minor	Minor2			Minor1			Major2		
Conflicting Flow All	-	423	212	215	424	-	0	0	0
Stage 1	-	423	-	0	0	-	-	-	-
Stage 2	-	0	-	215	424	-	-	-	-
Critical Hdwy	-	6.54	6.94	7.54	6.54	-	4.14	-	-
Critical Hdwy Stg 1	-	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	6.54	5.54	-	-	-	-
Follow-up Hdwy	-	4.02	3.32	3.52	4.02	-	2.22	-	-
Pot Cap-1 Maneuver	0	521	793	723	520	0	-	-	-
Stage 1	0	586	-	-	-	0	-	-	-
Stage 2	0	-	-	767	585	0	-	-	-
Platoon blocked, %								-	-
Mov Cap-1 Maneuver	-	521	793	601	520	-	-	-	-
Mov Cap-2 Maneuver	-	521	-	601	520	-	-	-	-
Stage 1	-	586	-	-	-	-	-	-	-
Stage 2	-	-	-	636	585	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	10.7	12.7	0
HCM LOS	B	B	

Minor Lane/Major Mvmt	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	770	520	-	-	-
HCM Lane V/C Ratio	0.175	0.105	-	-	-
HCM Control Delay (s)	10.7	12.7	0	-	-
HCM Lane LOS	B	B	A	-	-
HCM 95th %tile Q(veh)	0.6	0.3	-	-	-

Intersection	
Int Delay, s/veh	4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	7	42	13	23	46	4
Future Vol, veh/h	7	42	13	23	46	4
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	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	68	68	68	68	68	68
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	10	62	19	34	68	6

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	143	71	74	0	-	0
Stage 1	71	-	-	-	-	-
Stage 2	72	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	850	991	1526	-	-	-
Stage 1	952	-	-	-	-	-
Stage 2	951	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	839	991	1526	-	-	-
Mov Cap-2 Maneuver	839	-	-	-	-	-
Stage 1	940	-	-	-	-	-
Stage 2	951	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9	2.7	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1526	-	966	-	-
HCM Lane V/C Ratio	0.013	-	0.075	-	-
HCM Control Delay (s)	7.4	0	9	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

Intersection	
Intersection Delay, s/veh	6.7
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	7	0	0	0	2	1	0	0	1	0
Future Vol, veh/h	0	0	7	0	0	0	2	1	0	0	1	0
Peak Hour Factor	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	28	0	0	0	8	4	0	0	4	0
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	6.5	0	7.2	7
HCM LOS	A	-	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	67%	0%	0%	0%
Vol Thru, %	33%	0%	100%	100%
Vol Right, %	0%	100%	0%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	3	7	0	1
LT Vol	2	0	0	0
Through Vol	1	0	0	1
RT Vol	0	7	0	0
Lane Flow Rate	12	28	0	4
Geometry Grp	1	1	1	1
Degree of Util (X)	0.014	0.026	0	0.004
Departure Headway (Hd)	4.12	3.363	3.984	3.993
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	874	1069	0	901
Service Time	2.122	1.369	1.991	1.997
HCM Lane V/C Ratio	0.014	0.026	0	0.004
HCM Control Delay	7.2	6.5	7	7
HCM Lane LOS	A	A	N	A
HCM 95th-tile Q	0	0.1	0	0

Intersection	
Int Delay, s/veh	6.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	13	0	11	39	1
Future Vol, veh/h	5	13	0	11	39	1
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	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	57	57	57	57	57	57
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	9	23	0	19	68	2

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	148	10	0	0	19	0
Stage 1	10	-	-	-	-	-
Stage 2	138	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	844	1071	-	-	1597	-
Stage 1	1013	-	-	-	-	-
Stage 2	889	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	808	1071	-	-	1597	-
Mov Cap-2 Maneuver	808	-	-	-	-	-
Stage 1	1013	-	-	-	-	-
Stage 2	851	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.8	0	7.2
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	982	1597	-
HCM Lane V/C Ratio	-	-	0.032	0.043	-
HCM Control Delay (s)	-	-	8.8	7.4	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0.1	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	3	0	142	472	0	0
Future Vol, veh/h	3	0	142	472	0	0
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	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	0	163	543	0	0

Major/Minor	Minor2		Major1	
Conflicting Flow All	598	-	0	0
Stage 1	0	-	-	-
Stage 2	598	-	-	-
Critical Hdwy	6.84	-	4.14	-
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-
Follow-up Hdwy	3.52	-	2.22	-
Pot Cap-1 Maneuver	434	0	-	-
Stage 1	-	0	-	-
Stage 2	512	0	-	-
Platoon blocked, %				-
Mov Cap-1 Maneuver	434	-	-	-
Mov Cap-2 Maneuver	434	-	-	-
Stage 1	-	-	-	-
Stage 2	512	-	-	-

Approach	EB	NB
HCM Control Delay, s	13.4	
HCM LOS	B	

Minor Lane/Major Mvmt	NBL	NBT	EBLn1
Capacity (veh/h)	-	-	434
HCM Lane V/C Ratio	-	-	0.008
HCM Control Delay (s)	-	-	13.4
HCM Lane LOS	-	-	B
HCM 95th %tile Q(veh)	-	-	0

Intersection	
Int Delay, s/veh	5.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	3	82	0	141	0	0	0	0	0	232	5
Future Vol, veh/h	0	3	82	0	141	0	0	0	0	0	232	5
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	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	3	94	0	162	0	0	0	0	0	267	6

Major/Minor	Minor2			Minor1					Major2		
Conflicting Flow All	-	270	137	135	273	-			0	0	0
Stage 1	-	270	-	0	0	-			-	-	-
Stage 2	-	0	-	135	273	-			-	-	-
Critical Hdwy	-	6.54	6.94	7.54	6.54	-			4.14	-	-
Critical Hdwy Stg 1	-	5.54	-	-	-	-			-	-	-
Critical Hdwy Stg 2	-	-	-	6.54	5.54	-			-	-	-
Follow-up Hdwy	-	4.02	3.32	3.52	4.02	-			2.22	-	-
Pot Cap-1 Maneuver	0	635	886	823	633	0			-	-	-
Stage 1	0	685	-	-	-	0			-	-	-
Stage 2	0	-	-	854	683	0			-	-	-
Platoon blocked, %										-	-
Mov Cap-1 Maneuver	-	635	886	732	633	-			-	-	-
Mov Cap-2 Maneuver	-	635	-	732	633	-			-	-	-
Stage 1	-	685	-	-	-	-			-	-	-
Stage 2	-	-	-	759	683	-			-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	9.6	12.6	0
HCM LOS	A	B	

Minor Lane/Major Mvmt	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	874	633	-	-	-
HCM Lane V/C Ratio	0.112	0.256	-	-	-
HCM Control Delay (s)	9.6	12.6	0	-	-
HCM Lane LOS	A	B	A	-	-
HCM 95th %tile Q(veh)	0.4	1	-	-	-

Intersection	
Int Delay, s/veh	4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	7	31	50	47	34	8
Future Vol, veh/h	7	31	50	47	34	8
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	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	8	33	54	51	37	9

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	201	42	46	0	-	0
Stage 1	42	-	-	-	-	-
Stage 2	159	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	788	1029	1562	-	-	-
Stage 1	980	-	-	-	-	-
Stage 2	870	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	760	1029	1562	-	-	-
Mov Cap-2 Maneuver	760	-	-	-	-	-
Stage 1	945	-	-	-	-	-
Stage 2	870	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.9	3.8	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1562	-	966	-	-
HCM Lane V/C Ratio	0.034	-	0.042	-	-
HCM Control Delay (s)	7.4	0	8.9	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	0.1	-	-

Intersection	
Intersection Delay, s/veh	6.9
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	7	0	0	0	8	0	0	1	0	0
Future Vol, veh/h	0	0	7	0	0	0	8	0	0	1	0	0
Peak Hour Factor	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	18	0	0	0	21	0	0	3	0	0
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	6.4	0	7.3	7.2
HCM LOS	A	-	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	100%	0%	0%	100%
Vol Thru, %	0%	0%	100%	0%
Vol Right, %	0%	100%	0%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	8	7	0	1
LT Vol	8	0	0	1
Through Vol	0	0	0	0
RT Vol	0	7	0	0
Lane Flow Rate	21	18	0	3
Geometry Grp	1	1	1	1
Degree of Util (X)	0.024	0.017	0	0.003
Departure Headway (Hd)	4.167	3.375	3.989	4.182
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	864	1063	0	860
Service Time	2.17	1.386	2.001	2.188
HCM Lane V/C Ratio	0.024	0.017	0	0.003
HCM Control Delay	7.3	6.4	7	7.2
HCM Lane LOS	A	A	N	A
HCM 95th-tile Q	0.1	0.1	0	0

Intersection	
Int Delay, s/veh	7.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	8	47	0	10	30	1
Future Vol, veh/h	8	47	0	10	30	1
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	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	67	67	67	67	67	67
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	12	70	0	15	45	1

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	99	8	0	0	15	0
Stage 1	8	-	-	-	-	-
Stage 2	91	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	900	1074	-	-	1603	-
Stage 1	1015	-	-	-	-	-
Stage 2	933	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	875	1074	-	-	1603	-
Mov Cap-2 Maneuver	875	-	-	-	-	-
Stage 1	1015	-	-	-	-	-
Stage 2	907	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.8	0	7.1
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	1040	1603	-
HCM Lane V/C Ratio	-	-	0.079	0.028	-
HCM Control Delay (s)	-	-	8.8	7.3	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.3	0.1	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	3	0	48	158	0	0
Future Vol, veh/h	3	0	48	158	0	0
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	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	0	53	176	0	0

Major/Minor	Minor2		Major1	
Conflicting Flow All	194	-	0	0
Stage 1	0	-	-	-
Stage 2	194	-	-	-
Critical Hdwy	6.84	-	4.14	-
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-
Follow-up Hdwy	3.52	-	2.22	-
Pot Cap-1 Maneuver	777	0	-	-
Stage 1	-	0	-	-
Stage 2	820	0	-	-
Platoon blocked, %				-
Mov Cap-1 Maneuver	777	-	-	-
Mov Cap-2 Maneuver	777	-	-	-
Stage 1	-	-	-	-
Stage 2	820	-	-	-

Approach	EB	NB
HCM Control Delay, s	9.7	
HCM LOS	A	

Minor Lane/Major Mvmt	NBL	NBT	EBLn1
Capacity (veh/h)	-	-	777
HCM Lane V/C Ratio	-	-	0.004
HCM Control Delay (s)	-	-	9.7
HCM Lane LOS	-	-	A
HCM 95th %tile Q(veh)	-	-	0

Intersection	
Int Delay, s/veh	2.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	3	100	0	48	0	0	0	0	0	518	1
Future Vol, veh/h	0	3	100	0	48	0	0	0	0	0	518	1
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	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	3	111	0	53	0	0	0	0	0	576	1

Major/Minor	Minor2			Minor1					Major2		
Conflicting Flow All	-	577	289	290	577	-			0	0	0
Stage 1	-	577	-	0	0	-			-	-	-
Stage 2	-	0	-	290	577	-			-	-	-
Critical Hdwy	-	6.54	6.94	7.54	6.54	-			4.14	-	-
Critical Hdwy Stg 1	-	5.54	-	-	-	-			-	-	-
Critical Hdwy Stg 2	-	-	-	6.54	5.54	-			-	-	-
Follow-up Hdwy	-	4.02	3.32	3.52	4.02	-			2.22	-	-
Pot Cap-1 Maneuver	0	426	708	640	426	0			-	-	-
Stage 1	0	500	-	-	-	0			-	-	-
Stage 2	0	-	-	694	500	0			-	-	-
Platoon blocked, %										-	-
Mov Cap-1 Maneuver	-	426	708	536	426	-			-	-	-
Mov Cap-2 Maneuver	-	426	-	536	426	-			-	-	-
Stage 1	-	500	-	-	-	-			-	-	-
Stage 2	-	-	-	581	500	-			-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	11.2	14.7	0
HCM LOS	B	B	

Minor Lane/Major Mvmt	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	695	426	-	-	-
HCM Lane V/C Ratio	0.165	0.125	-	-	-
HCM Control Delay (s)	11.2	14.7	0	-	-
HCM Lane LOS	B	B	A	-	-
HCM 95th %tile Q(veh)	0.6	0.4	-	-	-

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	10	4	0	29	54	6
Future Vol, veh/h	10	4	0	29	54	6
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	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	68	68	68	68	68	68
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	15	6	0	43	79	9

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	127	84	88	0	-	0
Stage 1	84	-	-	-	-	-
Stage 2	43	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	868	975	1508	-	-	-
Stage 1	939	-	-	-	-	-
Stage 2	979	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	868	975	1508	-	-	-
Mov Cap-2 Maneuver	868	-	-	-	-	-
Stage 1	939	-	-	-	-	-
Stage 2	979	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.1	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1508	-	896	-	-
HCM Lane V/C Ratio	-	-	0.023	-	-
HCM Control Delay (s)	0	-	9.1	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Intersection	
Intersection Delay, s/veh	7
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	0	0	0	0	1	0	0	1	0
Future Vol, veh/h	0	0	0	0	0	0	0	1	0	0	1	0
Peak Hour Factor	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	0	0	0	4	0	0	4	0
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	0	0	7	7
HCM LOS	-	-	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	0%	0%	0%	0%
Vol Thru, %	100%	100%	100%	100%
Vol Right, %	0%	0%	0%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	1	0	0	1
LT Vol	0	0	0	0
Through Vol	1	0	0	1
RT Vol	0	0	0	0
Lane Flow Rate	4	0	0	4
Geometry Grp	1	1	1	1
Degree of Util (X)	0.004	0	0	0.004
Departure Headway (Hd)	3.937	3.95	3.95	3.937
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	914	0	0	914
Service Time	1.937	1.95	1.95	1.937
HCM Lane V/C Ratio	0.004	0	0	0.004
HCM Control Delay	7	7	7	7
HCM Lane LOS	A	N	N	A
HCM 95th-tile Q	0	0	0	0

Intersection	
Int Delay, s/veh	2.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	7	0	0	15	0	1
Future Vol, veh/h	7	0	0	15	0	1
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	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	57	57	57	57	57	57
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	12	0	0	26	0	2

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	15	13	0	0	26	0
Stage 1	13	-	-	-	-	-
Stage 2	2	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	1004	1067	-	-	1588	-
Stage 1	1010	-	-	-	-	-
Stage 2	1021	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	1004	1067	-	-	1588	-
Mov Cap-2 Maneuver	1004	-	-	-	-	-
Stage 1	1010	-	-	-	-	-
Stage 2	1021	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.6	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	1004	1588	-
HCM Lane V/C Ratio	-	-	0.012	-	-
HCM Control Delay (s)	-	-	8.6	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	0	0	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	0	130	646	0	0
Future Vol, veh/h	0	0	130	646	0	0
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	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	149	743	0	0

Major/Minor	Minor2		Major1	
Conflicting Flow All	670	-	0	0
Stage 1	0	-	-	-
Stage 2	670	-	-	-
Critical Hdwy	6.84	-	4.14	-
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-
Follow-up Hdwy	3.52	-	2.22	-
Pot Cap-1 Maneuver	390	0	-	-
Stage 1	-	0	-	-
Stage 2	470	0	-	-
Platoon blocked, %				-
Mov Cap-1 Maneuver	390	-	-	-
Mov Cap-2 Maneuver	390	-	-	-
Stage 1	-	-	-	-
Stage 2	470	-	-	-

Approach	EB	NB
HCM Control Delay, s	0	
HCM LOS	A	

Minor Lane/Major Mvmt	NBL	NBT	EBLn1
Capacity (veh/h)	-	-	-
HCM Lane V/C Ratio	-	-	-
HCM Control Delay (s)	-	-	0
HCM Lane LOS	-	-	A
HCM 95th %tile Q(veh)	-	-	-

Intersection	
Int Delay, s/veh	4.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	73	0	129	0	0	0	0	0	318	0
Future Vol, veh/h	0	0	73	0	129	0	0	0	0	0	318	0
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	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	84	0	148	0	0	0	0	0	366	0

Major/Minor	Minor2			Minor1					Major2		
Conflicting Flow All	-	366	183	183	366	-			0	0	0
Stage 1	-	366	-	0	0	-			-	-	-
Stage 2	-	0	-	183	366	-			-	-	-
Critical Hdwy	-	6.54	6.94	7.54	6.54	-			4.14	-	-
Critical Hdwy Stg 1	-	5.54	-	-	-	-			-	-	-
Critical Hdwy Stg 2	-	-	-	6.54	5.54	-			-	-	-
Follow-up Hdwy	-	4.02	3.32	3.52	4.02	-			2.22	-	-
Pot Cap-1 Maneuver	0	561	828	761	561	0			-	-	-
Stage 1	0	621	-	-	-	0			-	-	-
Stage 2	0	-	-	801	621	0			-	-	-
Platoon blocked, %										-	-
Mov Cap-1 Maneuver	-	561	828	684	561	-			-	-	-
Mov Cap-2 Maneuver	-	561	-	684	561	-			-	-	-
Stage 1	-	621	-	-	-	-			-	-	-
Stage 2	-	-	-	720	621	-			-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	9.8	13.7	0
HCM LOS	A	B	

Minor Lane/Major Mvmt	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	828	561	-	-	-
HCM Lane V/C Ratio	0.101	0.264	-	-	-
HCM Control Delay (s)	9.8	13.7	0	-	-
HCM Lane LOS	A	B	A	-	-
HCM 95th %tile Q(veh)	0.3	1.1	-	-	-

Intersection	
Int Delay, s/veh	1.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	10	6	9	54	39	12
Future Vol, veh/h	10	6	9	54	39	12
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	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	11	6	10	58	42	13

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	127	49	55	0	-	0
Stage 1	49	-	-	-	-	-
Stage 2	78	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	868	1020	1550	-	-	-
Stage 1	973	-	-	-	-	-
Stage 2	945	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	862	1020	1550	-	-	-
Mov Cap-2 Maneuver	862	-	-	-	-	-
Stage 1	966	-	-	-	-	-
Stage 2	945	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9	1	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1550	-	915	-	-
HCM Lane V/C Ratio	0.006	-	0.019	-	-
HCM Control Delay (s)	7.3	0	9	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Intersection	
Intersection Delay, s/veh	6.6
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	3	0	0	0	0	0	0	1	0	0
Future Vol, veh/h	0	0	3	0	0	0	0	0	0	1	0	0
Peak Hour Factor	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	8	0	0	0	0	0	0	3	0	0
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	6.4	0	0	7.2
HCM LOS	A	-	-	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	0%	0%	0%	100%
Vol Thru, %	100%	0%	100%	0%
Vol Right, %	0%	100%	0%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	0	3	0	1
LT Vol	0	0	0	1
Through Vol	0	0	0	0
RT Vol	0	3	0	0
Lane Flow Rate	0	8	0	3
Geometry Grp	1	1	1	1
Degree of Util (X)	0	0.007	0	0.003
Departure Headway (Hd)	3.949	3.338	3.944	4.148
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	0	1078	0	868
Service Time	1.95	1.34	1.946	2.148
HCM Lane V/C Ratio	0	0.007	0	0.003
HCM Control Delay	7	6.4	6.9	7.2
HCM Lane LOS	N	A	N	A
HCM 95th-tile Q	0	0	0	0

Intersection	
Int Delay, s/veh	4.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	12	4	0	13	4	1
Future Vol, veh/h	12	4	0	13	4	1
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	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	67	67	67	67	67	67
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	18	6	0	19	6	1

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	23	10	0	0	19	0
Stage 1	10	-	-	-	-	-
Stage 2	13	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	993	1071	-	-	1597	-
Stage 1	1013	-	-	-	-	-
Stage 2	1010	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	989	1071	-	-	1597	-
Mov Cap-2 Maneuver	989	-	-	-	-	-
Stage 1	1013	-	-	-	-	-
Stage 2	1006	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.7	0	5.8
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	1008	1597	-
HCM Lane V/C Ratio	-	-	0.024	0.004	-
HCM Control Delay (s)	-	-	8.7	7.3	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	8	0	62	158	0	0
Future Vol, veh/h	8	0	62	158	0	0
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	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	9	0	69	176	0	0

Major/Minor	Minor2		Major1	
Conflicting Flow All	226	-	0	0
Stage 1	0	-	-	-
Stage 2	226	-	-	-
Critical Hdwy	6.84	-	4.14	-
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-
Follow-up Hdwy	3.52	-	2.22	-
Pot Cap-1 Maneuver	742	0	-	-
Stage 1	-	0	-	-
Stage 2	790	0	-	-
Platoon blocked, %				-
Mov Cap-1 Maneuver	742	-	-	-
Mov Cap-2 Maneuver	742	-	-	-
Stage 1	-	-	-	-
Stage 2	790	-	-	-

Approach	EB	NB
HCM Control Delay, s	9.9	
HCM LOS	A	

Minor Lane/Major Mvmt	NBL	NBT	EBLn1
Capacity (veh/h)	-	-	742
HCM Lane V/C Ratio	-	-	0.012
HCM Control Delay (s)	-	-	9.9
HCM Lane LOS	-	-	A
HCM 95th %tile Q(veh)	-	-	0

Intersection	
Int Delay, s/veh	3.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	8	141	0	62	0	0	0	0	0	518	3
Future Vol, veh/h	0	8	141	0	62	0	0	0	0	0	518	3
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	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	9	157	0	69	0	0	0	0	0	576	3

Major/Minor	Minor2			Minor1					Major2		
Conflicting Flow All	-	578	290	293	579	-			0	0	0
Stage 1	-	578	-	0	0	-			-	-	-
Stage 2	-	0	-	293	579	-			-	-	-
Critical Hdwy	-	6.54	6.94	7.54	6.54	-			4.14	-	-
Critical Hdwy Stg 1	-	5.54	-	-	-	-			-	-	-
Critical Hdwy Stg 2	-	-	-	6.54	5.54	-			-	-	-
Follow-up Hdwy	-	4.02	3.32	3.52	4.02	-			2.22	-	-
Pot Cap-1 Maneuver	0	425	707	637	425	0			-	-	-
Stage 1	0	499	-	-	-	0			-	-	-
Stage 2	0	-	-	691	499	0			-	-	-
Platoon blocked, %										-	-
Mov Cap-1 Maneuver	-	425	707	488	425	-			-	-	-
Mov Cap-2 Maneuver	-	425	-	488	425	-			-	-	-
Stage 1	-	499	-	-	-	-			-	-	-
Stage 2	-	-	-	528	499	-			-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	11.9	15.1	0
HCM LOS	B	C	

Minor Lane/Major Mvmt	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	683	425	-	-	-
HCM Lane V/C Ratio	0.242	0.162	-	-	-
HCM Control Delay (s)	11.9	15.1	0	-	-
HCM Lane LOS	B	C	A	-	-
HCM 95th %tile Q(veh)	0.9	0.6	-	-	-

Intersection	
Int Delay, s/veh	3.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	10	43	13	31	61	6
Future Vol, veh/h	10	43	13	31	61	6
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	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	68	68	68	68	68	68
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	15	63	19	46	90	9

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	179	95	99	0	-	0
Stage 1	95	-	-	-	-	-
Stage 2	84	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	811	962	1494	-	-	-
Stage 1	929	-	-	-	-	-
Stage 2	939	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	800	962	1494	-	-	-
Mov Cap-2 Maneuver	800	-	-	-	-	-
Stage 1	917	-	-	-	-	-
Stage 2	939	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.2	2.2	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1494	-	927	-	-
HCM Lane V/C Ratio	0.013	-	0.084	-	-
HCM Control Delay (s)	7.4	0	9.2	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.3	-	-

Intersection	
Intersection Delay, s/veh	6.7
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	7	0	0	0	2	1	0	0	1	0
Future Vol, veh/h	0	0	7	0	0	0	2	1	0	0	1	0
Peak Hour Factor	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	28	0	0	0	8	4	0	0	4	0
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	6.5	0	7.2	7
HCM LOS	A	-	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	67%	0%	0%	0%
Vol Thru, %	33%	0%	100%	100%
Vol Right, %	0%	100%	0%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	3	7	0	1
LT Vol	2	0	0	0
Through Vol	1	0	0	1
RT Vol	0	7	0	0
Lane Flow Rate	12	28	0	4
Geometry Grp	1	1	1	1
Degree of Util (X)	0.014	0.026	0	0.004
Departure Headway (Hd)	4.12	3.363	3.984	3.993
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	874	1069	0	901
Service Time	2.122	1.369	1.991	1.997
HCM Lane V/C Ratio	0.014	0.026	0	0.004
HCM Control Delay	7.2	6.5	7	7
HCM Lane LOS	A	A	N	A
HCM 95th-tile Q	0	0.1	0	0

Intersection	
Int Delay, s/veh	6.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	7	13	0	15	39	1
Future Vol, veh/h	7	13	0	15	39	1
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	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	57	57	57	57	57	57
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	12	23	0	26	68	2

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	151	13	0	0	26	0
Stage 1	13	-	-	-	-	-
Stage 2	138	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	841	1067	-	-	1588	-
Stage 1	1010	-	-	-	-	-
Stage 2	889	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	805	1067	-	-	1588	-
Mov Cap-2 Maneuver	805	-	-	-	-	-
Stage 1	1010	-	-	-	-	-
Stage 2	851	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.9	0	7.2
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	958	1588	-
HCM Lane V/C Ratio	-	-	0.037	0.043	-
HCM Control Delay (s)	-	-	8.9	7.4	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0.1	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	3	0	177	646	0	0
Future Vol, veh/h	3	0	177	646	0	0
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	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	0	203	743	0	0

Major/Minor	Minor2		Major1	
Conflicting Flow All	778	-	0	0
Stage 1	0	-	-	-
Stage 2	778	-	-	-
Critical Hdwy	6.84	-	4.14	-
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-
Follow-up Hdwy	3.52	-	2.22	-
Pot Cap-1 Maneuver	333	0	-	-
Stage 1	-	0	-	-
Stage 2	413	0	-	-
Platoon blocked, %				-
Mov Cap-1 Maneuver	333	-	-	-
Mov Cap-2 Maneuver	333	-	-	-
Stage 1	-	-	-	-
Stage 2	413	-	-	-

Approach	EB	NB
HCM Control Delay, s	15.9	
HCM LOS	C	

Minor Lane/Major Mvmt	NBL	NBT	EBLn1
Capacity (veh/h)	-	-	333
HCM Lane V/C Ratio	-	-	0.01
HCM Control Delay (s)	-	-	15.9
HCM Lane LOS	-	-	C
HCM 95th %tile Q(veh)	-	-	0

Intersection	
Int Delay, s/veh	6.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	3	102	0	176	0	0	0	0	0	318	5
Future Vol, veh/h	0	3	102	0	176	0	0	0	0	0	318	5
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	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	3	117	0	202	0	0	0	0	0	366	6

Major/Minor	Minor2			Minor1					Major2		
Conflicting Flow All	-	369	186	185	372	-			0	0	0
Stage 1	-	369	-	0	0	-			-	-	-
Stage 2	-	0	-	185	372	-			-	-	-
Critical Hdwy	-	6.54	6.94	7.54	6.54	-			4.14	-	-
Critical Hdwy Stg 1	-	5.54	-	-	-	-			-	-	-
Critical Hdwy Stg 2	-	-	-	6.54	5.54	-			-	-	-
Follow-up Hdwy	-	4.02	3.32	3.52	4.02	-			2.22	-	-
Pot Cap-1 Maneuver	0	559	824	759	557	0			-	-	-
Stage 1	0	619	-	-	-	0			-	-	-
Stage 2	0	-	-	799	617	0			-	-	-
Platoon blocked, %										-	-
Mov Cap-1 Maneuver	-	559	824	648	557	-			-	-	-
Mov Cap-2 Maneuver	-	559	-	648	557	-			-	-	-
Stage 1	-	619	-	-	-	-			-	-	-
Stage 2	-	-	-	681	617	-			-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	10.2	15.1	0
HCM LOS	B	C	

Minor Lane/Major Mvmt	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	813	557	-	-	-
HCM Lane V/C Ratio	0.148	0.363	-	-	-
HCM Control Delay (s)	10.2	15.1	0	-	-
HCM Lane LOS	B	C	A	-	-
HCM 95th %tile Q(veh)	0.5	1.6	-	-	-

Intersection	
Int Delay, s/veh	3.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	10	33	53	62	44	12
Future Vol, veh/h	10	33	53	62	44	12
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	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	11	35	57	67	47	13

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	235	54	60	0	-	0
Stage 1	54	-	-	-	-	-
Stage 2	181	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	753	1013	1544	-	-	-
Stage 1	969	-	-	-	-	-
Stage 2	850	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	724	1013	1544	-	-	-
Mov Cap-2 Maneuver	724	-	-	-	-	-
Stage 1	932	-	-	-	-	-
Stage 2	850	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.1	3.4	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1544	-	927	-	-
HCM Lane V/C Ratio	0.037	-	0.05	-	-
HCM Control Delay (s)	7.4	0	9.1	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	0.2	-	-

Intersection	
Intersection Delay, s/veh	6.9
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	8	0	0	0	8	0	0	1	0	0
Future Vol, veh/h	0	0	8	0	0	0	8	0	0	1	0	0
Peak Hour Factor	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	21	0	0	0	21	0	0	3	0	0
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	6.5	0	7.3	7.2
HCM LOS	A	-	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	100%	0%	0%	100%
Vol Thru, %	0%	0%	100%	0%
Vol Right, %	0%	100%	0%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	8	8	0	1
LT Vol	8	0	0	1
Through Vol	0	0	0	0
RT Vol	0	8	0	0
Lane Flow Rate	21	21	0	3
Geometry Grp	1	1	1	1
Degree of Util (X)	0.024	0.02	0	0.003
Departure Headway (Hd)	4.173	3.375	3.991	4.188
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	862	1064	0	858
Service Time	2.176	1.386	2.004	2.194
HCM Lane V/C Ratio	0.024	0.02	0	0.003
HCM Control Delay	7.3	6.5	7	7.2
HCM Lane LOS	A	A	N	A
HCM 95th-tile Q	0.1	0.1	0	0

Intersection	
Int Delay, s/veh	7.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	12	48	0	13	31	1
Future Vol, veh/h	12	48	0	13	31	1
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	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	67	67	67	67	67	67
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	18	72	0	19	46	1

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	103	10	0	0	19	0
Stage 1	10	-	-	-	-	-
Stage 2	93	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	895	1071	-	-	1597	-
Stage 1	1013	-	-	-	-	-
Stage 2	931	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	869	1071	-	-	1597	-
Mov Cap-2 Maneuver	869	-	-	-	-	-
Stage 1	1013	-	-	-	-	-
Stage 2	904	-	-	-	-	-

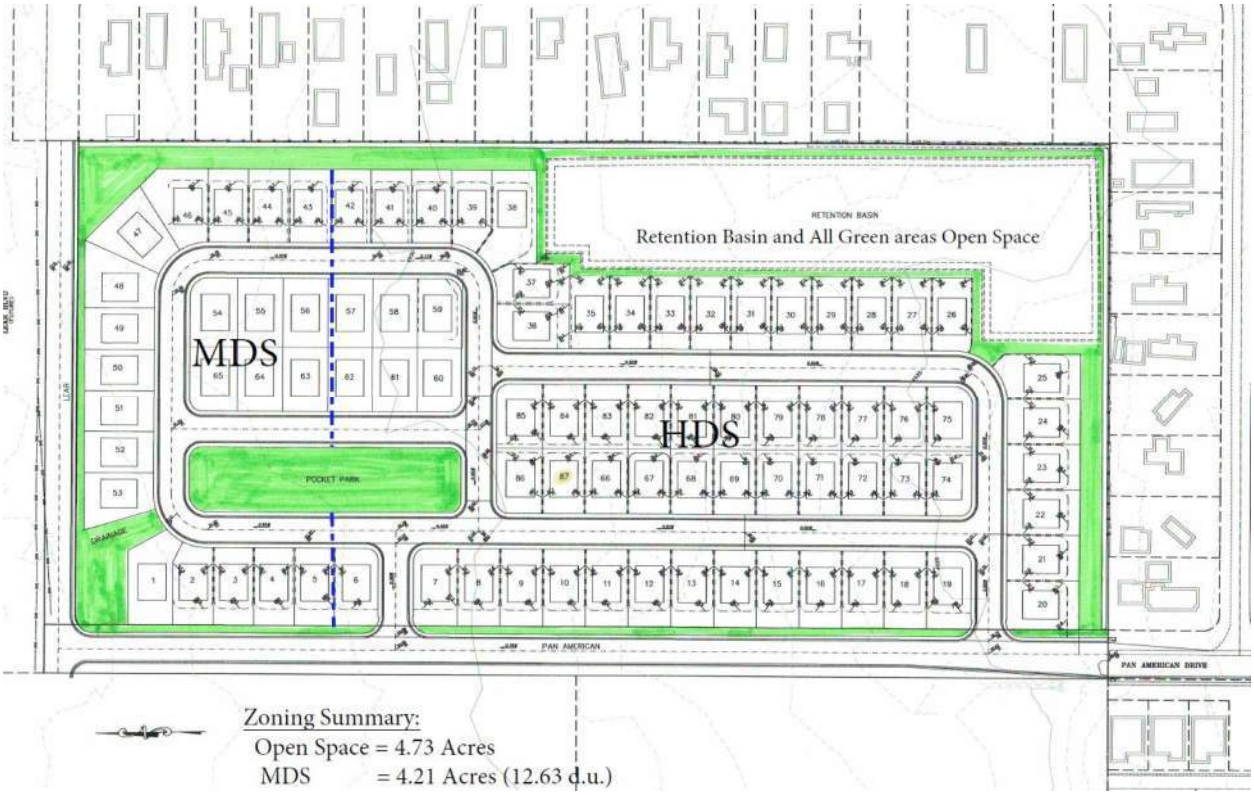
Approach	WB	NB	SB
HCM Control Delay, s	8.9	0	7.1
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	1023	1597	-
HCM Lane V/C Ratio	-	-	0.088	0.029	-
HCM Control Delay (s)	-	-	8.9	7.3	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.3	0.1	-

APPENDIX E

SITE PLAN

Exhibit "A"


RETENTION BASIN
Retention Basin and All Green areas Open Space
MDS
HDS
POCKET PARK
DRAINAGE
PAN AMERICAN
PAN AMERICAN DRIVE
Zoning Summary:
Open Space = 4.73 Acres
MDS = 4.21 Acres (12.63 d.u.)

LEGEND

REVEGETATION LANDSCAPE AREA (52,390 SF)
GRASS, SHRUB, & WILDFLOWER BLEND

STREETSCAPE LANDSCAPE AREA (14,500 SF)
TREES REQUIRED: (1,170 LF/50 LF)= 24 TREES
TREES PROVIDED: 24
SHRUBS REQUIRED: (14,500 SF/300 SF)*6= 290 SHRUBS

COMMON LANDSCAPE AREA (25,270 SF)
TREES REQUIRED: (25,270 SF/300 SF)= 85 TREES
TREES PROVIDED: 92 TREES
SHRUBS REQUIRED: (25,270 SF/300 SF)*6= 506SHRUBS

RETENTION BASIN (109,730 SF)

ACCENT TREES (19)

EVERGREEN TREES (31)

DECIDUOUS TREES (24)
“CLASS 1 OR 2” SMALLER CALIPER TREES

DECIDUOUS TREES (42)
“CLASS 3 OR 4” LARGER CALIPER TREES

XX SINGLE FAMILY HOUSE

8’ DECOMPOSED GRANITE TRAIL
(1,423 LF)
12’ WIDE COUNTY
ACCESS GRAVEL ROAD (800 LF)

REGISTERED LANDSCAPE ARCHITECT
MELISSA RUTH
1105
Expires: 06/30/23
STATE OF NEVADA

LEARNER LEMMON PRELIMINARY LANDSCAPE PLAN

Washoe County, Nevada

CALLANDER PROJECT NUMBER: 23019 | DATE: 12.08.2023 | CALLANDER ASSOCIATES

L1

0 20’ 40’ 80’

CALA

PAN AMERICAN WAY

SHRUB, TYP.

PLANTING AREA, TYP.

POCKET PARK W/ CHILDREN'S PLAY AREA

PARK SIGN

FENCE

IRR

SHADE TREE, TYP.

12' WIDE COUNTY ACCESS GRAVEL ROAD W/ PIPE GATE

EVERGREEN TREE, TYP.

TURF

8' WIDE DECOMPOSED GRANITE TRAIL

BOLLARD

SHADE SHELTER

BIKE PARKING

ACCENT TREE, TYP.

PICNIC AREA

DECOMPOSED GRANITE, TYP.

CONCRETE PATH, TYP.

BOLLARD

LEARNER LEMMON POCKET PARK PRELIMINARY PLAN

Washoe County, Nevada

CALLANDER PROJECT NUMBER: 23019 | DATE: 12.08.2023 | CALLANDER ASSOCIATES

L2

0 5' 10' 20'

CALA

TENTATIVE MAP APPLICATION

LEARNER - LEMMON PROPERTY

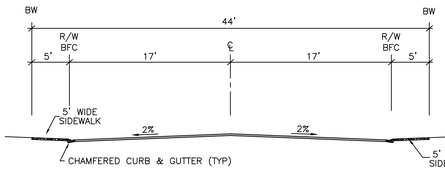
WASHOE COUNTY, NEVADA

OWNER/DEVELOPER

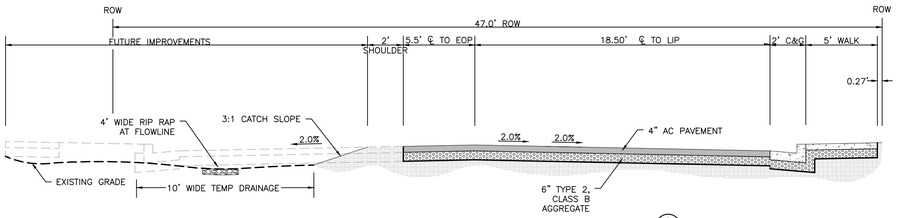
LC LEARNER, LLC
27132 B PASEO ESPADA, SUITE 1226
SAN JUAN CAPISTRANO, CA 92675
ATTN: JEFF HOLBROOK

PUBLIC SERVICES

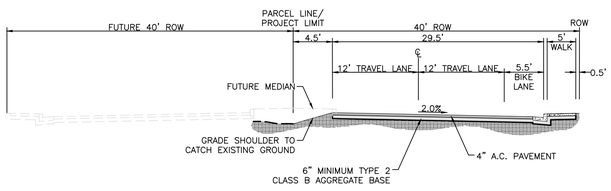
GAS & ELECTRICAL SERVICE: NV ENERGY
WATER SERVICE: TRUCKEE MEADOWS WATER AUTHORITY
SEWER SERVICE: WASHOE COUNTY
TELEPHONE: AT&T
CABLE TV: SPECTRUM
FIRE PROTECTION: TRUCKEE MEADOWS FIRE RESCUE
POLICE PROTECTION: WASHOE COUNTY SHERIFF



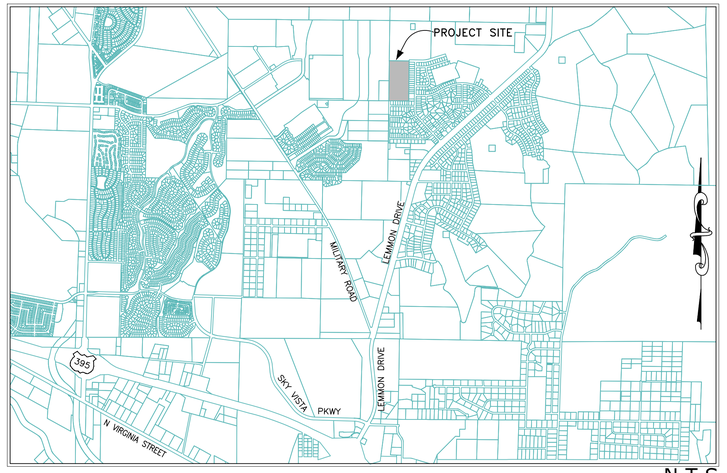
RESIDENTIAL STREET SECTION (1/C-1)



PAN AMERICAN DRIVE (2/C-1)

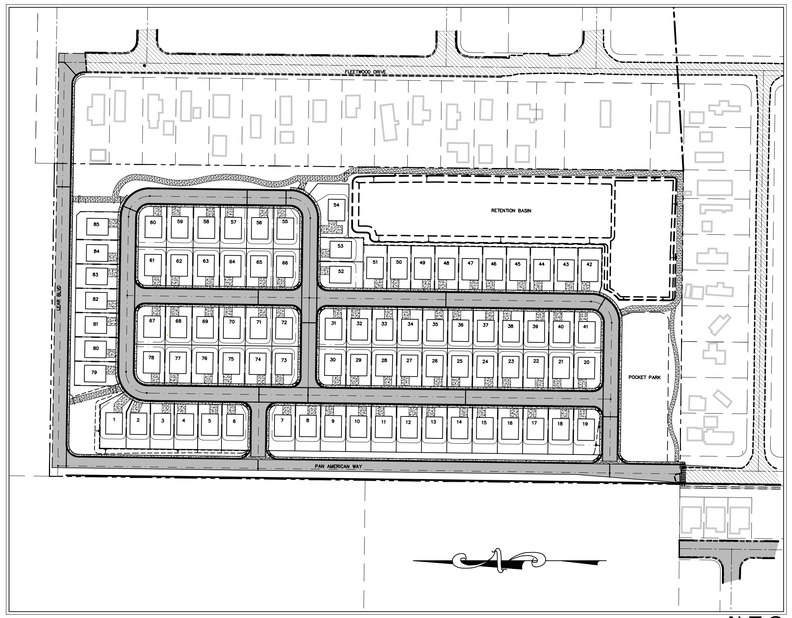


LEAR BOULEVARD (3/C-1)



N.T.S.

VICINITY MAP



N.T.S.

SITE

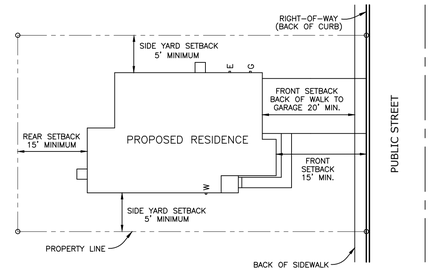
ENGINEER

Axion ENGINEERING
Civil Engineering • Land Development
683 EDISON WAY – RENO, NEVADA 89502
PH 775-771-7983 / ryan@axionengineering.net

SHEET INDEX

C1 .....TITLE SHEET
C2 .....SITE PLAN
C3 .....GRADING PLAN
C4 .....UTILITY PLAN
C5 .....X-SECTIONS
C6 .....SEWER DISPLAY
C7 .....STOCKPILE PLAN
L1 .....LANDSCAPE PLAN

MINIMUM SETBACKS

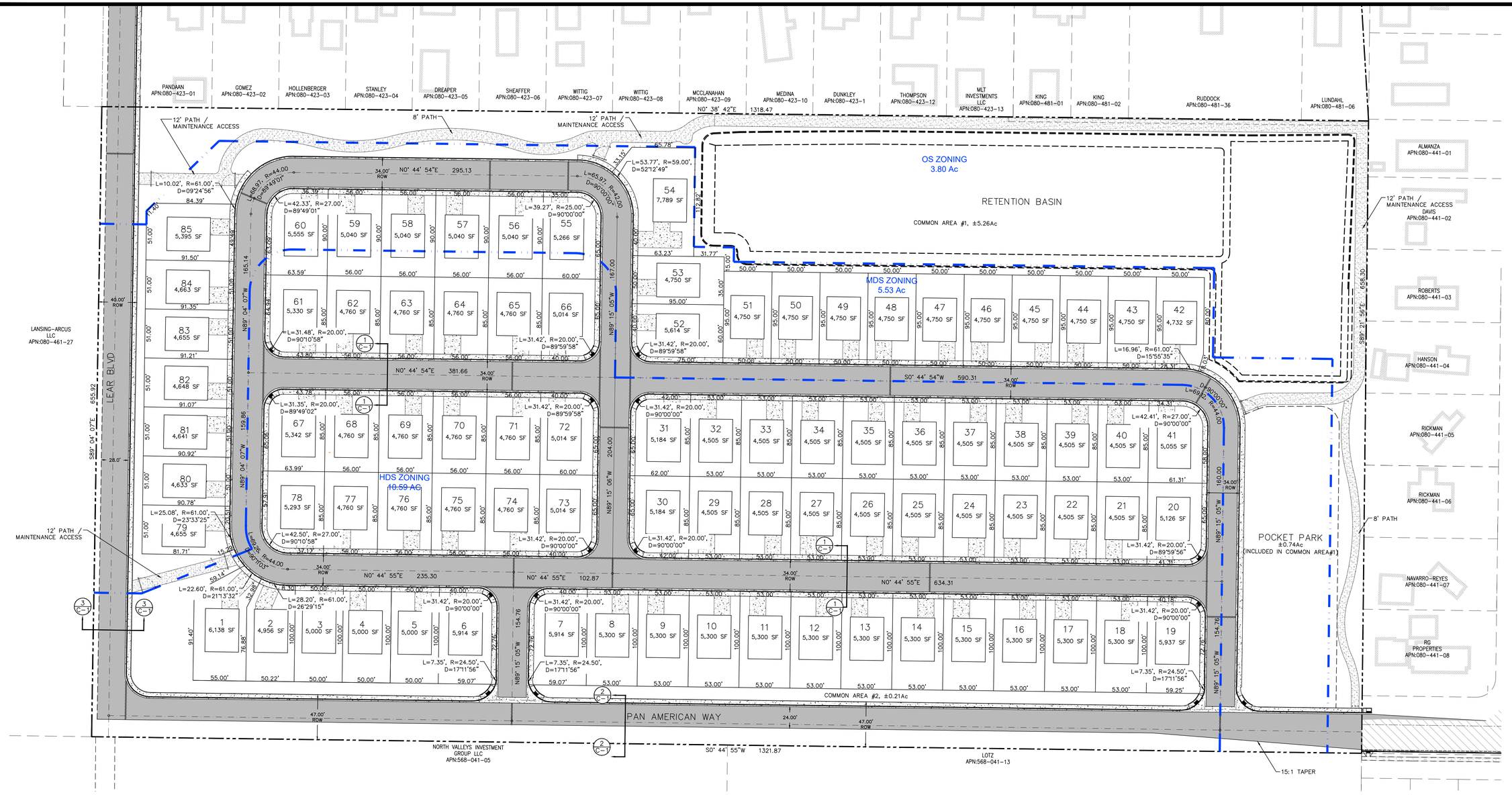


ENGINEERS STATEMENT

I, RYAN T. SIMS, DO HEREBY CERTIFY THAT THIS MAP HAS BEEN PREPARED BY ME, OR UNDER MY SUPERVISION AND WAS COMPLETED ON THIS 8th DAY OF DECEMBER, 2023.

PROFESSIONAL ENGINEER-STATE OF NEVADA
RYAN T. SIMS
Exp. 6-30-24
CIVIL
No. 16951
12-8-23

RYAN T. SIMS P.E. #16951



PROJECT AREA SUMMARY:

PARCEL AREA:	19.92 Ac
LOT AREA (85 LOTS):	9.68 Ac
RIGHT OF WAY AREA:	4.77 Ac
OPEN SPACE/LANDSCAPE:	5.46 Ac
PARK AREA:	0.74 Ac

PROPOSED LOT STANDARDS:

MINIMUM LOT AREA: 4,505 SF
MINIMUM LOT WIDTH: 50 FEET
SETBACKS:
FRONT: 15' (20' TO GARAGE)
SIDE 5'
REAR: 15'
DENSITY: 4.37 UNITS/AC GROSS
8.7 UNITS/AC NET

PARCEL INFORMATION:

APN 080-461-08 O PAN AMERICAN WAY
867,976 SF, 19.926 AC.
CURRENT MASTER PLAN DESIGNATION: SUBURBAN RESIDENTIAL
BASE ZONING: MEDIUM DENSITY SUBURBAN (11.36Ac, 57%), GENERAL RURAL (8.57Ac, 43%)

GROSS DENSITY: 4.37 UNITS/ACRE

CURRENT ZONING:
OPEN SPACE OS = 3.80 AC
MEDIUM DENSITY SUBURBAN MDS = 5.53 AC 3 DU/AC – 16.6 DU
HIGH DENSITY SUBURBAN HDS = 10.59 AC 7 DU/AC – 74.1 DU
MAXIMUM UNITS: 90 DU

PARKING REQUIRED: 2 PER UNIT

PARKING PROVIDED:

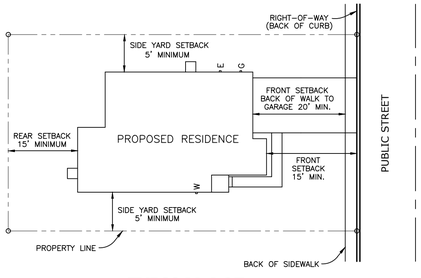
EACH UNIT: 2 GARAGE + 2 DRIVEWAY 4 SPACES

PROPOSED ACCESS AND STREET WILL BE COUNTY OWNED AND MAINTAINED

WATER SERVICE: TMWA (PUBLIC WATER MAINS)
SEWER SERVICE: WASHOE COUNTY
FIRE: TRUCKEE MEADOWS FIRE DEPARTMENT
POLICE: WASHOE COUNTY SHERIFFS OFFICE

WILDFIRE:
PARCEL FIRE RISK RATING: MODERATE
REQUIRED DEFENSIBLE SPACE: 30'

NUMBER OF LOTS: 85
MINIMUM LOT SIZE: 4,505 SF
MAXIMUM LOT SIZE: 7,789 SF
AVERAGE LOT SIZE: 4,960 SF



TYPICAL LOT

NORTH

GRAPHIC SCALE

50 0 25 50 100

(IN FEET)
1 inch = 50 ft.

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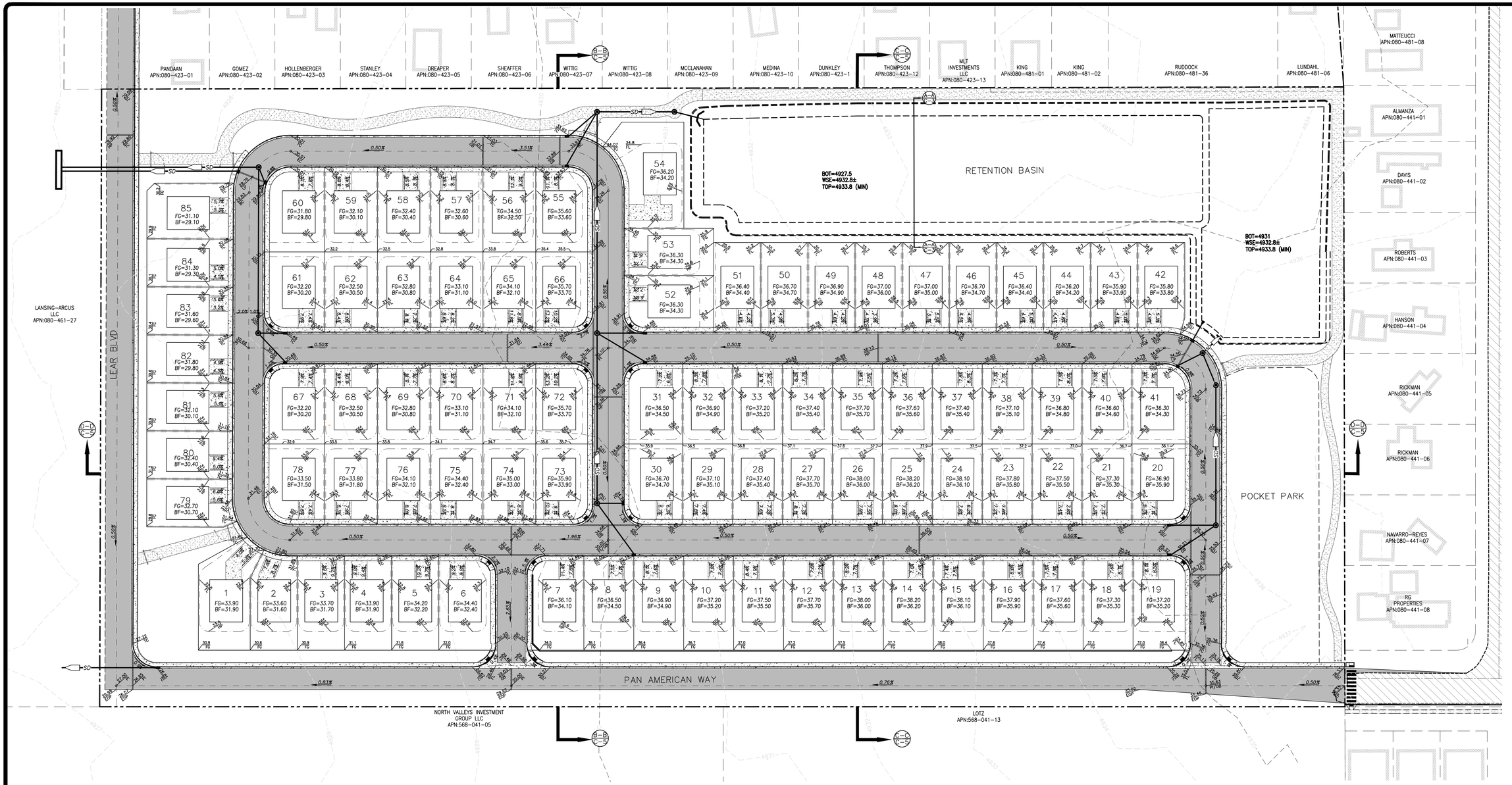
LEARNER LEMMON PROPERTY

SITE PLAN C-2



LEGEND

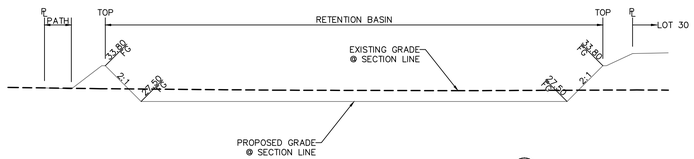
- GRADE BREAK
- 64 — LOT NUMBER
- 4462 — EXISTING CONTOUR LINE
- 70.00 FG — FINISHED GRADE ELEVATION
- 72.57 TC — TOP OF CURB ELEVATION
- 99.20 FL — FLOW LINE ELEVATION
- 5% — SLOPE IN PERCENT
- (E) — EXISTING

GRADING NOTES:

1. ALL CONSTRUCTION SHALL CONFORM TO THE STANDARD SPECIFICATIONS, AND THE LATEST STANDARD DETAILS FOR PUBLIC WORKS CONSTRUCTION 2012 ADDITION (AND ANY APPURTENANT SUPPLEMENTS) SPONSORED AN DISTRIBUTED BY RENO, SPARKS, AND WASHOE COUNTY, AND THE PROJECT GEOTECHNICAL INVESTIGATION.
2. ADD 4900 FEET TO ALL TRUNCATED ELEVATIONS.
3. THE NATURAL VEGETATION AND EXISTING LANDSCAPING SHALL BE PRESERVED AS MUCH AS PRACTICAL DURING SITE IMPROVEMENTS CONSTRUCTION..
4. SLOPES STEEPER THAN 3:1 SHALL BE MECHANICALLY STABILIZED WITH ROCK-RIP.

FEMA FLOOD HAZARD NOTE:

PER FEMA dFIRM PANELS 32031C2838G, EFFECTIVE 3/16/2009, THIS PROJECT LIES PARTIALLY WITHIN AN AREA DESIGNATED AS ZONE X (SHADED) AND ZONE X (UNSHADED)



A-A RETENTION BASIN SECTION

NORTH

GRAPHIC SCALE

50 0 25 50 100

(IN FEET)
1 inch = 50 ft.

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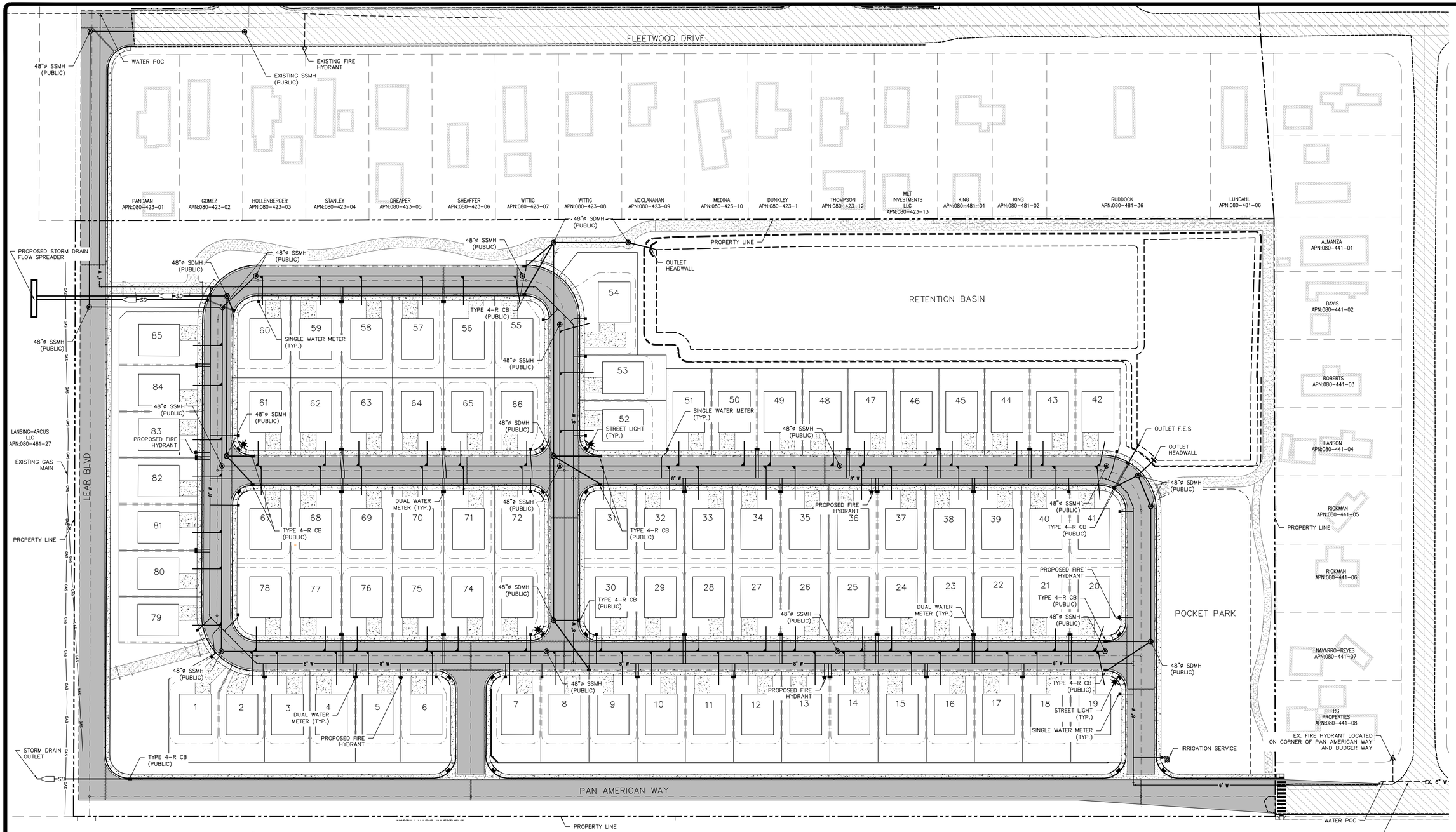
LEARNER LEMMON PROPERTY

GRADING PLAN C-3



LEGEND:

- MANHOLE (DASHED IF EXISTING)
- SD 18" — STORM DRAIN MAIN (DASHED IF EXISTING)
- SS 8" — SANITARY SEWER MAIN (DASHED IF EXISTING)
- 8"W — WATER MAIN
- SANITARY SEWER LATERAL
- SINGLE WATER METER
- DUAL WATER METER
- FIRE HYDRANT

NORTH

GRAPHIC SCALE

50 0 25 50 100

(IN FEET)
1 inch = 50 ft.

PUBLIC SEWER SYSTEM:

EACH LOT WILL BE SERVICED BY A SEWER LATERAL THAT WILL CONNECT TO A PUBLIC GRAVITY SEWER MAIN.

SINGLE RESIDENTIAL UNIT: 270 GAL/DAY

PEAKING FACTOR: 3

87 RESIDENTIAL UNITS : 70,470 GAL/DAY PEAK FLOW

UTILITY OWNERSHIP:

STORM DRAIN: WASHOE COUNTY
SANITARY SEWER: COUNTY AND CITY OWNED AND MAINTAINED
WATER: TMWA
GAS: NV ENERGY
ELECTRIC: NV ENERGY MAINS IN EASEMENT
COMMUNICATIONS: AT&T/CHARTER FACILITIES IN EASEMENT

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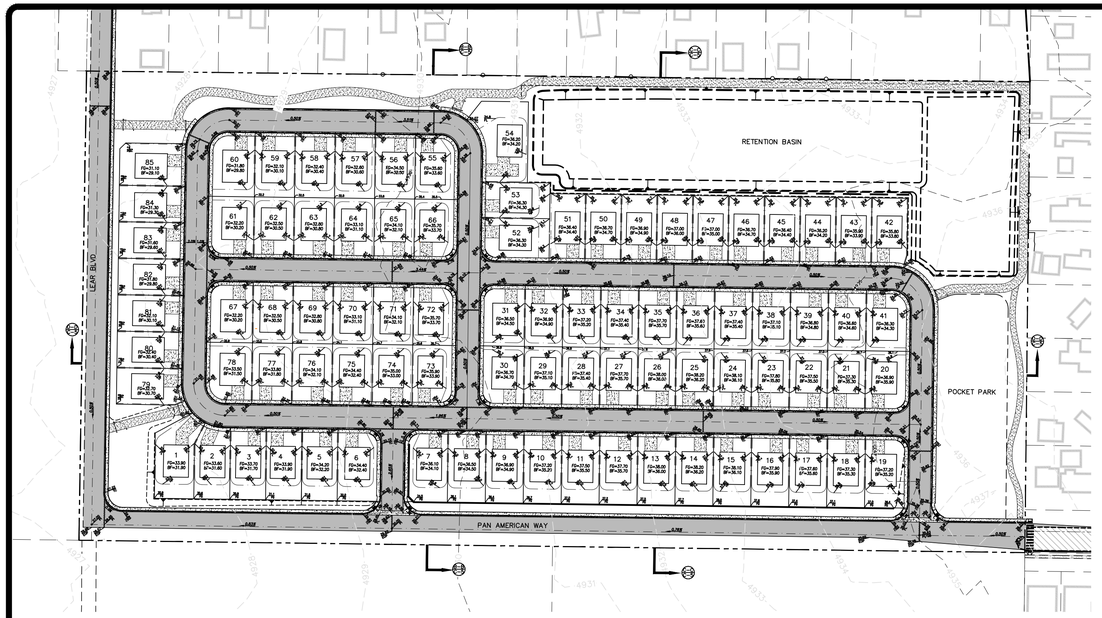
LEARNER LEMMON PROPERTY

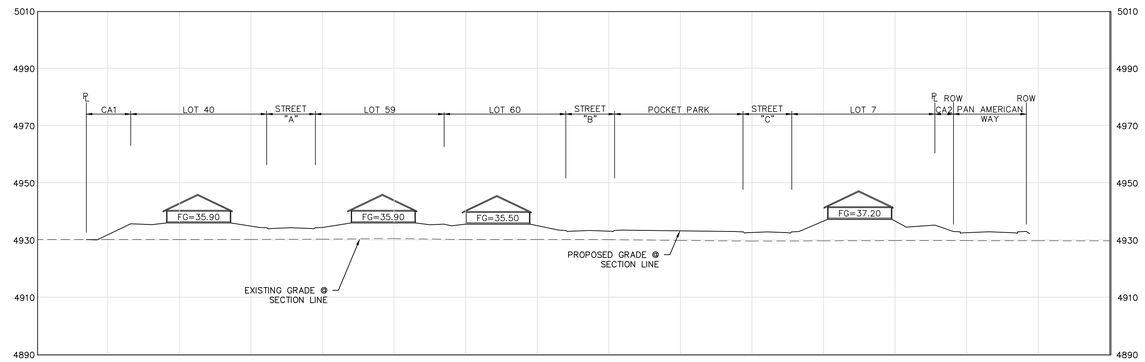
UTILITY PLAN C-4



SITEPLAN

SCALE: 1"=100'

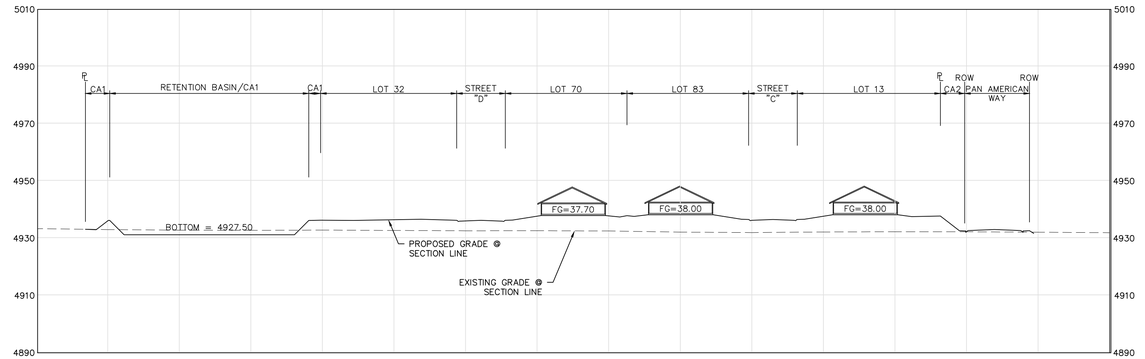
100 0 50 100 200



SCALE: 1"=50'

50 0 25 50 100

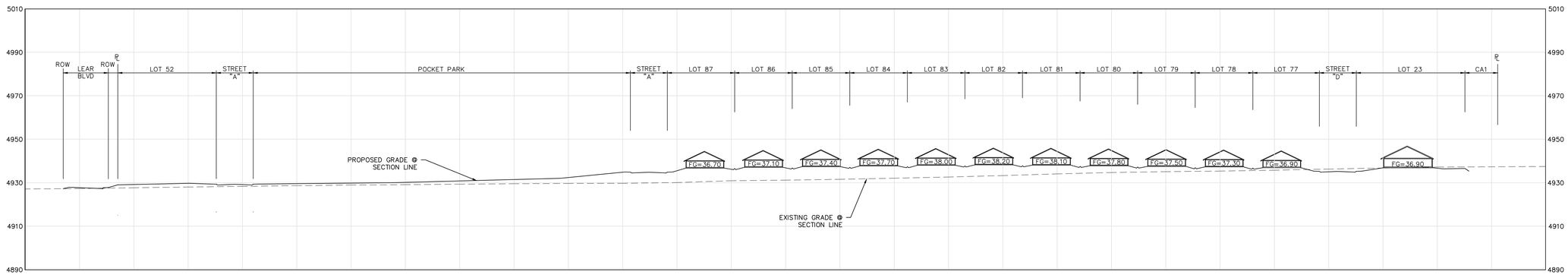
SECTION B-B



SCALE: 1"=50'

50 0 25 50 100

SECTION C-C



SECTION D-D

SCALE: 1"=50'

50 0 25 50 100

LEARNER LEMMON PROPERTY

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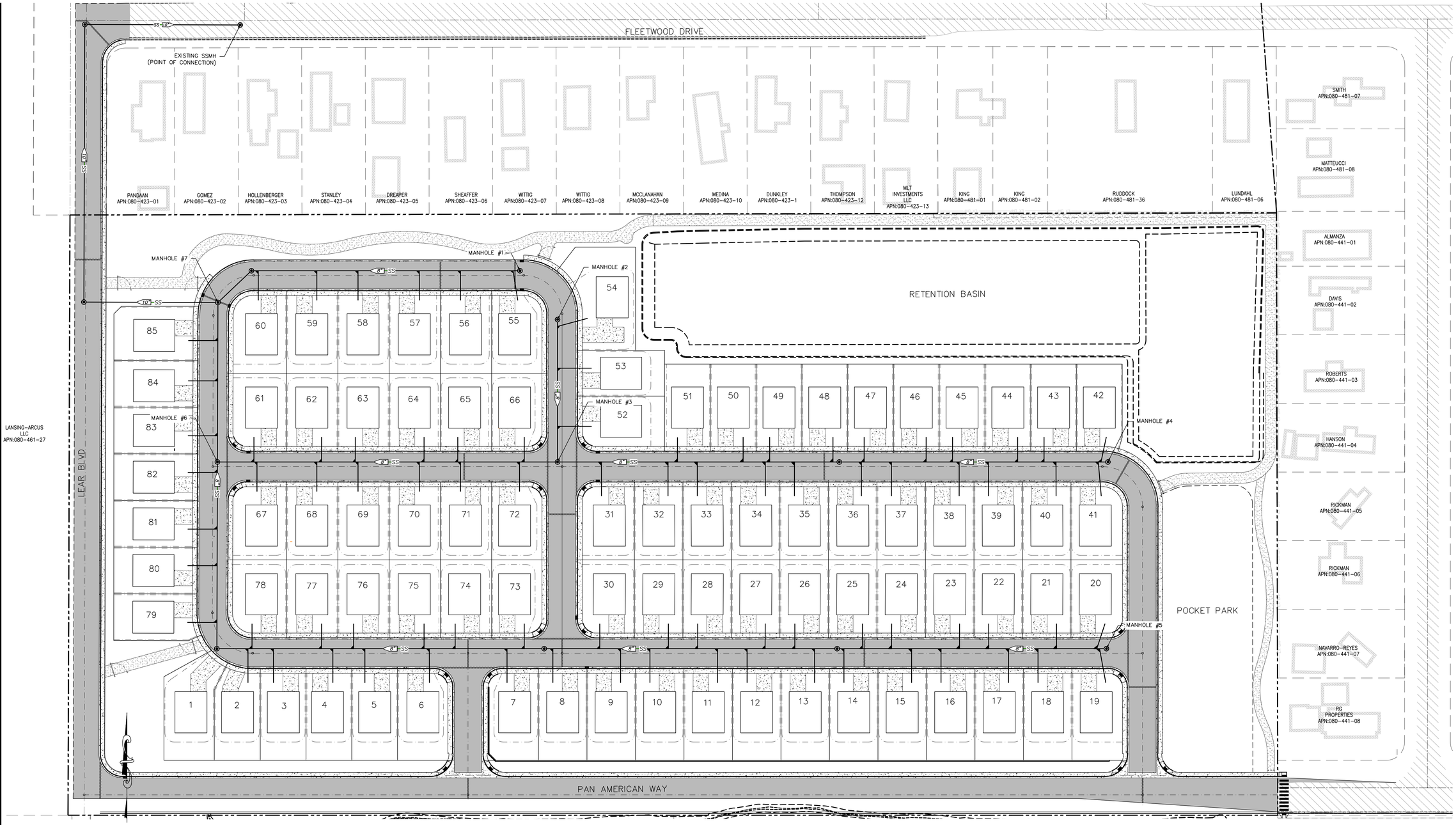
X-SECTIONS C-5



100 0 50 100 200

SCALE: 1"=100'

Preliminary Sanitary Sewer Pipe Calculations					
Pipe Segment	Slope (%)	Peak Flow (GPD)	Depth (Ft)	Expected Velocity (fps)	Half Full Velocity (fps)
MH #1 - MH #7	1.10	4,860	0.04	0.87	3.98
MH #2- MH #3	0.94	2,430	0.03	0.66	3.68
MH #4 - MH #6	0.50	29,160	0.1	1.36	2.68
MH #5 - MH #6	0.50	31,590	0.11	1.29	2.68
MH #6 -MH #7	0.50	63,180	0.15	1.64	2.68
MH #7 - EX. MH	0.21	68,040	0.18	1.27	2

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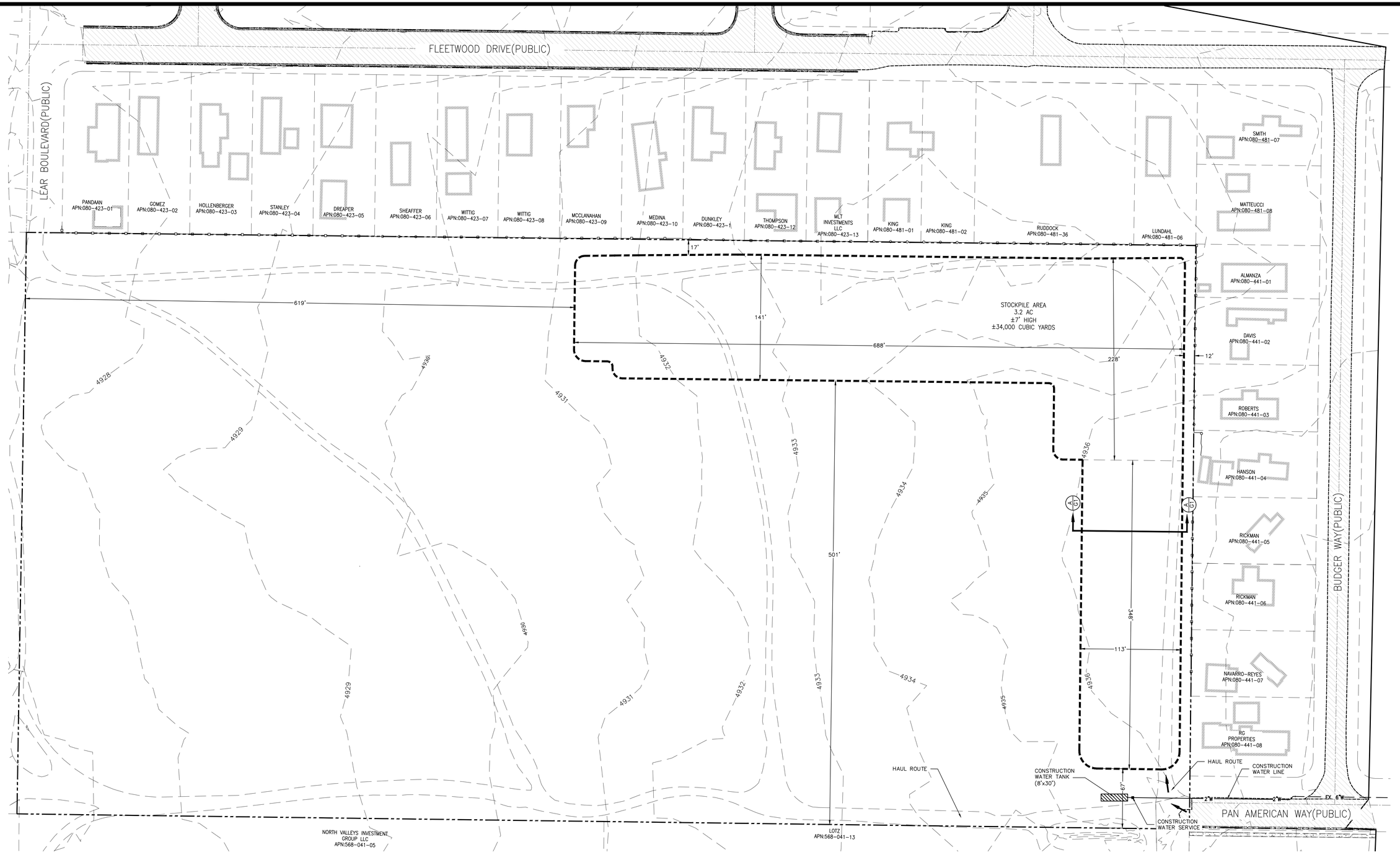
LEARNER LEMMON PROPERTY

SEWER DISPLAY C-6



MATERIAL SOURCE:
TBD

FEMA FLOOD HAZARD NOTE:

PER FEMA dFIRM PANELS 32031C2838G, EFFECTIVE 3/16/2009, THIS PROJECT LIES PARTIALLY WITHIN AN AREA DESIGNATED AS ZONE X (SHADED) AND ZONE X (UNSHADED)

GRADING NOTES:

1. ALL CONSTRUCTION SHALL CONFORM TO THE STANDARD SPECIFICATIONS, AND THE LATEST STANDARD DETAILS FOR PUBLIC WORKS CONSTRUCTION 2012 ADDITION (AND ANY APPURTENANT SUPPLEMENTS) SPONSORED AN DISTRIBUTED BY RENO, SPARKS, AND WASHOE COUNTY, AND THE PROJECT GEOTECHNICAL INVESTIGATION.
2. THE NATURAL VEGETATION AND EXISTING LANDSCAPING SHALL BE PRESERVED AS MUCH AS PRACTICAL DURING SITE IMPROVEMENTS CONSTRUCTION..
3. SLOPES STEEPER THAN 3:1 SHALL BE MECHANICALLY STABILIZED WITH ROCK-RIP.

LEGEND

4962 — EXISTING MINOR CONTOUR LINE

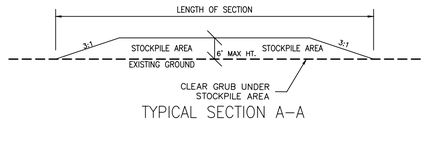
4960 — EXISTING MAJOR CONTOUR LINE

NORTH

GRAPHIC SCALE

50 0 25 50 100

(IN FEET)
1 inch = 50 ft.



TYPICAL SECTION A-A

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LEARNER LEMMON PROPERTY

STOCKPILE PLAN C-7

14’ SECURITY PIPE GATE
CLASS 1 OR 2 TREES DECIDUOUS TREES
BOLLARD
14’ SECURITY PIPE GATE
RETENTION BASIN
LEAR BLVD
655.92’
14’ SECURITY PIPE GATE
BOLLARD
14’ SECURITY PIPE GATE (2)
BOLLARD
POCKET PARK W/ CHILDREN’S PLAY AREA
PAN AMERICAN WAY
50’-0” TYP. SPACING
CLASS 3 OR 4 DECIDUOUS TREES
BOLLARD

LEGEND

REVEGETATION LANDSCAPE AREA (52,390 SF)
GRASS, SHRUB, & WILDFLOWER BLEND

STREETSCAPE LANDSCAPE AREA (14,500 SF)
TREES REQUIRED: (1,170 LF/50 LF)= 24 TREES
TREES PROVIDED: 24
SHRUBS REQUIRED: (14,500 SF/300 SF)*6= 290 SHRUBS

COMMON LANDSCAPE AREA (25,270 SF)
TREES REQUIRED: (25,270 SF/300 SF)= 85 TREES
TREES PROVIDED: 92 TREES
SHRUBS REQUIRED: (25,270 SF/300 SF)*6= 506SHRUBS

RETENTION BASIN (109,730 SF)

ACCENT TREES (19)

EVERGREEN TREES (31)

DECIDUOUS TREES (24)
“CLASS 1 OR 2” SMALLER CALIPER TREES

DECIDUOUS TREES (42)
“CLASS 3 OR 4” LARGER CALIPER TREES

XX SINGLE FAMILY HOUSE

8’ DECOMPOSED GRANITE TRAIL (1,423 LF)
12’ WIDE COUNTY ACCESS GRAVEL ROAD (800 LF)

REGISTERED LANDSCAPE ARCHITECT
MELISSA RUTH
1105
Expires: 06/30/23
STATE OF NEVADA

LEARNER LEMMON PRELIMINARY LANDSCAPE PLAN

Washoe County, Nevada

CALLANDER PROJECT NUMBER: 23019 | DATE: 12.08.2023 | CALLANDER ASSOCIATES

L1

0 20’ 40’ 80’

CALA

PAN AMERICAN WAY

SHRUB, TYP.

PLANTING AREA, TYP.

POCKET PARK W/ CHILDREN'S PLAY AREA

PARK SIGN

FENCE

IRR

SHADE TREE, TYP.

12' WIDE COUNTY ACCESS GRAVEL ROAD W/ PIPE GATE

EVERGREEN TREE, TYP.

TURF

8' WIDE DECOMPOSED GRANITE TRAIL

BOLLARD

SHADE SHELTER

BIKE PARKING

ACCENT TREE, TYP.

PICNIC AREA

DECOMPOSED GRANITE, TYP.

CONCRETE PATH, TYP.

BOLLARD

LEARNER LEMMON POCKET PARK PRELIMINARY PLAN

Washoe County, Nevada

CALLANDER PROJECT NUMBER: 23019 | DATE: 12.08.2023 | CALLANDER ASSOCIATES

L2

0 5' 10' 20'

CALA

November 21, 2023

Jeff Holbrook, Manager
LC Learner, LLC
325 Harbour Cove Drive #219
Sparks, NV, 89434

Via Email:
jholbrook@landcapip.com

SUBJECT: **Intent to Serve – Sanitary Sewer**
Learner Lemmon Project
080-461-08, 87 Lots

To whom it may concern:

The Washoe County Community Services Department, Engineering and Capital Projects Division, has reviewed the application for the subject project and has committed to serve the project under the following conditions:

1. The tentative map is approved by the Washoe County Planning Commission and all final maps have been reviewed and approved by Washoe County Sewer Utility for hydraulic capacity of the collection system and treatment capacity at the Lemmon Valley Water Reclamation Facility.
2. Adhere to all sections of NAC 278.290 & NAC 278.430 that require all necessary improvements to the collection system or treatment facility be approved by Washoe County Utilities and constructed and/or the financial assurance made prior to the approval of any final map.

Review of the information submitted does not constitute an application for service, imply the process of planning and construction of the facilities necessary for service have been completed, is not a will serve letter nor does it imply that any sewer connection fees have been paid. Capacity assurance will be determined after all fees have been paid and accepted.

Sincerely,

Dwayne Smith, P.E.
Director Engineering & Capital Projects

CC:
Brett H. and Bryan A Learner, 1540 Roma Ct, Reno, NV 89523
Ken Krater (via email: ken@kcgnv.com)

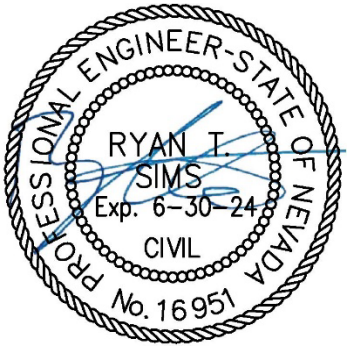
Preliminary Drainage Report

For

Learner – Lemmon Property

Prepared for:

LC Learner, LLC
27132 B Paseo Espada, Suite 1226
San Juan Capistrano, CA 92675



Prepared by:

12-08-23

Axion ENGINEERING
Civil Engineering • Land Development
Mapping • Surveying

Revised December, 2023

December 2023 Revision

The proposed layout for the Learner – Lemmon property has been revised. A storm drain analysis has been performed with the revised site layout and we have concluded that the proposed drainage patterns and quantity will remain unchanged. Some of the storm drain infrastructure has been relocated, but the on-site flows will still be split, with half going to the retention basin and the other half being released at the off-site outlet.

Introduction:

This report shall serve as the preliminary drainage study for the Learner – Lemmon property. The Learner project site (APN: 080-461-08) is located along Pan American Way and is situated within the West half of the Southwest quarter of the Northwest Quarter of Section 34, Township 21 North, Range 19 East, Mount Diablo Meridian. Reference the attached Vicinity Map.

The proposed project is a Tentative map for 87 Single Family residential lots with public street and utility improvements. Reference the attached site plan.

The site lies within FEMA FIRM Panel 32031C2838G effective 3/16/2009. The site is located within FEMA Flood Zone "X" (unshaded), an area of minimal flood hazard outside the 0.2% (500-year) annual chance floodplain.

Previous Studies:

No previous studies have been prepared for the project site.

Existing Conditions:

The project site is undeveloped with native vegetation (grasses and sagebrush) covering much of the site with some undeveloped dirt roads crossing the site. Existing grade generally slopes towards the northern end of the site.

To the North of the project site is currently undeveloped land. With the completion of this project the Northern side will be bordered by partially completed Lear Blvd. On the East and South Sides of the project are existing Single-Family homes and to the West is currently undeveloped City of Reno land. The proposed project will extend Pan American Way on the Western side of the project.

Methodology:

The onsite runoff was determined using the Rational Method (Q=CiA). The time of concentration used in all areas for rainfall intensities was T_c= 10 minutes, the minimum time of concentration used in the TMRDM. Rational C coefficients were chosen from the TMRDM based on the site conditions. Please Reference the attached table showing runoff calculations.

On-site retention volumes were calculated using the TR-55 method. Existing and proposed site runoffs were analyzed and compared to determine the increase in runoff volume. The on-site retention basin was sized using the increase in volume from the post developed site. Per the Swan Lake Terminal Basin policy, the retention basin volume used is 1.3 times the calculated volume for a factor of safety.

Existing Hydrology:

There is currently no storm drain infrastructure within the project site. The existing storm run off is conveyed across the site generally by sheet flow with some small alluvial-type drainage ways being present. The existing site grade is sloped from the southern end to the northern end with slopes less than 5%.

Proposed Hydrology:

The post developed hydrology has been analyzed by subdividing the project site into 22 sub-basins based on proposed site grading and catch basin locations. Catch basin and underground storm drain infrastructure is

designed to capture the entire 5-year storm event with no runoff exceeding half of the adjacent travel lane per City of Reno Design Manual. 100-year flows are not expected to reach the allowable street flow capacity at the right of way line at any point.

Runoff captured in catch basins will be conveyed through the site in an underground storm drain system. The underground storm drain system is designed to handle the entire 5-year storm event with the hydraulic grade line of the 100-year storm not exceeding 1 foot below final grade per the Truckee Meadows Regional Drainage Manual. Finally, the captured runoff will be released either to the proposed retention basin (South portion) or released to the north (North portion).

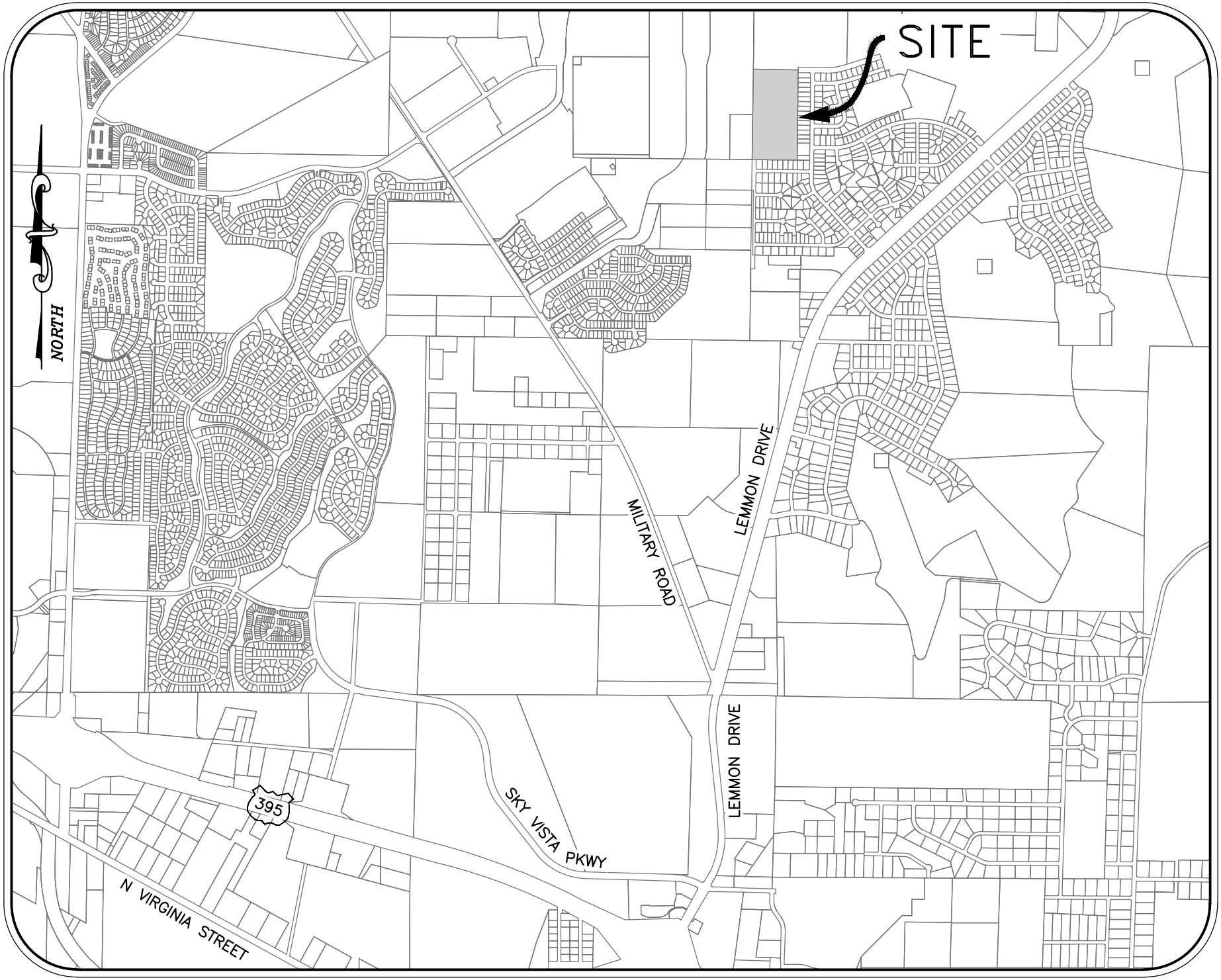
Retention:

The proposed retention basin has been designed by using the TR-55 method, by analyzing the existing and proposed 100-year, 10-day storm runoff volumes. Reference the attached TR-55 calculations within this report. The volume of the pre-developed 100-year, 10day storm was found to be 7.85 Ac-ft and 14.37 Ac-ft in the post-developed storm. Taking the difference of the proposed and existing storms multiplied by a factor of 1.3 determined the size of the proposed retention basin. Although only half of the proposed site will be drained to the retention basin, the entire 19.92 Ac site was accounted for when calculating the volumes ensuring the retention basin is adequately sized. Site grading will establish the conveyance of the post-developed flows, ensuring only the southern portion of the proposed site will be drained to the basin. The location and elevation of the basin have been based on percolation testing and the Truckee Meadows Regional Design Manual. Per the Truckee Meadows Regional Drainage Manual, the bottom of the basin must be 5' above the seasonal ground water elevation. Based on these parameters, the Eastern portion of the site has been chosen as the appropriate location for the basin. Reference the attached percolation testing report.

Conclusion:

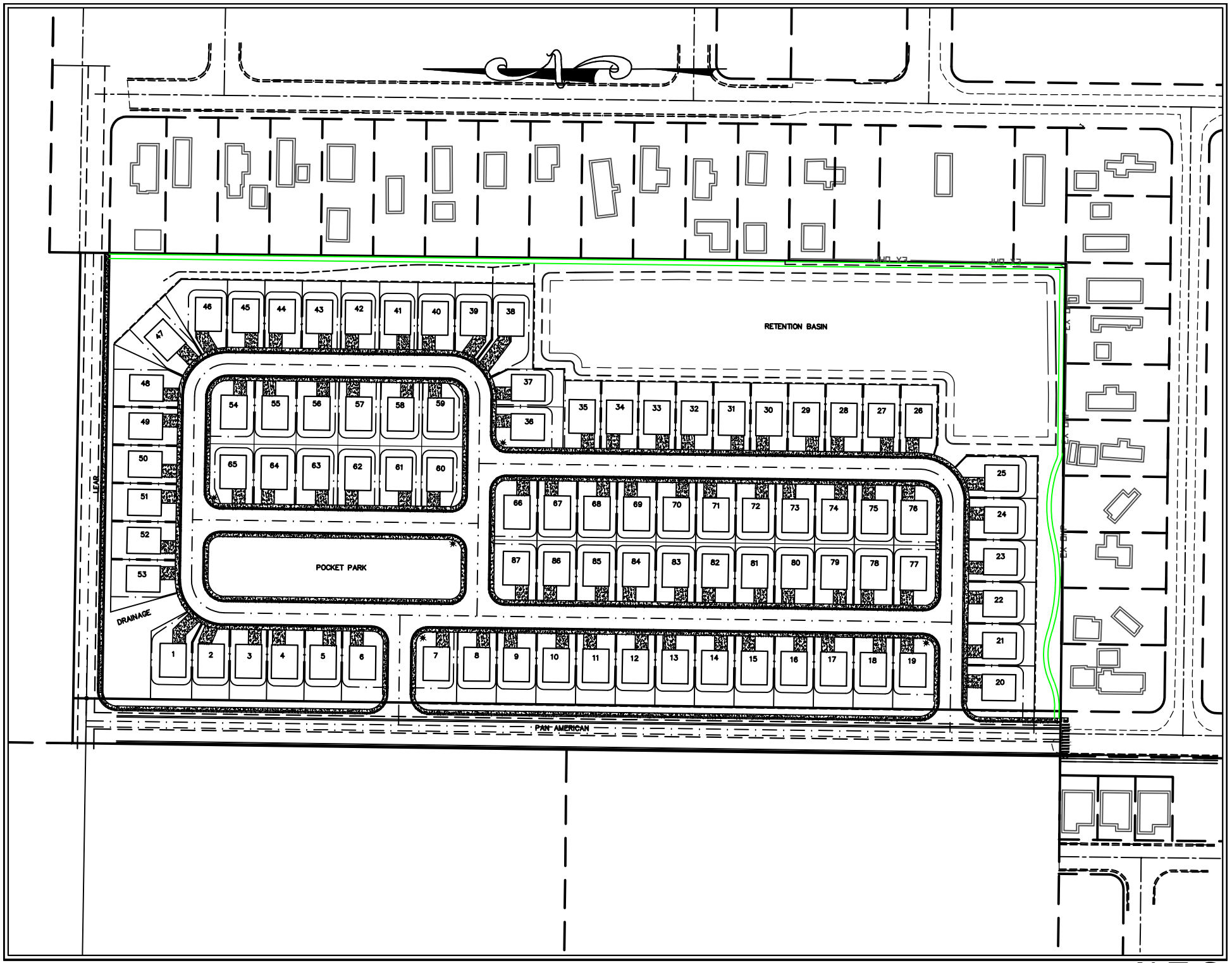
Overall, the 5-year and 100-year peak flow leaving the site will be reduced or remain at the existing flow rates. The Retention basin will retain both the 5-year and 100-year flow increases. Therefore, the effects of the development on all adjacent and downstream properties and drainageways will be reduced. The project and associated drainage improvements will be in compliance with the current edition of the Truckee Meadows Regional Drainage Manual.

Vicinity Map



VICINITY MAP

Site Plan


RETENTION BASIN
POCKET PARK
DRAINAGE
PAN-AMERICAN
LEAD
1
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4
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SITE

N.T.S.

NOAA Rainfall Data

NOAA Atlas 14, Volume 1, Version 5
Location name: Reno, Nevada, USA*
Latitude: 39.6446°, Longitude: -119.8458°
Elevation: 4930.59 ft**
* source: ESRI Maps
** source: USGS

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_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches/hour)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**1.25** (1.04-1.44)	**1.55** (1.30-1.81)	**2.08** (1.74-2.45)	**2.58** (2.17-3.06)	**3.42** (2.83-4.13)	**4.22** (3.41-5.17)	**5.20** (4.07-6.47)	**6.37** (4.81-8.11)	**8.32** (5.96-10.9)	**10.1** (6.97-13.6)
10-min	**0.948** (0.798-1.09)	**1.18** (0.990-1.37)	**1.58** (1.33-1.86)	**1.96** (1.65-2.33)	**2.61** (2.15-3.14)	**3.22** (2.59-3.94)	**3.95** (3.10-4.92)	**4.85** (3.67-6.17)	**6.34** (4.54-8.33)	**7.72** (5.30-10.4)
15-min	**0.784** (0.660-0.904)	**0.976** (0.816-1.14)	**1.30** (1.10-1.54)	**1.62** (1.37-1.92)	**2.15** (1.78-2.60)	**2.66** (2.14-3.26)	**3.26** (2.56-4.07)	**4.01** (3.03-5.10)	**5.23** (3.75-6.88)	**6.38** (4.38-8.58)
30-min	**0.530** (0.444-0.610)	**0.658** (0.550-0.766)	**0.878** (0.740-1.04)	**1.09** (0.920-1.29)	**1.45** (1.20-1.75)	**1.79** (1.44-2.19)	**2.20** (1.72-2.74)	**2.70** (2.04-3.44)	**3.52** (2.53-4.64)	**4.29** (2.95-5.78)
60-min	**0.328** (0.275-0.377)	**0.408** (0.341-0.475)	**0.543** (0.458-0.641)	**0.675** (0.569-0.801)	**0.898** (0.742-1.08)	**1.11** (0.893-1.36)	**1.36** (1.07-1.70)	**1.67** (1.26-2.13)	**2.18** (1.56-2.87)	**2.66** (1.83-3.58)
2-hr	**0.216** (0.192-0.248)	**0.268** (0.238-0.309)	**0.344** (0.302-0.396)	**0.410** (0.356-0.473)	**0.514** (0.436-0.597)	**0.609** (0.504-0.714)	**0.720** (0.581-0.855)	**0.866** (0.678-1.07)	**1.15** (0.849-1.45)	**1.40** (1.00-1.81)
3-hr	**0.175** (0.158-0.198)	**0.218** (0.196-0.248)	**0.272** (0.244-0.309)	**0.317** (0.281-0.361)	**0.381** (0.334-0.436)	**0.439** (0.378-0.507)	**0.508** (0.429-0.594)	**0.606** (0.500-0.719)	**0.778** (0.623-0.975)	**0.939** (0.734-1.21)
6-hr	**0.129** (0.117-0.145)	**0.161** (0.145-0.181)	**0.198** (0.178-0.223)	**0.227** (0.203-0.256)	**0.265** (0.234-0.300)	**0.293** (0.256-0.333)	**0.322** (0.278-0.370)	**0.359** (0.305-0.416)	**0.433** (0.360-0.509)	**0.507** (0.416-0.615)
12-hr	**0.089** (0.080-0.099)	**0.111** (0.100-0.124)	**0.139** (0.125-0.155)	**0.161** (0.144-0.180)	**0.190** (0.168-0.214)	**0.213** (0.186-0.241)	**0.236** (0.203-0.270)	**0.259** (0.220-0.300)	**0.290** (0.240-0.342)	**0.316** (0.257-0.379)
24-hr	**0.059** (0.053-0.066)	**0.074** (0.066-0.083)	**0.095** (0.085-0.106)	**0.111** (0.099-0.125)	**0.134** (0.119-0.151)	**0.153** (0.134-0.173)	**0.172** (0.150-0.196)	**0.193** (0.165-0.221)	**0.221** (0.186-0.256)	**0.243** (0.202-0.285)
2-day	**0.036** (0.032-0.041)	**0.046** (0.041-0.052)	**0.059** (0.052-0.068)	**0.071** (0.062-0.081)	**0.086** (0.075-0.099)	**0.099** (0.085-0.114)	**0.113** (0.096-0.131)	**0.128** (0.107-0.150)	**0.148** (0.122-0.177)	**0.165** (0.133-0.200)
3-day	**0.027** (0.023-0.030)	**0.034** (0.030-0.039)	**0.044** (0.039-0.051)	**0.053** (0.047-0.061)	**0.066** (0.057-0.075)	**0.076** (0.065-0.088)	**0.087** (0.074-0.101)	**0.099** (0.082-0.116)	**0.116** (0.094-0.138)	**0.130** (0.104-0.157)
4-day	**0.022** (0.019-0.025)	**0.028** (0.024-0.032)	**0.037** (0.032-0.042)	**0.044** (0.039-0.051)	**0.055** (0.048-0.064)	**0.064** (0.055-0.074)	**0.074** (0.062-0.086)	**0.084** (0.070-0.099)	**0.100** (0.081-0.119)	**0.112** (0.089-0.135)
7-day	**0.015** (0.013-0.017)	**0.019** (0.017-0.022)	**0.025** (0.022-0.030)	**0.031** (0.027-0.036)	**0.038** (0.033-0.045)	**0.045** (0.038-0.052)	**0.051** (0.043-0.061)	**0.058** (0.048-0.070)	**0.069** (0.055-0.083)	**0.077** (0.061-0.095)
10-day	**0.012** (0.010-0.014)	**0.015** (0.013-0.018)	**0.020** (0.018-0.024)	**0.025** (0.021-0.028)	**0.030** (0.026-0.035)	**0.035** (0.030-0.041)	**0.040** (0.034-0.047)	**0.046** (0.038-0.054)	**0.053** (0.043-0.064)	**0.059** (0.047-0.072)
20-day	**0.008** (0.007-0.009)	**0.010** (0.009-0.011)	**0.013** (0.011-0.015)	**0.016** (0.014-0.018)	**0.019** (0.017-0.022)	**0.022** (0.019-0.025)	**0.025** (0.021-0.029)	**0.028** (0.023-0.033)	**0.032** (0.026-0.038)	**0.035** (0.029-0.042)
30-day	**0.006** (0.005-0.007)	**0.008** (0.007-0.009)	**0.010** (0.009-0.012)	**0.012** (0.011-0.014)	**0.015** (0.013-0.017)	**0.017** (0.015-0.020)	**0.019** (0.016-0.023)	**0.022** (0.018-0.025)	**0.025** (0.021-0.029)	**0.027** (0.022-0.033)
45-day	**0.005** (0.004-0.006)	**0.006** (0.005-0.007)	**0.008** (0.007-0.010)	**0.010** (0.009-0.011)	**0.012** (0.010-0.014)	**0.014** (0.012-0.015)	**0.015** (0.013-0.017)	**0.017** (0.014-0.019)	**0.019** (0.016-0.022)	**0.021** (0.017-0.024)
60-day	**0.004** (0.004-0.005)	**0.005** (0.005-0.006)	**0.007** (0.006-0.008)	**0.009** (0.007-0.010)	**0.010** (0.009-0.012)	**0.011** (0.010-0.013)	**0.013** (0.011-0.014)	**0.014** (0.012-0.016)	**0.015** (0.013-0.018)	**0.016** (0.014-0.019)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

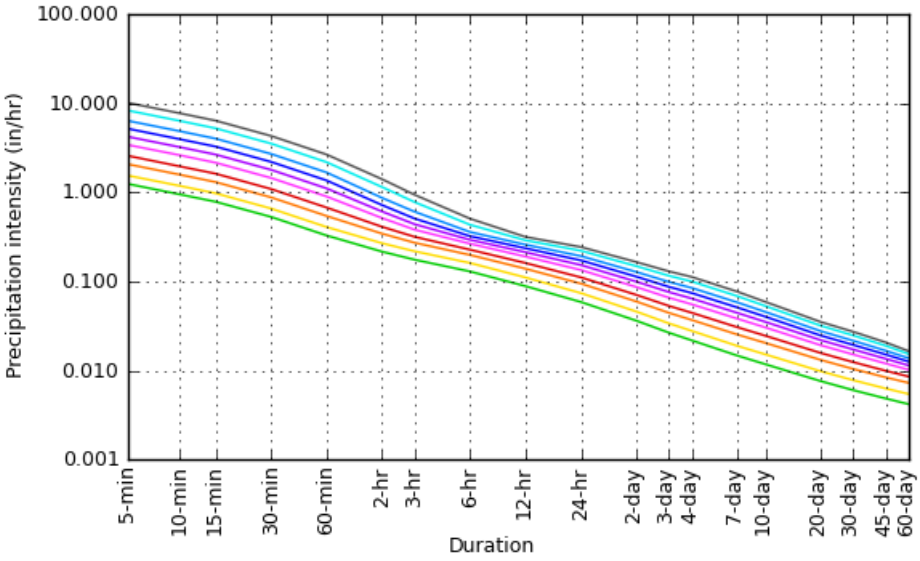
Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

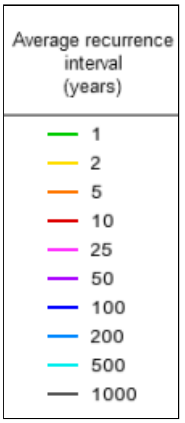
Please refer to NOAA Atlas 14 document for more information.

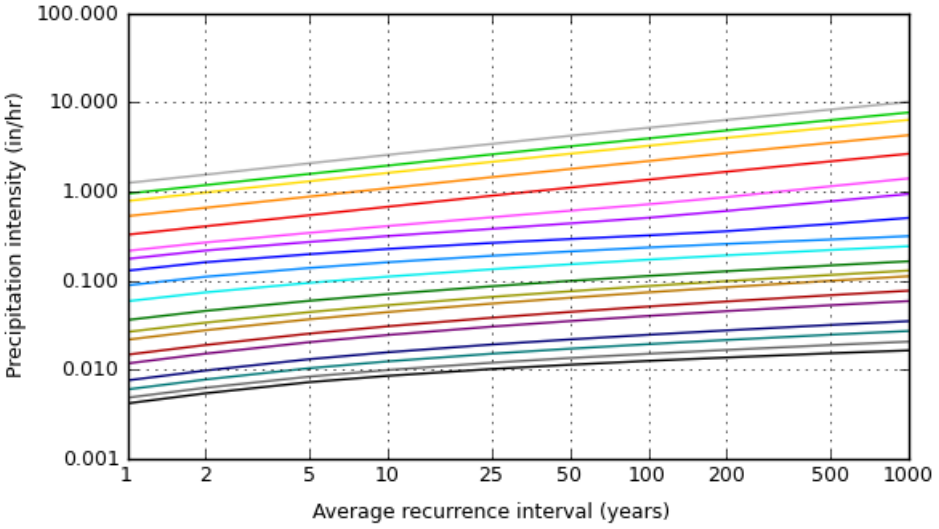
Back to Top

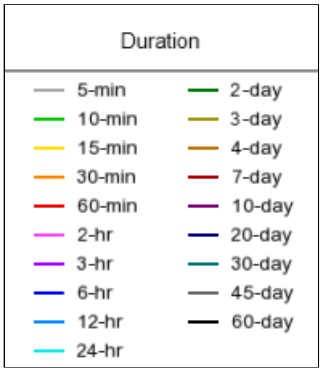
PF graphical

PDS-based intensity-duration-frequency (IDF) curves
Latitude: 39.6446°, Longitude: -119.8458°









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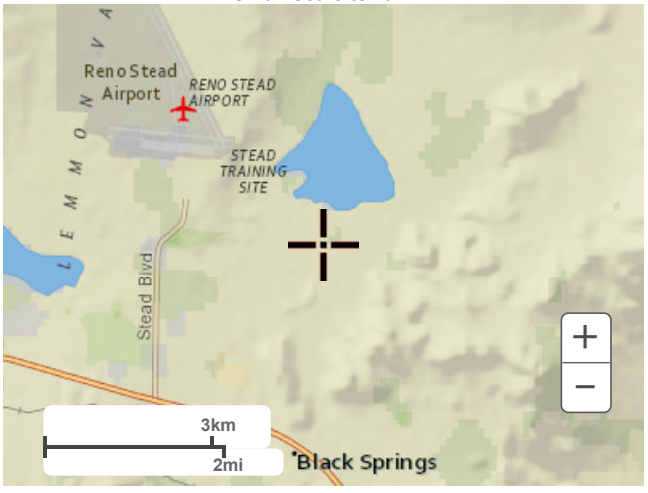
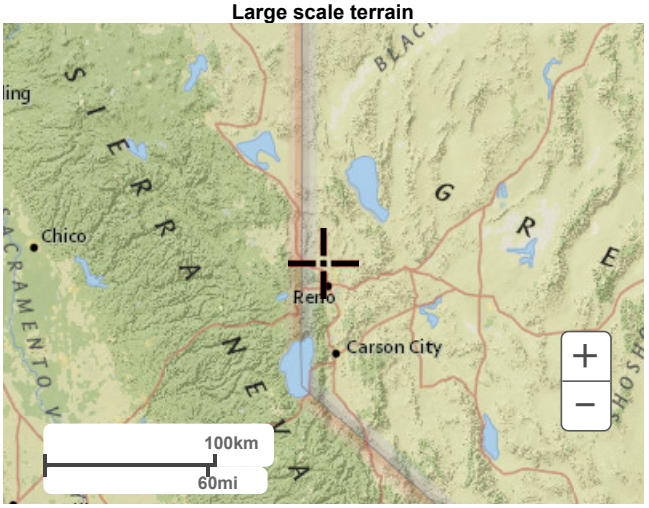
Back to Top

Maps & aerials

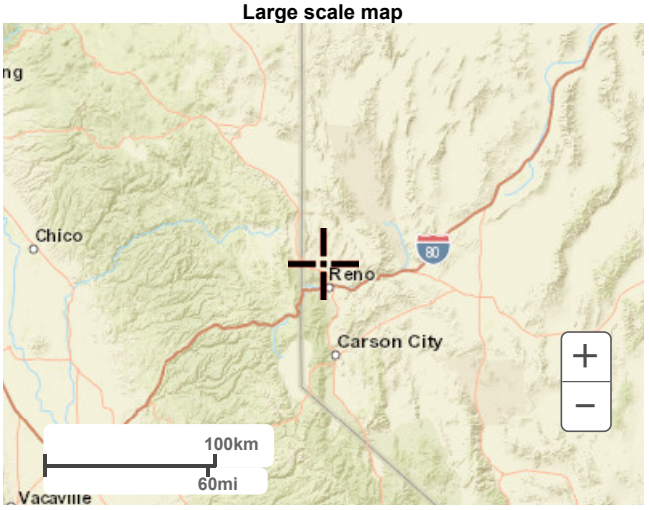
Small scale terrain



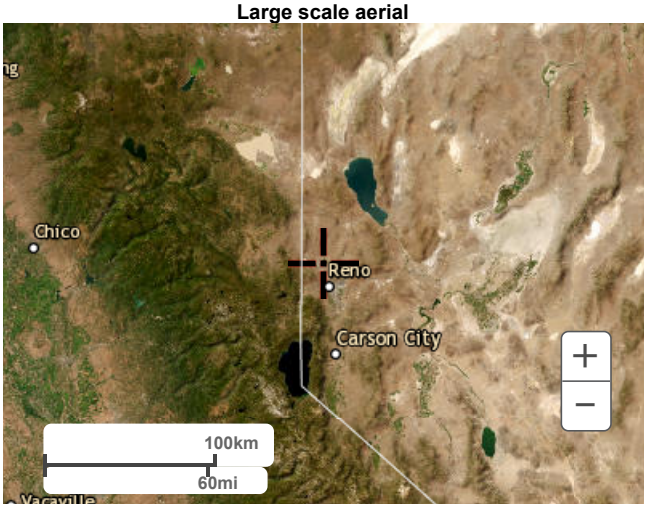
Large scale terrain



Large scale map



Large scale aerial



Back to Top

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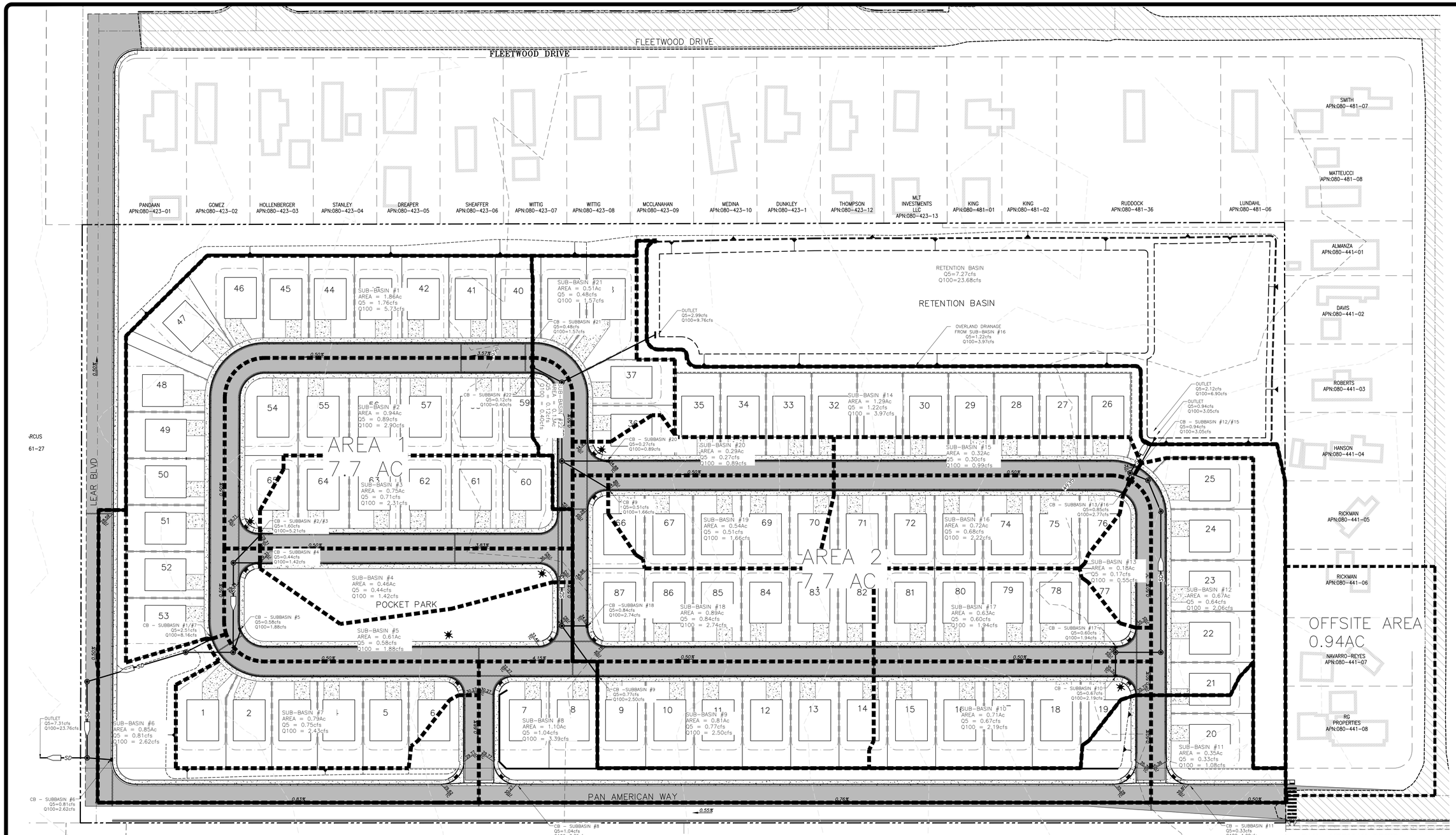
Hydrology Display



EXISTING RATIONAL METHOD CALCULATIONS									
DRAINAGE	AREA	RUNOFF COEFFICIENT		Tc	INTENSITY (in/hr)		PEAK RUNOFF (cfs)	
SUB-AREA	(acres)	5-YR	100-YR	(min)	5-YR	100-YR	5-YR	100-YR
1	1.86	0.2	0.5	10	1.58	3.95	0.59	3.67
2	0.94	0.2	0.5	10	1.58	3.95	0.30	1.86
3	0.75	0.2	0.5	10	1.58	3.95	0.24	1.48
4	0.46	0.2	0.5	10	1.58	3.95	0.15	0.91
5	0.61	0.2	0.5	10	1.58	3.95	0.19	1.20
6	0.85	0.2	0.5	10	1.58	3.95	0.27	1.68
7	0.79	0.2	0.5	10	1.58	3.95	0.25	1.56
8	1.1	0.2	0.5	10	1.58	3.95	0.35	2.17
9	0.81	0.2	0.5	10	1.58	3.95	0.26	1.60
10	0.71	0.2	0.5	10	1.58	3.95	0.22	1.40
11	0.35	0.2	0.5	10	1.58	3.95	0.11	0.69
12	0.67	0.2	0.5	10	1.58	3.95	0.21	1.32
13	0.18	0.2	0.5	10	1.58	3.95	0.06	0.36
14	1.29	0.2	0.5	10	1.58	3.95	0.41	2.55
15	0.32	0.2	0.5	10	1.58	3.95	0.10	0.63
16	0.72	0.2	0.5	10	1.58	3.95	0.23	1.42
17	0.63	0.2	0.5	10	1.58	3.95	0.20	1.24
18	0.89	0.2	0.5	10	1.58	3.95	0.28	1.76
19	0.54	0.2	0.5	10	1.58	3.95	0.17	1.07
20	0.29	0.2	0.5	10	1.58	3.95	0.09	0.57
21	0.51	0.2	0.5	10	1.58	3.95	0.16	1.01
22	0.13	0.2	0.5	10	1.58	3.95	0.04	0.26
						TOTAL	4.87	30.42

PROPOSED RATIONAL METHOD CALCULATIONS								
DRAINAGE	AREA	RUNOFF COEFFICIENT		Tc	INTENSITY (in/hr)		PEAK RUNOFF (cfs)	
SUB-AREA	(acres)	5-YR	100-YR	(min)	5-YR	100-YR	5-YR	100-YR
1	1.86	0.6	0.78	10	1.58	3.95	1.76	5.73
2	0.94	0.6	0.78	10	1.58	3.95	0.89	2.90
3	0.75	0.6	0.78	10	1.58	3.95	0.71	2.31
4	0.46	0.6	0.78	10	1.58	3.95	0.44	1.42
5	0.61	0.6	0.78	10	1.58	3.95	0.58	1.88
6	0.85	0.6	0.78	10	1.58	3.95	0.81	2.62
7	0.79	0.6	0.78	10	1.58	3.95	0.75	2.43
8	1.1	0.6	0.78	10	1.58	3.95	1.04	3.39
9	0.81	0.6	0.78	10	1.58	3.95	0.77	2.50
10	0.71	0.6	0.78	10	1.58	3.95	0.67	2.19
11	0.35	0.6	0.78	10	1.58	3.95	0.33	1.08
12	0.67	0.6	0.78	10	1.58	3.95	0.64	2.06
13	0.18	0.6	0.78	10	1.58	3.95	0.17	0.55
14	1.29	0.6	0.78	10	1.58	3.95	1.22	3.97
15	0.32	0.6	0.78	10	1.58	3.95	0.30	0.99
16	0.72	0.6	0.78	10	1.58	3.95	0.68	2.22
17	0.63	0.6	0.78	10	1.58	3.95	0.60	1.94
18	0.89	0.6	0.78	10	1.58	3.95	0.84	2.74
19	0.54	0.6	0.78	10	1.58	3.95	0.51	1.66
20	0.29	0.6	0.78	10	1.58	3.95	0.27	0.89
21	0.51	0.6	0.78	10	1.58	3.95	0.48	1.57
22	0.13	0.6	0.78	10	1.58	3.95	0.12	0.40
						TOTAL	14.60	47.45

NOTES:
OFFSITE AREA DRAINS TOWARD AREA 1.
AREA 1 DRAINS TOWARD OUTLET NORTH OF PROJECT AREA. AREA 2 DRAINS TOWARD RETENTION BASIN IN THE SOUTHEAST CORNER OF PROJECT AREA

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.

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HYDROLOGY DISPLAY C-6

Rational Method Calculations

Weighted values of the runoff coefficient "C" may be required where land use is most accurately described as a mixture of the land uses listed above or where it is a mixture of impervious and pervious areas and not well represented by a single entry in the preceding list.

Sub-areas which include an LID feature will typically require special consideration and weighting of the runoff coefficient "C". See Chapter X for specific guidance on post construction storm water quality design considerations.

Included below for reference is Table 202 from both the TMRDM and the Truckee Meadows Structural Controls Manual.

TABLE 202 ADDITIONAL RUNOFF COEFFICIENTS "C" FOR REFERENCE

Runoff coefficients for the Rational Method from the Washoe County Hydrologic Criteria and Drainage Design Manual (a.k.a., the TMRDM) and the City of Sparks (1998 and 1996, respectively), and as per the Truckee Meadows Structural Controls Design Manual.

Land Use or Surface Characteristics	Aver. % Impervious Area	Runoff Coefficients 5-Year (C_5)	Runoff Coefficients 100-Year (C_{100})
Business/Commercial:			
Downtown Areas	85	.82	.85
Neighborhood Areas	70	.65	.80
Residential:			
(Average Lot Size)			
⅛ Acre or Less (Multi-Unit)	65	.60	.78
¼ Acre	38	.50	.65
⅓ Acre	30	.45	.60
½ Acre	25	.40	.55
1 Acre	20	.35	.50
Industrial:	72	.68	.82
Open Space:			
(Lawns, Parks, Golf Courses)	5	.05	.30
Undeveloped Areas:			
Range	0	.20	.50
Forest	0	.05	.30
Streets/Roads:			
Paved	100	.88	.93
Gravel	20	.25	.50
Drives/Walks:	95	.87	.90
Roofs:	90	.85	.87

Notes:

1. Composite runoff coefficients shown for Residential, Industrial, and Business/Commercial Areas assume irrigated grass landscaping for all previous areas. For development with landscaping other than irrigated grass, the designer must develop project specific composite runoff coefficients from the surface characteristics presented in this table.

EXISTING RATIONAL METHOD CALCULATIONS								
DRAINAGE	AREA	RUNOFF COEFFICIENT		Tc	INTENSITY (in/hr)		PEAK RUNOFF (cfs)	
SUB-AREA	(acres)	5-YR	100-YR	(min)	5-YR	100-YR	5-YR	100-YR
1	1.86	0.2	0.5	10	1.58	3.95	0.59	3.67
2	0.94	0.2	0.5	10	1.58	3.95	0.30	1.86
3	0.75	0.2	0.5	10	1.58	3.95	0.24	1.48
4	0.46	0.2	0.5	10	1.58	3.95	0.15	0.91
5	0.61	0.2	0.5	10	1.58	3.95	0.19	1.20
6	0.85	0.2	0.5	10	1.58	3.95	0.27	1.68
7	0.79	0.2	0.5	10	1.58	3.95	0.25	1.56
8	1.1	0.2	0.5	10	1.58	3.95	0.35	2.17
9	0.81	0.2	0.5	10	1.58	3.95	0.26	1.60
10	0.71	0.2	0.5	10	1.58	3.95	0.22	1.40
11	0.35	0.2	0.5	10	1.58	3.95	0.11	0.69
12	0.67	0.2	0.5	10	1.58	3.95	0.21	1.32
13	0.18	0.2	0.5	10	1.58	3.95	0.06	0.36
14	1.29	0.2	0.5	10	1.58	3.95	0.41	2.55
15	0.32	0.2	0.5	10	1.58	3.95	0.10	0.63
16	0.72	0.2	0.5	10	1.58	3.95	0.23	1.42
17	0.63	0.2	0.5	10	1.58	3.95	0.20	1.24
18	0.89	0.2	0.5	10	1.58	3.95	0.28	1.76
19	0.54	0.2	0.5	10	1.58	3.95	0.17	1.07
20	0.29	0.2	0.5	10	1.58	3.95	0.09	0.57
21	0.51	0.2	0.5	10	1.58	3.95	0.16	1.01
22	0.13	0.2	0.5	10	1.58	3.95	0.04	0.26
						TOTAL	4.87	30.42

PROPOSED RATIONAL METHOD CALCULATIONS								
DRAINAGE	AREA	RUNOFF COEFFICIENT		Tc	INTENSITY (in/hr)		PEAK RUNOFF (cfs)	
SUB-AREA	(acres)	5-YR	100-YR	(min)	5-YR	100-YR	5-YR	100-YR
1	1.86	0.6	0.78	10	1.58	3.95	1.76	5.73
2	0.94	0.6	0.78	10	1.58	3.95	0.89	2.90
3	0.75	0.6	0.78	10	1.58	3.95	0.71	2.31
4	0.46	0.6	0.78	10	1.58	3.95	0.44	1.42
5	0.61	0.6	0.78	10	1.58	3.95	0.58	1.88
6	0.85	0.6	0.78	10	1.58	3.95	0.81	2.62
7	0.79	0.6	0.78	10	1.58	3.95	0.75	2.43
8	1.1	0.6	0.78	10	1.58	3.95	1.04	3.39
9	0.81	0.6	0.78	10	1.58	3.95	0.77	2.50
10	0.71	0.6	0.78	10	1.58	3.95	0.67	2.19
11	0.35	0.6	0.78	10	1.58	3.95	0.33	1.08
12	0.67	0.6	0.78	10	1.58	3.95	0.64	2.06
13	0.18	0.6	0.78	10	1.58	3.95	0.17	0.55
14	1.29	0.6	0.78	10	1.58	3.95	1.22	3.97
15	0.32	0.6	0.78	10	1.58	3.95	0.30	0.99
16	0.72	0.6	0.78	10	1.58	3.95	0.68	2.22
17	0.63	0.6	0.78	10	1.58	3.95	0.60	1.94
18	0.89	0.6	0.78	10	1.58	3.95	0.84	2.74
19	0.54	0.6	0.78	10	1.58	3.95	0.51	1.66
20	0.29	0.6	0.78	10	1.58	3.95	0.27	0.89
21	0.51	0.6	0.78	10	1.58	3.95	0.48	1.57
22	0.13	0.6	0.78	10	1.58	3.95	0.12	0.40
						TOTAL	14.60	47.45

Retention Basin TR-55 Calculations

Worksheet 2: Runoff curve number and runoff

Project	By	Date
Learner Lemmon existing		
Location	**Checked**	**Date**

Check one: ☐ Present ☐ Developed

1. Runoff curve number

Soil name and hydrologic group (appendix A)	Cover description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN 1/ Table 2-2	CN 1/ Figure 2-3	CN 1/ Figure 2-4	Area ☐ acres ☐ mi² ☒ %	Product of CN x area
Haybourne loamy Sand (A)		51			13.6	694
Orr variant gravelly Sandy loam (C)		63			86.4	5443

1/ Use only one CN source per line

Totals ➡ | | 6137

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{6137}{100} = 61.37$; **Use CN** ➡ 61

2. Runoff

		Storm #1	Storm #2	Storm #3
Frequency	yr	100		
Rainfall, P (~~24-hour~~ 10-day)	in	9.66		
Runoff, Q	in	~~4.42~~ 4.75		

(Use P and CN with table 2-1, figure 2-1, or equations 2-3 and 2-4)

$Q = \frac{(P-0.25)^2}{(P+0.85)}$ $S = \frac{1000}{CN} - 10$

$S = 6.40$

Worksheet 3: Time of Concentration (T_c) or travel time (T_t)

Project	By	Date
Location	Checked	Date

Check one: ☐ Present ☐ Developed

Check one: ☐ T_c ☐ T_t through subarea

Notes: Space for as many as two segments per flow type can be used for each worksheet.
Include a map, schematic, or description of flow segments.

Sheet flow (Applicable to Tc only)

	Segment ID		
1. Surface description (table 3-1)	Range		
2. Manning's roughness coefficient, n (table 3-1)	0.13		
3. Flow length, L (total L † 300 ft) ft	300		
4. Two-year 24-hour rainfall, P_2 in	1.77		
5. Land slope, s ft/ft	0.007		
6. $T_t = \frac{0.007\ (nL)^{0.8}}{P_2^{0.5}\ s^{0.4}}$ Compute T_t hr	0.72	+	=

Shallow concentrated flow

	Segment ID		
7. Surface description (paved or unpaved)	Unpaved		
8. Flow length, L ft	1129		
9. Watercourse slope, s ft/ft	0.007		
10. Average velocity, V (figure 3-1) ft/s	1.4		
11. $T_t = \frac{L}{3600\ V}$ Compute T_t hr	0.22	+	=

Total = 0.94hr

Channel flow

	Segment ID		
12. Cross sectional flow area, a ft^2			
13. Wetted perimeter, p_w ft			
14. Hydraulic radius, $r = \frac{a}{p_w}$ Compute r ft			
15 Channel slope, s ft/ft			
16. Manning's roughness coefficient, n			
17. $V = \frac{1.49\ r^{2/3}\ s^{1/2}}{n}$ Compute V ft/s			
18. ~~Flow~~ length, L ft			
19. $T_t = \frac{L}{3600\ V}$ Compute T_t hr		+	=
20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, and 19) Hr			

Worksheet 4: Graphical Peak Discharge method

Project	By	Date
Location	**Checked**	**Date**

Check one: ☐ Present ☐ Developed

1. Data

Drainage area ..... A_m = 0.031 mi^2 (acres/640)

Runoff curve number ..... CN = 61 (From worksheet 2)

Time of concentration ..... T_c = 0.94 hr (From worksheet 3)

Rainfall distribution ..... = II (I, IA, II III)

Pond and swamp areas sprea throughout watershed ..... = _____ percent of A_m (_____ acres or mi^2 covered)

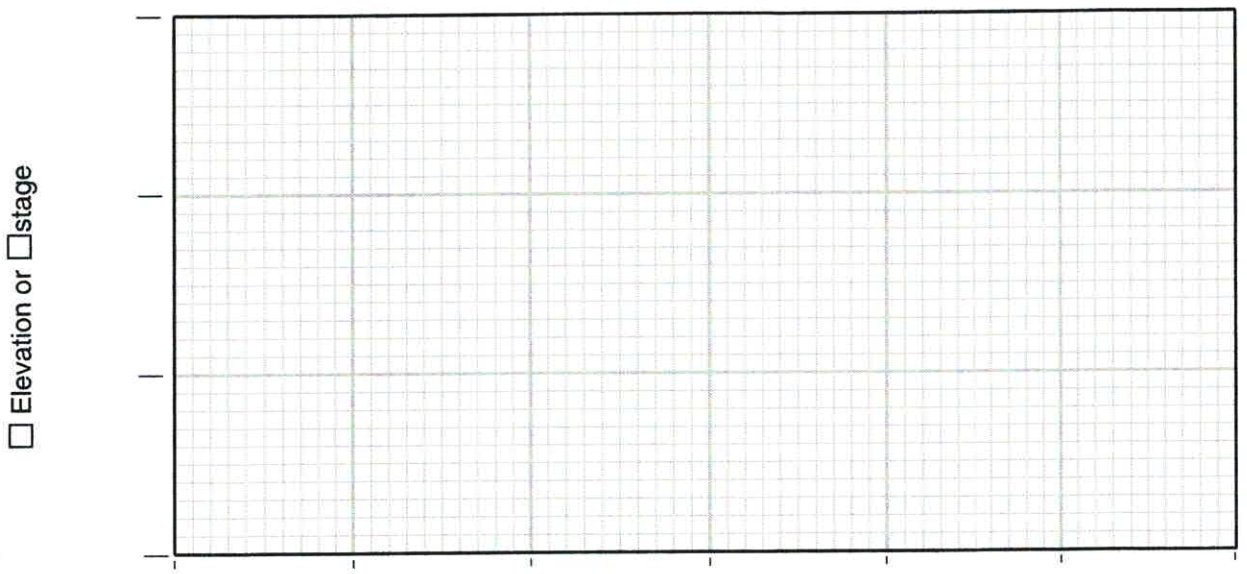
	Storm #1	Storm #2	Storm #3
2. Frequency ..... yr	100		
3. Rainfall, P (~~24-hour~~ 10-day) ..... in	9.66		
4. Initial abstraction, I_a ..... in (Use CN with table 4-1)	1.279		
5. Compute I_a/P	0.13		
6. Unit peak discharge, q_u ..... csm/in (Use T_c and I_a/P with exhibit 4– _____)	360		
7. Runoff, Q ..... in (From worksheet 2) Figure 2-6	4.75		
8. Pond and swamp adjustment factor, F_p ..... (Use percent pond and swamp area with table 4-2. Factor is 1.0 for zero percent pond ans swamp area.)			
9. Peak discharge, q_p ..... ft^3/s	53.01		

(Where $q_p = q_u A_m Q F_p$)

Worksheet 6a: Detention basin storage, peak outflow discharge (q_o) known

Project	By	Date
Location	Checked	Date

Check one: ☐ Present ☐ Developed

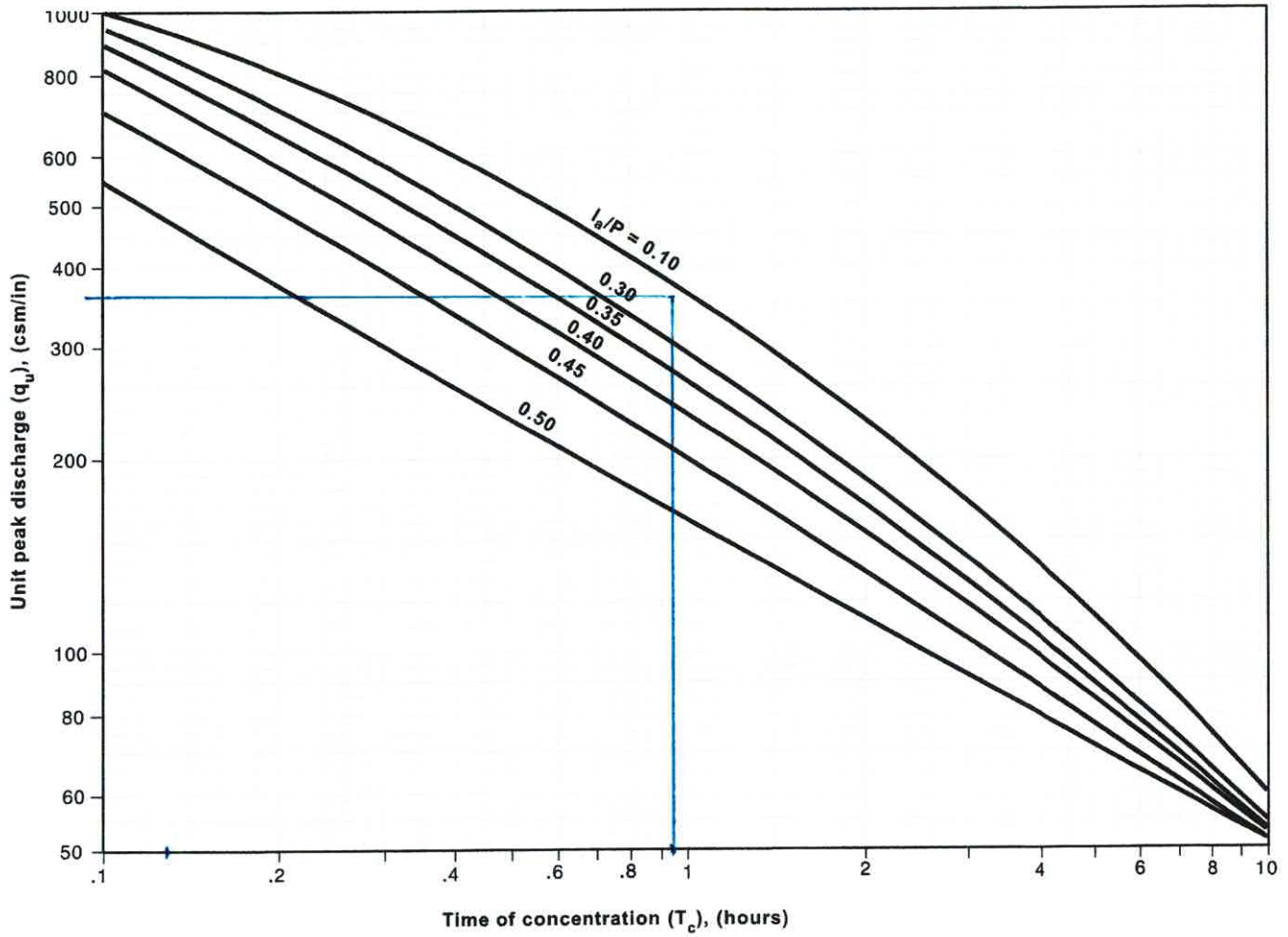


1. Data:
   Drainage area ..... A_m = 0.031 mi²
   Rainfall distribution type (I, IA, II, III) = _____

	1st Stage	2nd Stage
2. Frequency ..... yr	100	
3. Peak inflow discharge q_i ..... ft³/s (from worksheet 4 or 5b)		
4. Peak outflow discharge q_u ..... ft³/s 1/		
5. Compute $\frac{q_o}{q_i}$		
6. $\frac{V_s}{V_r}$ ..... (Use $\frac{q_o}{q_i}$ with figure 6-1)		
7. Runoff, Q ..... in (From worksheet 2)	4.75	
8. Runoff volume V_r ..... ac ft ($V_r = QA_m$ 53.33)	7.85	
9. Storage volume, V_s ..... ac-ft ($V_s = V_r (\frac{V_s}{V_r})$)		
10. Maximum storage E_{max} (from plot)		

1/ 2nd stage q_o includes 1st stage q_o.

Exhibit 4-II Unit peal discharge (q_u) for NRCS (SCS) type II rainfall distribution



Worksheet 2: Runoff curve number and runoff

Project	By	Date
Learner Lemmon Proposed		
Location	**Checked**	**Date**

Check one: ☐ Present ☐ Developed

1. Runoff curve number

Soil name and hydrologic group (appendix A)	Cover description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN 1/ Table 2-2	CN 1/ Figure 2-3	CN 1/ Figure 2-4	Area ☐ acres ☐ mi^2 ☒ %	Product of CN x area
Impervious	Pavement / Buildings	98			67	6,566
Landscaping		79			33	2,607

1/ Use only one CN source per line

Totals ➡ | | 9,173

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{9,173}{100} = 91.73$; **Use CN** ➡ 92

2. Runoff

	Storm #1	Storm #2	Storm #3
Frequency ..... yr	100		
Rainfall, P (~~24-hour~~ 10-day) ..... in	9.66		
Runoff, Q ..... in	8.69		

(Use P and CN with table 2-1, figure 2-1, or equations 2-3 and 2-4)

$Q = \frac{(P-0.2S)^2}{(P+0.8S)}$ $S = \frac{1000}{CN} - 10$

$S = 0.87$

Worksheet 3: Time of Concentration (T_c) or travel time (T_t)

Project	By	Date
Location	Checked	Date

Check one: ☐ Present ☐ Developed

Check one: ☐ T_c ☐ T_t through subarea

Notes: Space for as many as two segments per flow type can be used for each worksheet.
Include a map, schematic, or description of flow segments.

Sheet flow (Applicable to Tc only)

	Segment ID		
1. Surface description (table 3-1)	Smooth		
2. Manning's roughness coefficient, n (table 3-1)	0.011		
3. Flow length, L (total L † 300 ft) ft	300		
4. Two-year 24-hour rainfall, P_2 in	1.77		
5. Land slope, s ft/ft	0.0067		
6. $T_t = \frac{0.007\ (nL)^{0.8}}{P_2^{0.5}\ s^{0.4}}$ Compute T_t hr	0.10	+	=

Shallow concentrated flow

	Segment ID		
7. Surface description (paved or unpaved)	Paved		
8. Flow length, L ft	1,690		
9. Watercourse slope, s ft/ft	0.004		
10. Average velocity, V (figure 3-1) ft/s	1.42		
11. $T_t = \frac{L}{3600\ V}$ Compute T_t hr	0.37	+	=

Total = 0.47hr

Channel flow

	Segment ID		
12. Cross sectional flow area, a ft^2			
13. Wetted perimeter, p_w ft			
14. Hydraulic radius, $r = \frac{a}{p_w}$ Compute r ft			
15 Channel slope, s ft/ft			
16. Manning's roughness coefficient, n			
17. $V = \frac{1.49\ r^{2/3}\ s^{1/2}}{n}$ Compute V ft/s			
18. ~~Flow~~ length, L ft			
19. $T_t = \frac{L}{3600\ V}$ Compute T_t hr		+	=

20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, and 19) Hr

Worksheet 4: Graphical Peak Discharge method

Project	By	Date
Location	**Checked**	**Date**

Check one: ☐ Present ☐ Developed

1. Data

Drainage area ..... A_m = 0.031 mi^2 (acres/640)

Runoff curve number ..... CN = 92 (From worksheet 2)

Time of concentration ..... T_c = 0.47 hr (From worksheet 3)

Rainfall distribution ..... = II (I, IA, II III)

Pond and swamp areas sprea throughout watershed ..... = _____ percent of A_m (_____ acres or mi^2 covered)

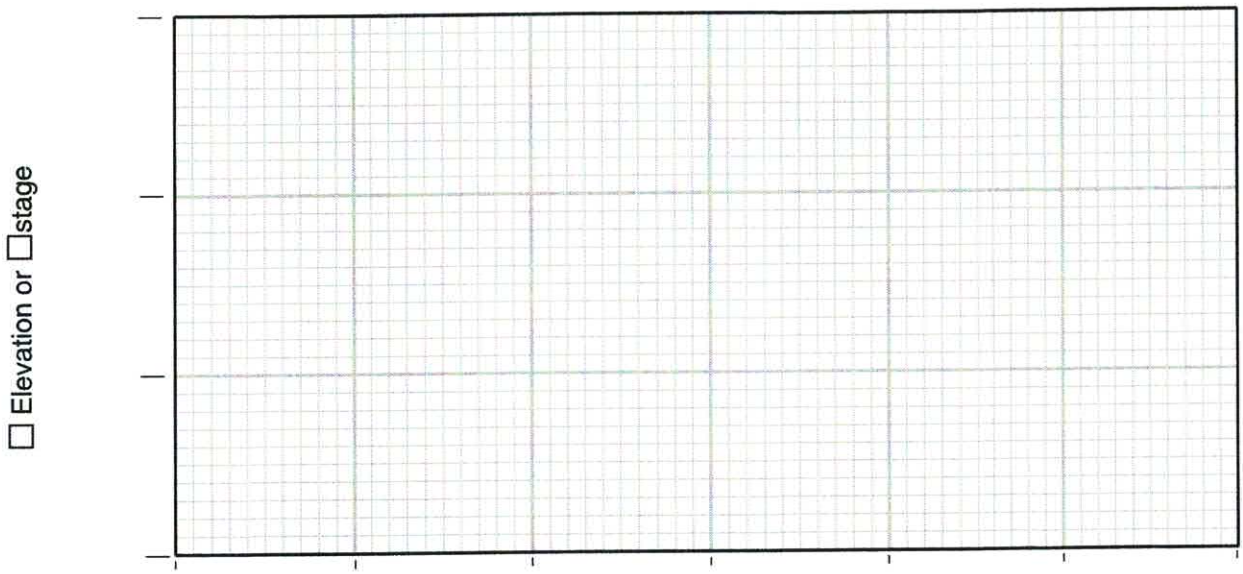
	Storm #1	Storm #2	Storm #3
2. Frequency ..... yr	100		
3. Rainfall, P ~~(24-hour)~~ 10-day ..... in	9.66		
4. Initial abstraction, I_a ..... in (Use CN with table 4-1)	0.174		
5. Compute I_a/P	0.02		
6. Unit peak discharge, q_u ..... csm/in (Use T_c and I_a/P with exhibit 4– _____)	550		
7. Runoff, Q ..... in (From worksheet 2) Figure 2-6	5.69		
8. Pond and swamp adjustment factor, F_p ..... (Use percent pond and swamp area with table 4-2. Factor is 1.0 for zero percent pond ans swamp area.)			
9. Peak discharge, q_p ..... ft^3/s	148.16		

(Where $q_p = q_u A_m Q F_p$)

Worksheet 6a: Detention basin storage, peak outflow discharge (q_o) known

Project	By	Date
Location	Checked	Date

Check one: ☐ Present ☐ Developed

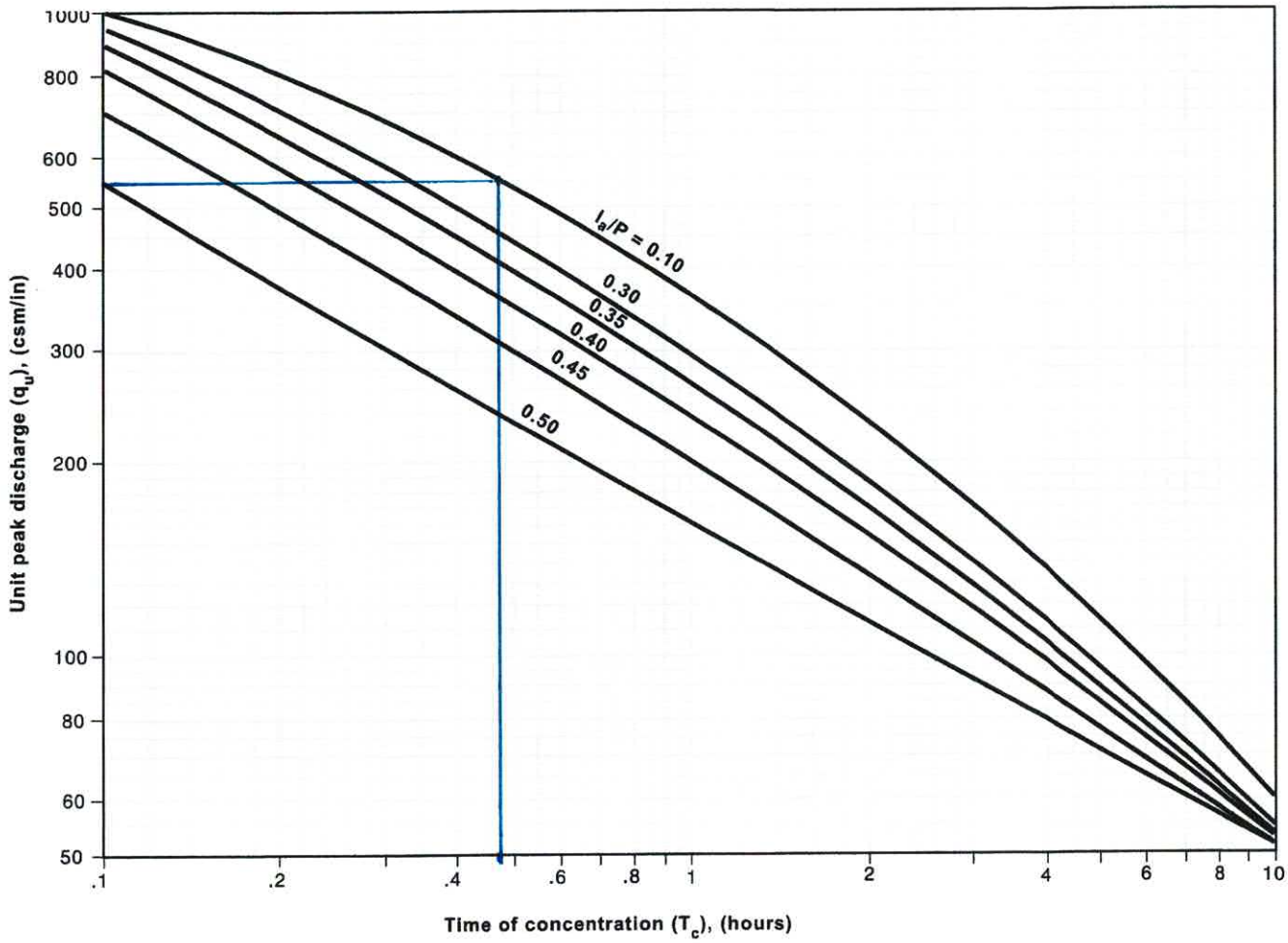


1. Data:
   Drainage area ..... A_m = 0.031 mi^2
   Rainfall distribution type (I, IA, II, III) = _____

	1st Stage	2nd Stage
2. Frequency ..... yr	100	
3. Peak inflow discharge q_i ..... ft^3/s (from worksheet 4 or 5b)		
4. Peak outflow discharge q_u ..... ft^3/s 1/		
5. Compute $\frac{q_o}{q_i}$		
6. $\frac{V_s}{V_r}$ ..... (Use $\frac{q_o}{q_i}$ with figure 6-1)		
7. Runoff, Q ..... in (From worksheet 2)		
8. Runoff volume V_r..... ac ft ($V_r = QA_m$ 53.33)	14.37	
9. Storage volume, V_s ..... ac-ft ($V_s = V_r (\frac{V_s}{V_r})$)		
10. Maximum storage E_{max} (from plot)		

1/ 2nd stage q_o includes 1st stage q_o.

Exhibit 4-II Unit peal discharge (q_u) for NRCS (SCS) type II rainfall distribution



Percolation Testing Report

January 9, 2023
Project No. 4092003

LC LEARNER, LLC
c/o Jeffrey Holbrook
27132 B Paseo Espada, Suite 1226
San Juan Capistrano, CA 92675

RE: Percolation Testing Investigation
Learner Lemmon – Infiltration Basin
Washoe County, Nevada

REF: Truckee Meadows Regional Drainage Manual
April 30, 2009

Washoe County Health District
Sewage, Wastewater, and Sanitation
May 23, 2013

Geotechnical Investigation
Learner Lemmon
Washoe County, Nevada
Wood Rodgers Project No. 4092001
September 2021

Infiltration Basin Limits
Axion Engineering
November 2022

Dear Jeffrey:

Wood Rodgers is pleased to present this summary letter transmitting the compilation of percolation test results for the Learner Lemmon project located in Washoe County, Nevada.

Approximate exploration locations and limits of the infiltration basin are presented on Figure 1 - Site Plan and Approximate Exploration Locations which is attached to this letter. Logs of explorations and percolation test summaries are attached to this letter.

ESTIMATED SEASONAL HIGH GROUND WATER LEVEL

Locating and designing an infiltration basin was investigated over a series of 3-exploration programs. Based on our explorations, it has been determined that the estimated seasonal high ground water level (ESHGWL) within the most recent basin layout (Axion Engineering, November 2022) is at or below elevation 4926-feet. As required in the Truckee Meadows Regional Drainage Manual, the proposed current basin bottom elevation of 4931-feet provides a 5-foot separation to ESHGWL. The following paragraphs summarize the investigation history for the infiltration basin.

Geotechnical Investigation Report (September 2021)

Within this preliminary investigation, no specific infiltration area was identified for investigation and no specific geomorphologic markers were identified within any of the test pit profiles. Variations in soil moisture content with depth indicated the ground water wetting front could approach an elevation of

4921.5-feet (based on calculated degree of saturation and consideration of capillary rise) in the northern area of the site (TP-1 and TP-2) and elevation 4924.5 in the eastern area of the site (TP-3). Groundwater was encountered in TP-3 at a depth of 9.5 feet (elevation of 4922.5-feet). Elevations were determined based on Washoe County contour mapping. Project development was tabled until 2022.

Logs of the September 2021 explorations are included as part of this letter (TP-1 thru TP-10).

Percolation Testing and ESHGWL Investigation (October 2022)

As the project was reactivated additional test pits and percolation testing were performed in the proposed infiltration area now located along the southern portion of the property. Free water was noted at elevations ranging between elevations 4920 and 4925-feet. Elevated moisture contents indicated the wetting front could approach elevation 4929 within the southwest corner of the property. Therefore, the infiltration basin was reoriented to extend along the eastern property boundary and extend approximately halfway across the development toward the north (Figure 1).

It should be noted that evidence of a confining layer was present near the southeast property corner and excavations below elevation 4923-feet (8-feet below design bottom of basin) could result in the development of an elevated free water surface.

Logs of the October 2022 explorations are included as part of this letter (TP-A thru TP-F).

Verification Percolation Testing (December 2022)

Logs of the December 2022 explorations are included as part of this letter (TP-G thru TP-L). Table 1 summarizes percolation test results from each investigation along with relevant elevations. Explorations indicated in gray are no longer within the infiltration basin footprint.

Table 1: Summary of Percolation Testing Results

Test Pit and Depth (ft)	Percolation Rate (min/in)	Existing Ground Elevation[1] (ft)	Percolation Test Elevation[1] (ft)	Free Water Elevation[1] (ft)	Elevation of Wetting Front (ESHGWL)
TP-1 @ 3.5	480	4928	4924.5	NE	4921.5
TP-1 @ 5.5	480	4928	4922.5	NE	4921.5
TP-2 @ 3	480	4928	4925	4916.5	4921.5

Table 1: Summary of Percolation Testing Results

Test Pit and Depth (ft)	Percolation Rate (min/in)	Existing Ground Elevation[1] (ft)	Percolation Test Elevation[1] (ft)	Free Water Elevation[1] (ft)	Elevation of Wetting Front (ESHGWL)
TP-2 @ 6	480	4928	4922	4916.5	4921.5
TP-3 @ 3.5	24	4932	3928.5	4922.5	4924.5
TP-3 @ 5	2.1	4932	4927	4922.5	4924.5
TP-A @ 4.5	Slower than 480	4936	4931.5	4923	4929
TP-A @ 8	Slower than 480	4936	4928	4923	
TP-B @ 6	240	4937	4931	4924	4925
TP-B @ 9	240	4937	4928	4924	
TP-C @ 8	480	4936	4928	4925	4927
TP-D @ 5	48	4936	4931	4923	4925
TP-D @ 8	14	4936	4928	4923	
[3]TP-E @ 2	11	4933	4931	4922	4926
TP-F	---	4934	---	4920	4924
[2]TP-G @ 2	4	4932	4930	---	[2]4922.5
[2]TP-H @ 3.5	37	4933	4929.5	---	[2]4922.5
[2]TP-I @ 3.5	20	4934	4930.5	---	[2]4922.5
[2]TP-J @ 3	21	4933	4930	---	[2]4922.5

Table 1: Summary of Percolation Testing Results

Test Pit and Depth (ft)	Percolation Rate (min/in)	Existing Ground Elevation[1] (ft)	Percolation Test Elevation[1] (ft)	Free Water Elevation[1] (ft)	Elevation of Wetting Front (ESHGWL)
[2]TP-K @ 4	2	4933	4929	---	[2]4922.5
[2]TP-L @ 4	3	4935	4931	---	[2]4922.5

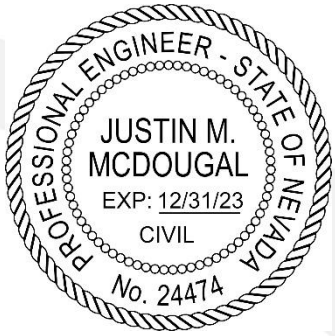
[1]Elevations are based on the Washoe County 6ft DEM. (Washoe County, reference date checked)
[2]Test pits 3, 6, 7 and 4 from the 2021 investigation were relied upon to establish a free water surface below elevation 4926-feet for the 12/2022 investigation.
[3]Confining layer noted at elevation 4923-feet.

Summary

We appreciate the opportunity to provide these services for the benefit of LC Learner, LLC and their duly assigned agents. Please contact our office should you have any related questions or comments.

Sincerely,

WOOD RODGERS, INCORPORATED

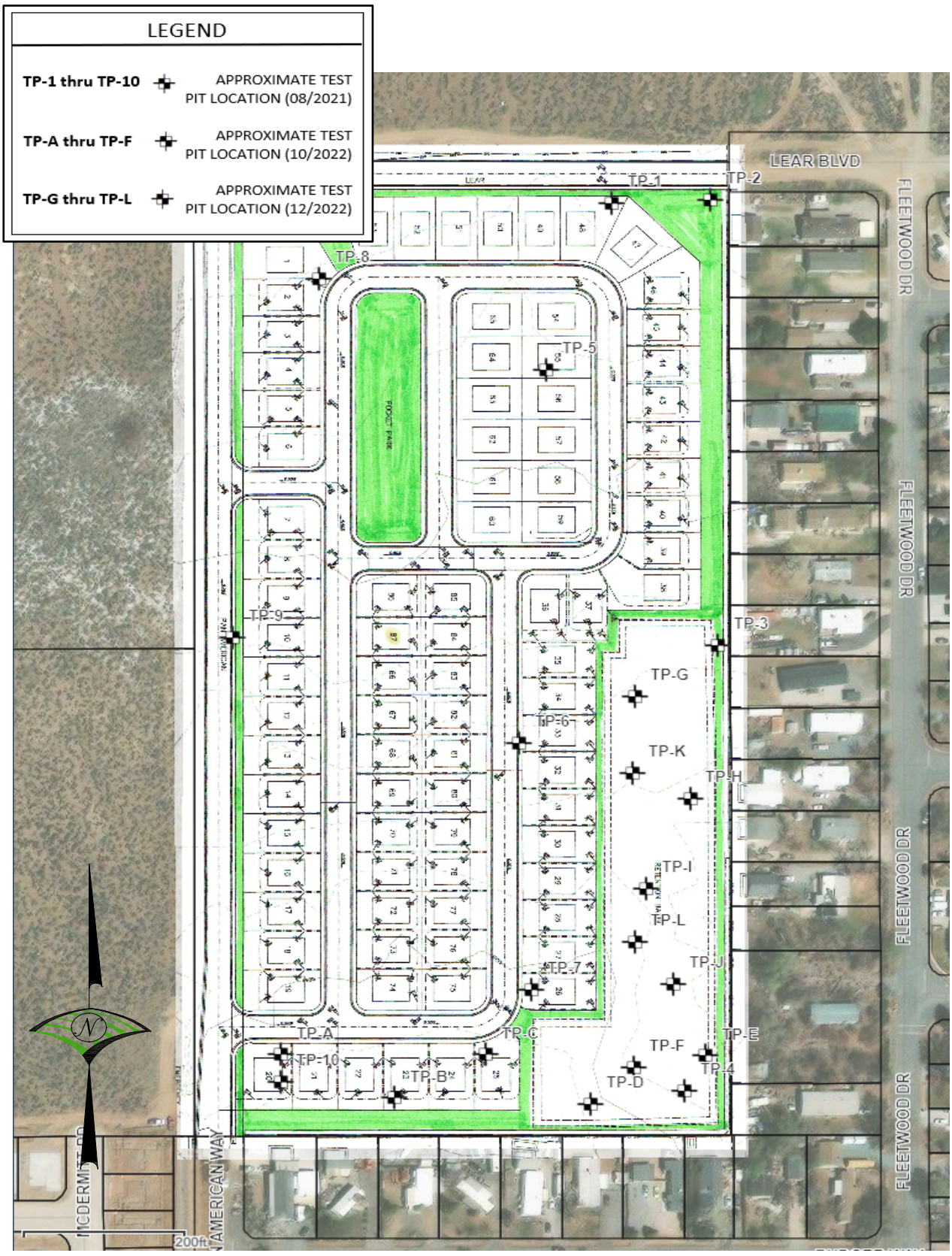


Justin M. McDougal, PE
Senior Engineer
PE Number: 24474
Expires: 12/31/2023

Jackson Beadell, EI
Technical Professional

Enclosures:

Figure 1 - Site Plan and Approximate Exploration Locations
Logs of Explorations and Percolation Tests



LEARNER LEMMON	SITE PLAN AND APPROXIMATE EXPLORATION LOCATIONS	FIGURE 1

Wood Rodgers Inc.
1361 Corporate Blvd
Reno NV 89521
Telephone: 775-823-4068
Fax: 775-823-4066

TEST PIT NUMBER TP-1

CLIENT D.R. Horton
PROJECT NAME Learner Lemmon
PROJECT NUMBER 4092001
PROJECT LOCATION Washoe County, Nevada
DATE STARTED 8/4/21 **COMPLETED** 8/4/21
GROUND ELEVATION 4928 ft **TEST PIT SIZE** 24 inches
EXCAVATION CONTRACTOR Joy Engineering
GROUND WATER LEVELS:
EXCAVATION METHOD CAT 420F Backhoe
AT TIME OF EXCAVATION --- NO FREE WATER ENCOUNTERED
LOGGED BY Seth Barton **CHECKED BY** Justin McDougal
AT END OF EXCAVATION --- NO FREE WATER ENCOUNTERED
NOTES: Elevations: Washoe County Regional Mapping System
AFTER EXCAVATION --- NO FREE WATER ENCOUNTERED

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	R-VALUE	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
0		TOPSOIL, (SM)	GB 1A									
		SILTY SAND, (SM) medium dense, dry, light brown, nonplastic	GB 1B					7.7	22	18	4	47.5
		SILTY, CLAYEY SAND, (SC-SM) very dense, slightly moist, brown, slightly plastic	GB 1C					9.6	31	15	16	64.9
5		SANDY LEAN CLAY, (CL) very stiff, moist, dark brown, medium plasticity, white specs/veins										
		SANDY LEAN CLAY, (CL) very stiff, moist to very moist, brown, medium plasticity, white specs/veins	GB 1D									
10		LEAN CLAY, (CL) very stiff, very moist, gray brown, medium plasticity	GB 1E									

Bottom of Test Pit at 12.0 Feet.

Soil Percolation Recorded Measurements

1.Depth to test : ***3.5'***
2.Time of 1st saturation to 12" ***10:22*** *Date :* ***8/4/2021***
If 12" of water drains from hole in 10 mins or less, refill to 12".
3.Time of 2nd saturation : ***10:33***
4.If 2nd filling drains in less than 10 mins, begin 1 hour test with 10 mins or less reading intervals.
5.If either filling exceeds 10 mins to drain from hole,begin a 4-hr pre-soak.
Return between 16 - 24 hrs to start test.

Date of percolation test : ***8/5/2021***

Hole # : ***PH-A*** *Diameter :* ***8"*** *Depth :* ***12"*** *Soil Type :* **CL**

Reading	Time Start	Time Finish	Water Level Start	Water Level Finish	Elapsed Time min	Water Fall (in)
1	8:12	8:42	6"	6 3/16"	30	3/16"
2	8:43	9:13	6"	6 1/16"	30	1/16"
3	9:14	9:44	6"	6 1/16"	30	1/16"
4						
5						
6						
7						

Stabilized Rate : **480** Min/inch *Tested by:* **J. Beadell**
Checked by : **J. McDougal**

Soil Percolation Recorded Measurements

1.Depth to test : ***5.5'***
2.Time of 1st saturation to 12" ***10:22*** *Date :* ***8/4/2021***
If 12" of water drains from hole in 10 mins or less, refill to 12".
3.Time of 2nd saturation : ***10:32***
4.If 2nd filling drains in less than 10 mins, begin 1 hour test with 10 mins or less reading intervals.
5.If either filling exceeds 10 mins to drain from hole,begin a 4-hr pre-soak.
Return between 16 - 24 hrs to start test.

Date of percolation test : ***8/5/2021***

Hole # : ***PH-B*** *Diameter :* ***8"*** *Depth :* ***12"*** *Soil Type :* ***CL***

Reading	Time Start	Time Finish	Water Level Start	Water Level Finish	Elapsed Time min	Water Fall (in)
1	8:22	8:52	6"	6"	30	0"
2	8:53	9:23	6"	6 1/16"	30	1/16"
3	9:24	9:54	6"	6 1/16"	30	1/16"
4						
5						
6						
7						

Stabilized Rate : **480** Min/inch *Tested by:* **J. Beadell**
Checked by : **J. McDougal**

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Fax: 775-823-4066

TEST PIT NUMBER TP-2

CLIENT D.R. Horton
PROJECT NAME Learner Lemmon
PROJECT NUMBER 4092001
PROJECT LOCATION Washoe County, Nevada
DATE STARTED 8/4/21 **COMPLETED** 8/4/21
GROUND ELEVATION 4928 ft **TEST PIT SIZE** 24 inches
EXCAVATION CONTRACTOR Joy Engineering
GROUND WATER LEVELS:
EXCAVATION METHOD CAT 420F Backhoe
AT TIME OF EXCAVATION ---
LOGGED BY Seth Barton **CHECKED BY** Justin McDougal
AT END OF EXCAVATION ---
NOTES: Elevations: Washoe County Regional Mapping System
24hrs AFTER EXCAVATION 11.50 ft / Elev 4916.50 ft

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	R-VALUE	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
0		TOPSOIL, (SM)	GB 2A					1.2				
		SILTY SAND, (SM) medium dense, dry, light brown, nonplastic	GB 2B					9.2				
		CLAYEY SAND, (SC) very dense, slightly moist, brown, low plasticity										
5		SANDY LEAN CLAY, (CL) very stiff, moist to very moist, brown, medium plasticity, white specs	GB 2C					22.8				
		SANDY LEAN CLAY, (CL) very stiff, very moist, gray brown, medium to high plasticity, white granular pockets	GB 2D					42.3				
10			GB 2E					41.6				

Bottom of Test Pit at 12.0 Feet.

Soil Percolation Recorded Measurements

1.Depth to test : **3'**
2.Time of 1st saturation to 12" **11:22** *Date :* **8/4/2021**
If 12" of water drains from hole in 10 mins or less, refill to 12".
3.Time of 2nd saturation : **11:32**
4.If 2nd filling drains in less than 10 mins, begin 1 hour test with 10 mins or less reading intervals.
5.If either filling exceeds 10 mins to drain from hole,begin a 4-hr pre-soak.
Return between 16 - 24 hrs to start test.

Date of percolation test : **8/5/2021**

Hole # : **PH-C** *Diameter :* **8"** *Depth :* **12"** *Soil Type :* **CL**

Reading	Time Start	Time Finish	Water Level Start	Water Level Finish	Elapsed Time min	Water Fall (in)
1	9:57	10:27	6"	6 2/16"	30	2/16"
2	10:28	10:58	6"	6 1/16"	30	1/16"
3	10:59	11:29	6"	6 1/16"	30	1/16"
4						
5						
6						
7						

Stabilized Rate : **480** Min/inch
Tested by: **J. Beadell**
Checked by : **J. McDougal**

Soil Percolation Recorded Measurements

1.Depth to test : **6'**
2.Time of 1st saturation to 12" **11:22** *Date :* **8/4/2021**
If 12" of water drains from hole in 10 mins or less, refill to 12".
3.Time of 2nd saturation : **11:32**
4.If 2nd filling drains in less than 10 mins, begin 1 hour test with 10 mins or less reading intervals.
5.If either filling exceeds 10 mins to drain from hole,begin a 4-hr pre-soak.
Return between 16 - 24 hrs to start test.

Date of percolation test : **8/5/2021**

Hole # : **PH-D** *Diameter :* **8"** *Depth :* **12"** *Soil Type :* **CL**

Reading	Time Start	Time Finish	Water Level Start	Water Level Finish	Elapsed Time min	Water Fall (in)
1	10:12	10:42	6"	6"	30	0"
2	10:43	11:13	6"	6 1/16"	30	1/16"
3	11:14	11:44	6"	6 1/16"	30	1/16"
4						
5						
6						
7						

Stabilized Rate : **480** Min/inch
Tested by: **J. Beadell**
Checked by : **J. McDougal**

Wood Rodgers Inc.
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Reno NV 89521
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Fax: 775-823-4066

TEST PIT NUMBER TP-3

CLIENT D.R. Horton
PROJECT NAME Learner Lemmon
PROJECT NUMBER 4092001
PROJECT LOCATION Washoe County, Nevada
DATE STARTED 8/4/21 **COMPLETED** 8/4/21
GROUND ELEVATION 4932 ft **TEST PIT SIZE** 24 inches
EXCAVATION CONTRACTOR Joy Engineering
GROUND WATER LEVELS:
EXCAVATION METHOD CAT 420F Backhoe
AT TIME OF EXCAVATION ---
LOGGED BY Seth Barton **CHECKED BY** Justin McDougal
AT END OF EXCAVATION ---
NOTES: Elevations: Washoe County Regional Mapping System
24hrs AFTER EXCAVATION 9.50 ft / Elev 4922.50 ft

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	R-VALUE	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
0		TOPSOIL, (SM)	GB 3A									
		SILTY, CLAYEY SAND, (SC-SM) medium dense, dry, light brown, slightly plastic	GB 3B									
		CLAYEY SAND, (SC) very dense, moist, brown, low plasticity	GB 3C									
5		SANDY LEAN CLAY, (CL) very stiff, moist to very moist, gray brown, medium plasticity, white specs	GB 3D									
10												

Bottom of Test Pit at 10.0 Feet.

Soil Percolation Recorded Measurements

1.Depth to test : **3.5'**
2.Time of 1st saturation to 12" **12:02** *Date :* **8/4/2021**
If 12" of water drains from hole in 10 mins or less, refill to 12".
3.Time of 2nd saturation : **12:12**
4.If 2nd filling drains in less than 10 mins, begin 1 hour test with 10 mins or less reading intervals.
5.If either filling exceeds 10 mins to drain from hole,begin a 4-hr pre-soak.
Return between 16 - 24 hrs to start test.

Date of percolation test : **8/5/2021**

Hole # : **PH-E** *Diameter :* **8"** *Depth :* **12"** *Soil Type :* **SC**

Reading	Time Start	Time Finish	Water Level Start	Water Level Finish	Elapsed Time min	Water Fall (in)
1	9:14	9:44	6"	7 12/16"	30	1 12/16"
2	9:46	10:16	6"	7 6/16"	30	1 6/16"
3	10:16	10:46	6"	7 7/16"	30	1 7/16"
4	10:46	11:16	6"	7 5/16"	30	1 5/16"
5	11:16	11:46	6"	7 4/16"	30	1 4/16"
6						
7						

Stabilized Rate : **24** Min/inch
Tested by: **S. Barton**
Checked by : **J. McDougal**

Soil Percolation Recorded Measurements

1.Depth to test : **5'**
2.Time of 1st saturation to 12" **12:02** *Date :* **8/4/2021**
If 12" of water drains from hole in 10 mins or less, refill to 12".
3.Time of 2nd saturation : **12:12**
4.If 2nd filling drains in less than 10 mins, begin 1 hour test with 10 mins or less reading intervals.
5.If either filling exceeds 10 mins to drain from hole,begin a 4-hr pre-soak.
Return between 16 - 24 hrs to start test.

Date of percolation test : **8/5/2021**

Hole # : **PH-F** *Diameter :* **8"** *Depth :* **12"** *Soil Type :* **SC**

Reading	Time Start	Time Finish	Water Level Start	Water Level Finish	Elapsed Time min	Water Fall (in)
1	9:28	9:33	6"	9 10/16"	5	3 10/16"
2	9:35	9:40	6"	9 6/16"	5	3 6/16"
3	9:43	9:47	6"	9 1/16"	5	3 1/16"
4	9:48	9:53	6"	8 9/16"	5	2 9/16"
5	9:55	10:00	6"	8 8/16"	5	2 8/16"
6	10:01	10:06	6"	8 7/16"	5	2 7/16"
7	10:06	10:11	6"	8 6/16"	5	2 6/16"

Stabilized Rate : **2.1** Min/inch
Tested by: **S. Barton**
Checked by : **J. McDougal**

Wood Rodgers, Inc.
1361 Corporate Blvd
Reno, NV 89502
Telephone: 775-823-4068
Fax: 775-823-4066

TEST PIT NUMBER TP-4

CLIENT D.R. Horton
PROJECT NAME Learner Lemmon
PROJECT NUMBER 4092001
PROJECT LOCATION Washoe County, Nevada
DATE STARTED 8/4/21 **COMPLETED** 8/4/21
GROUND ELEVATION 4934 ft **TEST PIT SIZE** 24 inches
EXCAVATION CONTRACTOR Joy Engineering
GROUND WATER LEVELS:
EXCAVATION METHOD CAT 420F Backhoe
AT TIME OF EXCAVATION --- NO FREE WATER ENCOUNTERED
LOGGED BY Seth Barton **CHECKED BY** Justin McDougal
AT END OF EXCAVATION --- NO FREE WATER ENCOUNTERED
NOTES: Elevations: Washoe County Regional Mapping System
AFTER EXCAVATION --- NO FREE WATER ENCOUNTERED

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	R-VALUE	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
0.0		SILTY SAND, (SM)	GB 4A									
		SILTY, CLAYEY SAND, (SC-SM) medium dense, dry, light brown, slightly plastic	GB 4B									
2.5		CLAYEY SAND, (SC) medium dense, slightly moist, brown, low plasticity	GB 4C									
5.0		CLAYEY SAND, (SC) slightly moist to moist, low plasticity	GB 4D									
7.5		SANDY LEAN CLAY, (CL) very stiff, very moist, gray brown, medium plasticity	GB 4E									
10.0		Bottom of Test Pit at 10.0 Feet.										

Wood Rodgers, Inc.
1361 Corporate Blvd
Reno, NV 89502
Telephone: 775-823-4068
Fax: 775-823-4066

TEST PIT NUMBER TP-5

CLIENT D.R. Horton
PROJECT NAME Learner Lemmon
PROJECT NUMBER 4092001
PROJECT LOCATION Washoe County, Nevada
DATE STARTED 8/4/21 **COMPLETED** 8/4/21
GROUND ELEVATION 4930 ft **TEST PIT SIZE** 24 inches
EXCAVATION CONTRACTOR Joy Engineering
GROUND WATER LEVELS:
EXCAVATION METHOD CAT 420F Backhoe
AT TIME OF EXCAVATION --- NO FREE WATER ENCOUNTERED
LOGGED BY Seth Barton **CHECKED BY** Justin McDougal
AT END OF EXCAVATION --- NO FREE WATER ENCOUNTERED
NOTES: Elevations: Washoe County Regional Mapping System
AFTER EXCAVATION --- NO FREE WATER ENCOUNTERED

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	R-VALUE	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
0.0		TOPSOIL, (SM)										
		SILTY SAND, (SM) medium dense, dry, light brown, nonplastic, slightly cemented	GB 5A									
		CLAYEY SAND, (SC) very dense, slightly moist, brown and white, low to medium plasticity										
2.5		SILTY, CLAYEY SAND, (SC-SM) very dense, slightly moist, brown, slightly plastic	GB 5B									
5.0		LEAN CLAY WITH SAND, (CL) very stiff, very moist, gray brown, medium plasticity										
7.5			GB 5C									
		LEAN CLAY, (CL) very stiff, very moist, gray white, medium plasticity										
10.0												

Bottom of Test Pit at 11.0 Feet.

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TEST PIT NUMBER TP-6

CLIENT D.R. Horton
PROJECT NAME Learner Lemmon
PROJECT NUMBER 4092001
PROJECT LOCATION Washoe County, Nevada
DATE STARTED 8/4/21 **COMPLETED** 8/4/21
GROUND ELEVATION 4932 ft **TEST PIT SIZE** 24 inches
EXCAVATION CONTRACTOR Joy Engineering
GROUND WATER LEVELS:
EXCAVATION METHOD CAT 420F Backhoe
AT TIME OF EXCAVATION --- NO FREE WATER ENCOUNTERED
LOGGED BY Seth Barton **CHECKED BY** Justin McDougal
AT END OF EXCAVATION --- NO FREE WATER ENCOUNTERED
NOTES: Elevations: Washoe County Regional Mapping System
AFTER EXCAVATION --- NO FREE WATER ENCOUNTERED

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	R-VALUE	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
0.0		TOPSOIL, (SM)										
		SILTY SAND, (SM) medium dense, dry, light brown, nonplastic	GB 6A									
2.5		CLAYEY SAND, (SC) very dense, moist, brown, low plasticity	GB 6B									
5.0		LEAN CLAY, (CL) very stiff, moist to very moist, gray brown white, medium plasticity	GB 6C									
7.5												
10.0												

Bottom of Test Pit at 11.0 Feet.

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TEST PIT NUMBER TP-7

CLIENT D.R. Horton
PROJECT NAME Learner Lemmon
PROJECT NUMBER 4092001
PROJECT LOCATION Washoe County, Nevada
DATE STARTED 8/4/21 **COMPLETED** 8/4/21
GROUND ELEVATION 4936 ft **TEST PIT SIZE** 24 inches
EXCAVATION CONTRACTOR Joy Engineering
GROUND WATER LEVELS:
EXCAVATION METHOD CAT 420F Backhoe
AT TIME OF EXCAVATION --- NO FREE WATER ENCOUNTERED
LOGGED BY Seth Barton **CHECKED BY** Justin McDougal
AT END OF EXCAVATION --- NO FREE WATER ENCOUNTERED
NOTES: Elevations: Washoe County Regional Mapping System
AFTER EXCAVATION --- NO FREE WATER ENCOUNTERED

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	R-VALUE	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
0.0		TOPSOIL, (SM)										
		SILTY SAND, (SM) medium dense, dry, brown, nonplastic	GB 7A					2.4				
		CLAYEY SAND, (SC) very dense, slightly moist to moist, brown, low plasticity, white specs						6.5				
2.5			SH 7B									
5.0												
			GB 7C					9.1	25	17	8	48.5
7.5												
10.0												

Bottom of Test Pit at 10.0 Feet.

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TEST PIT NUMBER TP-8

CLIENT D.R. Horton
PROJECT NAME Learner Lemmon
PROJECT NUMBER 4092001
PROJECT LOCATION Washoe County, Nevada
DATE STARTED 8/4/21 **COMPLETED** 8/4/21
GROUND ELEVATION 4928 ft **TEST PIT SIZE** 24 inches
EXCAVATION CONTRACTOR Joy Engineering
GROUND WATER LEVELS:
EXCAVATION METHOD CAT 420F Backhoe
AT TIME OF EXCAVATION --- NO FREE WATER ENCOUNTERED
LOGGED BY Seth Barton **CHECKED BY** Justin McDougal
AT END OF EXCAVATION --- NO FREE WATER ENCOUNTERED
NOTES: Elevations: Washoe County Regional Mapping System
AFTER EXCAVATION --- NO FREE WATER ENCOUNTERED

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	R-VALUE	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
0.0		TOPSOIL, (SM)										
		SILTY, CLAYEY SAND, (SC-SM) very dense, slightly moist, brown, slightly plastic	GB 8B									
		CLAYEY SAND, (SC) medium dense, slightly moist, brown, medium plasticity	GB 8A GB 8C									
2.5												
		LEAN CLAY WITH SAND, (CL) very stiff, very moist, gray white, medium plasticity	GB 8D				91.5					
5.0			GB 8E									
7.5												
		LEAN CLAY, (CL) very stiff, very moist, gray white, medium plasticity										
10.0			GB 8F									

Bottom of Test Pit at 11.0 Feet.

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TEST PIT NUMBER TP-9

CLIENT D.R. Horton
PROJECT NAME Learner Lemmon
PROJECT NUMBER 4092001
PROJECT LOCATION Washoe County, Nevada
DATE STARTED 8/4/21 **COMPLETED** 8/4/21
GROUND ELEVATION 4931 ft **TEST PIT SIZE** 24 inches
EXCAVATION CONTRACTOR Joy Engineering
GROUND WATER LEVELS:
EXCAVATION METHOD CAT 420F Backhoe
AT TIME OF EXCAVATION --- NO FREE WATER ENCOUNTERED
LOGGED BY Seth Barton **CHECKED BY** Justin McDougal
AT END OF EXCAVATION --- NO FREE WATER ENCOUNTERED
NOTES: Elevations: Washoe County Regional Mapping System
AFTER EXCAVATION --- NO FREE WATER ENCOUNTERED

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	R-VALUE	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
0.0		TOPSOIL, (SM)										
		CLAYEY SAND, (SC) medium dense, slightly moist, light brown, low plasticity	GB 9B									
		SILTY SAND, (SM) very dense, light brown, slightly plastic	GB 9A									
2.5			GB 9C					10.3	22	21	1	26.0
5.0												
7.5		LEAN CLAY WITH SAND, (CL) very stiff, moist to very moist, gray white, medium plasticity	GB 9D									
10.0												

Bottom of Test Pit at 10.0 Feet.

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TEST PIT NUMBER TP-10

CLIENT D.R. Horton
PROJECT NAME Learner Lemmon
PROJECT NUMBER 4092001
PROJECT LOCATION Washoe County, Nevada
DATE STARTED 8/4/21 **COMPLETED** 8/4/21
GROUND ELEVATION 4936 ft **TEST PIT SIZE** 24 inches
EXCAVATION CONTRACTOR Joy Engineering
GROUND WATER LEVELS:
EXCAVATION METHOD CAT 420F Backhoe
AT TIME OF EXCAVATION --- NO FREE WATER ENCOUNTERED
LOGGED BY Seth Barton **CHECKED BY** Justin McDougal
AT END OF EXCAVATION --- NO FREE WATER ENCOUNTERED
NOTES: Elevations: Washoe County Regional Mapping System
AFTER EXCAVATION --- NO FREE WATER ENCOUNTERED

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	R-VALUE	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
0.0		TOPSOIL, (SM)										
		SILTY, CLAYEY SAND, (SC-SM) medium dense, dry, light brown	GB 10A									
		CLAYEY SAND, (SC) medium dense to very dense, slightly moist, brown white, low plasticity										
2.5												
5.0												
7.5			GB 10B									
		Moist										
10.0												

Bottom of Test Pit at 10.0 Feet.

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TEST PIT NUMBER TP-A

CLIENT LC Learner, LLC
PROJECT NAME Learner Lemmon
PROJECT NUMBER 4092003
PROJECT LOCATION Washoe County, Nevada
DATE STARTED 10/6/22 **COMPLETED** 10/6/22
GROUND ELEVATION 4935.7 ft **TEST PIT SIZE** 48 inches
EXCAVATION CONTRACTOR Joy Engineering
GROUND WATER LEVELS:
EXCAVATION METHOD Komatsu 290
AT TIME OF EXCAVATION 15.0 ft
LOGGED BY Seth Barton **CHECKED BY** Justin McDougal
AT END OF EXCAVATION 15.0 ft
NOTES: Elevations: Washoe County 6ft DEM
24hrs AFTER EXCAVATION 13.00 ft / Elev 4922.70 ft

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	R-VALUE	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
0		SILTY, CLAYEY SAND, (SC-SM) loose to medium dense, dry, light brown, nonplastic	GB 1A									
		CLAYEY SAND, (SC) very dense, dry to slightly moist, medium brown, low plasticity	GB 2A					6.4				28.9
5			GB 3A									
		SANDY LEAN CLAY, (CL) very stiff, slightly moist to moist, light brown, medium plasticity	GB 4A									
		LEAN CLAY, (CL) very stiff, moist to very moist, gray, medium to high plasticity										
10			GB 5A									
15			GB 6A									

Bottom of Test Pit at 15.5 Feet.

Soil Percolation Recorded Measurements

1.Depth to test : ***4.5'***
2.Time of 1st saturation to 12" ***10:47 AM*** *Date :* ***6-Oct***
If 12" of water drains from hole in 10 mins or less, refill to 12".
3.Time of 2nd saturation : ***10:57 AM***
4.If 2nd filling drains in less than 10 mins, begin 1 hour test with 10 mins or less reading intervals.
5.If either filling exceeds 10 mins to drain from hole,begin a 4-hr pre-soak.
Return between 16 - 24 hrs to start test.

Date of percolation test : ***7-Oct***

Hole # : ***A1*** *Diameter :* ***9*** *Depth :* ***12*** *Soil Type :* ***SC***

Reading	Time Start	Time Finish	Water Level Start	Water Level Finish	Elapsed Time min	Water Fall (in)
1	8:36 AM	9:06 AM	6	6	30	0
2	9:06 AM	9:36 AM	6	6	30	0
3	9:36 AM	10:06 AM	6	6	30	0
4						
5						
6						
7						

Stabilized Rate : **SLOWER THAN 480 min/in**
Tested by: **J. Beadell**
Checked by : **J. McDougal**

Soil Percolation Recorded Measurements

1.Depth to test : ***8'***
2.Time of 1st saturation to 12" ***10:47 AM*** *Date :* ***6-Oct***
If 12" of water drains from hole in 10 mins or less, refill to 12".
3.Time of 2nd saturation : ***10:57 AM***
4.If 2nd filling drains in less than 10 mins, begin 1 hour test with 10 mins or less reading intervals.
5.If either filling exceeds 10 mins to drain from hole,begin a 4-hr pre-soak.
Return between 16 - 24 hrs to start test.

Date of percolation test : ***7-Oct***

Hole # : ***A2*** *Diameter :* ***7*** *Depth :* ***12*** *Soil Type :* ***CL***

Reading	Time Start	Time Finish	Water Level Start	Water Level Finish	Elapsed Time min	Water Fall (in)
1	8:39 AM	9:09 AM	6	6	30	0
2	9:09 AM	9:39 AM	6	6	30	0
3	9:39 AM	10:09 AM	6	6	30	0
4						
5						
6						
7						

Stabilized Rate : **SLOWER THAN 480 min/in**
Tested by: **J. Beadell**
Checked by : **J. McDougal**

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TEST PIT NUMBER TP-B

CLIENT LC Learner, LLC
PROJECT NAME Learner Lemmon
PROJECT NUMBER 4092003
PROJECT LOCATION Washoe County, Nevada
DATE STARTED 10/6/22 **COMPLETED** 10/6/22
GROUND ELEVATION 4937.2 ft **TEST PIT SIZE** 48 inches
EXCAVATION CONTRACTOR Joy Engineering
GROUND WATER LEVELS:
EXCAVATION METHOD Komatsu 290
AT TIME OF EXCAVATION ---
LOGGED BY Seth Barton **CHECKED BY** Justin McDougal
AT END OF EXCAVATION ---
NOTES: Elevations: Washoe County 6ft DEM
24hrs AFTER EXCAVATION 13.50 ft / Elev 4923.70 ft

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	R-VALUE	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
0		SILTY, CLAYEY SAND, (SC-SM) medium dense, dry, light brown, nonplastic										
		SILTY, CLAYEY SAND, (SC-SM) very dense, dry to slightly moist, medium brown, slightly plastic	GB 1B					7.0	23	18	5	27.8
5			GB 2B									
			GB 3B									
		SANDY LEAN CLAY, (CL) very stiff, slightly moist, medium brown with white, low to medium plasticity	GB 4B									
10		LEAN CLAY, (CL) very stiff, slightly moist to moist, gray with white, medium to high plasticity	GB 5B									
		▼										
15			GB 6B									

Bottom of Test Pit at 15.0 Feet.

Soil Percolation Recorded Measurements

1.Depth to test : **6'**
2.Time of 1st saturation to 12" **11:52 AM** *Date :* **6-Oct**
If 12" of water drains from hole in 10 mins or less, refill to 12".
3.Time of 2nd saturation : **N/A**
4.If 2nd filling drains in less than 10 mins, begin 1 hour test with 10 mins or less reading intervals.
5.If either filling exceeds 10 mins to drain from hole,begin a 4-hr pre-soak.
Return between 16 - 24 hrs to start test.

Date of percolation test : **7-Oct**

Hole # : **B1** *Diameter :* **7** *Depth :* **12** *Soil Type :* **SC-SM**

Reading	Time Start	Time Finish	Water Level Start	Water Level Finish	Elapsed Time min	Water Fall (in)
1	8:48 AM	9:18 AM	6	6 3/16	30	3/16
2	9:19 AM	9:49 AM	6	6 3/16	30	3/16
3	9:50 AM	10:20 AM	6	6 2/16	30	2/16
4						
5						
6						
7						

Stabilized Rate : **240.0** Min/inch
Tested by: **J. Beadell**
Checked by : **J. McDougal**

Soil Percolation Recorded Measurements

1.Depth to test : **9'**
2.Time of 1st saturation to 12" **11:52 AM** *Date :* **6-Oct**
If 12" of water drains from hole in 10 mins or less, refill to 12".
3.Time of 2nd saturation : **N/A**
4.If 2nd filling drains in less than 10 mins, begin 1 hour test with 10 mins or less reading intervals.
5.If either filling exceeds 10 mins to drain from hole,begin a 4-hr pre-soak.
Return between 16 - 24 hrs to start test.

Date of percolation test : **7-Oct**

Hole # : **B2** *Diameter :* **8** *Depth :* **12** *Soil Type :* **CL**

Reading	Time Start	Time Finish	Water Level Start	Water Level Finish	Elapsed Time min	Water Fall (in)
1	8:51 AM	9:21 AM	6	6 2/16	30	2/16
2	9:22 AM	9:52 AM	6	6 2/16	30	2/16
3	9:52 AM	10:22 AM	6	6 2/16	30	2/16
4						
5						
6						
7						

Stabilized Rate : **240.0** Min/inch
Tested by: **J. Beadell**
Checked by : **J. McDougal**

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TEST PIT NUMBER TP-C

CLIENT LC Learner, LLC
PROJECT NAME Learner Lemmon
PROJECT NUMBER 4092003
PROJECT LOCATION Washoe County, Nevada
DATE STARTED 10/6/22 **COMPLETED** 10/6/22
GROUND ELEVATION 4936.2 ft **TEST PIT SIZE** 48 inches
EXCAVATION CONTRACTOR Joy Engineering
GROUND WATER LEVELS:
EXCAVATION METHOD Komatsu 290
AT TIME OF EXCAVATION ---
LOGGED BY Seth Barton **CHECKED BY** Justin McDougal
AT END OF EXCAVATION ---
NOTES: Elevations: Washoe County 6ft DEM
24hrs AFTER EXCAVATION 11.00 ft / Elev 4925.20 ft

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	R-VALUE	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
0		SILTY, CLAYEY SAND, (SC-SM) loose to medium dense, dry, light brown, nonplastic	GB 1C									
		CLAYEY SAND, (SC) very dense, dry to slightly moist, medium brown, low plasticity										
5			GB 2C									
		SANDY LEAN CLAY, (CL) very stiff, slightly moist, light brown, medium plasticity	GB 3C									
		LEAN CLAY, (CL) very stiff, moist to very moist, gray, medium to high plasticity										
10			GB 4C									
15			GB 5C									

Bottom of Test Pit at 15.0 Feet.

Soil Percolation Recorded Measurements

1.Depth to test : ***8'***
2.Time of 1st saturation to 12" ***12:47 PM*** *Date :* ***6-Oct***
If 12" of water drains from hole in 10 mins or less, refill to 12".
3.Time of 2nd saturation : ***N/A***
4.If 2nd filling drains in less than 10 mins, begin 1 hour test with 10 mins or less reading intervals.
5.If either filling exceeds 10 mins to drain from hole,begin a 4-hr pre-soak.
Return between 16 - 24 hrs to start test.

Date of percolation test : **7-Oct**

Hole # : ***C*** *Diameter :* ***8*** *Depth :* ***12*** *Soil Type :* ***CL***

Reading	Time Start	Time Finish	Water Level Start	Water Level Finish	Elapsed Time min	Water Fall (in)
1	9:05 AM	9:35 AM	6	6 1/16	30	1/16
2	9:35 AM	10:05 AM	6	6 1/16	30	1/16
3	10:05 AM	10:35 AM	6	6 1/16	30	1/16
4						
5						
6						
7						

Stabilized Rate : **480.0** Min/inch

Tested by: **S. Barton**
Checked by : **J. McDougal**

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TEST PIT NUMBER TP-D

CLIENT LC Learner, LLC
PROJECT NAME Learner Lemmon
PROJECT NUMBER 4092003
PROJECT LOCATION Washoe County, Nevada
DATE STARTED 10/6/22 **COMPLETED** 10/6/22
GROUND ELEVATION 4936.1 ft **TEST PIT SIZE** 48 inches
EXCAVATION CONTRACTOR Joy Engineering
GROUND WATER LEVELS:
EXCAVATION METHOD Komatsu 290
AT TIME OF EXCAVATION ---
LOGGED BY Seth Barton **CHECKED BY** Justin McDougal
AT END OF EXCAVATION ---
NOTES: Elevations: Washoe County 6ft DEM
24hrs AFTER EXCAVATION 13.00 ft / Elev 4923.10 ft

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	R-VALUE	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
0		SILTY, CLAYEY SAND, (SC-SM) medium dense, dry, light brown, nonplastic										
		SANDY LEAN CLAY, (CL) very stiff, dry to slightly moist, medium brown, low to medium plasticity	GB 1D									
5			GB 2D					11.8	28	15	13	52.7
		CLAYEY SAND, (SC) very dense, slightly moist, medium brown with white, low plasticity	GB 3D					11.3	25	17	8	44.2
10		LEAN CLAY, (CL) very stiff, slightly moist to moist, gray with white, medium to high plasticity										
		▼										
15			GB 4D									

Bottom of Test Pit at 17.0 Feet.

Soil Percolation Recorded Measurements

1.Depth to test : ***5'***
2.Time of 1st saturation to 12" ***1:47 PM*** *Date :* ***6-Oct***
If 12" of water drains from hole in 10 mins or less, refill to 12".
3.Time of 2nd saturation : ***1:57 PM***
4.If 2nd filling drains in less than 10 mins, begin 1 hour test with 10 mins or less reading intervals.
5.If either filling exceeds 10 mins to drain from hole,begin a 4-hr pre-soak.
Return between 16 - 24 hrs to start test.

Date of percolation test : ***7-Oct***

Hole # : ***D1*** *Diameter :* ***8*** *Depth :* ***12*** *Soil Type :* ***CL***

Reading	Time Start	Time Finish	Water Level Start	Water Level Finish	Elapsed Time min	Water Fall (in)
1	8:57 AM	9:27 AM	6	6 12/16	30	12/16
2	9:27 AM	9:57 AM	6	6 11/16	30	11/16
3	9:57 AM	10:27 AM	6	6 10/16	30	10/16
4						
5						
6						
7						

Stabilized Rate : **48.0** Min/inch
Tested by: **S. Barton**
Checked by : **J. McDougal**

Soil Percolation Recorded Measurements

1.Depth to test : ***8'***
2.Time of 1st saturation to 12" ***2:00 PM*** *Date :* ***6-Oct***
If 12" of water drains from hole in 10 mins or less, refill to 12".
3.Time of 2nd saturation : ***2:10 PM***
4.If 2nd filling drains in less than 10 mins, begin 1 hour test with 10 mins or less reading intervals.
5.If either filling exceeds 10 mins to drain from hole,begin a 4-hr pre-soak.
Return between 16 - 24 hrs to start test.

Date of percolation test : ***7-Oct***

Hole # : ***D2*** *Diameter :* ***8*** *Depth :* ***12*** *Soil Type :* ***SC***

Reading	Time Start	Time Finish	Water Level Start	Water Level Finish	Elapsed Time min	Water Fall (in)
1	9:01 AM	9:31 AM	6	8 8/16	30	2 8/16
2	9:31 AM	10:01 AM	6	8 4/16	30	2 4/16
3	10:01 AM	10:31 AM	6	8 3/16	30	2 3/16
4	10:31 AM	11:01 AM	6	8 2/16	30	2 2/16
5						
6						
7						

Stabilized Rate : **14.1** Min/inch
Tested by: **S. Barton**
Checked by : **J. McDougal**

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TEST PIT NUMBER TP-E

CLIENT LC Learner, LLC
PROJECT NAME Learner Lemmon
PROJECT NUMBER 4092003
PROJECT LOCATION Washoe County, Nevada
DATE STARTED 10/6/22 **COMPLETED** 10/6/22
GROUND ELEVATION 4933.2 ft **TEST PIT SIZE** 48 inches
EXCAVATION CONTRACTOR Joy Engineering
GROUND WATER LEVELS:
EXCAVATION METHOD Komatsu 290
AT TIME OF EXCAVATION 11.0 ft
LOGGED BY Seth Barton **CHECKED BY** Justin McDougal
AT END OF EXCAVATION 11.0 ft
NOTES: Elevations: Washoe County 6ft DEM
24hrs AFTER EXCAVATION 5.00 ft / Elev 4928.20 ft

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	R-VALUE	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
0		SILTY SAND, (SM) medium dense, dry, light brown, nonplastic	GB 1E					4.7	19	17	2	28.6
		CLAYEY SAND TO SANDY LEAN CLAY, (SC-CL) very dense to very stiff, moist, medium brown, low to medium plasticity	GB 2E					10.4				
5			GB 3E					14.3				
		LEAN CLAY, (CL) stiff, very moist, gray, medium to high plasticity	GB 4E									
10												
			GB 5E									
15												

Bottom of Test Pit at 15.0 Feet.

Soil Percolation Recorded Measurements

1.Depth to test : ***2'***
2.Time of 1st saturation to 12" ***2:15 PM*** *Date :* ***6-Oct***
If 12" of water drains from hole in 10 mins or less, refill to 12".
3.Time of 2nd saturation : ***2:25 PM***
4.If 2nd filling drains in less than 10 mins, begin 1 hour test with 10 mins or less reading intervals.
5.If either filling exceeds 10 mins to drain from hole,begin a 4-hr pre-soak.
Return between 16 - 24 hrs to start test.

Date of percolation test : **7-Oct**

Hole # : ***E1*** *Diameter :* ***8*** *Depth :* ***12*** *Soil Type :* ***SM***

Reading	*Time*		*Water Level*		*Elapsed*	*Water*
	Start	*Finish*	*Start*	*Finish*	*Time min*	*Fall (in)*
1	10:48 AM	11:18 AM	6	8 15/16	30	2 15/16
2	11:18 AM	11:48 AM	6	8 14/16	30	2 14/16
3	11:48 AM	12:18 PM	6	8 13/16	30	2 13/16
4						
5						
6						
7						

Stabilized Rate : **10.7** Min/inch
Tested by: **S. Barton**
Checked by : **J. McDougal**

Wood Rodgers Inc.
1361 Corporate Blvd
Reno NV 89521
Telephone: 775-823-4068
Fax: 775-823-4066

TEST PIT NUMBER TP-F

CLIENT LC Learner, LLC
PROJECT NAME Learner Lemmon
PROJECT NUMBER 4092003
PROJECT LOCATION Washoe County, Nevada
DATE STARTED 10/7/22 **COMPLETED** 10/7/22
GROUND ELEVATION 4934.1 ft **TEST PIT SIZE** 48 inches
EXCAVATION CONTRACTOR Joy Engineering
GROUND WATER LEVELS:
EXCAVATION METHOD Komatsu 290
AT TIME OF EXCAVATION 14.5 ft
LOGGED BY Seth Barton **CHECKED BY** Justin McDougal
AT END OF EXCAVATION ---
NOTES: Elevations: Washoe County 6ft DEM
0.5hrs AFTER EXCAVATION 14.00 ft / Elev 4920.10 ft

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	R-VALUE	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
0		SILTY, CLAYEY SAND, (SC-SM) medium dense, dry, light brown, nonplastic										
		SILTY, CLAYEY SAND, (SC-SM) very dense, dry to slightly moist, medium brown, slightly plastic	GB 1F					14.7	26	21	5	48.4
5												
		CLAYEY SAND, (SC) very dense, slightly moist, light brown, low plasticity	GB 2F					16.8	25	17	8	36.2
10		LEAN CLAY, (CL) very stiff, moist to very moist, gray, medium to high plasticity	GB 3F									
15			GB 4F									

Bottom of Test Pit at 17.0 Feet.

Wood Rodgers Inc.
1361 Corporate Blvd
Reno NV 89521
Telephone: 775-823-4068
Fax: 775-823-4066

TEST PIT NUMBER TP-G

CLIENT LC Learner, LLC
PROJECT NAME Learner Lemmon
PROJECT NUMBER 4092003
PROJECT LOCATION Washoe County, Nevada
DATE STARTED 12/22/22 **COMPLETED** 12/22/22
GROUND ELEVATION 4932.2 ft **TEST PIT SIZE** 24 inches
EXCAVATION CONTRACTOR Joy Engineering
GROUND WATER LEVELS:
EXCAVATION METHOD CAT 420F Backhoe
AT TIME OF EXCAVATION --- NO FREE WATER ENCOUNTERED
LOGGED BY Jackson Beadell **CHECKED BY** Justin McDougal
AT END OF EXCAVATION --- NO FREE WATER ENCOUNTERED
NOTES: Elevations: Washoe County 6ft DEM
AFTER EXCAVATION --- NO FREE WATER ENCOUNTERED

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	R-VALUE	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
0.0		SILTY SAND, (SM) medium dense, moist, dark brown, nonplastic	GB G1									

Bottom of Test Pit at 2.0 Feet.

Soil Percolation Recorded Measurements

1.Depth to test : ***2'***
2.Time of 1st saturation to 12" ***10:05 AM*** *Date :* ***22-Dec***
If 12" of water drains from hole in 10 mins or less, refill to 12".
3.Time of 2nd saturation : ***10:15 AM***
4.If 2nd filling drains in less than 10 mins, begin 1 hour test with 10 mins or less reading intervals.
5.If either filling exceeds 10 mins to drain from hole,begin a 4-hr pre-soak.
Return between 16 - 24 hrs to start test.

Date of percolation test : **23-Dec**

Hole # : ***G*** *Diameter :* ***8*** *Depth :* ***12*** *Soil Type :* ***SM***

Reading	Time		Water Level		Elapsed	Water
	Start	Finish	Start	Finish	Time min	Fall (in)
1	10:38 AM	10:48 AM	6	8 7/16	10	2 7/16
2	10:49 AM	10:59 AM	6	8 6/16	10	2 6/16
3	10:59 AM	11:09 AM	6	8 5/16	10	2 5/16
4	11:09 AM	11:19 AM	6	8 4/16	10	2 4/16
5	11:20 AM	11:30 AM	6	8 7/16	10	2 7/16
6	11:31 AM	11:41 AM	6	8 7/16	10	2 7/16
7	11:42 AM	11:52 AM	6	8 6/16	10	2 6/16

Stabilized Rate : **4.2** Min/inch

Tested by: **J. Beadell**
Checked by : **J. McDougal**

Wood Rodgers Inc.
1361 Corporate Blvd
Reno NV 89521
Telephone: 775-823-4068
Fax: 775-823-4066

TEST PIT NUMBER TP-H

CLIENT LC Learner, LLC
PROJECT NAME Learner Lemmon
PROJECT NUMBER 4092003
PROJECT LOCATION Washoe County, Nevada
DATE STARTED 12/22/22 **COMPLETED** 12/22/22
GROUND ELEVATION 4933.1 ft **TEST PIT SIZE** 24 inches
EXCAVATION CONTRACTOR Joy Engineering
GROUND WATER LEVELS:
EXCAVATION METHOD CAT 420F Backhoe
AT TIME OF EXCAVATION --- NO FREE WATER ENCOUNTERED
LOGGED BY Jackson Beadell **CHECKED BY** Justin McDougal
AT END OF EXCAVATION --- NO FREE WATER ENCOUNTERED
NOTES: Elevations: Washoe County 6ft DEM
AFTER EXCAVATION --- NO FREE WATER ENCOUNTERED

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	R-VALUE	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
0.0		SILTY SAND, (SM) medium dense, moist, dark brown, nonplastic										
2.5		SILTY, CLAYEY SAND, (SC-SM) dense, slightly moist, tan brown, low plasticity, 0/60/40	GB H1									

Bottom of Test Pit at 3.5 Feet.

Soil Percolation Recorded Measurements

1.Depth to test : ***3.5'***
2.Time of 1st saturation to 12" ***10:56 AM*** *Date :* ***22-Dec***
If 12" of water drains from hole in 10 mins or less, refill to 12".
3.Time of 2nd saturation : ***N/A***
4.If 2nd filling drains in less than 10 mins, begin 1 hour test with 10 mins or less reading intervals.
5.If either filling exceeds 10 mins to drain from hole,begin a 4-hr pre-soak.
Return between 16 - 24 hrs to start test.

Date of percolation test : **23-Dec**

Hole # : ***H*** *Diameter :* ***7*** *Depth :* ***12*** *Soil Type :* ***SC-SM***

Reading	Time		Water Level		Elapsed	Water
	Start	Finish	Start	Finish	Time min	Fall (in)
1	8:01 AM	8:31 AM	6	6 14/16	30	14/16
2	8:32 AM	9:02 AM	6	6 14/16	30	14/16
3	9:03 AM	9:33 AM	6	6 13/16	30	13/16
4	9:34 AM	10:04 AM	6	6 13/16	30	13/16
5						
6						
7						

Stabilized Rate : **36.9** Min/inch

Tested by: **J. Beadell**
Checked by : **J. McDougal**

Wood Rodgers Inc.
1361 Corporate Blvd
Reno NV 89521
Telephone: 775-823-4068
Fax: 775-823-4066

TEST PIT NUMBER TP-I

CLIENT LC Learner, LLC
PROJECT NAME Learner Lemmon
PROJECT NUMBER 4092003
PROJECT LOCATION Washoe County, Nevada
DATE STARTED 12/22/22 **COMPLETED** 12/22/22
GROUND ELEVATION 4933.8 ft **TEST PIT SIZE** 24 inches
EXCAVATION CONTRACTOR Joy Engineering
GROUND WATER LEVELS:
EXCAVATION METHOD CAT 420F Backhoe
AT TIME OF EXCAVATION --- NO FREE WATER ENCOUNTERED
LOGGED BY Jackson Beadell **CHECKED BY** Justin McDougal
AT END OF EXCAVATION --- NO FREE WATER ENCOUNTERED
NOTES: Elevations: Washoe County 6ft DEM
AFTER EXCAVATION --- NO FREE WATER ENCOUNTERED

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	R-VALUE	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
0.0		SILTY SAND, (SM) medium dense, moist, dark brown, nonplastic										
		FAT CLAY, (CH) stiff, moist, dark brown, medium to high plasticity	GB I1									
2.5		CLAYEY SAND TO SANDY LEAN CLAY, (SC-CL) dense to very stiff, slightly moist, tan brown, low plasticity	GB I2									

Bottom of Test Pit at 3.5 Feet.

Soil Percolation Recorded Measurements

1.Depth to test : ***3.5'***
2.Time of 1st saturation to 12" ***11:24 AM*** *Date :* ***22-Dec***
If 12" of water drains from hole in 10 mins or less, refill to 12".
3.Time of 2nd saturation : ***N/A***
4.If 2nd filling drains in less than 10 mins, begin 1 hour test with 10 mins or less reading intervals.
5.If either filling exceeds 10 mins to drain from hole,begin a 4-hr pre-soak.
Return between 16 - 24 hrs to start test.

Date of percolation test : **23-Dec**

Hole # : ***I*** *Diameter :* ***7*** *Depth :* ***12*** *Soil Type :* ***SC-CL***

Reading	Time		Water Level		Elapsed	Water
	Start	Finish	Start	Finish	Time min	Fall (in)
1	8:19 AM	8:49 AM	6	8 1/16	30	2 1/16
2	8:50 AM	9:20 AM	6	7 10/16	30	1 10/16
3	9:21 AM	9:51 AM	6	7 9/16	30	1 9/16
4	9:52 AM	10:22 AM	6	7 8/16	30	1 8/16
5						
6						
7						

Stabilized Rate : **20.0** Min/inch

Tested by: **J. Beadell**
Checked by : **J. McDougal**

Wood Rodgers Inc.
1361 Corporate Blvd
Reno NV 89521
Telephone: 775-823-4068
Fax: 775-823-4066

TEST PIT NUMBER TP-J

CLIENT LC Learner, LLC
PROJECT NAME Learner Lemmon
PROJECT NUMBER 4092003
PROJECT LOCATION Washoe County, Nevada
DATE STARTED 12/22/22 **COMPLETED** 12/22/22
GROUND ELEVATION 4932.9 ft **TEST PIT SIZE** 24 inches
EXCAVATION CONTRACTOR Joy Engineering
GROUND WATER LEVELS:
EXCAVATION METHOD CAT 420F Backhoe
AT TIME OF EXCAVATION --- NO FREE WATER ENCOUNTERED
LOGGED BY Jackson Beadell **CHECKED BY** Justin McDougal
AT END OF EXCAVATION --- NO FREE WATER ENCOUNTERED
NOTES: Elevations: Washoe County 6ft DEM
AFTER EXCAVATION --- NO FREE WATER ENCOUNTERED

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	R-VALUE	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
0.0		SILTY SAND, (SM) medium dense, moist, dark brown, nonplastic										
		SANDY LEAN CLAY, (CL) very stiff, slightly moist, light tan, low to medium plasticty										
2.5			GB J1									

Bottom of Test Pit at 3.0 Feet.

Soil Percolation Recorded Measurements

1.Depth to test : ***3'***
2.Time of 1st saturation to 12" ***12:22 PM*** *Date :* ***22-Dec***
If 12" of water drains from hole in 10 mins or less, refill to 12".
3.Time of 2nd saturation : ***N/A***
4.If 2nd filling drains in less than 10 mins, begin 1 hour test with 10 mins or less reading intervals.
5.If either filling exceeds 10 mins to drain from hole,begin a 4-hr pre-soak.
Return between 16 - 24 hrs to start test.

Date of percolation test : **23-Dec**

Hole # : ***J*** *Diameter :* ***7*** *Depth :* ***12*** *Soil Type :* ***CL***

Reading	Time		Water Level		Elapsed	Water
	Start	Finish	Start	Finish	Time min	Fall (in)
1	8:44 AM	9:14 AM	6	4 8/16	30	1 8/16
2	9:15 AM	9:45 AM	6	4 8/16	30	1 8/16
3	9:46 AM	10:16 AM	6	4 9/16	30	1 7/16
4						
5						
6						
7						

Stabilized Rate : **20.9** Min/inch

Tested by: **B. LaBarr**
Checked by : **J. McDougal**

Wood Rodgers Inc.
1361 Corporate Blvd
Reno NV 89521
Telephone: 775-823-4068
Fax: 775-823-4066

TEST PIT NUMBER TP-K

CLIENT LC Learner, LLC
PROJECT NAME Learner Lemmon
PROJECT NUMBER 4092003
PROJECT LOCATION Washoe County, Nevada
DATE STARTED 12/22/22 **COMPLETED** 12/22/22
GROUND ELEVATION 4933.2 ft **TEST PIT SIZE** 24 inches
EXCAVATION CONTRACTOR Joy Engineering
GROUND WATER LEVELS:
EXCAVATION METHOD CAT 420F Backhoe
AT TIME OF EXCAVATION --- NO FREE WATER ENCOUNTERED
LOGGED BY Jackson Beadell **CHECKED BY** Justin McDougal
AT END OF EXCAVATION --- NO FREE WATER ENCOUNTERED
NOTES: Elevations: Washoe County 6ft DEM
AFTER EXCAVATION --- NO FREE WATER ENCOUNTERED

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	R-VALUE	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
0.0		SILTY SAND, (SM) medium dense, moist, dark brown, nonplastic										
2.5		POORLY GRADED SAND WITH SILT AND GRAVEL, (SP-SM) dense, slightly moist, tan, nonplastic, lense of sandy lean clay in corner of test pit	GB K1									

Bottom of Test Pit at 4.0 Feet.

Soil Percolation Recorded Measurements

1.Depth to test : ***4'***
2.Time of 1st saturation to 12" ***10:30 AM*** *Date :* ***22-Dec***
If 12" of water drains from hole in 10 mins or less, refill to 12".
3.Time of 2nd saturation : ***10:40 AM***
4.If 2nd filling drains in less than 10 mins, begin 1 hour test with 10 mins or less reading intervals.
5.If either filling exceeds 10 mins to drain from hole,begin a 4-hr pre-soak.
Return between 16 - 24 hrs to start test.

Date of percolation test : **23-Dec**

Hole # : ***K*** *Diameter :* ***8*** *Depth :* ***12*** *Soil Type :* ***SP-SM***

Reading	Time		Water Level		Elapsed	Water
	Start	Finish	Start	Finish	Time min	Fall (in)
1	10:43 AM	10:49 AM	6	2	6	4
2	10:49 AM	10:55 AM	6	2 7/16	6	3 9/16
3	10:56 AM	11:02 AM	6	2 8/16	6	3 8/16
4	11:04 AM	11:10 AM	6	2 10/16	6	3 6/16
5	11:12 AM	11:18 AM	6	2 12/16	6	3 4/16
6	11:19 AM	11:25 AM	6	2 12/16	6	3 4/16
7	11:26 AM	11:32 AM	6	2 13/16	6	3 3/16

Stabilized Rate : **1.9** Min/inch

Tested by: **B. LaBarr**
Checked by : **J. McDougal**

Wood Rodgers Inc.
1361 Corporate Blvd
Reno NV 89521
Telephone: 775-823-4068
Fax: 775-823-4066

TEST PIT NUMBER TP-L

CLIENT LC Learner, LLC
PROJECT NAME Learner Lemmon
PROJECT NUMBER 4092003
PROJECT LOCATION Washoe County, Nevada
DATE STARTED 12/22/22 **COMPLETED** 12/22/22
GROUND ELEVATION 4934.5 ft **TEST PIT SIZE** 24 inches
EXCAVATION CONTRACTOR Joy Engineering
GROUND WATER LEVELS:
EXCAVATION METHOD CAT 420F Backhoe
AT TIME OF EXCAVATION --- NO FREE WATER ENCOUNTERED
LOGGED BY Jackson Beadell **CHECKED BY** Justin McDougal
AT END OF EXCAVATION --- NO FREE WATER ENCOUNTERED
NOTES: Elevations: Washoe County 6ft DEM
AFTER EXCAVATION --- NO FREE WATER ENCOUNTERED

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	R-VALUE	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
0.0		SILTY SAND, (SM) medium dense, moist, dark brown, nonplastic										
		CLAYEY SAND, (SC) dense, moist, light brown, low plasticity										
2.5		POORLY GRADED SAND WITH SILT AND GRAVEL, (SP-SM) dense, slightly moist, light brown, nonplastic	GB L1									

Bottom of Test Pit at 4.0 Feet.

Soil Percolation Recorded Measurements

1.Depth to test : ***4'***
2.Time of 1st saturation to 12" ***11:55 AM*** *Date :* ***22-Dec***
If 12" of water drains from hole in 10 mins or less, refill to 12".
3.Time of 2nd saturation : ***12:03 PM***
4.If 2nd filling drains in less than 10 mins, begin 1 hour test with 10 mins or less reading intervals.
5.If either filling exceeds 10 mins to drain from hole,begin a 4-hr pre-soak.
Return between 16 - 24 hrs to start test.

Date of percolation test : **23-Dec**

Hole # : ***L*** *Diameter :* ***8*** *Depth :* ***12*** *Soil Type :* ***SP-SM***

Reading	Time		Water Level		Elapsed	Water
	Start	Finish	Start	Finish	Time min	Fall (in)
1	12:03 PM	12:13 PM	6	10 2/16	10	4 2/16
2	12:14 PM	12:24 PM	6	9 9/16	10	3 9/16
3	12:25 PM	12:35 PM	6	9 10/16	10	3 10/16
4	12:37 PM	12:47 PM	6	9 8/16	10	3 8/16
5	12:48 PM	12:58 PM	6	9 8/16	10	3 8/16
6	12:59 PM	1:09 PM	6	9 8/16	10	3 8/16
7	1:10 PM	1:20 PM	6	9 8/16	10	3 8/16

Stabilized Rate : **2.9** Min/inch

Tested by: **J. Beadell**
Checked by : **J. McDougal**

Preliminary Sewer Study

For

Learner – Lemmon Property

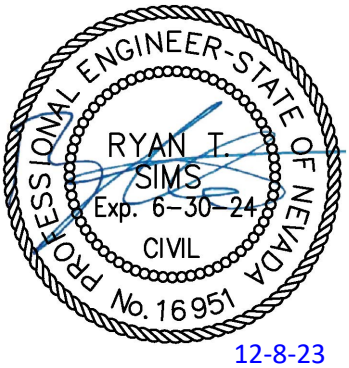
Prepared for:

LC Learner, LLC
27132 B Paseo Espanda, Suite 1226
San Juan Capistrano, CA 92675

Prepared by:

Axion ENGINEERING
Civil Engineering • Land Development
Mapping • Surveying

December, 2023



12-8-23

Introduction:

This report presents the preliminary sanitary sewer plan for the Learner – Lemmon Property. It includes expected flow analysis, proposed sewer facilities to serve the development and existing sewer facilities surrounding the project site.

The Learner project site (APN: 080-461-08) is located along Pan American Way and is situated within the West half of the Southwest quarter of the Northwest Quarter of Section 34, Township 21 North, Range 19 East, Mount Diablo Meridian. Reference the attached Vicinity Map.

The proposed project is a Tentative map for 85 Single Family residential lots with public street and utility improvements. Reference the attached site plan.

PROPOSED SEWER SYSTEM

Reference the attached sewer display for the proposed sewer system that will serve the development.

The Learner – Lemmon project will create 85 Single family residential lots in Lemmon Valley, within Washoe County. The proposed 85 lots will be supported by roadway and public utility improvements.

The project is within the Lemmon Valley Wastewater Treatment Plant (LVWWTP) sewershed. It has been confirmed by Washoe County and City of Reno that the project must be designed to flow to the LVWWTP.

Proposed lots within the Learner – Lemmon subdivision will be served by an onsite 8" public sewer main system. The on-site system will convey waste to a proposed 10" off-site system within future Lear Blvd, east to existing Fleetwood Drive, then south within Fleetwood Drive to an existing sewer manhole at the intersection of Fleetwood Drive and Compton Street. This sewer then flows to the LVWWTP.

The expected sewer peak flow contribution (per the Washoe County CSD Gravity Sewer Collection Design Standards) is as follows:

Flow Determination: **270 gals/day/lot**
Lot Count: **85 Lots**
Peaking Factor: **3**

Expected peak flow: (270 gal/day/lot) x (87 Lots) x (3) = **68,850 gal/day**

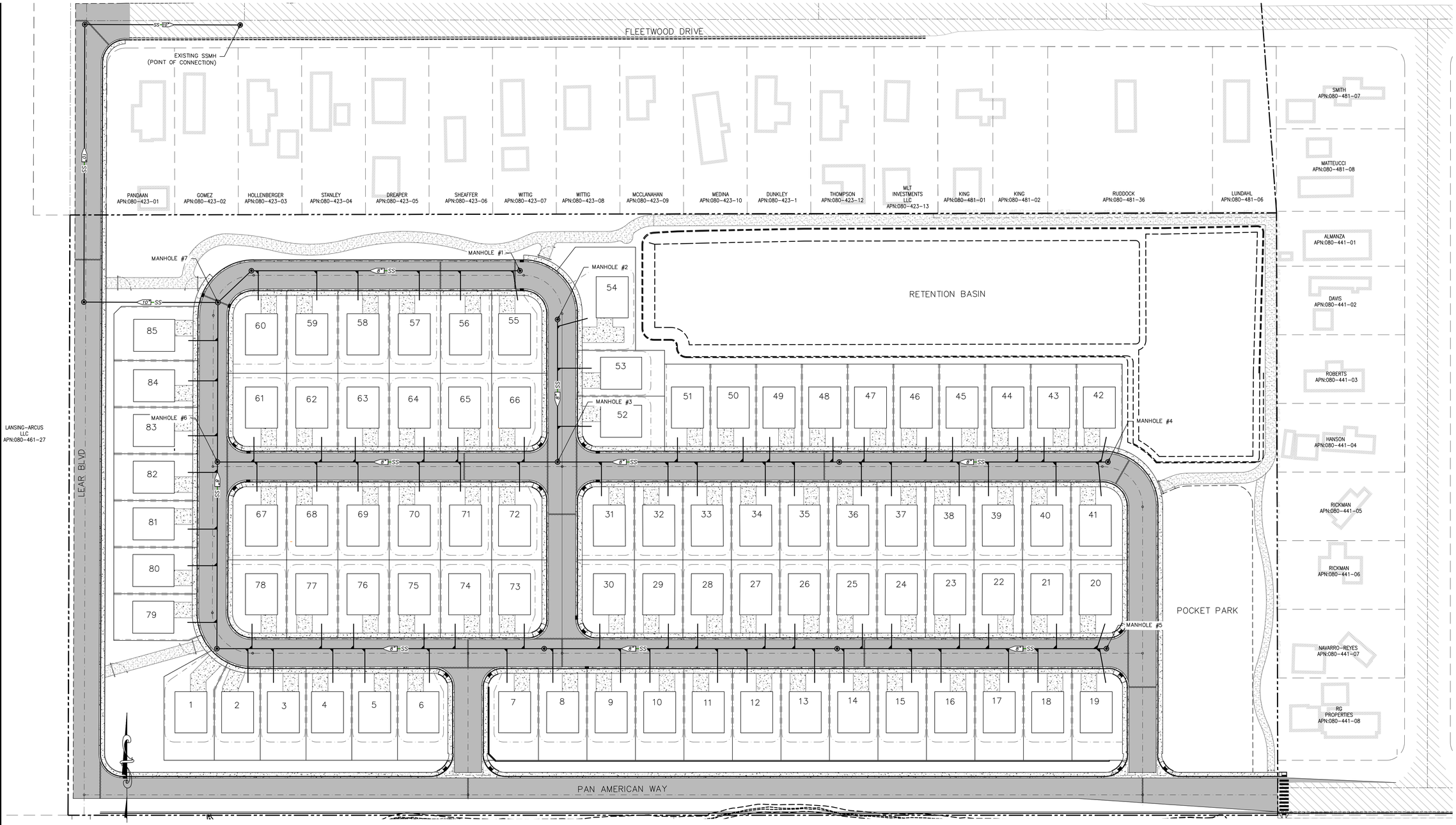
It is our understanding from conversations with Washoe County that the LVWWTP currently has capacity to serve the project, and that previous analysis shows no other capacity issues within the sewer system to the LVWWTP.

The onsite sewer system is expected to have a minimum 8" pipe slope of 0.50%. This produces a half-full velocity of 2.30 feet per second.

The offsite sewer was upsized to 10" to accommodate the relatively flat slope necessary to maintain the feasibility of the project. The slope shown of 0.21% produces 2 feet per second velocity at half full. At the project expected peak flow the velocity was calculated to be 1.3 feet per second. Per many sources, including (Design and Construction of Sanitary and Storm Sewers, WPCF Manual of Practice No. 9, 1982 (5th Printing): 2 fps is considered an acceptable minimum flow at half full as "The low velocities actually required to transport organics may explain why many sewers laid at extremely flat grades do not cause excessive trouble due to the deposition of these materials." It is not expected that this sewer at relatively flat slope, with smooth pipe and proper usual maintenance, will have any significant issues due to material deposition.

Conclusion

This report identifies the preliminary findings for the Learner – Lemmon project. The proposed preliminary analysis has been performed in conformance Washoe County standards and the findings show that the sewer will operate within the applicable standards of Washoe County.



100 0 50 100 200

SCALE: 1"=100'

Preliminary Sanitary Sewer Pipe Calculations					
Pipe Segment	Slope (%)	Peak Flow (GPD)	Depth (Ft)	Expected Velocity (fps)	Half Full Velocity (fps)
MH #1 - MH #7	1.10	4,860	0.04	0.87	3.98
MH #2- MH #3	0.94	2,430	0.03	0.66	3.68
MH #4 - MH #6	0.50	29,160	0.1	1.36	2.68
MH #5 - MH #6	0.50	31,590	0.11	1.29	2.68
MH #6 -MH #7	0.50	63,180	0.15	1.64	2.68
MH #7 - EX. MH	0.21	68,040	0.18	1.27	2

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LEARNER LEMMON PROPERTY

SEWER DISPLAY C-6