



Planning Commission Staff Report

Meeting Date: March 5, 2024

Agenda Item: 9B

TENTATIVE SUBDIVISION MAP CASE NUMBER:

WTM23-001 (Learner-Lemmon)

BRIEF SUMMARY OF REQUEST:

Request for an 85-lot residential common open space subdivision.

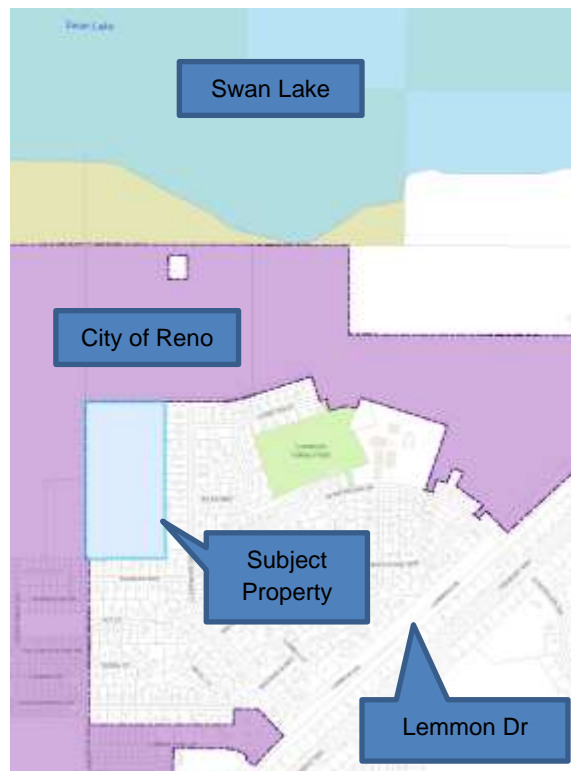
STAFF PLANNER:

Kat Oakley, Planner
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CASE DESCRIPTION

For hearing, discussion, and possible action to approve a Tentative Subdivision Map to allow the subdivision of one parcel totaling 19.92 acres into an 85-lot common open space residential development with lots ranging in size from 4,500 to 7,750 square feet; and for major grading of ±19.926 acres, with ±20,000 cubic yards of excavated material and ±55,000 cubic yards of fill material, with ±35,000 cubic yards of that fill material imported.

Applicant: Krater Consulting Group, PC
 Property Owner: Learner, Brett H & Learner, Bryan A
 Location: 0 Pan American Way
 APN: 080-461-08
 Parcel Size: 19.926 acres
 Master Plan: Suburban Residential (SR)
 Regulatory Zone: High Density Suburban (HDS), Medium Density Suburban (MDS), and Open Space (OS) North Valleys
 Area Plan: North Valleys
 Development Code: Authorized in Article 608, Tentative Subdivision Maps and Article 408, Common Open Space Development
 Commission District: 5 – Commissioner Herman



Vicinity Map

STAFF RECOMMENDATION

APPROVE

APPROVE WITH CONDITIONS

DENY

POSSIBLE MOTION

I move that, after giving reasoned consideration to the information contained in the staff report and information received during the public hearing, the Washoe County Planning Commission approve Tentative Subdivision Map Case Number WTM23-001 for Krater Consulting Group, PC, with the conditions included as Exhibit A to this matter, having made all ten findings in accordance with Washoe County Code Section 110.608.25:

(Motion with Findings on Page 18)

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Tentative Subdivision Map

The purpose of a Tentative Subdivision Map is:

- To allow the creation of saleable lots;
- To implement the Washoe County Master Plan, including the area plans, and any specific plans adopted by the County;
- To establish reasonable standards of design and reasonable procedures for subdivision and re-subdivision in order to further the orderly layout and use of land and ensure proper legal descriptions and monumenting of subdivided land; and
- To safeguard the public health, safety and general welfare by establishing minimum standards of design and development for any subdivision platted in the unincorporated area of Washoe County.

If the Planning Commission grants an approval of the Tentative Subdivision Map, that approval is subject to conditions of approval. Conditions of Approval are requirements that need to be completed during different stages of the proposed project. Those stages are typically:

- Prior to recordation of a final map.
- Prior to obtaining a final inspection and/or a certificate of occupancy on a structure.
- Prior to the issuance of a business license or other permits/licenses.
- Some Conditions of Approval are referred to as “operational conditions.” These conditions must be continually complied with for the life of the project.

The Conditions of Approval for Tentative Subdivision Map Case Number WTM23-001 are attached to this staff report and will be included with the action order.

Project Evaluation

The Learner-Lemmon project proposes an 85-lot, common open space, single-family subdivision totaling 19.9 acres. The subject property is a mix of the Medium Density Suburban (MDS), High Density Suburban (HDS), and Open Space (OS) regulatory zones. The zoning allows for a maximum of 90 dwelling units; 85 residential lots are proposed, with 5.27 acres of common open space. The project site is located west of the intersection of Lear Blvd and Fleetwood Dr, bordering the City of Reno to the north and west. To the east and south, there are MDS lots that are generally 1/3 acre in size. No phasing is proposed.

This project is proposed as a common open space subdivision which allows, “variation of lot size, including density transfer subdivisions, in order to preserve or provide open space, protect natural and scenic resources, achieve a more efficient use of land, minimize road building, and encourage a sense of community.” Because the request is for a common open space subdivision, the applicant is proposing smaller lot sizes than otherwise allowed within the existing regulatory zones. The smaller lot sizes allow for open space with community amenities. The applicant is proposing an average lot size of 4,960 sf, with a range from 4,500-7,750 sf. They are also proposing special setbacks of 20’ from garages to the front lot line(s), 15’ from the living spaces to the front lot line(s), 15’ from the rear lot line, and 5’ from the sides. The proposed subdivision is located within the Lemmon Valley Suburban Character Management Area (LVSCMA), which is a designated growth area in North Valleys.

Approximately 5.27 acres are being designated by the developer as common open space and will contain the required on-site drainage retention facilities, a pocket park, and trails.

Land Type	Acreage	Percent of Site
Common Open Space	5.27	26.5%
Developable Lots/Roads	14.63	73.5%

The total density allowed can be found below:

Regulatory Zoning	Total Acreage	Density (du/acre)	Allowed Units
Open Space (OS)	3.8	0	0.00
High Density Suburban (HDS)	10.59	7	74.13
Medium Density Suburban (MDS)	5.53	3	16.59
Total	19.92	4.55	90.72

The minimum lot size allowed within the MDS regulatory zone is 12,000 sf and within the HDS regulatory zone is 5,000 sf, but common open space subdivisions allow for lot size to be modified. Typical residential fencing will be permitted on side and rear lot lines, behind the front of the home. The applicant notes that an HOA will be responsible for all common open space.

Article 408: Common Open Space

The proposed Tentative Subdivision Map is for a common open space development. This requires the applicant to meet the purpose of a Common Open Space Development Article as outlined in 110.408.00, summarized in the table below:

Article 408 Purpose Requirement	Brief Analysis
Preserve or Provide Open Space	The applicant is proposing ± 5.27 acres of common open space containing a pocket park and trails. The common open space area also contains the stormwater retention basins, which are required by Washoe County Code, not accessible to the public, and do not count towards the additional public benefit provided by a common open space development. The retention basins occupy approximately 2.4 acres of the common open space. There are therefore 2.85 acres of common open space that preserve or provide open space. That amounts to 14.4% of the proposed development.
Protect Natural and Scenic Resources	A small portion of the lot is in the 100-year floodplain and is zoned open space. The rest of the subject property contains no development constraints or significant natural or scenic resources.
Achieve a More Efficient Use of Land	The average lot size for a single family detached parcel is 4,960 square feet. Approximately 2.85 acres is preserved for community amenities.
Minimize Road Building	The road network is generally a lot-and-block pattern. The 5.27 acres of common open space along the site perimeter does not contain roads. The smaller lots sizes therefore lead to a more condensed developed area and less road building.
Encourage A Sense of Community	The proposed tentative subdivision provides community assets in the form of a pocket park and trails.

The proposed development must be shown to be in conformance with Article 408, Common Open Space Development. The intent of Article 408 is to “*set forth regulations to permit variation of lot size, including density transfer subdivisions, in order to preserve or provide open space, protect natural and scenic resources, achieve a more efficient use of land, minimize road building, and encourage a sense of community.*”

Washoe County Code 110.408.45 (b) requires:

Permanent Preservation and Maintenance. Provisions shall be made for the permanent preservation and ongoing maintenance of the common open space and other common areas using a legal instrument acceptable to the County.

Appropriate Conditions of Approval have been included with this report, should approval be granted by the Planning Commission.



Pocket Park Plan

Landscaping

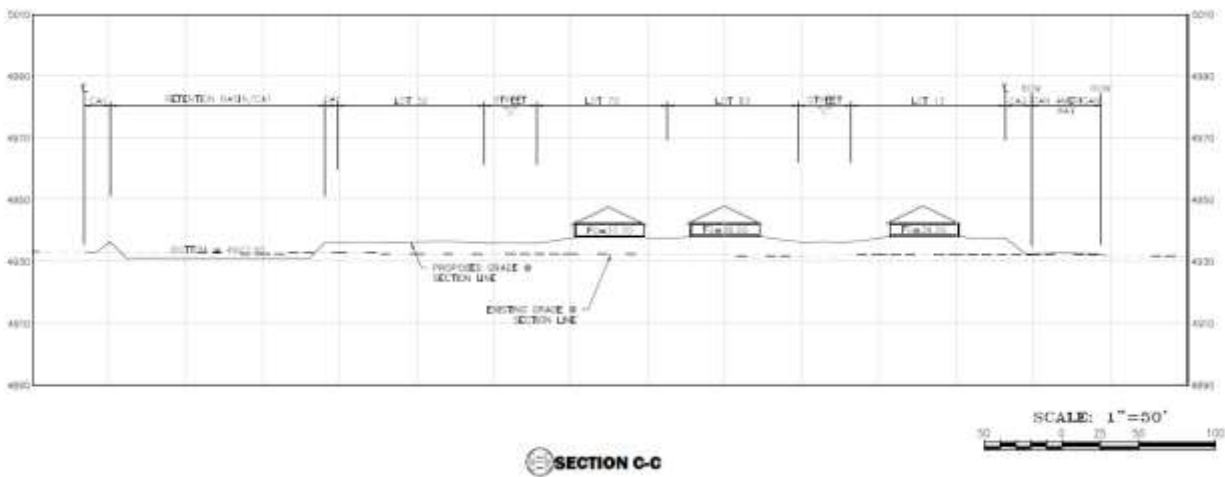
The applicant has proposed a landscaping buffer along Pan American Way and other landscaped areas in the northeast and southwest corners of the parcel. There will be one tree every 50' along Pan American Way, with 290 shrubs proposed. Per Master Plan policy LUT.17.5, condition 1(s) requires the planting of canopy trees in all front yards within the subdivision. Final compliance with the proposed landscaping plans and conditions will be assessed at the final map stage.



Preliminary Landscaping Plan

Article 438: Grading

The applicant is requesting up to 35,000 cy of import fill, with expectations that they can reduce total cut and fill to approximately 20,000 cy in the final design. Per the cross section (section C-C) below, the applicants are proposing to place 6 to 8 feet of fill above current grade. The proposed grading exceeds the major grading thresholds and can be approved through the tentative map process. The subject property is generally flat and the majority of proposed grading creates minimal difference between existing and proposed grade, directing drainage towards the appropriate drainage facilities. Two retention basins are proposed in the southeast corner of the site, one of which will be approximately 6' deep and the other approximately 3' deep. The sides of both basins will consist of 2:1 slopes stabilized by riprap, in conformance with the grading standards of WCC 110.438.45(k). Proposed grading plans conform with all other standards of Article 438. Final review ensuring conformance with Article 438 and with all Conditions of Approval will occur during the building permit stage.

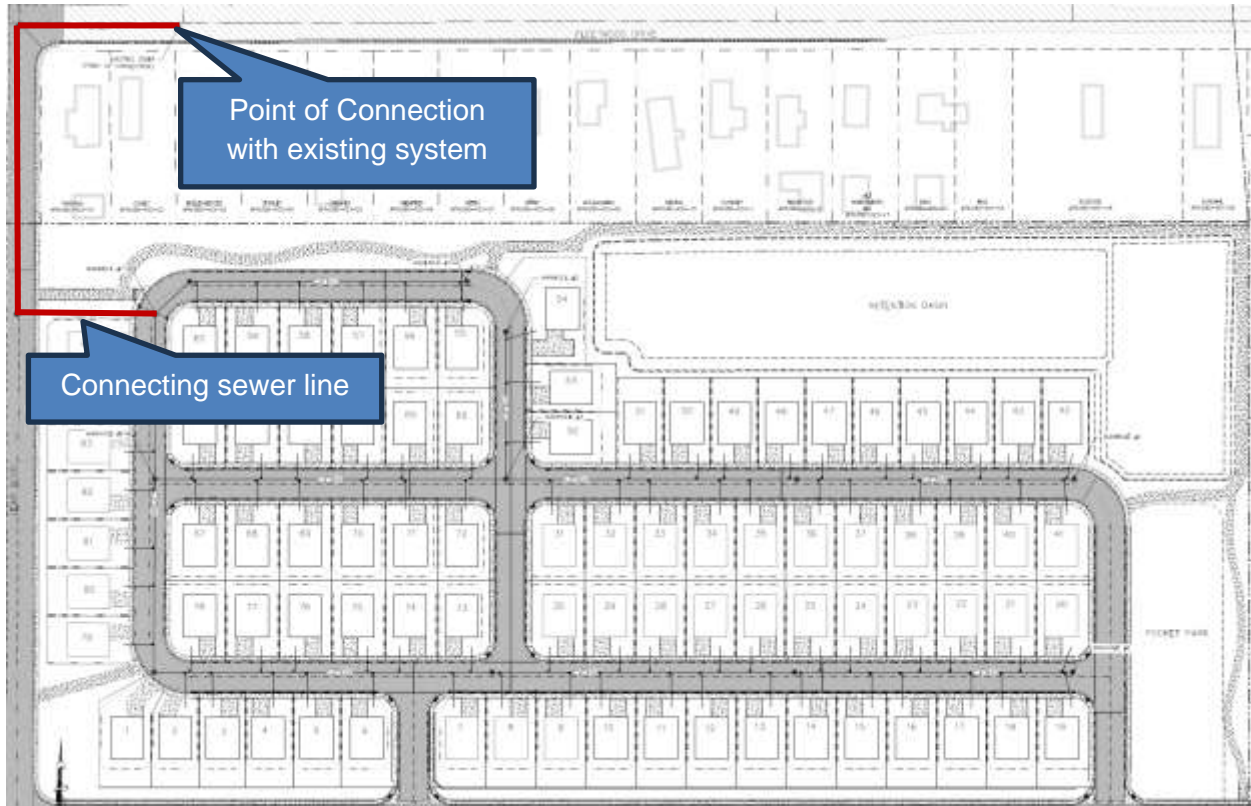


Grading Cross-section

Facilities and Services

The proposed development will be served by Lemmon Valley Elementary School, O'Brien Middle School, and North Valley's High School. The Washoe County School District reviewed this application and stated that they would not have problems accommodating students from the development.

The Lemmon Valley Wastewater Treatment Plant (LVWWTP) will serve the proposed development, and the applicant has received an intent to serve letter from the Washoe County Engineering and Capital Projects Division (Engineering Division) for sewer service. LVWWTP is fully operational and has sufficient capacity to serve the proposed development. The Engineering Division has recommended appropriate conditions regarding sewer infrastructure and has indicated no concerns. Connection to existing sewer infrastructure will be made near the northern end of Fleetwood Dr.



Water service will be provided by the Truckee Meadows Water Authority (TMWA). The applicant has stated that they will purchase water rights from TMWA or Vilder Water Company. Per comments from the Washoe County Water Rights manager, a will-serve from TMWA will be required before the approval of a final map.

Traffic

The minimum LOS for local roadway facilities is C. The traffic impact study (TIS) analyzed five intersections as identified in conjunction with the Washoe County Engineering Division: Limber Pine Dr and Lemmon Drive (#1), Pan American Drive and Budger Way (#2), Fleetwood Drive and Lemmon Dr (#3), Fleetwood Drive and Budger Way (#4), and Lear Blvd and Fleetwood Drive (#5). See the map below for intersection locations:



As the map indicates, the identified intersections assume that traffic will access Lemmon Drive through Limber Pine Drive and Fleetwood Drive. This assumption was based on conversations with the Engineering Division. Trip generation estimates for the project are as follows:

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

These estimates and their impacts on the identified intersections were added to a projected 2026 background scenario and a 2050 background scenario, resulting on the following LOS calculations:

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)
Limber Pine Drive and Lemmon Drive (#1) Two-Way Stop Control Northbound Left Eastbound Left	10.4 (B) 10.8 (B)	9.0 (A) 9.7 (A)	10.8 (B) 11.6 (B)	9.2 (A) 10.1 (A)	10.8 (B) 11.6 (B)	9.2 (A) 10.1 (B)	13.7 (B) 12.7 (B)	10.6 (B) 10.6 (B)	14.2 (B) 13.7 (C)	10.5 (B) 10.9 (B)
Budger Way and Pan American Drive (#2) Two-Way Stop Control Southbound Left Westbound	0 (A) 8.6 (A)	5.4 (A) 8.6 (A)	0 (A) 9.0 (A)	7.5 (A) 9.1 (A)	7.3 (A) 8.8 (A)	7.3 (A) 8.8 (A)	0 (A) 8.6 (A)	7.3 (A) 8.7 (A)	7.3 (A) 8.9 (A)	7.3 (A) 8.9 (A)
Fleetwood Drive and Lemmon Drive (#3) Two-Way Stop Control Northbound Left Eastbound	8.2 (A) 10.0 (B)	8.0 (A) 9.3 (A)	8.3 (A) 10.5 (B)	8.1 (A) 9.3 (A)	8.3 (A) 10.6 (A)	8.1 (A) 9.9 (A)	8.8 (A) 11.3 (B)	8.5 (A) 9.8 (A)	8.9 (A) 11.9 (B)	8.6 (A) 10.7 (A)
Fleetwood Drive and Budget Way (#4) Two-Way Stop Control Northbound Left Eastbound	0 (A) 8.9 (A)	7.3 (A) 8.8 (A)	0 (A) 8.9 (A)	7.3 (A) 8.8 (A)	7.4 (A) 8.9 (A)	7.3 (A) 9.0 (A)	0 (A) 9.1 (A)	7.3 (A) 9.0 (A)	7.4 (A) 9.2 (A)	7.4 (A) 9.2 (A)
Fleetwood Drive and Lear Boulevard (#5) Two-Way Stop Control Eastbound Westbound	0 (A) 0 (A)	0 (A) 0 (A)	0 (A) 0 (A)	0 (A) 0 (A)	0 (A) 0 (A)	0 (A) 0 (A)	0 (A) 0 (A)	0 (A) 0 (A)	0 (A) 0 (A)	0 (A) 0 (A)

As shown above, impacted roadways and intersections will remain within an acceptable level of service of A or B in the 2026 scenario and of A-C in the 2050 scenario.

Lemmon Drive was not included in the TIS beyond the intersection with Fleetwood Drive. Based on a previous version of the traffic impact study, the Regional Transportation Commission (RTC) indicated in comments that a left turn lane will need to be installed at the intersection of Lemmon and Fleetwood Drive. The Washoe County Engineering Division worked with the applicant to update their study to reflect a traffic distribution that included Limber Pine Drive. A queuing analysis indicates that a left turn lane will not be necessary at Fleetwood Drive.

The Washoe County Engineering Division has also provided Conditions of Approval regarding the improvement of Lear Blvd and Pan American Way along the northern and western boundaries of the subject site. Both roads will be improved to county standards, with pedestrian facilities installed on the perimeter of the proposed development. The sides of the roadways opposite the development will require the installation of drainage facilities as specified by the Engineering Division and to their satisfaction. These conditions can be found in Exhibit A. The Engineering Division also included a condition regarding the distance between the garage and sidewalk that will be applicable in addition to the property line setbacks.

Area Plan Evaluation

The subject parcel is located within the North Valleys Area Plan. The following are the pertinent policies from the Area Plan:

Relevant Area Plan Policies Reviewed

Policy	Brief Policy Description	Complies	Response
NV.2.1	Use of curb and gutter will be minimized. If used, must be justified by demonstrating benefit to health, safety, and welfare of the community.	Yes	Curb and gutter are proposed. Subject property is within walking distance of elementary school and is proposed to contain a pocket park/walking trails. Sidewalks necessary for public safety.
NV.2.2	Subdivisions shall minimize disruption of natural topography and vegetation when possible.	Yes	The subject property is largely flat and sparsely vegetated with brush. Disruption of topography is minimal and disturbed areas will be revegetated or otherwise stabilized.
NV.2.3	Noxious weed management plan is required.	Yes	Condition of approval 1.u.
NV.2.5	New residential subdivisions must include process to let prospective homeowners know of potential impacts of livestock.	Yes	Condition of approval 1.q.11.
NV.2.6	The Reno-Tahoe Airport Authority (RTAA) shall review application for necessary height restrictions/avigation easements.	Yes	Application sent to RTAA; no comments were received.
NV.6.1	Design standards for subdivisions in MDS regulatory zone, including open space buffer by adjacent residential development, dark-sky lighting standards, architectural and landscape standards, etc.	Yes	A minimum 50' open space buffer is proposed between the residential lots and adjacent developments with an 8' wide decomposed granite trail, greater than the 30' minimum buffer required. The buffer is significantly larger than 50' in most places. All other applicable design requirements of this section are included as Conditions of Approval 1.v.
NV.6.2	Design standards for subdivisions in HDS regulatory zone, including landscaping standards and dark-sky lighting standards.	Yes	All applicable design standard requirements of this section are included as Conditions of Approval 1.v.
NV.8.1	Maintain minimum level of service (LOS) for local transportation facilities of LOS C.	Yes	Traffic impact study shows that a minimum LOS C will be maintained on local transportation facilities. Engineering condition 3.a ensures that necessary improvements to maintain an acceptable LOS are made.
NV.10.1	The Nevada Department of Conservation and Natural Resources (DCNR) will be contacted and an archaeological investigation conducted if requested.	Yes	This application was sent to the State Historic Preservation Office (SHPO) in the DCNR. They did not indicate any concerns or need for an archaeological investigation. Their response to a previous application on this site indicates possible cultural resources in the area. Condition 1.h ensures that, if any cairn or grave is discovered, SHPO would be contacted and appropriate action taken.

NV.10.4	Interpretive displays will be provided at all parks with information regarding cultural and historic resources near the site.	Yes	Condition 1.w requires an interpretive sign at the park developed with appropriate consultation with experts.
NV.14.1	The Nevada Department of Wildlife (NDOW) will be given an opportunity to comment.	Yes	This application was sent to NDOW. They had no concerns.
NV.19.4	Development will be consistent with goals, objectives, and strategies of Swan Lake Nature Study Area Master Plan.	Yes	Proposal is consistent with the Swan Lake Nature Study Area Master Plan.

Master Plan Evaluation

The elements of the Washoe County Master Plan have several policies relevant to subdivision development. Applicable policies are analyzed below:

Land Use and Transportation Element

Policy	Brief Policy Description	Complies	Response
2.2	Allow flexibility in development proposals to vary lot size.	Yes	See analysis of Article 408.
2.4	Development reviews shall include a process to ensure that a safe and reasonable walking/biking route exists between all relevant land uses that promote these alternative transportation modes within a community or region.	Yes	110.604.25 requires a pedestrian circulation and access plan.
4.1	Maintain a balanced distribution of land use patterns to: a. Provide opportunities for a variety of land uses, facilities and services that serve present and future population; b. Promote integrated communities with opportunities for employment, housing, schools, park, civic facilities, and services essential to the daily life of the residents; and c. Allow housing opportunities for a broad socio-economic population.	Mixed	Proposed development seeks approval of only one type of housing product. Pocket park and trails are provided as part of common open space development to serve existing and future populations. Smaller parcels generally lower cost of housing.
5.2	Proposed development plans shall be required to provide the minimum service standards as described in the Land Use and Transportation Plan	Yes	Traffic LOS in the North Valleys is required to remain at a “C” level. The traffic report included with appropriate mitigations shows that local traffic will remain at LOS C or better.
5.3	New development shall not reduce the quality of service for	Yes	Traffic LOS in the North Valleys is required to remain at a “C” level. The

	existing residents and businesses nor reduce the ability of public agencies to provide quality service.		traffic report included with appropriate mitigations shows that local traffic will remain at LOS C or better.
9.1	Create, maintain, and connect usable open space for aesthetic, recreational purposes and natural resource protection	Yes	Development provides open space that will be maintained by the HOA per condition of approval 1.q.
9.5	Require the connection of open space; trail access and bikeway systems with regard to a multitude of different trail uses	Yes	Open space and trails in development connect to pedestrian facilities.
14.1	Trails and trailheads shall be planned, designed, and constructed to avoid or minimize degradation of natural and cultural resources	Yes	Condition 1.h ensures that any cairns or graves found on the subject site will be appropriately investigated and protected.
14.4	Trails shall be interconnected and provide for pedestrian, equestrian, bicycle, and motorized uses, where each use is warranted. Incompatible uses shall be appropriately separated	Yes	Open space and trails in development connect to pedestrian facilities.
17.5	The streets are narrow in width and shaded with trees. This type of street network is conducive to efficient cycling and walking.	Yes	Condition of approval 1.s ensures that streets will be appropriately shaded with trees.
18.1	Design neighborhood circulation to balance the safe and efficient movement of local pedestrian and bicycle traffic with the need to accommodate vehicular traffic.	Yes	See above regarding Pedestrian circulation and access.
20.7	Require developers to establish xeriscaping Best Management practices and discourage lawns.	Yes	Xeriscape best management practices will be required per condition 1.q.12.
25.1	Ensure that development proposals are in conformance with appropriate Master Plan policies and the relevant Area Plan policies.	Yes	See Area Plan policy analysis above.
29.3	Establish a high-quality pedestrian-oriented street environment that is visually interesting, comprehensive and varied (Photo 18).	Yes	Garages will be required to be setback from front yard 5' more than other parts of structures, encouraging building articulation and varied street environment. Landscaping required per condition 1.s will also add to visual interest of street environment. Sidewalks and trails are included in the subdivision design.
29.6	Streets and bicycle lanes within the neighborhood shall form a connected network, which	Yes	All roads in proposed subdivision are connected and have pedestrian facilities.

	disperses traffic by providing a variety of pedestrian and vehicular routes to any destination		
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Conservation Plan

Policy	Brief Policy Description	Complies	Condition of Approval/Comment
3.4	Washoe County will limit development within the Development Constraints Area in accordance with the Truckee Meadows Regional Plan.	Yes	No development is proposed in the development constraints area
10.2	Prior to the approval of a development proposal, the Washoe County Department of Community Development will require geologic reports that identify potential hazards. In areas where geologic hazards are identified, extensive soil, hydrology, and engineering studies must clearly demonstrate that the proposed development will not result in avoidable public costs and will not pose significant risk of earthquake, landslide, erosion, sedimentation and drainage problems	Yes	A geotechnical report was provided and did not identify any potential hazards.
19.1	During development review, the Washoe County Department of Community Development will require documentary evidence of compliance with the requirements of the Federal Clean Water Act and any other federal wetland regulations.	Yes	There are no regulated wetlands on the subject site. Water services will be provided by the Truckee Meadows Water Authority (TMWA).

Reviewing Agencies

The following agencies/individuals received a copy of the project application for review and evaluation.

Agencies	Sent to Review	Responded	Provided Conditions	Contact
US Postal Service	X			
BLM - Eagle Lake Field Office	X			
NDOT (Transportation)	X	X		Jeffrey Graham, jeffrey.graham@dot.nv.gov
NDOW (Wildlife)	X	X		Katie Andrie, kmandrie@ndow.org
NV Water Resources	X	X	X	Steve Shell, sshell@water.nv.gov
Washoe County Operations Division Director	X			
Washoe County Risk Management	X	X	X	Doreen Ertell, dertell@washoecounty.gov
Washoe County Sewer	X			
Washoe County Surveyor (PMs Only)	X	X	X	Wayne Handrock, whandrock@washoecounty.gov; Matt
Washoe County Traffic	X			
Washoe County Water Resource Planning	X	X		Timber Weiss, tweiss@washoecounty.gov
WCSO Law Enforcement	X	X	X	Capt. Brandon Zirkle, BZirkle@washoecounty.gov;
Washoe County Engineering (Land Development) (All Apps)	X			
HEALTH	X			
NNPH Air Quality	X			
NNPH EMS	X	X	X	James English, jenglish@nnph.org
Sparks Fire	X	X	X	Brittany Lemon, blemon@tmfpd.us
REGIONAL/CITIES	X			
Airport Authority	X			
Truckee Meadows Regional Planning	X	X		Kyle Chisholm, kyle.chisholm@washoeschools.net
Washoe County School District (All TMs)	X	X		Jim Shaffer, shafferjam51@gmail.com
Washoe-Storey Conservation District	X	X		Marquis Williams, mwilliams@rtcwashoe.com
HISTORIC PRESERVATION	X			
Nevada State Historic Preservation	X			
Pyramid Lake Paiute Tribe	X			
Reno/Sparks Indian Colony	X			
AT&T	X			
Southwest Gas (cc Paiute Pipeline)	X			

All conditions required by the contacted agencies can be found in Exhibit A, Conditions of Approval.

Staff Comment on Required Findings

WCC Section 110.608.25 of Article 608, *Tentative Subdivision Maps*, requires that all of the following findings be made to the satisfaction of the Washoe County Planning Commission before granting approval of a tentative map request. Staff has completed an analysis of the application and has determined that the proposal is in compliance with the required findings as follows.

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

Staff Comment: Per the analysis conducted in this staff report, the proposed map is consistent with the master plan, including the North Valleys Area Plan. The project implements policies of that plan by providing an open space buffer between the proposed residential lots and existing county development, and through other elements of the design.

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

Staff Comment: The design of the proposed subdivision is consistent with the Master Plan. Several Conditions of Approval are proposed to ensure consistency with the master plan, including conditions regarding cultural resources, landscaping, and open space maintenance. The design as proposed incorporates many requirements of the North Valley's Area Plan, including an open space buffer between the new residential lots and adjacent development and a decomposed granite trail.

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

Staff Comment: The subject site is physically suitable for the proposed 85-lot residential development. There are no development constraints in the proposed development area and the site is generally flat.

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

Staff Comment: The Washoe County Engineering Division reviewed the proposed development for sanitary sewer considerations and recommended appropriate Conditions of Approval to ensure appropriate infrastructure development on the site. Wastewater treatment capacity is available and adequate and will be provided by the Lemmon Valley Wastewater Treatment Plant. The subdivision therefore meets the requirements of Article 702.

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

Staff Comment: The Nevada Division of Wildlife (NDOW) reviewed this application and had no comments. There is no known habitat of any endangered plant or wildlife species on the subject parcel and the subdivision and associated improvements are not likely to cause environmental damage to those species.

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

Staff Comment: The subdivision is not likely to cause significant public health problems. There are sufficient facilities capacity for wastewater generated by the proposed development. Appropriate air quality permitting and mitigation will occur at the time of grading and construction. Pavement will be shaded by trees, reducing potential urban heat effects. No negative public health impact is anticipated.

- (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.

Staff Comment: There are no existing public access easements through the property. Lear Blvd and Pan American Way will be extended along the northern and western edges

of the property respectively. These roadways will be built by the developer per conditions of the Washoe County Engineering Division.

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

Staff Comment: Lear Blvd and Pan American Way will be extended along the northern and western edges of the property respectively, connecting the development to other local roads in the area. Two access points are provided sufficient for emergency access. Trails are proposed on the southern and eastern property boundaries and will also provide public access to surrounding lands where appropriate.

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

Staff Comment: All common areas within the development are proposed to remain the property of the developer, but conditions have been included to ensure that common areas are dedicated for common benefit only.

- (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.

Staff Comment: The design of the developed portion of the proposed subdivision is a traditional lot-and-block layout. No particular emphasis was explained in the application materials in relation to providing for future passive or natural heating or cooling opportunities.

Recommendation

After a thorough analysis and review, Tentative Subdivision Map Case Number WTM23-001 is being recommended for approval with conditions. Staff offers the following motion for the Commission's consideration.

Motion

I move that, after giving reasoned consideration to the information contained in the staff report and information received during the public hearing, the Washoe County Planning Commission approve Tentative Subdivision Map Case Number WTM23-001 for Krater Consulting Group, PC, with the condition included as Exhibit A to this matter, having made all ten findings in accordance with Washoe County Code Section 110.608.25:

- (a) Plan Consistency. That the proposed map is consistent with the Master Plan and any specific plan;
- (b) Design or Improvement. That the design or improvement of the proposed subdivision is consistent with the Master Plan and any specific plan;
- (c) Type of Development. That the site is physically suited for the type of development proposed;
- (d) Availability of Services. That the subdivision will meet the requirements of Article 702, Adequate Public Facilities Management System;
- (e) Fish or Wildlife. That neither the design of the subdivision nor any proposed improvements is likely to cause substantial environmental damage, or substantial and avoidable injury to any endangered plant, wildlife or their habitat;
- (f) Public Health. That the design of the subdivision or type of improvement is not likely to cause significant public health problems;

- (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;
- (h) Access. That the design of the subdivision provides any necessary access to surrounding, adjacent lands and provides appropriate secondary access for emergency vehicles;
- (i) Dedications. That any land or improvements to be dedicated to the County is consistent with the Master Plan; and
- (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.

Appeal Process

Planning Commission action will be effective 10 calendar days after the written decision is filed with the Secretary to the Planning Commission, unless the action is appealed to the Washoe County Board of County Commissioners, in which case the outcome of the appeal shall be determined by the Washoe County Board of County Commissioners. Any appeal must be filed in writing with the Planning and Building Division within 10 calendar days from the date the written decision is filed with the Secretary to the Planning Commission and mailed to the applicant.

Applicant: Karter Consulting Group, PC, ken@kcgnev.com

Property Owner: Learner, Brett H & Learner, Bryan A

Representatives: LC Learner, LLC, jholbrook@landcapip.com



Conditions of Approval

Tentative Subdivision Map Case Number WTM23-001

The project approved under Tentative Subdivision Map Case Number WTM23-001 shall be carried out in accordance with the conditions of approval granted by the Planning Commission on March 5, 2024. Conditions of approval are requirements placed on a permit or development by each reviewing agency. These conditions of approval may require submittal of documents, applications, fees, inspections, amendments to plans, and more. These conditions do not relieve the applicant of the obligation to obtain any other approvals and licenses from relevant authorities required under any other act.

Unless otherwise specified, all conditions related to the approval of this tentative subdivision map shall be met or financial assurance must be provided to satisfy the conditions of approval prior to the recordation of a final subdivision map. The agency responsible for determining compliance with a specific condition shall determine whether the condition must be fully completed or whether the applicant shall be offered the option of providing financial assurance. All agreements, easements, or other documentation required by these conditions shall have a copy filed with the County Engineer and the Planning and Building Division.

Compliance with the conditions of approval related to this tentative subdivision map is the responsibility of the applicant, his/her successor in interest, and all owners, assignees, and occupants of the property and their successors in interest. Failure to comply with any of the conditions imposed in the approval of the tentative subdivision map may result in the institution of revocation procedures.

Washoe County reserves the right to review and revise the conditions of approval related to this tentative subdivision map should it be determined that a subsequent license or permit issued by Washoe County violates the intent of this approval.

For the purpose of conditions imposed by Washoe County, “may” is permissive and “shall” or “must” is mandatory.

Conditions of approval are usually complied with at different stages of the proposed project. Those stages are typically:

- Prior to recordation of a final map.
- Prior to obtaining a final inspection and/or a certificate of occupancy.
- Prior to the issuance of a business license or other permits/licenses.
- Some “conditions of approval” are referred to as “operational conditions.” These conditions must be continually complied with for the life of the project.

The Washoe County Commission oversees many of the reviewing agencies/departments with the exception of the following agencies.

- **The DISTRICT BOARD OF HEALTH, through Northern Nevada Public Health (NNPH), has jurisdiction over public health matters. Any conditions set by NNPH must be appealed to the District Board of Health.**

STANDARD CONSIDERATIONS FOR SUBDIVISIONS
Nevada Revised Statutes 278.349

Pursuant to NRS 278.349, when contemplating action on a tentative subdivision map, the governing body, or the planning commission if it is authorized to take final action on a tentative map, shall consider:

- (a) Environmental and health laws and regulations concerning water and air pollution, the disposal of solid waste, facilities to supply water, community or public sewage disposal and, where applicable, individual systems for sewage disposal;
- (b) The availability of water which meets applicable health standards and is sufficient for the reasonably foreseeable needs of the subdivision;
- (c) The availability and accessibility of utilities;
- (d) The availability and accessibility of public services such as schools, police and fire protection, transportation, recreation and parks;
- (e) Conformity with the zoning ordinances and master plan, except that if any existing zoning ordinance is inconsistent with the master plan, the zoning ordinance takes precedence;
- (f) General conformity with the governing body's master plan of streets and highways;
- (g) The effect of the proposed subdivision on existing public streets and the need for new streets and highways to serve the subdivision;
- (h) Physical characteristics of the land such as floodplain, slope and soil;
- (i) The recommendations and comments of those entities reviewing the tentative map pursuant to NRS 278.330 and 278.335; and
- (j) The availability and accessibility of fire protection, including, but not limited to, the availability and accessibility of water and services for the prevention and containment of fires, including fires in wild lands.

FOLLOWING ARE CONDITIONS OF APPROVAL REQUIRED BY THE REVIEWING AGENCIES. EACH CONDITION MUST BE MET TO THE SATISFACTION OF THE ISSUING AGENCY.

Washoe County Planning and Building Division

1. The following conditions are requirements of the Planning and Building Division, which shall be responsible for determining compliance with these conditions.

Contact Name – Kat Oakley, Planner, 775.328.3628, koakley@washoecounty.gov

- a. The applicant shall demonstrate substantial conformance to the plans approved as part of this tentative subdivision map.
- b. The applicant shall include a condition response memorandum with each subsequent permit application. That memorandum shall list each condition of approval, shall provide a narrative describing how each condition has been complied with, and the location of the information showing compliance with each condition within the improvement plan set that has been submitted.
- c. The subdivision shall be in substantial conformance with the provisions of Washoe County Development Code Article 604, Design Requirements, and Article 608, Tentative Subdivision Maps.
- d. Final maps and final construction drawings shall comply with all applicable statutes, ordinances, rules, regulations and policies in effect at the time of submittal of the tentative

map or, if requested by the developer and approved by the applicable agency, those in effect at the time of approval of the final map.

- e. In accordance with NRS 278.360 and Article 610 of the Washoe County Development Code, the sub-divider shall present to Washoe County a final map, prepared in accordance with the tentative map, for the entire area for which a tentative map has been approved, or one of a series of final maps, each covering a portion of the approved tentative map, within four years after the date of approval of the tentative map or within two years of the date of approval for subsequent final maps. The date of the signing of the final map by the Director of Planning and Building constitutes the presentation date of the final map. On subsequent final maps, that date may be extended by two years if the extension request is received prior to the expiration date.
- f. Final maps shall be in substantial compliance with all plans and documents submitted with and made part of this tentative map request, as may be amended by action of the final approving authority.
- g. All final maps shall contain the applicable portions of the following jurat:

THE TENTATIVE MAP FOR **WTM23-001 for Learner-Lemmon** WAS APPROVED BY THE WASHOE COUNTY PLANNING COMMISSION ON **February 6, 2024**.

THIS FINAL MAP, **MAP NAME AND UNIT/PHASE #**, MEETS ALL APPLICABLE STATUTES, ORDINANCES AND CODE PROVISIONS, IS IN SUBSTANTIAL CONFORMANCE WITH THE TENTATIVE MAP, AND ALL CONDITIONS HAVE BEEN MET.

[Omit the following paragraph if this is the first and last (only) final map.]

THE NEXT FINAL MAP FOR **WTM23-001** MUST BE APPROVED AND ACCEPTED FOR RECORDATION AND SIGNED BY THE PLANNING AND BUILDING DIRECTOR ON OR BEFORE THE EXPIRATION DATE, THE ____ DAY OF _____, 20____, OR AN EXTENSION OF TIME FOR THE TENTATIVE MAP MUST BE APPROVED BY THE WASHOE COUNTY PLANNING COMMISSION ON OR BEFORE SAID DATE.

THIS FINAL MAP IS APPROVED AND ACCEPTED FOR RECORDATION **THIS ____ DAY OF _____, 20____** BY THE PLANNING AND BUILDING DIRECTOR. THE OFFER OF DEDICATION FOR **STREETS, SEWERS, ETC.** IS REJECTED AT THIS TIME, BUT WILL REMAIN OPEN IN ACCORDANCE WITH NRS CHAPTER 278.

KELLY MULLIN, DIRECTOR
PLANNING AND BUILDING

Jurat for ALL SUBSEQUENT FINAL MAPS

THE TENTATIVE MAP for **WTM23-001** APPROVED *<denied>* BY THE WASHOE COUNTY PLANNING COMMISSION ON *<date>*. **[If the TM**

had been appealed to the BCC --- Add:] THE WASHOE COUNTY COMMISSION APPROVED THE TENTATIVE MAP ON APPEAL ON <date>.

THE FIRST FINAL MAP FOR THIS TENTATIVE MAP WAS APPROVED AND ACCEPTED FOR RECORDATION ON <date of Planning and Building Director's signature on first final map>. [Omit the following if second map.] THE MOST RECENTLY RECORDED FINAL MAP, <subdivision name and prior unit/phase #> FOR THIS TENTATIVE MAP WAS APPROVED AND ACCEPTED FOR RECORDATION ON <date of Planning and Building Director's signature on most recent final map> [If an extension has been granted after that date – add the following]: A TWO YEAR EXTENSION OF TIME FOR THE TENTATIVE MAP WAS APPROVED BY THE WASHOE COUNTY PLANNING COMMISSION ON <date of last Planning Commission action to extend the tentative map>.

THIS FINAL MAP, <subdivision name and unit/phase #>, MEETS ALL APPLICABLE STATUTES, ORDINANCES AND CODE PROVISIONS; IS IN SUBSTANTIAL CONFORMANCE WITH THE TENTATIVE MAP; AND ALL CONDITIONS HAVE BEEN MET.

[Omit the following paragraph if this is the last final map.]

THE NEXT FINAL MAP FOR WTM23-001 MUST BE APPROVED AND ACCEPTED FOR RECORDATION AND SIGNED BY THE PLANNING AND BUILDING DIRECTOR ON OR BEFORE THE EXPIRATION DATE, THE ____ DAY OF _____, 20____, <add two years to the current expiration date unless that date is more than two years away> OR AN EXTENSION OF TIME FOR THE TENTATIVE MAP MUST BE APPROVED BY THE WASHOE COUNTY PLANNING COMMISSION ON OR BEFORE SAID DATE.

<Insert Merger and Re-subdivision option as applicable>

THIS FINAL MAP IS APPROVED AND ACCEPTED FOR RECORDATION THIS ____ DAY OF _____, 20____ BY THE WASHOE COUNTY PLANNING AND BUILDING DIRECTOR. THE OFFER OF DEDICATION FOR <streets, sewers> IS REJECTED AT THIS TIME, BUT WILL REMAIN OPEN IN ACCORDANCE WITH NRS CHAPTER 278.

KELLY MULLIN, DIRECTOR,
PLANNING AND BUILDING DIVISION

- h. A note shall be placed on all grading plans and construction drawings stating:

NOTE

Should any cairn or grave of a Native American be discovered during site development, work shall temporarily be halted at the

specific site and the Sheriff's Office as well as the State Historic Preservation Office of the Department of Conservation and Natural Resources shall be immediately notified per NRS 383.170.

- i. The final map shall designate faults that have been active during the Holocene epoch of geological time, and the final map shall contain the following note:

NOTE

No habitable structures shall be located on a fault that has been active during the Holocene epoch of geological time.

- j. The developer shall be required to participate in any applicable General Improvement District or Special Assessment District formed by Washoe County.
- l. The developer and all successors shall direct any potential purchaser of the site to meet with the Planning and Building Division to review conditions of approval prior to the final sale of the site. Any subsequent purchasers of the site shall notify the Planning and Building Division of the name, address, telephone number and contact person of the new purchaser within thirty (30) days of the final sale.
- m. Construction activities shall be limited to the hours between 7am to 7pm, Monday through Saturday only. Any construction machinery activity or any noise associated with the construction activity are also limited to these hours.
- n. A certification letter or series of letters by a registered landscape architect or other persons permitted to prepare landscaping and irrigation plans pursuant to N.R.S. 623A shall be submitted to and approved by Planning and Building. All landscaping shall meet the planting and irrigation standards of Article 412 and the letter(s) shall certify that such standards are met. Any landscaping plans and the letter shall be wet-stamped.
- o. All landscaping shall be maintained in accordance with the provisions found in Section 110.412.75, Maintenance. A three-year maintenance plan shall be submitted by a licensed landscape architect registered in the State of Nevada to the Planning and Building Division, prior to a Certificate of Occupancy. The plan shall be wet-stamped.
- p. Failure to comply with the conditions of approval shall render this approval null and void.
- q. Conditions, covenants, and restrictions (CC&Rs), including any supplemental CC&Rs, shall be submitted to Planning and Building staff for review and subsequent forwarding to the District Attorney for review. The final CC&Rs shall be signed and notarized by the owner(s) and submitted to Planning and Building with the recordation fee prior to the recordation of the final map. The CC&Rs shall require all phases and units of the subdivision approved under this tentative map to be subject to the same CC&Rs. Washoe County shall be made a party to the applicable provisions of the CC&Rs to the satisfaction of the District Attorney's Office. Said CC&Rs shall specifically address the potential for liens against the properties and the individual property owners' responsibilities for the funding of maintenance, replacement, and perpetuation of the following items, at a minimum:
 - 1. Maintenance of public access easements, common areas, and common open spaces. Provisions shall be made to monitor and maintain, for a period of three (3) years regardless of ownership, a maintenance plan for the common open space

- area. The maintenance plan for the common open space area shall, as a minimum, address the following:
- a. Vegetation management;
 - b. Watershed management;
 - c. Debris and litter removal;
 - d. Fire access and suppression; and
 - e. Maintenance of public access and/or maintenance of limitations to public access.
2. All drainage facilities and roadways not maintained by Washoe County shall be privately maintained and perpetually funded by the homeowners association.
 3. All open space shall be identified as common open space on the final map and shall be privately maintained and perpetually funded by the homeowners association. The deed to the open space and any common area shall reflect perpetual dedication for that purpose. The maintenance of the common open space, common areas and related improvements shall be addressed in the CC&Rs to the satisfaction of the District Attorney's Office.
 4. The project, if adjacent to undeveloped land shall maintain a fire fuel break of a minimum 30 feet in width until such time as the adjacent land is developed.
 5. Locating habitable structures on potentially active (Holocene) fault lines, whether noted on the recorded map or disclosed during site preparation, is prohibited.
 6. All outdoor lighting on buildings and streets within the subdivision shall be down-shielded.
 7. No motorized vehicles shall be allowed on the platted common area.
 8. Washoe County will not assume responsibility for maintenance of the private street system of the development nor will Washoe County accept the streets for dedication to Washoe County unless the streets meet those Washoe County standards in effect at the time of offer for dedication.
 9. Mandatory solid waste collection.
 10. Fence material (if any), height, and location limitations, and re-fencing standards. Replacement fence must be compatible in materials, finish and location of existing fence.
 11. Notice must be provided of the existence of livestock and the potential for noise and odor in the entirety of the North Valleys Planning Area, including the subject site.
 12. Xeriscape best management practices will be established and lawns discouraged.
- r. The common open space owned by the homeowners association shall be noted on the final map as "common open space" and the related deed of conveyance shall specifically provide for the preservation of the common open space in perpetuity. The deed to the open space and common area shall reflect perpetual dedication for that purpose.
 - s. To fulfill 2010 Master Plan policy LUT.17.5, at least 1 canopy tree shall be planted within each front yard within the tentative map. These trees will be reflected in final landscaping plans and meet the planting standards of WCC 110.412.60. All front yard trees shall be installed before a certificate of occupancy is issued for each residential lot.

- t. All disturbed slopes shall be revegetated with a seed mix reviewed by the Washoe Storey Conservation District and approved by planning.
- u. Prior to the issuance of building or grading permits, the applicant shall prepare a noxious weed management plan in consultation with the Washoe Storey Conservation District.
- v. To fulfill policies NV.6.1 and NV 6.2 of the North Valleys Area Plan, the following standards are applicable to proposed development within the subdivision and will be assessed at the building permit stage of review:
 - 1. Setbacks and driveway design shall be varied throughout the development.
 - 2. No more than 25% of total residential units shall be constructed in the same architectural elevation.
 - 3. All exterior lighting must show how it is consistent with current best practice “dark-sky” standards. Exterior lighting fixtures mounted on the homes or units shall be no higher than the line of the first story eave or, where no eave exists, no higher than 15 feet above finished grade. Lights shall be shielded to prevent light spillage onto adjacent properties or streets.
 - 4. Landscape designs must be established that emphasize the use of native vegetation, with non-native and atypical vegetation integrated sparingly into any landscaped area. Homebuilders must offer at least two separate xeriscape options.
- w. An interpretive sign shall be placed in the pocket park that provides information regarding cultural and historic resources near the site. This sign will be developed in consultation with a professional archaeologist. Any applicable tribal agencies will also be contacted and consulted in the development of the interpretive sign.
- x. A bike rack shall be installed in the pocket park.

Washoe County Engineering and Capital Projects

- 2. The following conditions are requirements of the Engineering and Capital Projects, which shall be responsible for determining compliance with these conditions.

Contact Name – Robert Wimer, P.E., 775.328.2059, rwimer@washoecounty.gov

- a. Final maps and final construction drawings shall comply with all applicable statutes, ordinances, rules, regulations, and policies in effect at the time of submittal of the final map and subsequent individual building permits.
- b. Prior to acceptance of public improvements and release of any financial assurances, the developer shall provide as-built construction drawings in an acceptable digital format prepared by a civil engineer and/or surveyor licensed in the State of Nevada.
- c. The developer shall provide written approval from the U.S. Postal Service (USPS) concerning the installation and type of mail delivery facilities. The system, other than individual mailboxes, must be shown on the project construction plans and installed as part of the onsite improvements.
- d. A complete set of construction improvement drawings, including an onsite grading plan, shall be submitted to the County Engineer for approval prior to finalization of any portion of the tentative map. Grading shall comply with best management practices (BMPs) and shall include detailed plans for grading and drainage on each lot, erosion control (including BMP locations and installation details), slope stabilization and mosquito abatement. Placement or disposal of any excavated material shall be indicated on the grading plan.

- e. All open space shall be identified as common open space on the final map. A note on the final map shall indicate that all common open spaces shall be privately maintained and perpetually funded by the Homeowners Association. The maintenance of the common open space shall also be addressed in the CC&Rs to the satisfaction of the District Attorney's Office.
- f. Any existing easements, facilities, or utilities that conflict with the development shall be relocated, quitclaimed, and/or abandoned, as appropriate.
- g. Any easement documents recorded for the project shall include an exhibit map that shows the location and limits of the easement in relationship to the project.
- h. Add the following note to the civil improvement plans: "All public utilities shall be placed underground, except in the case where underground placement of utilities is shown not to be feasible, in which case the County Engineer may approve exceptions to this requirement."
- i. With each affected final map, provide written approval from all utility provider(s) for any improvements located within their easement or under or over their facilities.
- j. Appropriate easements shall be granted for any existing or new utilities, with each affected final map.
- k. A 10-foot public utility easement (PUE), a 10-foot Washoe County easement for traffic control signage, plowed snow storage and sidewalks, and a 10-foot United States Postal Service facilities easement shall be granted adjacent to all rights-of-way.
- l. Slope easements shall be provided for areas of cut or fill that fall outside of the subdivision boundary.
- m. Prior to recordation of the affected final map, an ASTM E1527-13 Phase I Environmental Site Assessment shall be submitted for all parcels or right-of-way dedicated to Washoe County. If Phase 1 assessment results in recommendations including the requirement to complete next phase assessment, the applicant shall be required to follow the recommendations. The County must review and approve the recommendations in Phase 1 to determine the next steps.
- n. The conditional approval of this tentative map shall not be construed as final approval of the drainage facilities shown on the tentative map. Final approval of the drainage facilities will occur during the final map review.
- o. Prior to finalization of the first final map, a master hydrology/hydraulic report and a master storm drainage plan shall be submitted for approval.
- p. Prior to finalization of any portion of the tentative map, a final, detailed hydrology/hydraulic report for that unit shall be submitted.
- q. Any increase in storm water runoff flow rate resulting from the development based on the 5-year and 100-year storm(s) shall be retained onsite.
- r. Prior to the finalization of the first final map, an operation and maintenance plan for the maintenance of the project's storm water basin(s) and drainage channel(s) shall be developed in accordance with the Washoe County Code Article 421. The Operation and Maintenance Plan shall be incorporated into the project CC&Rs.
- s. The 100-year floodplain boundaries and flood elevations shall appear on each final map. If the floodplain boundary has been conditionally changed by a Federal Emergency Management Agency (FEMA) Conditional Letter of Map Amendment (CLMA) or

Conditional Letter of Map Revision (CLOMR), the date of that letter and a note to that effect shall appear on the final map.

- t. Prior to placement of any fill material within a FEMA Special Flood Hazard Area, an approved Conditional Letter of Map Revision (CLOMR) shall be obtained from FEMA.
- u. The following note shall be added to each final map; "All properties, regardless of if they are located within or outside of a FEMA Special Flood Hazard Area, may be subject to flooding. The property owner is required to maintain all drainage easements and natural drainages and not perform or allow unpermitted and unapproved modifications to the property that may have detrimental impacts to surrounding properties."
- v. Drainage swales that drain more than two lots are not allowed to flow over the curb into the street; these flows shall be intercepted by an acceptable storm drain inlet and routed into the storm drain system.
- w. A note on the final map shall indicate that all drainage facilities not maintained by Washoe County shall be perpetually maintained by a homeowner's association. The maintenance and funding of private drainage facilities shall also be addressed in the CC&Rs to the satisfaction of the District Attorney's Office and County Engineer.
- x. Maintenance access and drainage easements shall be provided for all existing and proposed drainage facilities. All drainage facilities located within the Common Open Space shall be constructed with an adjoining minimum 12-foot-wide all-weather access road. Maintenance access road(s) shall be provided to the bottom of proposed storm water basins as well as over County owned and maintained storm drainage facilities.
- y. With the submittal of the first Final Map, a Low Impact Development (LID) design including plans and details shall be prepared for the project and implemented with each final map. The LID plan shall be prepared to minimize the increased volume of runoff and prevention of non-storm water discharge (nuisance flow) from the site. The LID design shall determine the viability of individual lot LID concepts. Any retained volume shall be designed to percolate in accordance with Northern Nevada Public Health requirements. Percolation testing and a gravel backfilled infiltration gallery shall be included in the design of the retention/detention basin.
- z. The project shall mitigate the increased storm water volume produced from the development based on the 100 year–10-day storm event. Alternatives for mitigation include excavation of material within or adjacent to the existing flood zone creating additional effective flood volume or other means subject to approval by the County Engineer.
- aa. The project shall mitigate the loss of Swan Lake flood storage volume for any portion of the development where fill is placed within areas located at or below the current FEMA designated 100-year water surface elevation or future revised 100-year flood plain elevation at a rate of 1.3:1 and as approved by the County Engineer. Flood storage volume mitigation shall address both the above ground storage and below ground storage lost due to filling within the floodplain. A geotechnical analysis and study shall be performed to estimate in-situ soil porosity and infiltration rates which can be used to estimate sub-surface storage volume lost.
- bb. The project shall mitigate the loss of Swan Lake flood pool surface area for any portion of the development (including Lemmon Drive right-of-way improvements) where fill is placed within areas located at or below the current FEMA designated 100-year water surface elevation or future revised 100-year flood plain elevation approved by the County Engineer. Prior to the approval of the first final map, it shall be demonstrated that the

volume of storm water lost due to evaporation for the post-development condition shall be greater than or equal to the pre-development condition.

- cc. A note shall be added to the final map and similar language contained with the project CC&Rs stating that owners of parcels created by a final map within this development shall not protest the formation of a Storm Water Utility District, Flood Control District, Special Assessment District, or other funding mechanism which is approved and created for the purpose of storm water and/or flood water management.
 - dd. Offsite drainage and common open space drainage draining onto residential lots shall be perpetuated around the residential lots and drainage facilities capable of passing a 100-year storm shall be constructed with the subdivision improvements to perpetuate the storm water runoff to improved or natural drainage facilities. The maintenance of these drainage facilities shall be addressed in the CC&Rs to the satisfaction of the District Attorney's Office.
3. The following conditions are requirements of the Engineering and Capital Projects, which shall be responsible for determining compliance with these conditions.

Contact Name – Mitchell Fink, P.E., 775.328.2050, mfink@washoecounty.gov

- a. The adjacent streets, Lear Boulevard and Pan American Way, shall be constructed to the following minimum standards and to the approval of the County Engineer:
 - 1. Lear Boulevard – Street section shall include a 29-foot minimum crowned pavement section with concrete curb, gutter, and 5-foot sidewalk along the southern side of the roadway and exclude curb, gutter, and sidewalk along the northern side of the roadway.
 - 2. Pan American Way – Street section shall include a 29-foot minimum crowned pavement section with concrete curb, gutter, and 4-foot sidewalk along the eastern side of the roadway and a concrete curb and gutter section, without sidewalk, along the western side of the roadway.
- b. Street names shall be reviewed and approved by the Regional Street Naming Coordinator and the approval letter shall be submitted with each final map application.
- c. Proposed landscaping and/or fencing along street rights-of-way and within median islands shall be designed to meet American Association of State Highway and Transportation Officials (AASHTO) sight distances and safety guidelines. No tree shall overhang the curb line of any public street.
- d. An Encroachment and Excavation Permit shall be obtained from Washoe County Engineering and Capital Projects Division for any utilities or other encroachments/excavations constructed within existing County roadways/rights-of-way.
- e. Streetlights shall be constructed to Washoe County standards at locations to be determined at the final design stage.
- f. AASHTO clear zones shall be determined for all streets adjacent to retaining walls or slopes steeper than 3:1. If a recoverable or traversable clear zone cannot be provided, an analysis to determine if barriers are warranted shall be submitted for approval.
- g. Sidewalks shall be constructed on both sides of all streets within the development.
- h. Appropriate curve warning signs and/or a lower speed limit shall be determined and posted on all horizontal roadway curves that do not meet the standard Washoe County 25-mile per hour design speed.

- i. Appropriate transitions shall be provided between the existing and proposed improvements at all proposed street connections. This may include removal of existing pavement.
- j. Any streetlights that do not meet Washoe County standards shall be placed outside Washoe County right-of-way. These streetlights shall be private, and the CC&Rs shall indicate operation and maintenance of the streetlights shall be the responsibility of the Homeowners Association. The County Engineer and the District Attorney's Office shall determine compliance with this condition.
- k. A 20' setback is required between the back of the sidewalk and the front of the garage.
- l. Prior to final map recordation, all right-of-way for Lear Boulevard and Pan American Way required to support the proposed improvements, including drainage ditches, shall be offered for dedication to Washoe County.

Washoe County Utilities

4. The following conditions are requirements of Utilities, which shall be responsible for determining compliance with these conditions.

Contact Name—Alexander Mayorga, P.E., 775.328.2313, amayorga@washoecounty.gov

- a. All sanitary sewer connection fees shall be paid to Washoe County prior to issuance of Certificate of Occupancy for any building permits. Documentation of receipt of payment to Washoe County shall be provided to Washoe County with application of building permits.
- b. A sanitary sewer will-serve from Washoe County shall be obtained prior to approval of each subdivision map.
- c. The applicant shall conform to all conditions imposed by intergovernmental agreements required to provide sewer service to the subject project, and, if required, be a party to any such agreements.
- d. All fees shall be paid in accordance with Washoe County Ordinance prior to the approval of each final map.
- e. Improvement plans shall be submitted and approved by Washoe County Community Services Department ("CSD") prior to approval of the final map. They shall comply with Washoe County Design Standards and be designed by a Professional Engineer licensed to practice in the State of Nevada.
- f. The applicant shall submit an electronic copy of the street and lot layout for each final map at initial submittal time. The files must be in a format acceptable to Washoe County.
- g. The applicant shall construct and/or provide financial assurance for the construction of any on-site and off-site sanitary sewer collection systems prior to signature on each final map. The financial assurance must be in a form and amount acceptable to the CSD.
- h. Approved improvement plans shall be used for the construction of on-site and off-site sanitary sewer collection system. The CSD will be responsible for inspecting the construction of the sanitary sewer collection system.
- i. The sanitary sewer collection system must be offered for dedication to Washoe County along with the recordation of each final map.
- j. Easements and real property for all sanitary sewer collection systems and appurtenances shall be in accordance with Washoe County Design Standards and offered for dedication to Washoe County along with the recordation of each final map.

- k. A master sanitary sewer report for the entire tentative map shall be prepared and submitted by the applicant's engineer at the time of the initial submittal for the first final map which addresses:
 - 1. the estimated sewage flows generated by this project,
 - 2. projected sewage flows from potential or existing development within tributary areas,
 - 3. the impact on capacity of existing infrastructure,
 - 4. slope of pipe, invert elevation and rim elevation for all manholes,
 - 5. proposed collection line sizes, on-site and off-site alignment, and half-full velocities.
- l. No Certificate of Occupancy will be issued until all the sewer collection facilities necessary to serve each final map have been completed, accepted and engineer prepared as-built drawings are delivered to the utility. As-built drawings must be in a format acceptable to Washoe County.
- m. No permanent structures (including rockery or retaining walls, buildings, etc.) shall be allowed within or upon any County maintained utility easement.
- n. A minimum 30-foot sanitary sewer and access easement shall be dedicated to Washoe County over any facilities not located in a dedicated right of way.
- o. A minimum 12-foot wide all weather sanitary sewer access road with appropriate through put or turn around design to the satisfaction of the County Engineer shall be constructed to facilitate access to off-site sanitary sewer manholes.
- p. The developer will be responsible to fund the design and construction of major infrastructure such as pump structures, controls, telemetry and appurtenances, lift stations, force mains, sewer mains, interceptor, and wastewater treatment facilities necessary to accommodate the project.
- q. The CSD shall reserve the right to over-size or realign the design of infrastructure to accommodate future development as determined by accepted engineering calculations.

Northern Nevada Public Health

- 5. The following conditions are requirements of Northern Nevada Public Health, which shall be responsible for determining compliance with these conditions. The District Board of Health has jurisdiction over all public health matters in Northern Nevada Public Health. Any conditions set by NNPH must be appealed to the District Board of Health.

Contact Name – Jim English, EHS Supervisor, 775.900.7239, jenglish@nnph.org

- a. Prior to any final grading or other civil site improvements, an approved Water Project must be submitted with all grading, civil improvements, and building plans. The approved Water Project must demonstrate the water system will conform to the State of Nevada Design, Construction, Operation and Maintenance Regulations for Public Water Systems, NAC Chapter 445A, and the State of Nevada Regulations Governing Review of Plans for Subdivisions, Condominiums, and Planned Unit Developments, NAC 278.400 and 278.410.
- b. Mass grading may proceed after approval of the Tentative Map and upon review and approval by NNPH of a grading permit application.
 - i. The final map submittal shall include a Truckee Meadows Water Authority annexation and discovery with the mass grading permit.

- ii. Any changes to previously approved improvement plans made prior to final map submittal shall be resubmitted for review per NAC 278.290 and NAC 445A.66715.
- c. The following must be submitted with the final map application for review and approval:
 - i. Construction plans for the development must be submitted to NNPH for approval. The construction drawings must conform to the State of Nevada Regulations Concerning Review of Plans for Subdivisions, Condominiums and Planned Unit Developments, and any applicable requirements of NNPH.
 - ii. Prior to approval of a final map for the referenced project and pursuant to NAC 278.370, the developer must have the design engineer or a third person submit to the satisfaction of NNPH an inspection plan for periodic inspection of the construction of the systems for water supply and community sewerage. The inspection plan must address the following and be included with the final map submittal:
 - 1. The inspection plan must indicate if an authorized agency, city or county is performing inspection of the construction of the systems for water supply and community sewerage;
 - 2. The design engineer or third person shall, pursuant to the approved inspection plan, periodically certify in writing to NNPH that the improvements are being installed in accordance with the approved plans and recognized practices of the trade;
 - 3. The developer must bear the cost of the inspections; and
 - 4. The developer may select a third-person inspector but the selection must be approved by NNPH or local agency. A third-person inspector must be a disinterested person who is not an employee of the developer.
 - iii. Prior to final map approval, a "Commitment for Service" letter from the sewage purveyor committing sewer service for the entire proposed development shall be submitted to NNPH. The letter must indicate that the community facility for treatment will not be caused to exceed its capacity and the discharge permit requirements by this added service, or the facility will be expanded to provide for the added service.
 - 1. A copy of this letter must be included with the final map submittal.
 - iv. Prior to final map approval, a "Commitment for Water Service" letter from the water purveyor committing adequate water service for the entire proposed development must be submitted to NNPH.
 - 1. A copy of this letter must be included with the final map submittal.
 - v. The final map submittal must include a letter from Nevada Division of Environmental Protection to NNPH certifying their approval of the final map.
 - vi. The final map application packet must include a letter from Division of Water Resources certifying their approval of the final map.
 - vii. Pursuant to NAC 278.360 of the State of Nevada Regulations Governing Review of plans for Subdivision, Condominiums, and Planned Unit Developments, the development of the subdivision must be carried on in a manner which will minimize water pollution.
 - 1. Construction plans shall clearly show how the subdivision will comply with NAC 278.360.
 - viii. Prior to approval of the final map, the applicant must submit to NNPH the final map fee.

- ix. All grading and development activities must be in compliance with the DBOH Regulations Governing the Prevention of Vector-Borne Diseases.

State Division of Water Resources

- 6. The following conditions are requirements of the Regional Transportation Commission, which shall be responsible for determining compliance with these conditions. The Regional Transportation Commission is directed and governed by its own board. Therefore, any conditions set by the Regional Transportation Commission must be appealed to that board.

Contact Name – Steve Shell, Water Rights Specialist II, 775.684.2836, sshell@water.nv.gov

- a. A will serve from Truckee Meadows Water Authority and a mylar map of the proposed project must be presented to the State Engineer for approval and signed through his office prior to development.

Truckee Meadows Fire Protection District

- 7. The following condition is a requirement of the Truckee Meadows Fire Protection District, which shall be responsible for determining compliance with this condition.

Contact Name – Brittany Lemon, Fire Captain, 775.326.6079, blemon@tmfpd.us

- a. This project shall meet and comply with all requirements of currently adopted TMFPD fire codes, ordinances, and standards at the time of construction to include infrastructure for fire apparatus access roads and water supply. <https://tmfpd.us/fire-code/>

*** End of Conditions ***

Date: February 13, 2024

To: Kat Oakley, Planner

From: Janelle K. Thomas, P.E., C.F.M., Senior Licensed Engineer
Robert Wimer, P.E., Licensed Engineer

Re: **WTM23-001** (85 Lots)

GENERAL PROJECT DISCUSSION

Washoe County Engineering staff has reviewed the above referenced application. The proposed project consists of an 85-lot subdivision and is located on approximately 19.926 acres at the southeast corner of Pan American Drive and the future Lear Boulevard. The parcel numbers include the following: 080-461-08. The Engineering and Capital Projects Division recommends approval subject to the following comments and conditions of approval, which supplement applicable County Code and are based upon our review of the site and the tentative map application prepared by Krater Consulting Group, PC.

Sanitary sewer service will be provided by Washoe County.

For questions related to sections below, please see the staff's name referenced.

GRADING (COUNTY CODE 110.438)

Contact Information: Robert Wimer, P.E. (775) 328-2059

Conditions:

1. Final maps and final construction drawings shall comply with all applicable statutes, ordinances, rules, regulations, and policies in effect at the time of submittal of the approval of the final map and subsequent individual building permits.
2. Prior to acceptance of public improvements and release of any financial assurances, the developer shall provide as-built construction drawings in an acceptable digital format prepared by a civil engineer and/or surveyor licensed in the State of Nevada.
3. The developer shall provide written approval from the U.S. Postal Service (USPS) concerning the installation and type of mail delivery facilities. The system, other than individual mailboxes, must be shown on the project construction plans and installed as part of the onsite improvements.
4. A complete set of construction improvement drawings, including an onsite grading plan, shall be submitted to the County Engineer for approval prior to finalization of any portion of the tentative map. Grading shall comply with best management practices (BMPs) and shall include detailed plans for grading and drainage on each lot, erosion control (including BMP locations and installation details), slope stabilization and mosquito abatement. Placement or disposal of any excavated material shall be indicated on the grading plan.

5. All open space shall be identified as common area on the final map. A note on the final map shall indicate that all common areas shall be privately maintained and perpetually funded by the Homeowners Association. The maintenance of the common areas shall also be addressed in the CC&Rs to the satisfaction of the District Attorney's Office.
6. Any existing easements, facilities, or utilities that conflict with the development shall be relocated, quitclaimed, and/or abandoned, as appropriate.
7. Any easement documents recorded for the project shall include an exhibit map that shows the location and limits of the easement in relationship to the project.
8. Add the following note to the civil improvement plans: "All public utilities shall be placed underground, except in the case where underground placement of utilities is shown not to be feasible, in which case the County Engineer may approve exceptions to this requirement."
9. With each affected final map, provide written approval from all utility provider(s) for any improvements located within their easement or under or over their facilities.
10. Appropriate easements shall be granted for any existing or new utilities, with each affected final map.
11. A 10-foot public utility easement (PUE), a 10-foot Washoe County easement for traffic control signage, plowed snow storage and sidewalks, and a 10-foot United States Postal Service facilities easement shall be granted adjacent to all rights-of-way.
12. Slope easements shall be provided for areas of cut or fill that fall outside of the subdivision boundary.
13. Prior to recordation of the affected final map, an ASTM E1527-13 Phase I Environmental Site Assessment shall be submitted for all parcels or right-of-way dedicated to Washoe County. If Phase 1 assessment results in recommendations including the requirement to complete next phase assessment, the applicant shall be required to follow the recommendations. The County must review and approve the recommendations in Phase 1 to determine the next steps.

DRAINAGE (COUNTY CODE 110.416, 110.418, 110.420, and 110.421)

Contact Information: Robert Wimer, P.E. (775) 328-2059

Conditions:

1. The conditional approval of this tentative map shall not be construed as final approval of the drainage facilities shown on the tentative map. Final approval of the drainage facilities will occur during the final map review.
2. Prior to finalization of the first final map, a master hydrology/hydraulic report and a master storm drainage plan shall be submitted for approval.
3. Prior to finalization of any portion of the tentative map, a final, detailed hydrology/hydraulic report for that unit shall be submitted.
4. Any increase in storm water runoff flow rate resulting from the development based on the 5-year and 100-year storm(s) shall be retained onsite.
5. Prior to the finalization of the first final map, an operation and maintenance plan for the maintenance of the project's storm water basin(s) and drainage channel(s) shall be

developed in accordance with the Washoe County Code Article 421. The Operation and Maintenance Plan shall be incorporated into the project CC&Rs.

6. The 100-year floodplain boundaries and flood elevations shall appear on each final map. If the floodplain boundary has been conditionally changed by a Federal Emergency Management Agency (FEMA) Conditional Letter of Map Amendment (CLMA) or Conditional Letter of Map Revision (CLOMR), the date of that letter and a note to that effect shall appear on the final map.
7. Prior to placement of any fill material within a FEMA Special Flood Hazard Area, an approved Conditional Letter of Map Revision (CLOMR) shall be obtained from FEMA.
8. The following note shall be added to each final map; "All properties, regardless of if they are located within or outside of a FEMA Special Flood Hazard Area, may be subject to flooding. The property owner is required to maintain all drainage easements and natural drainages and not perform or allow unpermitted and unapproved modifications to the property that may have detrimental impacts to surrounding properties."
9. Drainage swales that drain more than two lots are not allowed to flow over the curb into the street; these flows shall be intercepted by an acceptable storm drain inlet and routed into the storm drain system.
10. A note on the final map shall indicate that all drainage facilities not maintained by Washoe County shall be perpetually maintained by a homeowner's association. The maintenance and funding of private drainage facilities shall also be addressed in the CC&Rs to the satisfaction of the District Attorney's Office and County Engineer.
11. Maintenance access and drainage easements shall be provided for all existing and proposed drainage facilities. All drainage facilities located within the Common Area shall be constructed with an adjoining minimum 12-foot-wide all-weather access road. Maintenance access road(s) shall be provided to the bottom of proposed storm water basins as well as over County owned and maintained storm drainage facilities.
12. With the submittal of the first Final Map, a Low Impact Development (LID) design including plans and details shall be prepared for the project and implemented with each final map. The LID plan shall be prepared to minimize the increased volume of runoff and prevention of non-storm water discharge (nuisance flow) from the site. The LID design shall determine the viability of individual lot LID concepts. Any retained volume shall be designed to percolate in accordance with Northern Nevada Public Health requirements. Percolation testing and a gravel backfilled infiltration gallery shall be included in the design of the retention/detention basin.
13. The project shall mitigate the increased storm water volume produced from the development based on the 100 year–10-day storm event. Alternatives for mitigation include excavation of material within or adjacent to the existing flood zone creating additional effective flood volume or other means subject to approval by the County Engineer.
14. The project shall mitigate the loss of Swan Lake flood storage volume for any portion of the development where fill is placed within areas located at or below the current FEMA designated 100-year water surface elevation or future revised 100-year flood plain elevation at a rate of 1.3:1 and as approved by the County Engineer. Flood storage volume mitigation shall address both the above ground storage and below ground storage lost due to filling within the floodplain. A geotechnical analysis and study shall be

performed to estimate in-situ soil porosity and infiltration rates which can be used to estimate sub-surface storage volume lost.

15. The project shall mitigate the loss of Swan Lake flood pool surface area for any portion of the development (including Lemmon Drive right-of-way improvements) where fill is placed within areas located at or below the current FEMA designated 100-year water surface elevation or future revised 100-year flood plain elevation approved by the County Engineer. Prior to the approval of the first final map, it shall be demonstrated that the volume of storm water lost due to evaporation for the post-development condition shall be greater than or equal to the pre-development condition.
16. A note shall be added to the final map and similar language contained with the project CC&Rs stating that owners of parcels created by a final map within this development shall not protest the formation of a Storm Water Utility District, Flood Control District, Special Assessment District, or other funding mechanism which is approved and created for the purpose of storm water and/or flood water management.
17. Offsite drainage and common area drainage draining onto residential lots shall be perpetuated around the residential lots and drainage facilities capable of passing a 100-year storm shall be constructed with the subdivision improvements to perpetuate the storm water runoff to improved or natural drainage facilities. The maintenance of these drainage facilities shall be addressed in the CC&Rs to the satisfaction of the District Attorney's Office.

TRAFFIC AND ROADWAY (COUNTY CODE 110.436)

Contact Information: Mitchell Fink, P.E. (775) 328-2050

Conditions:

1. All roadway improvements necessary to serve the project shall be designed and constructed to the latest County standards and specifications. The applicant shall comply with Washoe County Development Code Section 110.436.20 (e) Streets Adjacent to Property Boundaries. The adjacent streets, Lear Boulevard and Pan American Way, shall be constructed to the following minimum standards and the County Engineer, with consideration of input from the City of Reno, shall determine compliance with this condition:
 - Lear Boulevard – Street section shall include a 29-foot minimum crowned pavement section with concrete curb, gutter, and 5-foot sidewalk along the southern side of the roadway and exclude curb, gutter, and sidewalk along the northern side of the roadway.
 - Pan American Way – Street section shall include a 29-foot minimum crowned pavement section with concrete curb, gutter, and 4-foot sidewalk along the eastern side of the roadway and a concrete curb section without sidewalk along the western side of the roadway.
2. Street names shall be reviewed and approved by the Regional Street Naming Coordinator and the approval letter shall be submitted with each final map application.
3. Proposed landscaping and/or fencing along street rights-of-way and within median islands shall be designed to meet American Association of State Highway and Transportation Officials (AASHTO) sight distances and safety guidelines. No tree shall overhang the curb line of any public street.

4. An Encroachment and Excavation Permit shall be obtained from Washoe County Engineering and Capital Projects Division for any utilities or other encroachments/excavations constructed within existing County roadways/rights-of-way.
5. Streetlights shall be constructed to Washoe County standards at locations to be determined at the final design stage.
6. AASHTO clear zones shall be determined for all streets adjacent to retaining walls or slopes steeper than 3:1. If a recoverable or traversable clear zone cannot be provided, an analysis to determine if barriers are warranted shall be submitted for approval.
7. Sidewalks shall be constructed on both sides of all streets within the development.
8. Appropriate curve warning signs and/or a lower speed limit shall be determined and posted on all horizontal roadway curves that do not meet the standard Washoe County 25-mile per hour design speed.
9. Appropriate transitions shall be provided between the existing and proposed improvements at all proposed street connections. This may include removal of existing pavement.
10. Any streetlights that do not meet Washoe County standards shall be placed outside Washoe County right-of-way. These streetlights shall be private, and the CC&Rs shall indicate operation and maintenance of the streetlights shall be the responsibility of the Homeowners Association. The County Engineer and the District Attorney's Office shall determine compliance with this condition.
11. A 20' setback is required between the back of the sidewalk and the front of the garage.
12. The project traffic impact study shall be updated to provide future conditions analysis for 2050 projections without project traffic and plus project traffic and recommended mitigations to the satisfaction of the County Engineer.
13. Prior to final map recordation, all right-of-way for Lear Boulevard and Pan American Way required to support the proposed improvements, including drainage ditches, shall be offered for dedication to Washoe County.

UTILITIES (County Code 422 & Sewer Ordinance)

Contact Information: Alexander Mayorga, P.E. (775) 328-2313

Conditions:

1. All sanitary sewer connection fees shall be paid to the City of Reno prior to issuance of Certificate of Occupancy for any building permits. Documentation of receipt of payment to City of Reno shall be provided to Washoe County with application of building permits.
2. A sanitary sewer will-serve from Washoe County shall be obtained prior to approval of each subdivision map.
3. The applicant shall conform to all conditions imposed by intergovernmental agreements required to provide sewer service to the subject project, and, if required, be a party to any such agreements.
4. All fees shall be paid in accordance with Washoe County Ordinance prior to the approval of each final map.

5. Improvement plans shall be submitted and approved by CSD prior to approval of the final map. They shall comply with Washoe County Design Standards and be designed by a Professional Engineer licensed to practice in the State of Nevada.
6. The applicant shall submit an electronic copy of the street and lot layout for each final map at initial submittal time. The files must be in a format acceptable to Washoe County.
7. The applicant shall construct and/or provide financial assurance for the construction of any on-site and off-site sanitary sewer collection systems prior to signature on each final map. The financial assurance must be in a form and amount acceptable to the CSD.
8. Approved improvement plans shall be used for the construction of on-site and off-site sanitary sewer collection system. The CSD will be responsible for inspecting the construction of the sanitary sewer collection system.
9. The sanitary sewer collection system must be offered for dedication to Washoe County along with the recordation of each final map.
10. Easements and real property for all sanitary sewer collection systems and appurtenances shall be in accordance with Washoe County Design Standards and offered for dedication to Washoe County along with the recordation of each final map.
11. A master sanitary sewer report for the entire tentative map shall be prepared and submitted by the applicant's engineer at the time of the initial submittal for the first final map which addresses:
 - a. the estimated sewage flows generated by this project,
 - b. projected sewage flows from potential or existing development within tributary areas,
 - c. the impact on capacity of existing infrastructure,
 - d. slope of pipe, invert elevation and rim elevation for all manholes,
 - e. proposed collection line sizes, on-site and off-site alignment, and half-full velocities.
12. No Certificate of Occupancy will be issued until all the sewer collection facilities necessary to serve each final map have been completed, accepted and engineer prepared as-built drawings are delivered to the utility. As-built drawings must be in a format acceptable to Washoe County.
13. No permanent structures (including rockery or retaining walls, buildings, etc.) shall be allowed within or upon any County maintained utility easement.
14. A minimum 30-foot sanitary sewer and access easement shall be dedicated to Washoe County over any facilities not located in a dedicated right of way.
15. A minimum 12-foot wide all weather sanitary sewer access road with appropriate through put or turn around design to the satisfaction of the County Engineer shall be constructed to facilitate access to off-site sanitary sewer manholes.
16. The developer will be responsible to fund the design and construction of major infrastructure such as pump structures, controls, telemetry and appurtenances, lift stations, force mains, sewer mains, interceptor, and wastewater treatment facilities necessary to accommodate the project.
17. The CSD shall reserve the right to over-size or realign the design of infrastructure to accommodate future development as determined by accepted engineering calculations.

Oakley, Katherine

From: Lemon, Brittany
Sent: Thursday, October 19, 2023 11:29 AM
To: Oakley, Katherine
Cc: Way, Dale
Subject: WTM23-001 (Learner-Lemon) Conditions of Approval

Hi Kat,

“This project shall meet and comply with all requirements of currently adopted TMFPD fire codes, ordinances, and standards at the time of construction to include infrastructure for fire apparatus access roads and water supply.”

<https://tmfpd.us/fire-code/>.

Thank you!

Brittany Lemon

Fire Captain - Fire Prevention | Truckee Meadows Fire & Rescue

blemon@tmfpd.us | Office: 775.326.6079 | Cell: 775.379.0584

3663 Barron Way, Reno, NV 89511



"Committed to excellence, service, and the protection of life and property in our community"

November 17, 2023

Washoe County Community Services
Planning and Development Division

RE: Learner-Lemon; 080-461-08
Tentative Map Application; WTM23-001

Dear Washoe County Planning Staff:

Northern Nevada Public Health (NNPH), Environmental Health Services Division has reviewed the above referenced project. Approval by NNPH is subject to the following conditions:

Tentative Map Review and Final Map Conditions per NAC 278

NNPH requires the following conditions to be completed prior to review and approval of any final map:

1. Prior to any final grading or other civil site improvements, an approved Water Project must be submitted with all grading, civil improvements, and building plans. The approved Water Project must demonstrate the water system will conform to the State of Nevada Design, Construction, Operation and Maintenance Regulations for Public Water Systems, NAC Chapter 445A, and the State of Nevada Regulations Governing Review of Plans for Subdivisions, Condominiums, and Planned Unit Developments, NAC 278.400 and 278.410.
2. Mass grading may proceed after approval of the Tentative Map and upon review and approval by NNPH of a grading permit application.
 - a. The final map submittal shall include a Truckee Meadows Water Authority annexation and discovery with the mass grading permit.
 - b. Any changes to previously approved improvement plans made prior to final map submittal shall be resubmitted for review per NAC 278.290 and NAC 445A.66715.

NNPH requires the following to be submitted with the final map application for review and approval:

1. Construction plans for the development must be submitted to NNPH for approval. The construction drawings must conform to the State of Nevada Regulations Concerning Review of Plans for Subdivisions, Condominiums and Planned Unit Developments, and any applicable requirements of NNPH.
2. Prior to approval of a final map for the referenced project and pursuant to NAC 278.370, the developer must have the design engineer or a third person submit to the satisfaction of NNPH an inspection plan for periodic inspection of the construction of the systems for water supply and

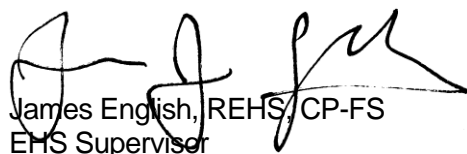


community sewerage. The inspection plan must address the following and be included with the final map submittal:

- a. The inspection plan must indicate if an authorized agency, city or county is performing inspection of the construction of the systems for water supply and community sewerage;
 - b. The design engineer or third person shall, pursuant to the approved inspection plan, periodically certify in writing to NNPH that the improvements are being installed in accordance with the approved plans and recognized practices of the trade;
 - c. The developer must bear the cost of the inspections; and
 - d. The developer may select a third-person inspector but the selection must be approved by NNPH or local agency. A third-person inspector must be a disinterested person who is not an employee of the developer.
3. Prior to final map approval, a "Commitment for Service" letter from the sewage purveyor committing sewer service for the entire proposed development shall be submitted to NNPH. The letter must indicate that the community facility for treatment will not be caused to exceed its capacity and the discharge permit requirements by this added service, or the facility will be expanded to provide for the added service.
 - a. A copy of this letter must be included with the final map submittal.
 4. Prior to final map approval, a "Commitment for Water Service" letter from the water purveyor committing adequate water service for the entire proposed development must be submitted to NNPH.
 - a. A copy of this letter must be included with the final map submittal.
 5. The final map submittal must include a letter from Nevada Division of Environmental Protection to NNPH certifying their approval of the final map.
 6. The final map application packet must include a letter from Division of Water Resources certifying their approval of the final map.
 7. Pursuant to NAC 278.360 of the State of Nevada Regulations Governing Review of plans for Subdivision, Condominiums, and Planned Unit Developments, the development of the subdivision must be carried on in a manner which will minimize water pollution.
 - a. Construction plans shall clearly show how the subdivision will comply with NAC 278.360.
 8. Prior to approval of the final map, the applicant must submit to NNPH the final map fee.
 9. All grading and development activities must be in compliance with the DBOH Regulations Governing the Prevention of Vector-Borne Diseases.

If you have any questions or would like clarification regarding the foregoing, please contact Jim English, EHS Supervisor at jenglish@washoecounty.us regarding all NNPH comments.

Sincerely,



James English, REHS, CP-FS
EHS Supervisor
Environmental Health Services
Northern Nevada Public Health

Oakley, Katherine

From: Graham, Jeffrey <jeffrey.graham@dot.nv.gov>
Sent: Monday, November 27, 2023 4:11 PM
To: Oakley, Katherine
Subject: RE: October Agency Review Memo II

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

Hi Kat,

Thanks for reaching out about the development. I wouldn't say NDOT has no concerns as we all know the Lemmon Valley interchange has capacity issues, but due to the location and relatively small impact to NDOT right-of-way, NDOT has no comments for the development.

Happy Holidays!

Thank you,



Jeff Graham
Traffic Engineer
District II

Nevada Department of Transportation
O 775.834.8382 M 775.443.7462
e jeffrey.graham@dot.nv.gov | w dot.nv.gov

From: Sinnott, Mark <msinnott@dot.nv.gov>
Sent: Wednesday, November 22, 2023 10:21 AM
To: Graham, Jeffrey <jeffrey.graham@dot.nv.gov>
Subject: Fw: October Agency Review Memo II

From: Oakley, Katherine <KOakley@washoecounty.gov>
Sent: Wednesday, November 22, 2023 9:41 AM
To: Hawvichorst, Michelle <mhawvichorst@dot.nv.gov>; Sinnott, Mark <msinnott@dot.nv.gov>
Subject: FW: October Agency Review Memo II

Hello,

I am emailing to follow up on Item 5, WTM23-001 Learner Lemmon Tentative Map. I believe you received this agency review memo, but apologies if that wasn't the case. I just want to double check that you have no comments on this development. I realize it is relatively small, but traffic concerns always come up in this area, so confirmation that you have no concerns would be appreciated.

Thank you, and have a great thanksgiving.

Best,



Kat Oakley

Planner, Planning & Building Division | Community Services Department

koakley@washoecounty.gov | Direct Line: 775.328.3628

My working hours: Monday-Friday 8:00am to 5:00pm

Visit us first online: www.washoecounty.gov/csd

Planning Division: 775.328.6100 | Planning@washoecounty.gov

CSD Office Hours: Monday-Friday 8:00am to 4:00pm

1001 East Ninth Street, Reno, NV 89512



Have some kudos to share about a Community Services Department employee or experience?

[Submit a Nomination](#)

From: Roman, Brandon <BRoman@washoecounty.gov>

Sent: Wednesday, October 18, 2023 2:31 PM

To: Huntley, Scott <SHuntley@washoecounty.gov>; Giesinger, Chad <CGiesinger@washoecounty.gov>; Crump, Eric S <ECrump@washoecounty.gov>; Pekar, Faye-Marie L. <FPekar@washoecounty.gov>; Ertell, Doreen <DErtell@washoecounty.gov>; Mayorga, Alexander R. <AMayorga@washoecounty.gov>; Fink, Mitchell <MFink@washoecounty.gov>; Rigdon, Kimberly <KRigdon@washoecounty.gov>; Weiss, Timber A. <TWeiss@washoecounty.gov>; Beard, Blaine <BB Beard@washoecounty.gov>; Zirkle, Brandon <BZirkle@washoecounty.gov>; Wimer, Robert <RWimer@washoecounty.gov>; Rosa, Genine <GRosa@nnph.org>; Restori, Joshua <JRestori@nnph.org>

Cc: Smith, Dwayne E. <DESmith@washoecounty.gov>; Hein, Stephen <SHein@washoecounty.gov>; Thomas, Janelle K. <JKThomas@washoecounty.gov>; Gustafson, Jennifer <jgustafson@da.washoecounty.gov>; EHS Plan Review <EHSPlanReview@nnph.org>; West, Walt <WWest@washoecounty.gov>; Mullin, Kelly D. <KMullin@washoecounty.gov>; Lloyd, Trevor <TLloyd@washoecounty.gov>; Albarran, Adriana <AAlbarran@washoecounty.gov>; Emerson, Kathy <KEmerson@washoecounty.gov>; Oakley, Katherine <KOakley@washoecounty.gov>

Subject: October Agency Review Memo II

Good afternoon,

Please remember to send any agency review responses/comments directly to the Planner for the case, rather than replying to me.

Please find the attached **Agency Review Memo I** with cases received in **October** by Washoe County Community Services Department, Planning and Building Division.

You've each been asked to review the applications for the items indicated below. The item descriptions and links to the applications are provided in the memo. **Comments due for all items by October 25, 2023.** Thank you all.

~~~~~

Scott (Building) – **Items 1, 2 and 4**

Chad (GIS) – **Items 3 and 4**

Eric (Operations) – **Item 4**

Faye-Marie (Parks & Open Space) – **Item 5**

Doreen (Risk Management) – **Item 4**

Alex (Sewer) – **Items 2 and 5**

Stephen (Street Naming) – **Item 5**

Mitch (Traffic) – **Items 2 and 5**

Kim (Water Resource Planning) – **Items 4 and 5**

Timber (Water Rights) – **All Items**

Captains Beard and Zirkle (WCSO) – **Item 4**

Rob (Land Development) – **All Items**

Dwayne/Stephen/Janelle (Engineering) – **All Items**

Genine and Josh (Air Quality) – **Items 2, 4 and 5**

EMS – **Items 2, 4 and 5**

David/Jim/Wes (Environmental Health) – **All Items**

Sincerely,



**Brandon Roman**  
**Office Support Specialist, Planning & Building Division | Community Services Department**

[broman@washoecounty.gov](mailto:broman@washoecounty.gov) | Direct Line: 775.328.3606

My working hours: Monday-Friday 7:00am to 3:30pm

Visit us first online: [www.washoecounty.gov/csd](http://www.washoecounty.gov/csd)

Planning Division: 775.328.6100 | [Planning@washoecounty.gov](mailto:Planning@washoecounty.gov)

CSD Office Hours: Monday-Friday 8:00am to 4:00pm

1001 East Ninth Street, Reno, NV 89512



Have some kudos to share about a Community Services Department employee or experience?

[Submit a Nomination](#)

## Oakley, Katherine

---

**From:** Roman, Brandon  
**Sent:** Thursday, October 19, 2023 8:40 AM  
**To:** Oakley, Katherine; Olander, Julee  
**Subject:** FW: October Agency Review Memo II

From NDOW for 360 Specific Plan and Learner Lemmon

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**From:** Katie Andrlle <kmandrle@ndow.org>  
**Sent:** Thursday, October 19, 2023 8:24 AM  
**To:** Roman, Brandon <BRoman@washoecounty.gov>  
**Subject:** RE: October Agency Review Memo II

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

Hi Brandon,

NDOW does not have any comments on these items.

Thank you,

Katie

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**From:** Roman, Brandon <BRoman@washoecounty.gov>  
**Sent:** Wednesday, October 18, 2023 2:33 PM  
**Subject:** October Agency Review Memo II

**WARNING** - This email originated from outside the State of Nevada. Exercise caution when opening attachments or clicking links, especially from unknown senders.

Good afternoon,

Please remember to send agency review responses/comments directly to the Planner for the case, rather than replying to me.

Please find the attached **Agency Review Memo II** with cases received in **October** by Washoe County Community Services Department, Planning and Building Division. You've been asked to review the application for **Items #4 and #5**. The item description and link to the application are provided in the memo. **Comments are due by October 25, 2023.**

Sincerely,



**Brandon Roman**

**Office Support Specialist, Planning & Building Division | Community Services Department**

[broman@washoecounty.gov](mailto:broman@washoecounty.gov) | Direct Line: 775.328.3606

My working hours: Monday-Friday 7:00am to 3:30pm

Visit us first online: [www.washoecounty.gov/csd](http://www.washoecounty.gov/csd)

Planning Division: 775.328.6100 | [Planning@washoecounty.gov](mailto:Planning@washoecounty.gov)

CSD Office Hours: Monday-Friday 8:00am to 4:00pm

1001 East Ninth Street, Reno, NV 89512



Have some kudos to share about a Community Services Department employee or experience?

[Submit a Nomination](#)



## REGIONAL TRANSPORTATION COMMISSION

Metropolitan Planning • Public Transportation & Operations • Engineering & Construction

Metropolitan Planning Organization of Washoe County, Nevada

January 18, 2024

Kat Oakley  
Community Services Department  
County of Washoe  
1001 East Ninth Street  
Reno, NV 89512

RE: Learner Lemmon Residential Subdivision – Application for a Tentative Map - RTC Comment Letter

Dear Ms. Oakley

RTC appreciates the opportunity to comment on the proposed Learner Lemmon Residential Subdivision project located at 0 Pan American Drive in Washoe County. RTC is committed to working with County staff, developers, and other stakeholders across Washoe County on transit-supportive developments that grow ridership, reduce driving, and promote walkable neighborhoods.

The purpose of this letter is to provide recommendations based on the project's proximity to any RTC existing or upcoming roadway improvements.

### *Traffic Impact Study*

The traffic study indicates that traffic generated by the proposed development will access the project area from the regional road network via Fleetwood Drive at Lemmon Drive. Lemmon Drive is designated as an Arterial by the 2050 Regional Transportation Plan (RTP).

There is currently no left turn lane from Lemmon Drive at this location. The background plus project volumes for the left turn movement from northbound Lemmon Drive onto Fleetwood Drive exceed safe volume thresholds for left turn movements directly from an uncontrolled arterial. The RTC recommends the applicant construct a left turn lane with length appropriate to accommodate vehicle deceleration from Lemmon Drive and storage of queueing vehicles as described by the AASHTO Policy on Geometric Design of Highways and Streets.

The applicant should also be aware that RTC is scheduled to begin construction on the Lemmon Drive Segment 2 Project in 2025, which will widen Lemmon Drive from two lanes to four lanes north of Fleetwood Drive.

### *Active Transportation & Transit Orientation*

The RTP emphasizes community revitalization projects that encourage walking and bicycling. In order to enhance walkability, and bikeability, the County should consider requiring installation of wide sidewalks, pedestrian lighting, ADA-compliant curb ramps, and easily accessible bike racks as a condition of project approval.

Additionally, RTC encourages the incorporation of pedestrian-oriented building design strategies such as placing of building facades along the sidewalk, locating surface-level parking in alleys and away from walkways when possible, and strategically including entrances and windows facing the street for convenient pedestrian access.



RTC looks forward to reviewing any further documents related to this project. If you have any questions regarding this response, please contact Marquis Williams by phone at 775-332-0174, by email at [MWilliams@rtcwashoe.com](mailto:MWilliams@rtcwashoe.com), or by mail at the following address:

RTC Development Review  
1105 Terminal Way, Suite 211  
Reno, NV 89502

Sincerely,

A handwritten signature in black ink, appearing to read "Marquis Williams". The signature is fluid and cursive, with the first name "Marquis" written in a larger, more prominent script than the last name "Williams".

Marquis Williams  
Senior Technical Planner

## Oakley, Katherine

---

**From:** Chisholm, Kyle W <Kyle.Chisholm@WashoeSchools.net>  
**Sent:** Wednesday, November 22, 2023 9:45 AM  
**To:** Oakley, Katherine; Rodela, Brett A  
**Subject:** RE: [EXTERNAL] RE: October Agency Review Memo II

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

Hi Kat,

WCSD doesn't have any comments at this time and we don't anticipate any issues accommodating students possibly generated by this development.

Happy holidays,

### Kyle Chisholm

School Property Planning Manager  
Washoe County School District, Capital Projects  
Office: (775) 789-3810  
Email: [Kyle.Chisholm@WashoeSchools.Net](mailto:Kyle.Chisholm@WashoeSchools.Net)



---

**From:** Oakley, Katherine <KOakley@washoecounty.gov>  
**Sent:** Wednesday, November 22, 2023 9:38 AM  
**To:** Rodela, Brett A <Brett.Rodela@WashoeSchools.net>; Chisholm, Kyle W <Kyle.Chisholm@WashoeSchools.net>  
**Subject:** [EXTERNAL] RE: October Agency Review Memo II

Hello,

Hopefully you all received the attached agency review memo (although it appears maybe you didn't). I am emailing about comments on item 5, WTM23-001 Learner-Lemmon. If you are able to get me comments by Monday, December 4<sup>th</sup>, that would be much appreciated. I apologize if this is the first you're hearing of this; it's possible you were missed in the initial request for comments.

Thanks, and have a good thanksgiving,



### Kat Oakley

Planner, Planning & Building Division | Community Services Department  
[koakley@washoecounty.gov](mailto:koakley@washoecounty.gov) | Direct Line: 775.328.3628

My working hours: Monday-Friday 8:00am to 5:00pm

Visit us first online: [www.washoecounty.gov/csd](http://www.washoecounty.gov/csd)

Planning Division: 775.328.6100 | [Planning@washoecounty.gov](mailto:Planning@washoecounty.gov)

CSD Office Hours: Monday-Friday 8:00am to 4:00pm

1001 East Ninth Street, Reno, NV 89512

## Oakley, Katherine

---

**From:** Steve Shell <sshell@water.nv.gov>  
**Sent:** Thursday, October 19, 2023 3:14 PM  
**To:** Oakley, Katherine  
**Subject:** WTM23-001

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

The subject property lies within the Truckee Meadows Water Authority service area. Municipal water service is subject to Truckee Meadows Water Authority rules and regulations and approval by the Office of the State Engineer regarding water quantity and availability. A Will Serve from Truckee Meadows Water Authority and a mylar map of the proposed project must be presented to the State Engineer for approval and signed through his office prior to development.

As of June 1, 2021, the Office of the State Engineer is open to the public. Please call 684-2800 upon arrival and a representative will come down to escort you to our office.

### Steve Shell

Water Rights Specialist II  
Department of Conservation and Natural Resources  
Nevada Division of Water Resources  
901 S. Stewart St., Suite 2002  
Carson City, NV 89701  
[sshell@water.nv.gov](mailto:sshell@water.nv.gov)  
(O) 775-684-2836 | (F) 775-684-2811



NEVADA DIVISION  
OF WATER RESOURCES



Nevada Department of  
**CONSERVATION &  
NATURAL RESOURCES**

Connect with us:





## Washoe-Storey Conservation District

Bret Tyler Chairmen  
Jim Shaffer Treasurer  
Cathy Canfield Storey app  
Jean Herman Washoe app

1365 Corporate Blvd.  
Reno NV 89502  
775 857-8500 ext. 131  
nevadaconservation.com

October 23, 2023

Washoe County Community Services Department

C/O Kat Oakley, Planner

1001 E Ninth Street, Bldg. A

Reno, NV 89512

R: WTM23-001 Learner-Lemon

Dear Kat,

In reviewing the open space tentative map for an 87-lot development, the Conservation District has the following comments.

The applicant stated in the application that they have substantial experience for revegetation as why the District does not need to review the seed mix. The District has experience and knowledge and would like to review the revegetation plan.

With the import of 26,500 cubic yards of fill, the District requires an onsite noxious weed plan to prevent the transfer of weed seed species from establishing on this project.

Class 4 large canopy trees are proposed planted fifty feet on center on Pan American Drive. The District recommends a mix of evergreen and deciduous trees planted twenty feet on center Pan American Driven.

The District supports the Pocket Parks with a xeriscape theme including trails for the Community.

To reassure ground water recharge, we encourage the retention basin designed with two feet wide by three feet deep infiltration trench the length of the basin.

The District recommends soft earth tone colors for the roofs and homes exteriors to balance with the natural features of the development.

With the project drainage and sewage effluent eventually discharged to Swan Lake, the accumulative impact mitigated to start resolving the issues at Swan Lake.

Thank you for providing us with the opportunity to review the project and any questions call us (775)-750-8272.

Sincerely,

Jim Shaffer

Date: October 19, 2023

To: Kat Oakley, Planner

From: Timber Weiss, P.E., Licensed Engineer

Re: Tentative Subdivision Map Case Number WTM23-001 (Learner-Lemon)  
APN 080-461-08

### **GENERAL PROJECT DISCUSSION**

For hearing, discussion, and possible action to approve a common open space tentative subdivision map to allow the subdivision of one parcel totaling 19.92 acres into an 87-lot common open space development.

***The Community Services Department (CSD) recommends approval of this project with the following Water Rights conditions:***

The application indicates that Municipal water service will be provided by the Truckee Meadows Water Authority (TMWA). The application also contains a TMWA discovery dated May 2, 2023.

Conditions:

There are no water rights conditions for approval of this tentative map. Following the possible approval of the tentative subdivision map, the potential future project will require water supply and sewer service which in turn will require the expansion of water and sewer services and annexation to TMWA service area.

Valid water and sewer will serve letters will be required prior to approval of the final map proposed by this tentative map.

**Public Notice**

Washoe County Code requires that public notification for a special use permit must be mailed to a minimum of 30 separate property owners within a minimum 500-foot radius of the subject property a minimum of 10 days prior to the public hearing date. A notice setting forth the time, place, purpose of hearing, a description of the request and the land involved was sent within a 500-foot radius of the subject property. A total of 116 separate property owners were noticed a minimum of 10 days prior to the public hearing date.



**Public Notice Map**  
**Case Number WTM23-001**

**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  
1165 Mount Rose Street  
Reno, Nevada 89509  
(775) 815-9561

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.

|                                                                                                 |                 |                                       |                 |
|-------------------------------------------------------------------------------------------------|-----------------|---------------------------------------|-----------------|
| <b>Project Information</b>                                                                      |                 | Staff Assigned Case No.: _____        |                 |
| Project Name:                                                                                   |                 |                                       |                 |
| Project Description:                                                                            |                 |                                       |                 |
| Project Address:                                                                                |                 |                                       |                 |
| Project Area (acres or square feet):                                                            |                 |                                       |                 |
| Project Location (with point of reference to major cross streets <b>AND</b> area locator):      |                 |                                       |                 |
| Assessor's Parcel No.(s):                                                                       | Parcel Acreage: | Assessor's Parcel No.(s):             | Parcel Acreage: |
|                                                                                                 |                 |                                       |                 |
| Indicate any previous Washoe County approvals associated with this application:<br>Case No.(s). |                 |                                       |                 |
| <b>Applicant Information</b> (attach additional sheets if necessary)                            |                 |                                       |                 |
| <b>Property Owner:</b>                                                                          |                 | <b>Professional Consultant:</b>       |                 |
| Name:                                                                                           |                 | Name:                                 |                 |
| Address:                                                                                        |                 | Address:                              |                 |
| Zip:                                                                                            |                 | Zip:                                  |                 |
| Phone:                                                                                          |                 | Phone:                                |                 |
| Fax:                                                                                            |                 | Fax:                                  |                 |
| Email:                                                                                          |                 | Email:                                |                 |
| Cell:                                                                                           |                 | Cell:                                 |                 |
| Other:                                                                                          |                 | Other:                                |                 |
| Contact Person:                                                                                 |                 | Contact Person:                       |                 |
| <b>Applicant/Developer:</b>                                                                     |                 | <b>Other Persons to be Contacted:</b> |                 |
| Name:                                                                                           |                 | Name:                                 |                 |
| Address:                                                                                        |                 | Address:                              |                 |
| Zip:                                                                                            |                 | Zip:                                  |                 |
| Phone:                                                                                          |                 | Phone:                                |                 |
| Fax:                                                                                            |                 | Fax:                                  |                 |
| Email:                                                                                          |                 | Email:                                |                 |
| Cell:                                                                                           |                 | Cell:                                 |                 |
| Other:                                                                                          |                 | Other:                                |                 |
| Contact Person:                                                                                 |                 | Contact Person:                       |                 |
| <b>For Office Use Only</b>                                                                      |                 |                                       |                 |
| Date Received:                                                                                  |                 | Initial:                              |                 |
| County Commission District:                                                                     |                 | Planning Area:                        |                 |
| CAB(s):                                                                                         |                 | Master Plan Designation(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)?

3. Density and lot design:

|                                              |  |
|----------------------------------------------|--|
| a. Acreage of project site                   |  |
| b. Total number of lots                      |  |
| c. Dwelling units per acre                   |  |
| d. Minimum and maximum area of proposed lots |  |
| e. Minimum width of proposed lots            |  |
| f. Average lot size                          |  |

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

|                                 |  |
|---------------------------------|--|
| a. Sewer Service                |  |
| b. Electrical Service           |  |
| c. Telephone Service            |  |
| d. LPG or Natural Gas Service   |  |
| e. Solid Waste Disposal Service |  |
| f. Cable Television Service     |  |
| g. Water Service                |  |

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:

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

d. Proposed yard setbacks if different from standard:

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

f. Identify all proposed non-residential uses:

g. Improvements proposed for the common open space:

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

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

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

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

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

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?

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

|                                                         |                             |
|---------------------------------------------------------|-----------------------------|
| <input checked="" type="checkbox"/> Yes (Washoe County) | <input type="checkbox"/> No |
|---------------------------------------------------------|-----------------------------|

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

|                              |                                        |                           |
|------------------------------|----------------------------------------|---------------------------|
| <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> 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?

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):

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

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:

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

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:

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?

[Empty text box]

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?

[Empty text box]

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?

[Empty text box]

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?

[Empty text box]

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?

[Empty text box]

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?



## **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 8<sup>th</sup> of each month. If the 8<sup>th</sup> 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](https://www.onenv.us)

- 
- 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](mailto: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**)

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**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:

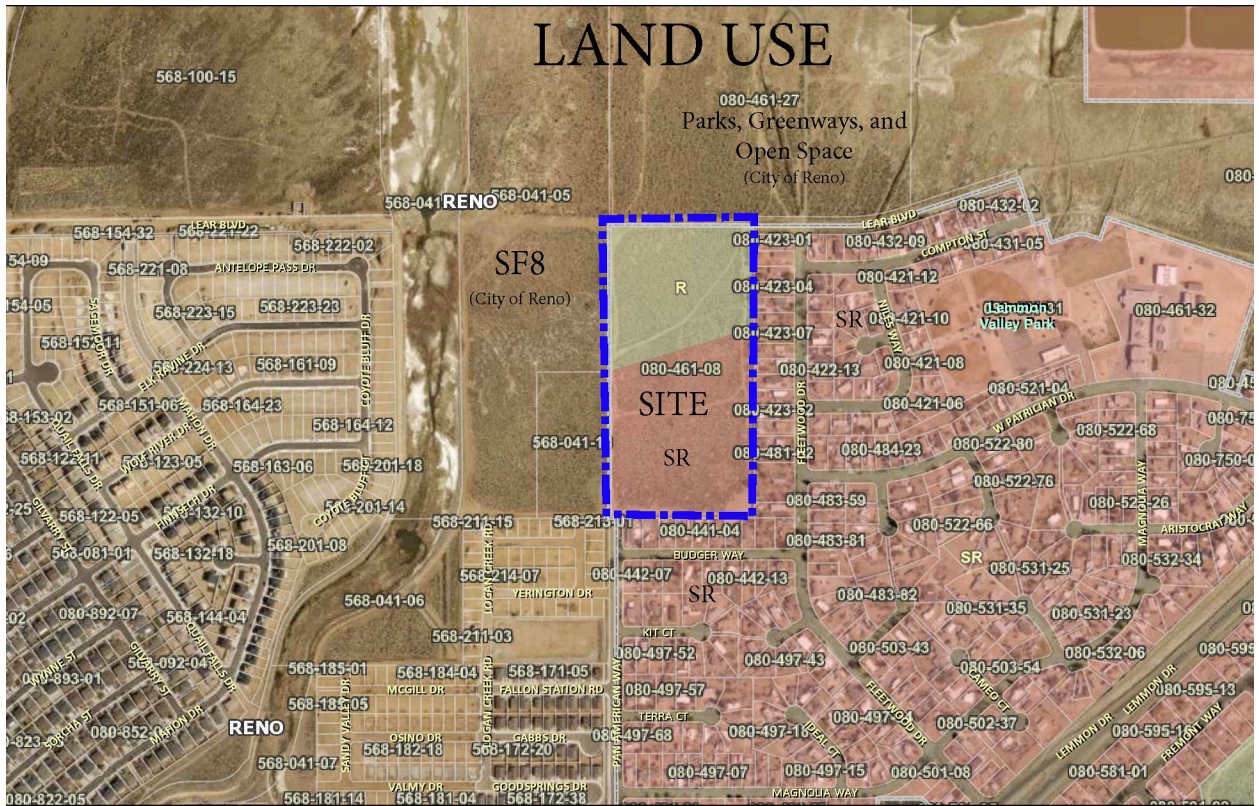
(a) Location Map. A general location map providing the context of location and vicinity of the site.

**RESPONSE – See the Highlighted Area Below. The site lies within a built up area.**



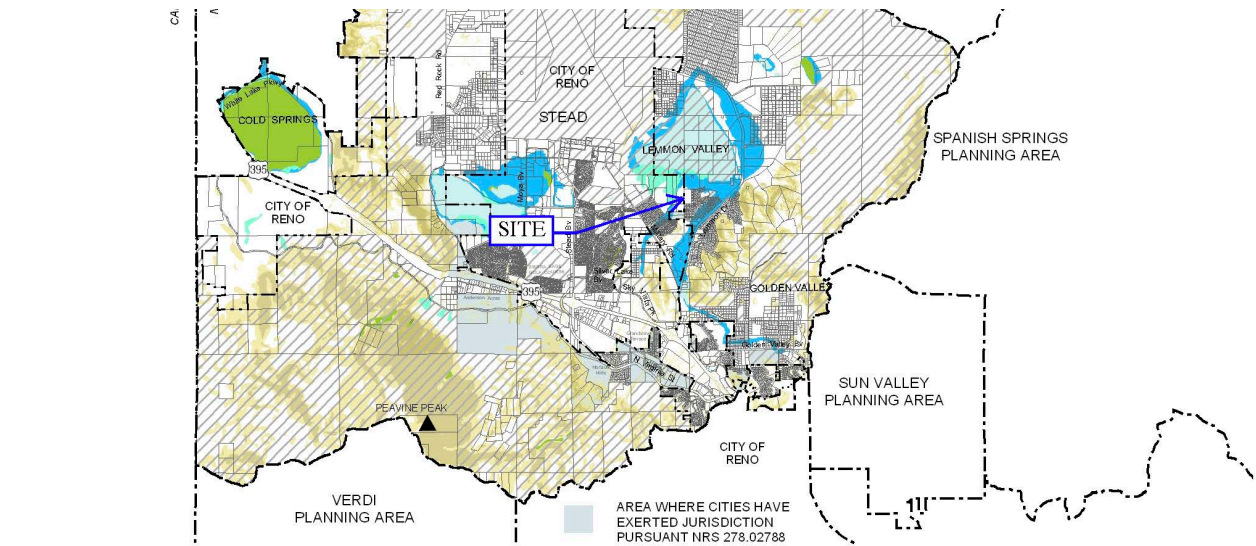
**LOCATION MAP**

(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**





### NORTH VALLEYS DEVELOPMENT SUITABILITY

- RIDGE LINES TO BE PROTECTED
- SLOPES GREATER THAN 15%
- SLOPES GREATER THAN 30%
- FLOODWAY AREA
- 100-YEAR FLOOD HAZARD
- POTENTIAL WETLANDS
- BOTH POTENTIAL FLOOD HAZARD AND POTENTIAL WETLANDS
- PUBLIC LAND
- MOST SUITABLE
- WATER BODIES
- DITCHES

NOTE: THE SCALE AND CONFIGURATION OF ALL INFORMATION SHOWN HEREON ARE APPROXIMATE ONLY AND ARE NOT INTENDED AS A GUIDE FOR DESIGN OR SURVEY WORK. REPRODUCTION IS NOT PERMITTED WITHOUT PRIOR WRITTEN PERMISSION FROM THE WASHOE COUNTY COMMUNITY DEVELOPMENT DEPARTMENT.

0 2000 4000 6000 Feet



**WASHOE COUNTY  
NEVADA**

**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  $\pm 800'$  west of the site. Lemmon Lake (Swan Lake) lies  $\pm 1,500$  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  $\pm 1,500$  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 Holocene 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 22<sup>nd</sup> 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 Harbour Cove Dr Sparks | JHinckley@landcapip.com                      |
| 3. Frank & Diana Bushey | 479 Compton St, Reno, NV.  | dianabushey@yahoo.com/pastorfrank@ccreno.org |
| 4. Gaye Hollenberger    | 9581 Fleetwood Dr.         | gsp1shd@gmail.com                            |
| 5. SUSAN JACKSON        | ARISTOCRATWAY              | BOUNCIEBACKIII@YAHOO.COM                     |
| 6. Rick Snow            | 487 W PATRICIA DR.         |                                              |
| 7. Idella Fields        | 9395 Fleetwood DR          |                                              |
| Atg. 8. STUART MACKIE   |                            | STUSUEM@GMAIL.COM                            |
| 9. RHYAN BUCK           |                            | rmetal01@charter.net                         |

IX.



4.25.2023

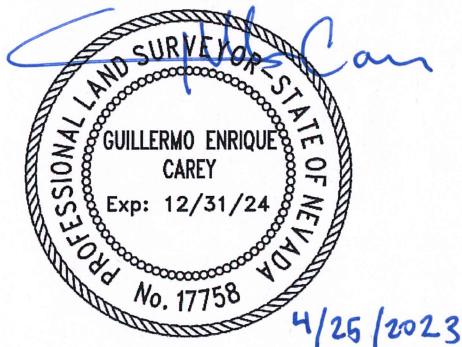
**EXHIBIT 'A'**

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 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 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

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 10<sup>th</sup> of December, 2018.

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

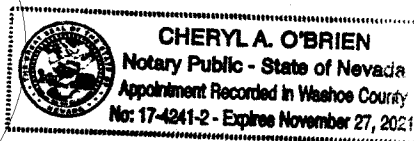
By: Gerald J. Echevarria  
Gerald J. Echevarria, Co-Trustee

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.

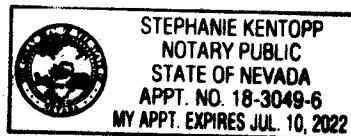
Cheryl A. O'Brien  
Notary Public



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.

Stephanie Kentopp  
Notary Public





X.

PORTION OF THE N 1/2 SECTION 34  
T21N - R19E

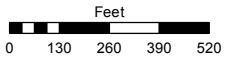
**DIVISION OF  
LAND MAP #79**

Assessor's Map Number

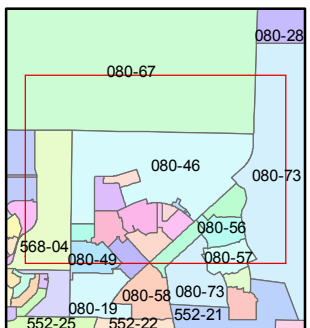
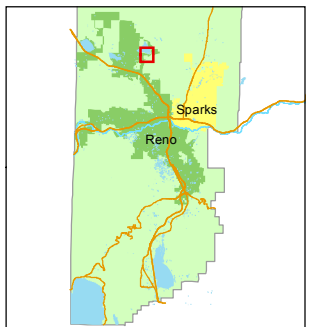
**080-46**

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

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



1 inch = 500 feet



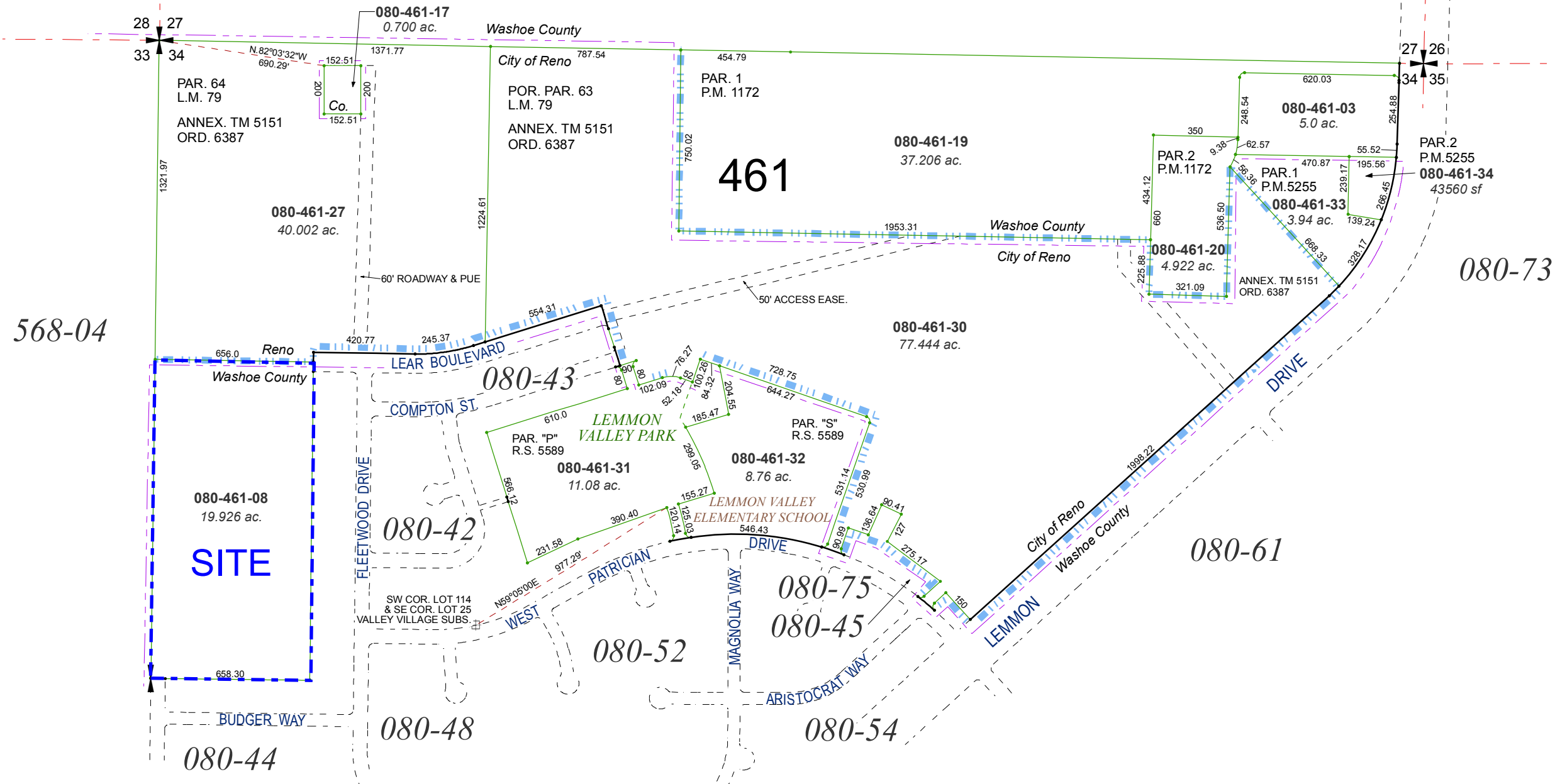
created by: EMG 10/09/2014

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

area previously shown on map(s)

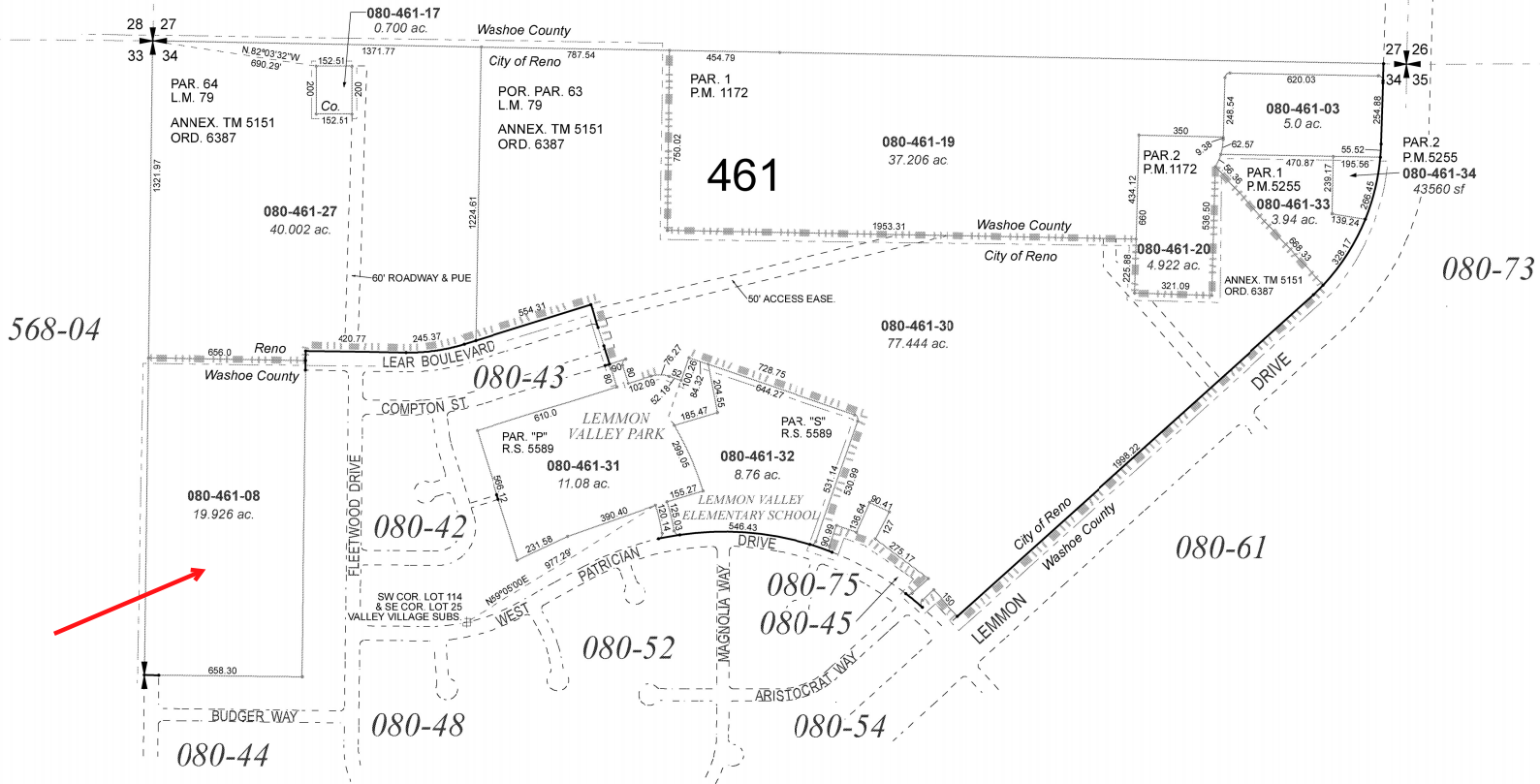
NOTE: This map was prepared for the use of the Washoe County Assessor for assessment and illustrative purposes only. It does not represent a survey of the premises. No liability is assumed as to the sufficiency of the data delineated herein.

**EXHIBIT D**



PORTION OF THE N 1/2 SECTION 34  
T21N - R19E

**DIVISION OF  
LAND MAP #79**

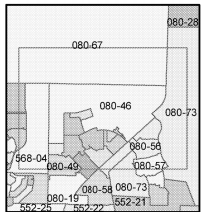
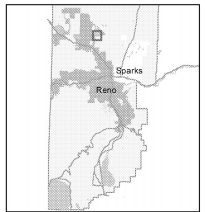
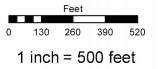


Assessor's Map Number

**080-46**

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

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



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.

# XIII.



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, 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



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



**WOOD RODGERS**  
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## 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.

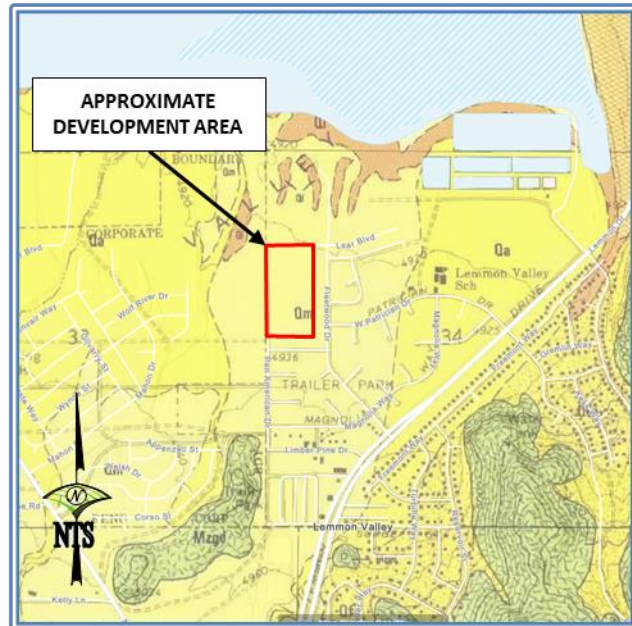


FIGURE 2 - RENO NE QUADRANGLE GEOLOGIC MAP (NBMG, CORDY, 1985)

## 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<sup>1</sup>.

---

<sup>1</sup> • 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) <sup>1</sup> |
|-----------------------------------------------------------------|-----------------------------------------------------------|
| Dead Load Plus Full Time Live Load                              | 2,500                                                     |
| Dead Load Plus Live Loads, Plus Transient Wind or Seismic Loads | 3,325                                                     |

<sup>1</sup> 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)<br>(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,  $\mu$ , 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,  $\mu$ , for 5-inch Slabs

| Material                           | First Movement | Average Subsequent Movements |
|------------------------------------|----------------|------------------------------|
| Aggregate Base                     | 1.95           | 1.37                         |
| Structural Fill                    | 1.72           | 0.88                         |
| Polyethylene Sheeting <sup>1</sup> | 0.88           | 0.55                         |

<sup>1</sup>For normal construction practice,  $\mu = 0.75$

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<br>(psf/f) | Passive<br>(psf/f) | At Rest<br>(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<sup>®</sup> 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

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).

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 |

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 | <sup>1</sup> Depth to Test (Ft) | USCS | <sup>2</sup> 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                       |

<sup>1</sup> Depth to Test references the bottom of the percolation hole.

<sup>2</sup> 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 <sup>1</sup>      | Type II Class B Base Course Thickness (In.) <sup>2</sup> |
|-----------------------|--------------------------|---------------------------------|----------------------------------------------------------|
| Dedicated Local Roads | 4                        | 2" Type 3 + Lime /<br>2" Type 2 | 6                                                        |

<sup>1</sup> 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

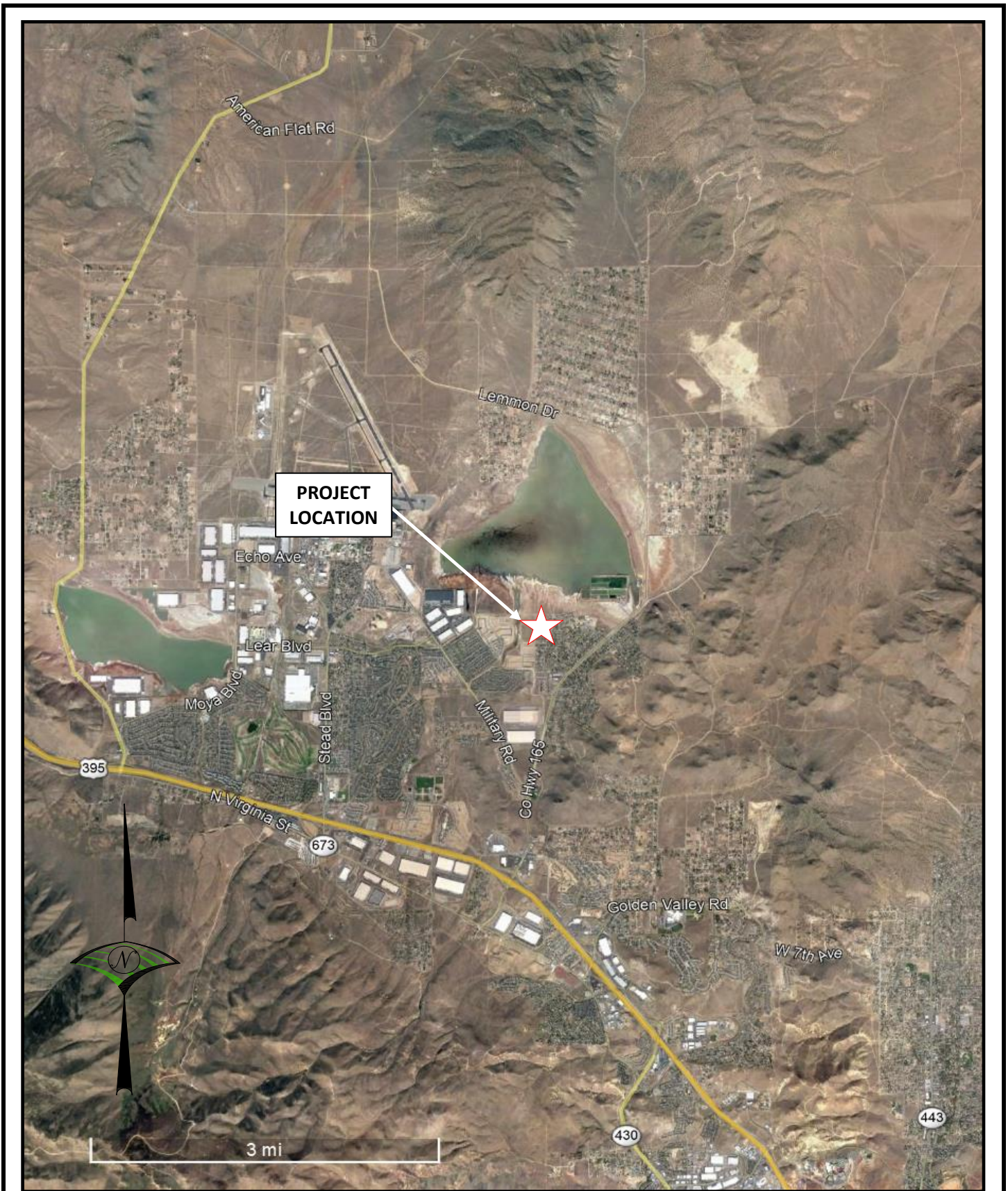



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|  <p><b>WOOD RODGERS</b><br/>1361 Corporate Boulevard, Reno, NV 89502<br/>Phone 775.823.4068 Fax 775.823.4066</p> | <p><b>VICINITY MAP</b></p> | <p><b>Geotechnical Investigation</b></p>                                                                                                                                                                                                                                                     |
|                                                                                                                                                                                                     |                            | <p style="text-align: center;"><b>LEARNER LEMMON<br/>D.R. HORTON<br/>WASHOE COUNTY, NV</b></p> <p>Project No.: 4092001<br/>Date: 08/12/21</p> <div style="border: 1px solid black; padding: 5px; text-align: center; width: fit-content; margin: auto;"> <p><b>PLATE<br/>A-1a</b></p> </div> |



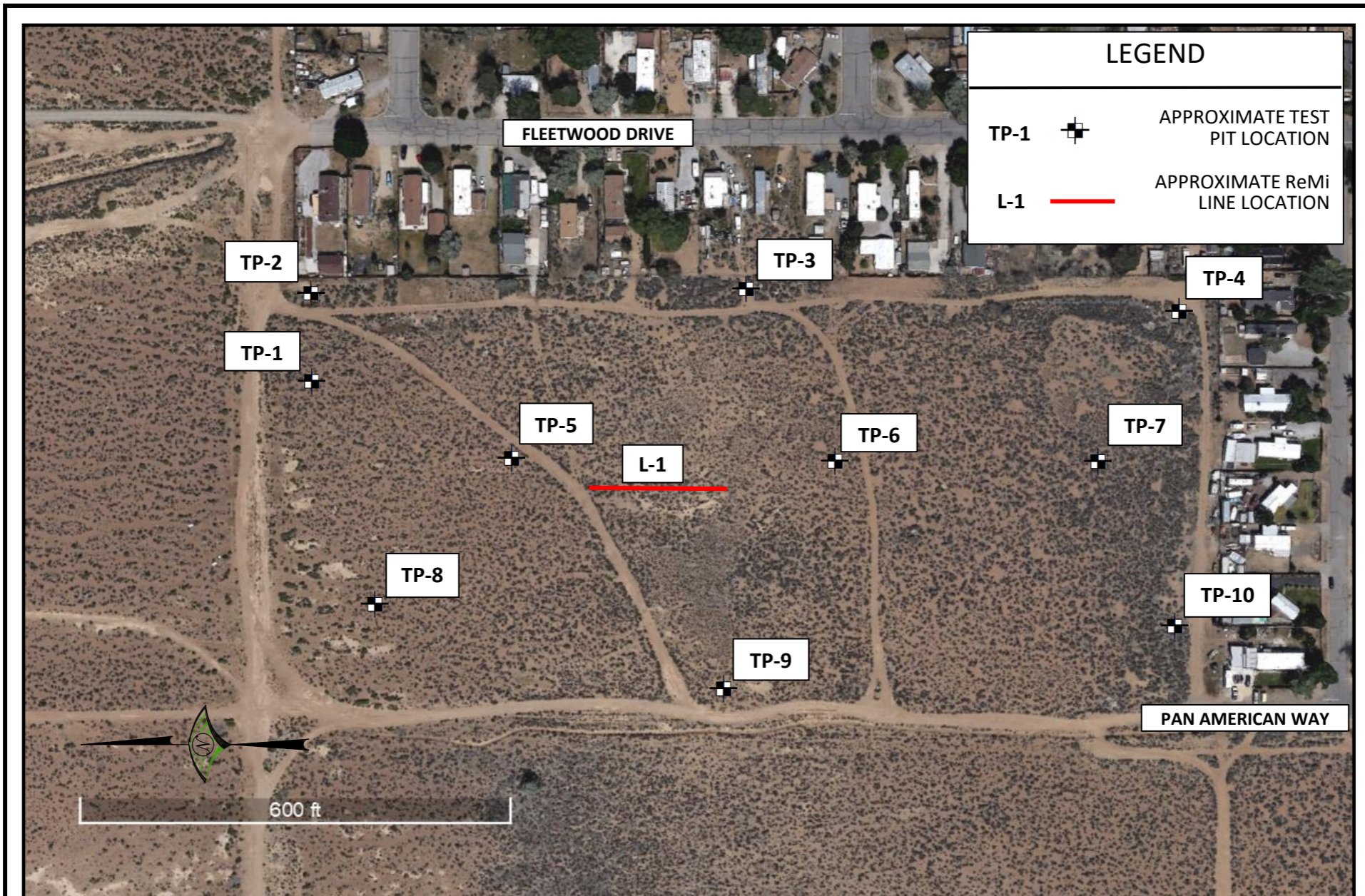


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|                                                                                                                                                                                                                       |                                                                  |                                                                                                                                                                                                                                                                                               |
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|  <p><b>WOOD RODGERS</b><br/>         1361 Corporate Boulevard, Reno, NV 89502<br/>         Phone 775.823.4068 Fax 775.823.4066</p> | <p><b>SITE MAP AND APPROXIMATE<br/>EXPLORATION LOCATIONS</b></p> | <p><i>Geotechnical Investigation</i><br/> <b>LEARNER LEMMON</b><br/> <b>D.R. HORTON</b><br/> <b>WASHOE COUNTY, NV</b></p> <p>Project No.: 4092001<br/>         Date: 08/12/21</p> <div style="border: 1px solid black; padding: 2px; display: inline-block;"> <p><b>Plate A-1b</b></p> </div> |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|



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# TEST PIT NUMBER TP-1

\\GEOEOTECH\BH\COLUMNS PLATE - GINT STD US LAB.GDT - 9/23/21 14:25 - \\WOODRODGERS\LOG\PRODUCTION\DATA\JOBS-RENO\JOBS\4092\_LEARNING\_LEMMON\LEARNING\_LEMMON.GPJ

**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  
**EXCAVATION METHOD** CAT 420F Backhoe  
**LOGGED BY** Seth Barton **CHECKED BY** Justin McDougal  
**NOTES:** Elevations: Washoe County Regional Mapping System

**GROUND WATER LEVELS:**  
**AT TIME OF EXCAVATION** --- NO FREE WATER ENCOUNTERED  
**AT END OF EXCAVATION** --- NO FREE WATER ENCOUNTERED  
**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 |               |                  | FINES CONTENT (%) |
|------------|-------------|----------------------------------------------------------------------------------------------------|--------------------|------------------|-----------------------|---------|--------------------|----------------------|------------------|---------------|------------------|-------------------|
|            |             |                                                                                                    |                    |                  |                       |         |                    |                      | LIQUID LIMIT     | PLASTIC LIMIT | PLASTICITY INDEX |                   |
| 0          |             | TOPSOIL, (SM)                                                                                      | GB 1A              |                  |                       |         |                    |                      |                  |               |                  |                   |
| 1          |             | SILTY SAND, (SM) medium dense, dry, light brown, nonplastic                                        | GB 1B              |                  |                       |         |                    | 7.7                  | 22               | 18            | 4                | 47.5              |
| 2          |             | SILTY, CLAYEY SAND, (SC-SM) very dense, slightly moist, brown, slightly plastic                    | GB 1C              |                  |                       |         |                    | 9.6                  | 31               | 15            | 16               | 64.9              |
| 3          |             | SANDY LEAN CLAY, (CL) very stiff, moist, dark brown, medium plasticity, white specs/veins          |                    |                  |                       |         |                    |                      |                  |               |                  |                   |
| 4          |             | SANDY LEAN CLAY, (CL) very stiff, moist to very moist, brown, medium plasticity, white specs/veins | GB 1D              |                  |                       |         |                    |                      |                  |               |                  |                   |
| 5          |             | 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  |        | Water Level |         | Elapsed Time min | Water Fall (in) |
|---------|-------|--------|-------------|---------|------------------|-----------------|
|         | Start | Finish | Start       | Finish  |                  |                 |
| 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

PAGE 1 OF 1

**CLIENT** D.R. Horton  
**PROJECT NUMBER** 4092001  
**DATE STARTED** 8/4/21 **COMPLETED** 8/4/21  
**EXCAVATION CONTRACTOR** Joy Engineering  
**EXCAVATION METHOD** CAT 420F Backhoe  
**LOGGED BY** Seth Barton **CHECKED BY** Justin McDougal  
**NOTES:** Elevations: Washoe County Regional Mapping System

**PROJECT NAME** Learner Lemmon  
**PROJECT LOCATION** Washoe County, Nevada  
**GROUND ELEVATION** 4928 ft **TEST PIT SIZE** 24 inches  
**GROUND WATER LEVELS:**  
**AT TIME OF EXCAVATION** ---  
**AT END OF EXCAVATION** ---  
**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 |               |                  | FINES CONTENT (%) |
|------------|-------------|-------------------------------------------------------------------------------------------------------------|--------------------|------------------|-----------------------|---------|--------------------|----------------------|------------------|---------------|------------------|-------------------|
|            |             |                                                                                                             |                    |                  |                       |         |                    |                      | LIQUID LIMIT     | PLASTIC LIMIT | PLASTICITY INDEX |                   |
| 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                                         |                    |                  |                       |         |                    |                      |                  |               |                  |                   |
|            |             | SANDY LEAN CLAY, (CL) very stiff, moist to very moist, brown, medium plasticity, white specs                | GB 2C              |                  |                       |         |                    | 22.8                 |                  |               |                  |                   |
|            |             |                                                                                                             | GB 2D              |                  |                       |         |                    | 42.3                 |                  |               |                  |                   |
|            |             | SANDY LEAN CLAY, (CL) very stiff, very moist, gray brown, medium to high plasticity, white granular pockets | 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 Time min | Water Fall (in) |
|---------|-------|--------|-------------|---------|------------------|-----------------|
|         | Start | Finish | Start       | Finish  |                  |                 |
| 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

\\WOODRODGERS.LOC\PRODUCT\DATA\JOBS-RENO\JOBS\4092\_LEARNING\_LEMMON\LEARNING\_LEMMON\_OA\GEO\TECH\G104\_GINT\LEARNING\_LEMMON.GPJ

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

PAGE 1 OF 1

**CLIENT** D.R. Horton  
**PROJECT NUMBER** 4092001  
**DATE STARTED** 8/4/21 **COMPLETED** 8/4/21  
**EXCAVATION CONTRACTOR** Joy Engineering  
**EXCAVATION METHOD** CAT 420F Backhoe  
**LOGGED BY** Seth Barton **CHECKED BY** Justin McDougal  
**NOTES:** Elevations: Washoe County Regional Mapping System

**PROJECT NAME** Learner Lemmon  
**PROJECT LOCATION** Washoe County, Nevada  
**GROUND ELEVATION** 4932 ft **TEST PIT SIZE** 24 inches  
**GROUND WATER LEVELS:**  
**AT TIME OF EXCAVATION** ---  
**AT END OF EXCAVATION** ---  
**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 |               |                  | FINES CONTENT (%) |
|------------|-------------|---------------------------------------------------------------------------------------------------|--------------------|------------------|-----------------------|---------|--------------------|----------------------|------------------|---------------|------------------|-------------------|
|            |             |                                                                                                   |                    |                  |                       |         |                    |                      | LIQUID LIMIT     | PLASTIC LIMIT | PLASTICITY INDEX |                   |
| 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              |                  |                       |         |                    |                      |                  |               |                  |                   |
|            |             |                                                                                                   | 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  |        | Water Level |          | Elapsed Time min | Water Fall (in) |
|---------|-------|--------|-------------|----------|------------------|-----------------|
|         | Start | Finish | Start       | Finish   |                  |                 |
| 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

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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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# TEST PIT NUMBER TP-4

GEOTECH BH COLUMNS PLATE - GINT STD US LAB.GDT - 9/28/21 10:27 - \\WOODRODGERS.LOC\PRODUCTION\DATA\JOBS-RENO\JOBS\M092\_LEARNING\_LEMMON\LEARNING\_LEMMON\_OA\GEOTECH\GINT\LEARNING\_LEMMON.GPJ

**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 |               |                  | FINES CONTENT (%) |
|------------|-------------|------------------------------------------------------------------------------|--------------------|------------------|-----------------------|---------|--------------------|----------------------|------------------|---------------|------------------|-------------------|
|            |             |                                                                              |                    |                  |                       |         |                    |                      | LIQUID LIMIT     | PLASTIC LIMIT | PLASTICITY INDEX |                   |
| 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              |                  |                       |         |                    |                      |                  |               |                  |                   |
|            |             | CLAYEY SAND, (SC) slightly moist to moist, low plasticity                    |                    |                  |                       |         |                    |                      |                  |               |                  |                   |
| 5.0        |             |                                                                              |                    |                  |                       |         |                    |                      |                  |               |                  |                   |
| 7.5        |             |                                                                              | GB 4D              |                  |                       |         |                    |                      |                  |               |                  |                   |
|            |             |                                                                              |                    |                  |                       |         |                    |                      |                  |               |                  |                   |
| 10.0       |             | SANDY LEAN CLAY, (CL) very stiff, very moist, gray brown, medium plasticity  | GB 4E              |                  |                       |         |                    |                      |                  |               |                  |                   |

Bottom of Test Pit at 10.0 Feet.





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# TEST PIT NUMBER TP-5

PAGE 1 OF 1

**CLIENT** D.R. Horton  
**PROJECT NUMBER** 4092001  
**DATE STARTED** 8/4/21 **COMPLETED** 8/4/21  
**EXCAVATION CONTRACTOR** Joy Engineering  
**EXCAVATION METHOD** CAT 420F Backhoe  
**LOGGED BY** Seth Barton **CHECKED BY** Justin McDougal  
**NOTES:** Elevations: Washoe County Regional Mapping System

**PROJECT NAME** Learner Lemmon  
**PROJECT LOCATION** Washoe County, Nevada  
**GROUND ELEVATION** 4930 ft **TEST PIT SIZE** 24 inches  
**GROUND WATER LEVELS:**  
**AT TIME OF EXCAVATION** --- NO FREE WATER ENCOUNTERED  
**AT END OF EXCAVATION** --- NO FREE WATER ENCOUNTERED  
**AFTER EXCAVATION** --- NO FREE WATER ENCOUNTERED

| DEPTH<br>(ft) | GRAPHIC LOG | MATERIAL DESCRIPTION                                                                    | SAMPLE TYPE NUMBER | RECOVERY % (RQD) | BLOW COUNTS (N VALUE) | R-VALUE | DRY UNIT WT. (pcf) | MOISTURE CONTENT (%) | ATTERBERG LIMITS |               |                  | FINES CONTENT (%) |
|---------------|-------------|-----------------------------------------------------------------------------------------|--------------------|------------------|-----------------------|---------|--------------------|----------------------|------------------|---------------|------------------|-------------------|
|               |             |                                                                                         |                    |                  |                       |         |                    |                      | LIQUID LIMIT     | PLASTIC LIMIT | PLASTICITY INDEX |                   |
| 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           |             | LEAN CLAY, (CL) very stiff, very moist, gray white, medium plasticity                   | GB 5C              |                  |                       |         |                    |                      |                  |               |                  |                   |
| 10.0          |             |                                                                                         |                    |                  |                       |         |                    |                      |                  |               |                  |                   |

Bottom of Test Pit at 11.0 Feet.



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# TEST PIT NUMBER TP-6

GINTLEARNING.LEMMON\_OAIGEOGTECH04 GINTLEARNING.LEMMON.GPJ

**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 |               |                  | FINES CONTENT (%) |
|------------|-------------|--------------------------------------------------------------------------------------|--------------------|------------------|-----------------------|---------|--------------------|----------------------|------------------|---------------|------------------|-------------------|
|            |             |                                                                                      |                    |                  |                       |         |                    |                      | LIQUID LIMIT     | PLASTIC LIMIT | PLASTICITY INDEX |                   |
| 0.0        |             | TOPSOIL, (SM)<br>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

PAGE 1 OF 1

**CLIENT** D.R. Horton  
**PROJECT NUMBER** 4092001  
**DATE STARTED** 8/4/21 **COMPLETED** 8/4/21  
**EXCAVATION CONTRACTOR** Joy Engineering  
**EXCAVATION METHOD** CAT 420F Backhoe  
**LOGGED BY** Seth Barton **CHECKED BY** Justin McDougal  
**NOTES:** Elevations: Washoe County Regional Mapping System

**PROJECT NAME** Learner Lemmon  
**PROJECT LOCATION** Washoe County, Nevada  
**GROUND ELEVATION** 4936 ft **TEST PIT SIZE** 24 inches  
**GROUND WATER LEVELS:**  
**AT TIME OF EXCAVATION** --- NO FREE WATER ENCOUNTERED  
**AT END OF EXCAVATION** --- NO FREE WATER ENCOUNTERED  
**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 |               |                  | FINES CONTENT (%) |
|------------|-------------|-------------------------------------------------------------------------------------------|--------------------|------------------|-----------------------|---------|--------------------|----------------------|------------------|---------------|------------------|-------------------|
|            |             |                                                                                           |                    |                  |                       |         |                    |                      | LIQUID LIMIT     | PLASTIC LIMIT | PLASTICITY INDEX |                   |
| 0.0        |             | TOPSOIL, (SM)                                                                             | GB 7A              |                  |                       |         |                    | 2.4                  |                  |               |                  |                   |
|            |             | SILTY SAND, (SM) medium dense, dry, brown, nonplastic                                     |                    |                  |                       |         |                    |                      |                  |               |                  |                   |
| 2.5        |             | CLAYEY SAND, (SC) very dense, slightly moist to moist, brown, low plasticity, white specs | SH 7B              |                  |                       |         |                    | 6.5                  |                  |               |                  |                   |
| 5.0        |             |                                                                                           |                    |                  |                       |         |                    |                      |                  |               |                  |                   |
| 7.5        |             |                                                                                           | GB 7C              |                  |                       |         |                    | 9.1                  | 25               | 17            | 8                | 48.5              |
| 10.0       |             |                                                                                           |                    |                  |                       |         |                    |                      |                  |               |                  |                   |

Bottom of Test Pit at 10.0 Feet.

GEOTECH BH COLUMNS PLATE - GINT STD US LAB.GDT - 9/28/21 10:27 - \\WOODRODGERS.LOC\PRODUCTION\DATA\JOBS-RENO\JOBS\M092\_LEARNING\_LEMMON\LEARNING\_LEMMON\LEARNING\_LEMMON\_OA\GEOTECH\GINT\GINTLEARNING\_LEMMON.GPJ





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# TEST PIT NUMBER TP-9

PAGE 1 OF 1

**CLIENT** D.R. Horton  
**PROJECT NUMBER** 4092001  
**DATE STARTED** 8/4/21 **COMPLETED** 8/4/21  
**EXCAVATION CONTRACTOR** Joy Engineering  
**EXCAVATION METHOD** CAT 420F Backhoe  
**LOGGED BY** Seth Barton **CHECKED BY** Justin McDougal  
**NOTES:** Elevations: Washoe County Regional Mapping System

**PROJECT NAME** Learner Lemmon  
**PROJECT LOCATION** Washoe County, Nevada  
**GROUND ELEVATION** 4931 ft **TEST PIT SIZE** 24 inches  
**GROUND WATER LEVELS:**  
**AT TIME OF EXCAVATION** --- NO FREE WATER ENCOUNTERED  
**AT END OF EXCAVATION** --- NO FREE WATER ENCOUNTERED  
**AFTER EXCAVATION** --- NO FREE WATER ENCOUNTERED

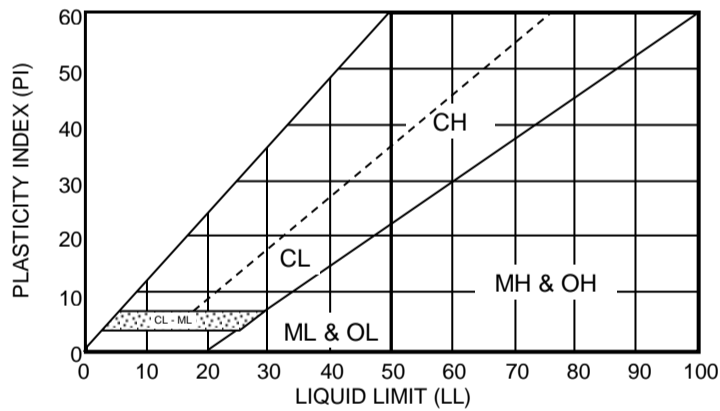
| DEPTH (ft) | GRAPHIC LOG | MATERIAL DESCRIPTION                                                                     | SAMPLE TYPE NUMBER | RECOVERY % (RQD) | BLOW COUNTS (N VALUE) | R-VALUE | DRY UNIT WT. (pcf) | MOISTURE CONTENT (%) | ATTERBERG LIMITS |               |                  | FINES CONTENT (%) |
|------------|-------------|------------------------------------------------------------------------------------------|--------------------|------------------|-----------------------|---------|--------------------|----------------------|------------------|---------------|------------------|-------------------|
|            |             |                                                                                          |                    |                  |                       |         |                    |                      | LIQUID LIMIT     | PLASTIC LIMIT | PLASTICITY INDEX |                   |
| 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<br>GB 9C     |                  |                       |         |                    | 10.3                 | 22               | 21            | 1                | 26.0              |
| 2.5        |             |                                                                                          |                    |                  |                       |         |                    |                      |                  |               |                  |                   |
| 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.

GINTLEARNING.LEMMON\_OAIGEOGTECH04 GINTLEARNING.LEMMON.GPJ



| MAJOR DIVISION                                                        |                                                                     |                                                                    |                                     |    | TYPICAL NAMES                                                                           |                                                               |
|-----------------------------------------------------------------------|---------------------------------------------------------------------|--------------------------------------------------------------------|-------------------------------------|----|-----------------------------------------------------------------------------------------|---------------------------------------------------------------|
| COARSED-GRAINED SOILS<br>MORE THAN HALF IS COARSER THAN NO. 200 SIEVE | GRAVEL<br>MORE THAN HALF COARSE FRACTION IS LARGER THAN NO. 4 SIEVE | CLEAN SANDS WITH LITTLE OR NO FINES                                |                                     | GW | WELL GRADED GRAVELS WITH OR WITHOUT SAND, LITTLE OR NO FINES                            |                                                               |
|                                                                       |                                                                     | GRAVELS WITH OVER 12% FINES                                        |                                     | GP | POORLY GRADED GRAVELS WITH OR WITHOUT SAND, LITTLE OR NO FINES                          |                                                               |
|                                                                       |                                                                     | SAND<br>MORE THAN HALF COARSE FRACTION IS SMALLER THAN NO. 4 SIEVE | CLEAN SANDS WITH LITTLE OR NO FINES |    | SW                                                                                      | WELL GRADED SANDS WITH OR WITHOUT GRAVEL, LITTLE OR NO FINES  |
|                                                                       |                                                                     |                                                                    | SANDS WITH OVER 12% FINES           |    | SP                                                                                      | POORLY GRADED SAND WITH OR WITHOUT GRAVEL, LITTLE OR NO FINES |
|                                                                       | FINE-GRAINED SOILS<br>MORE THAN HALF IS FINER THAN NO. 200 SIEVE    | SILT AND CLAY<br>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<br>CLAYS WITH SANDS AND GRAVELS, LEAN CLAYS |                                                               |
|                                                                       |                                                                     |                                                                    |                                     | OL | ORGANIC SILTS OR CLAYS OF LOW PLASTICITY                                                |                                                               |
|                                                                       |                                                                     | SILT AND CLAY<br>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    |

  
**WOOD RODGERS**  
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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**



Wood Rodgers Inc.  
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# GRAIN SIZE DISTRIBUTION

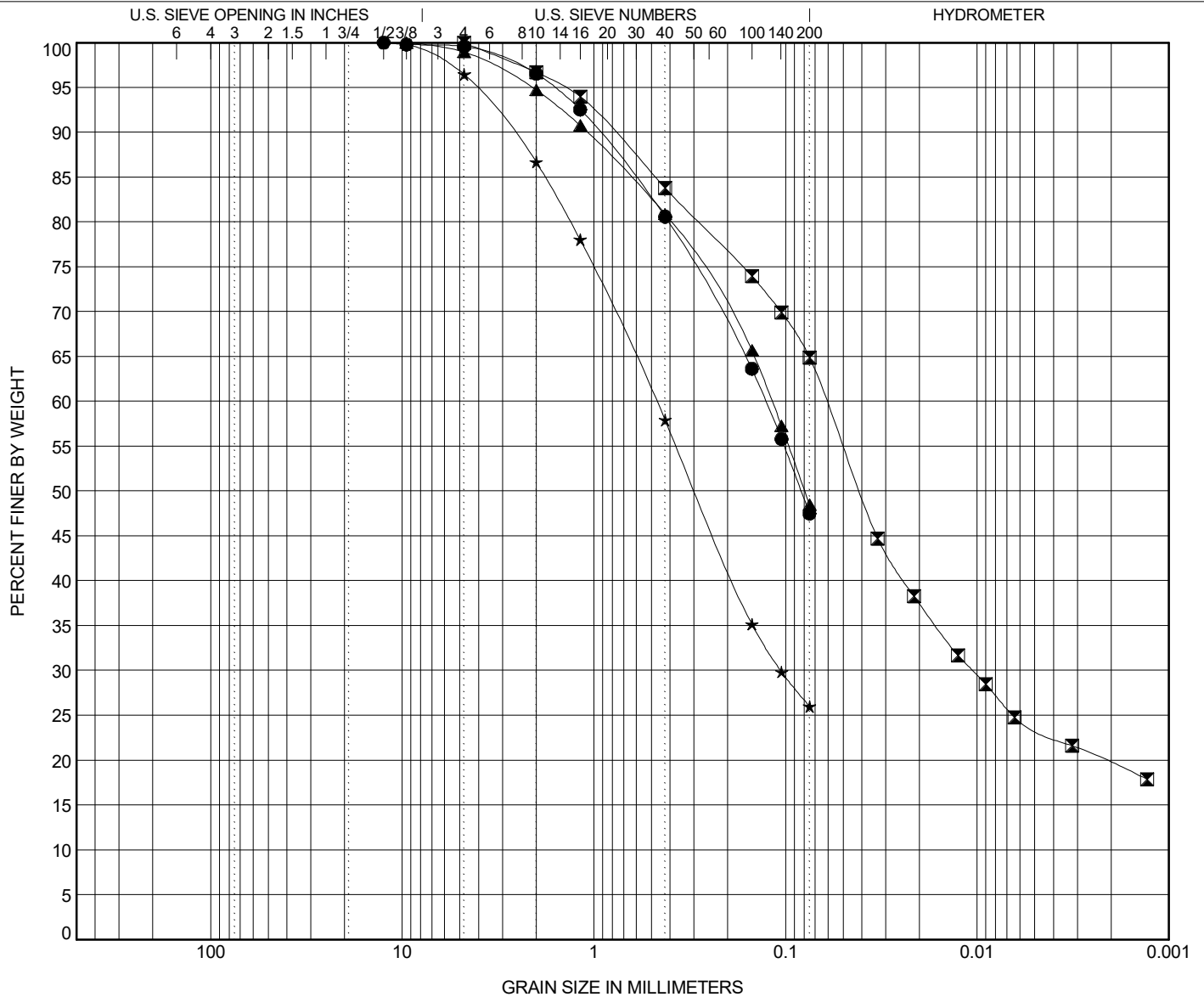
CLIENT D.R. Horton

PROJECT NAME Learner Lemmon

PROJECT NUMBER 4092001

PROJECT LOCATION Washoe County, Nevada

GRAIN SIZE - GINT STD. US LAB. GDT - 9/23/21 14:50 - \\WOODRODGERS.LOC\PRODUCTION\DATA\JOBS-RENO\JOBS\4092\_LEARNING\_LEMMON\LEARNING\_LEMMON\_OA\GEO\TECH\GINT\LEARNING\_LEMMON.GPJ



| 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       | <b>SILTY, CLAYEY SAND(SC-SM)</b> | 22 | 18 | 4  |    |    |
| ☒ TP-1   | 3.0       | <b>SANDY LEAN CLAY(CL)</b>       | 31 | 15 | 16 |    |    |
| ▲ TP-7   | 6.0       | <b>CLAYEY SAND(SC)</b>           | 25 | 17 | 8  |    |    |
| ★ TP-9   | 1.5       | <b>SILTY SAND(SM)</b>            | 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

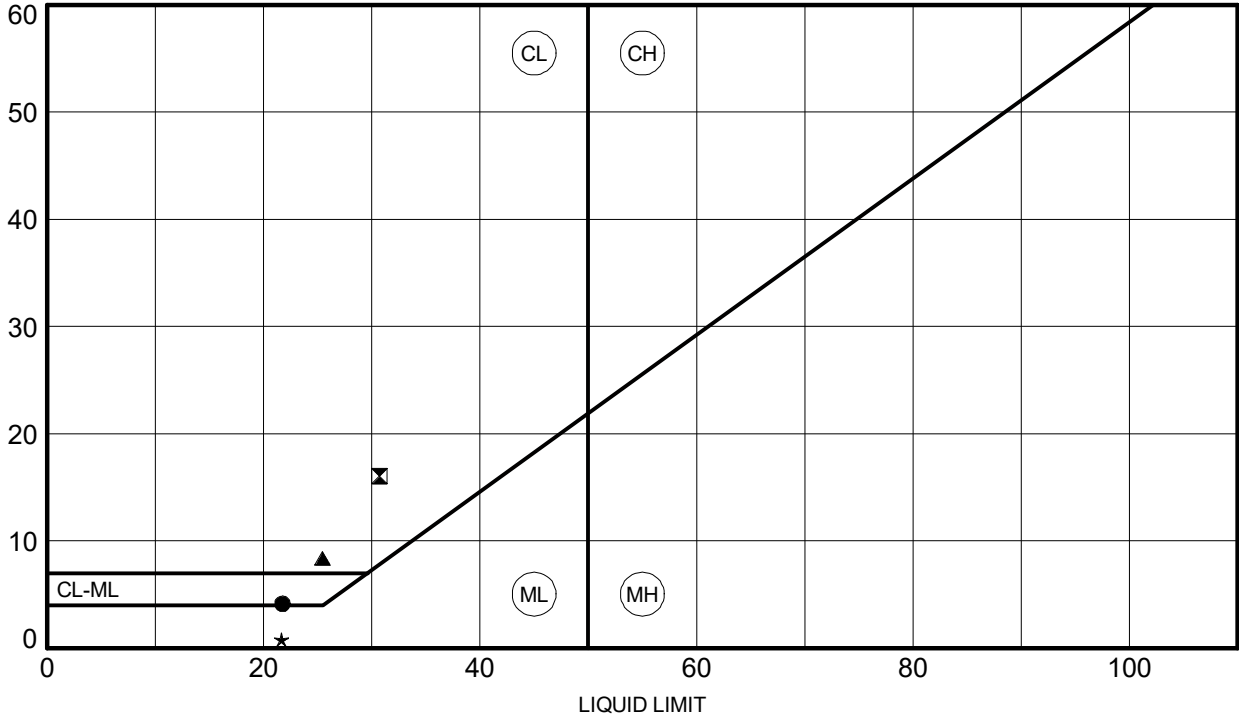
**CLIENT** D.R. Horton

**PROJECT NAME** Learner Lemmon

**PROJECT NUMBER** 4092001

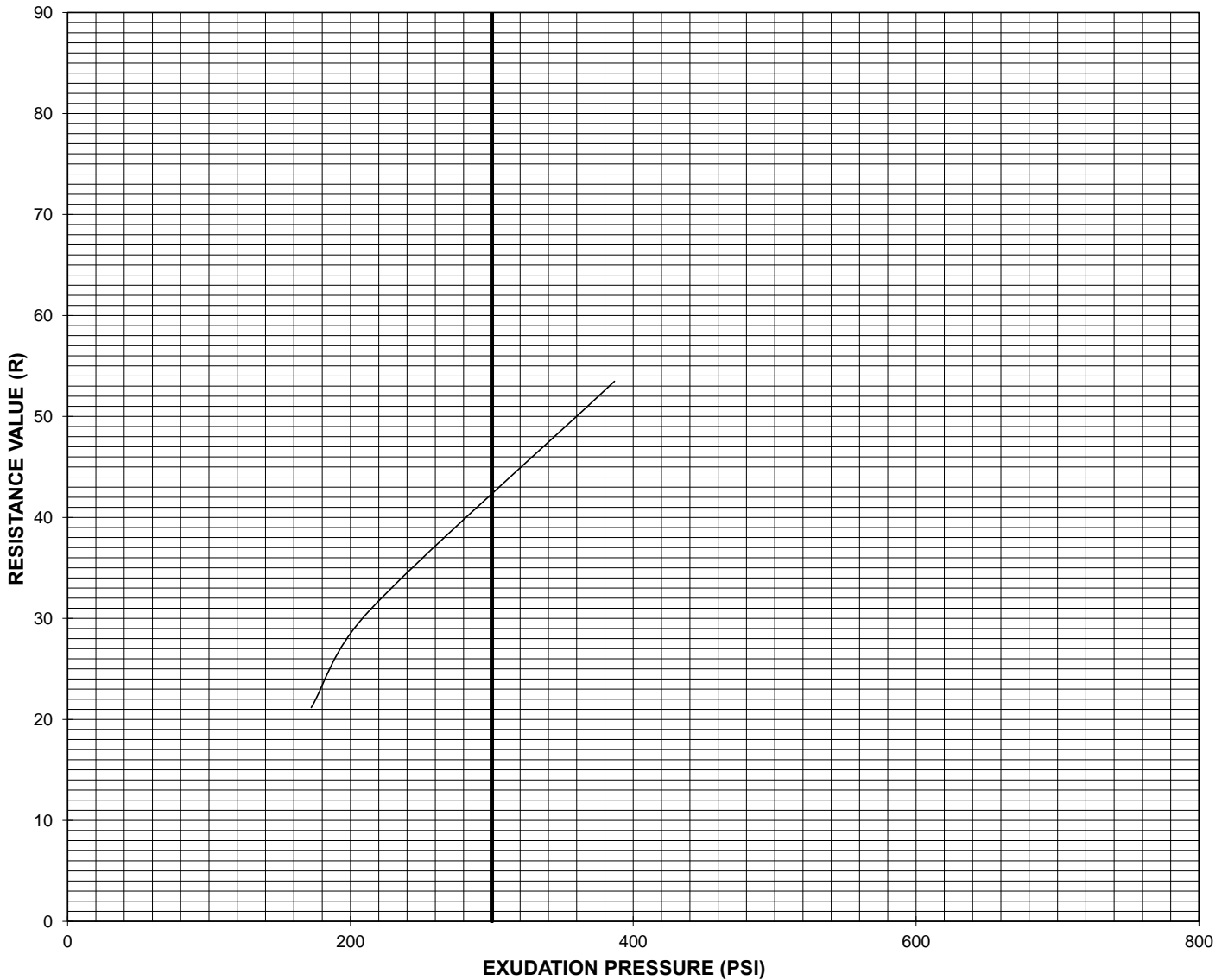
**PROJECT LOCATION** Washoe County, Nevada

P L A S T I C I T Y  
I N D E X



| 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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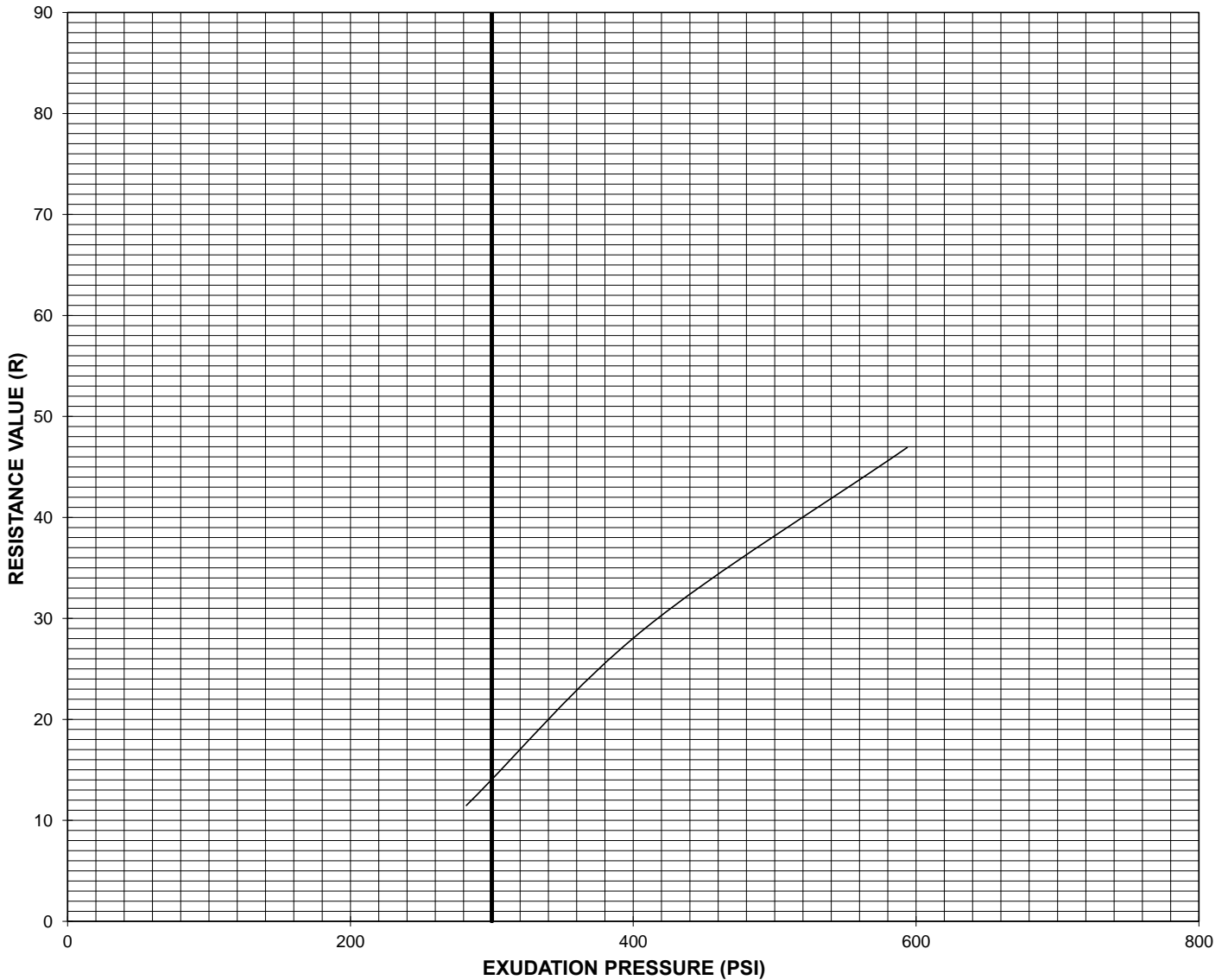
Tel: 775.823.4068  
Fax: 775.823.4066

**Learner Lemmon**



| 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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**Learner Lemmon**



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



Daniel B. Stephens & Associates, Inc.

### Summary of Water Potential

| Sample Number        | Moisture Content<br>(%, g/g) | Water Potential<br>(-cm water) | Water Potential<br>(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                    |



**WOOD RODGERS**

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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**

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

**Sampled By:** Client

**Laboratory Accreditation Number:** NV015/CA2990

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

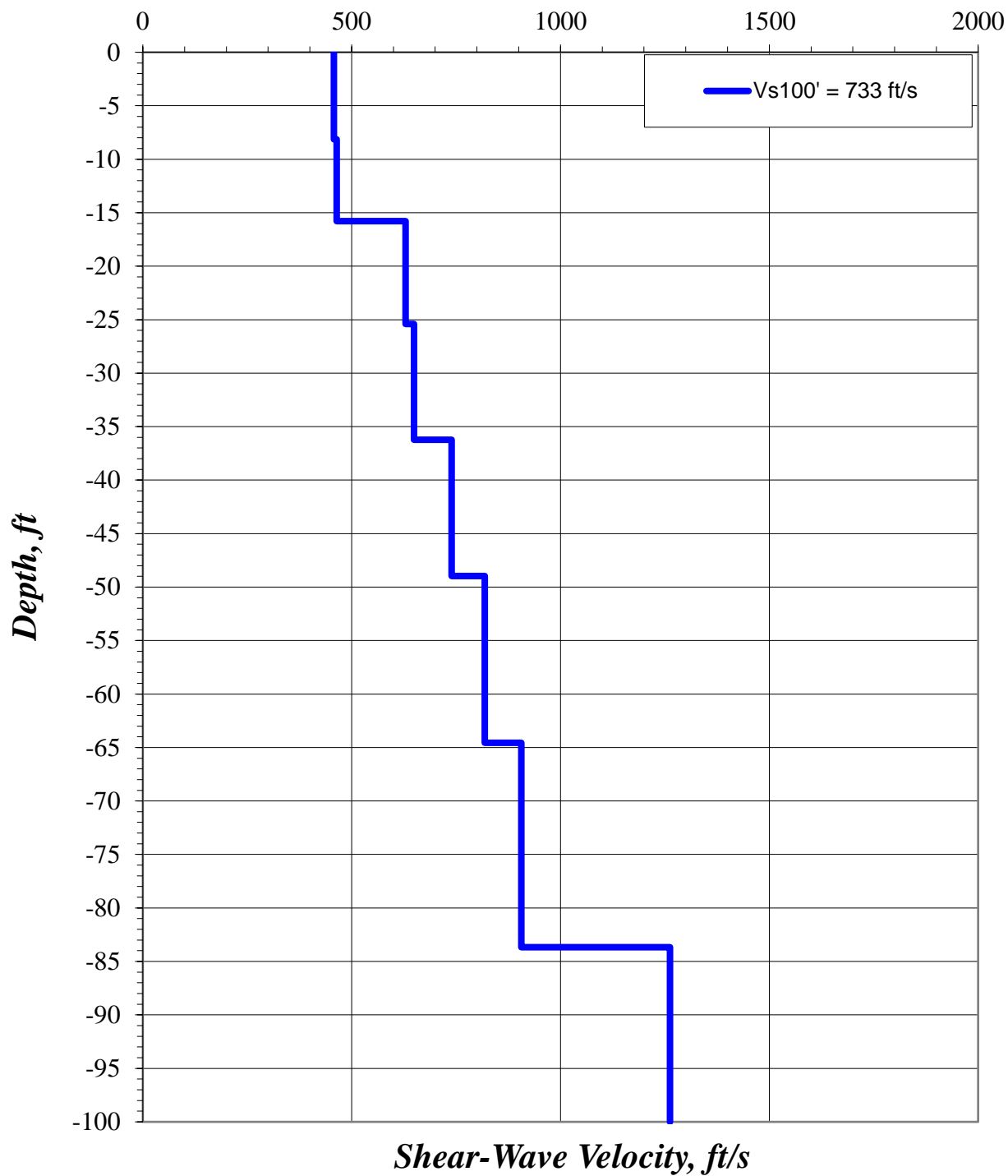
| Parameter                                         | Method                   | Result   | Units    | PQL  | Analyst | Date/Time Analyzed | Data Flag |
|---------------------------------------------------|--------------------------|----------|----------|------|---------|--------------------|-----------|
| 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 Na <sub>2</sub> SO <sub>4</sub> | Calculation              | < 0.01   | %        | 0.01 | AC      | 08/20/2021 10:21   |           |
| Sulfate                                           | SM4500 SO <sub>4</sub> E | < 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

|                      |                         |                          |                      |
|----------------------|-------------------------|--------------------------|----------------------|
| <b>Laboratory ID</b> | <b>Client Sample ID</b> | <b>Date/Time Sampled</b> | <b>Date Received</b> |
| 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 Na <sub>2</sub> SO <sub>4</sub> | Calculation              | < 0.01   | %        | 0.01 | AC      | 08/20/2021 10:21   |           |
| Sulfate                                           | SM4500 SO <sub>4</sub> E | 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**  
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**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**



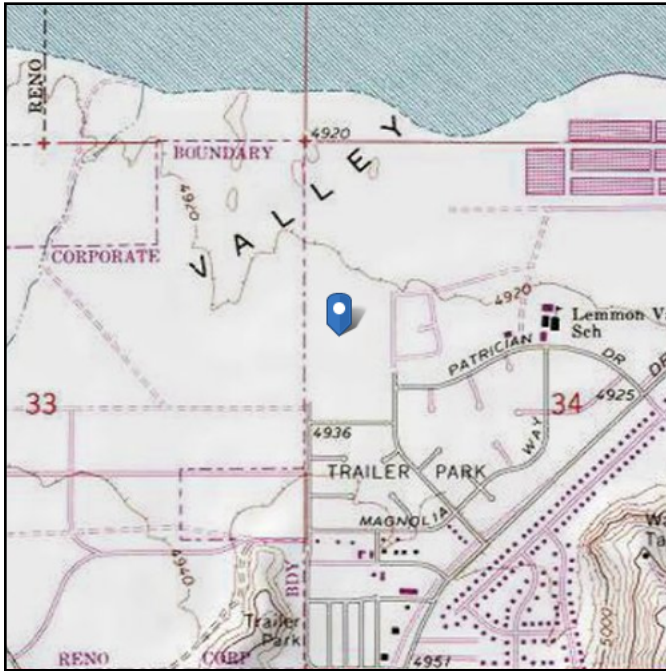
APPENDIX B  
ASCE 7 HAZARDS REPORT

# ASCE 7 Hazards Report

**Address:**  
No Address at This  
Location

**Standard:** ASCE/SEI 7-16  
**Risk Category:** II  
**Soil Class:** D - Stiff Soil

**Elevation:** 4928.89 ft (NAVD 88)  
**Latitude:** 39.6451  
**Longitude:** -119.8459





**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 <sub>M</sub> : | 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.

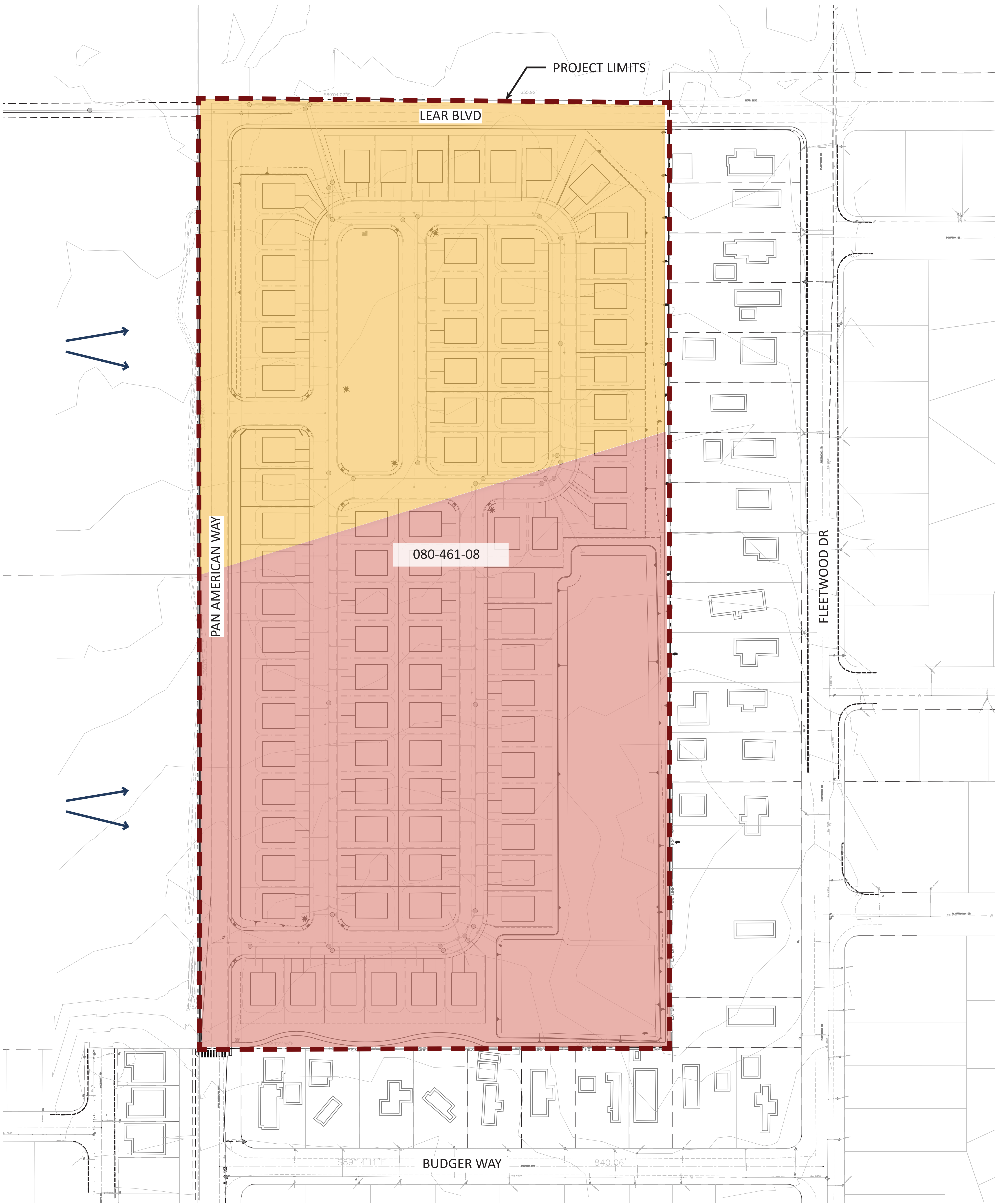
**Data Accessed:** Tue Aug 17 2021

**Date Source:** [USGS Seismic Design Maps](#)

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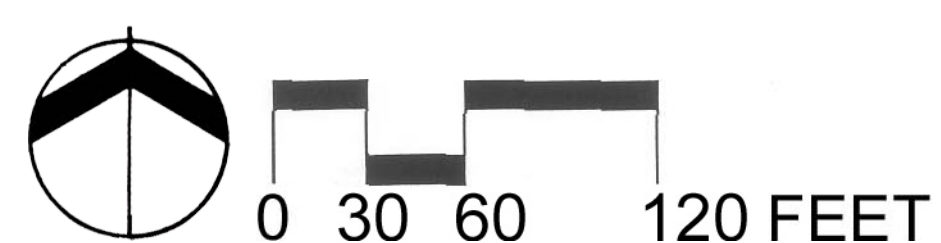
**NOTES**

- 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 Washoe County Development Code.

**LEGEND**

- EXISTING LAND USE: RURAL DESIGNATION
- EXISTING LAND USE: SUBURBAN RESIDENTIAL
- PREVAILING WINDS FROM WEST



**LEARNER LEMMON OPPORTUNITY AND CONSTRAINTS MAP**  
Washoe County, Nevada

# LEARNER-LEMMON SINGLE-FAMILY

RENO, NV

APN: 080-461-08



*Prepared for:*  
**LC Learner, LLC.**  
31103 Rancho Viejo Road, Suite D3099  
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*Prepared by:*  
**Kimley»»Horn**

March 2023 (Revised November 2023)  
192349000  
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## TRAFFIC IMPACT STUDY

FOR

# LEARNER-LEMMON SINGLE-FAMILY

***Prepared for:***

**LC Learner, LLC**

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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

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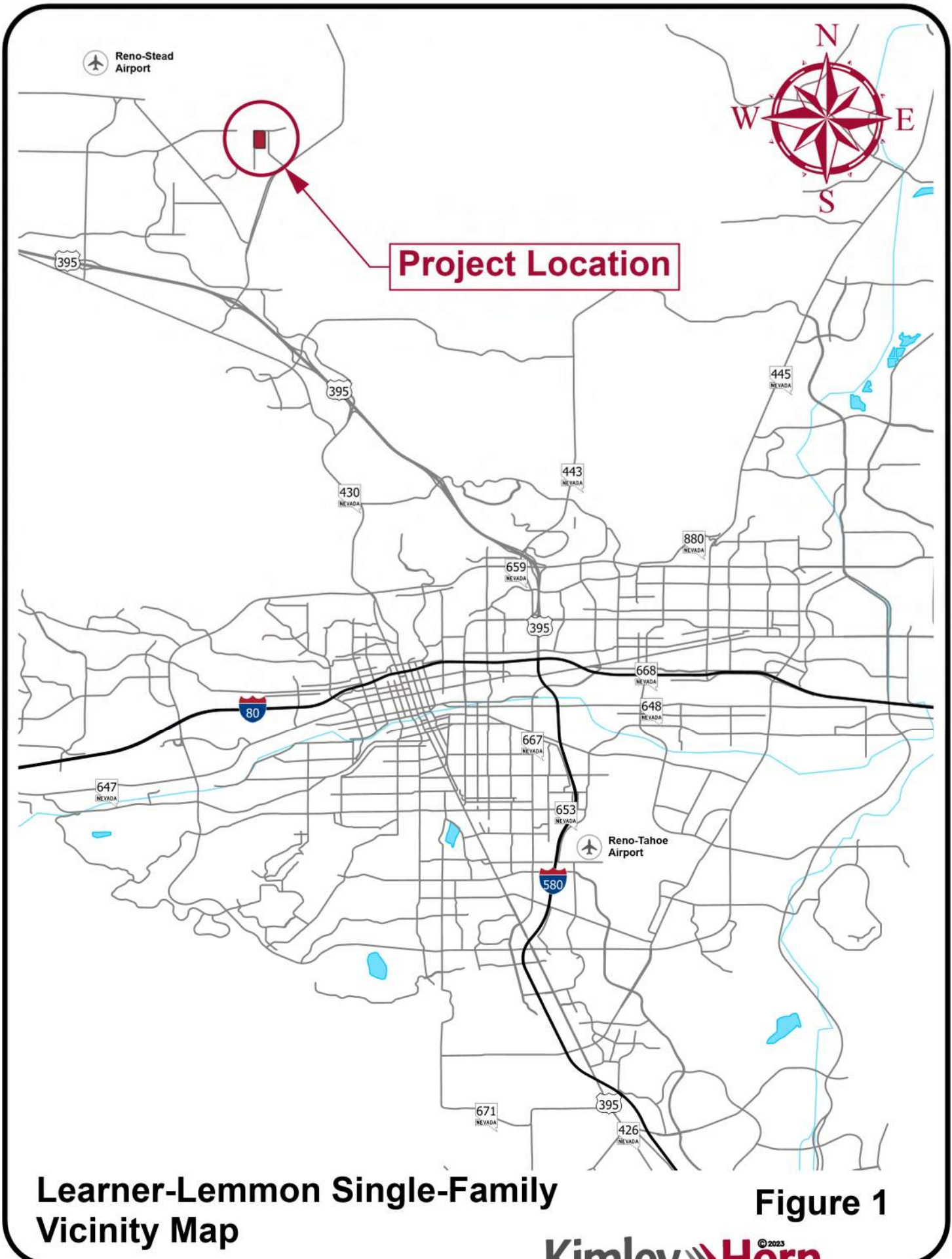
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## 1. INTRODUCTION

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 |

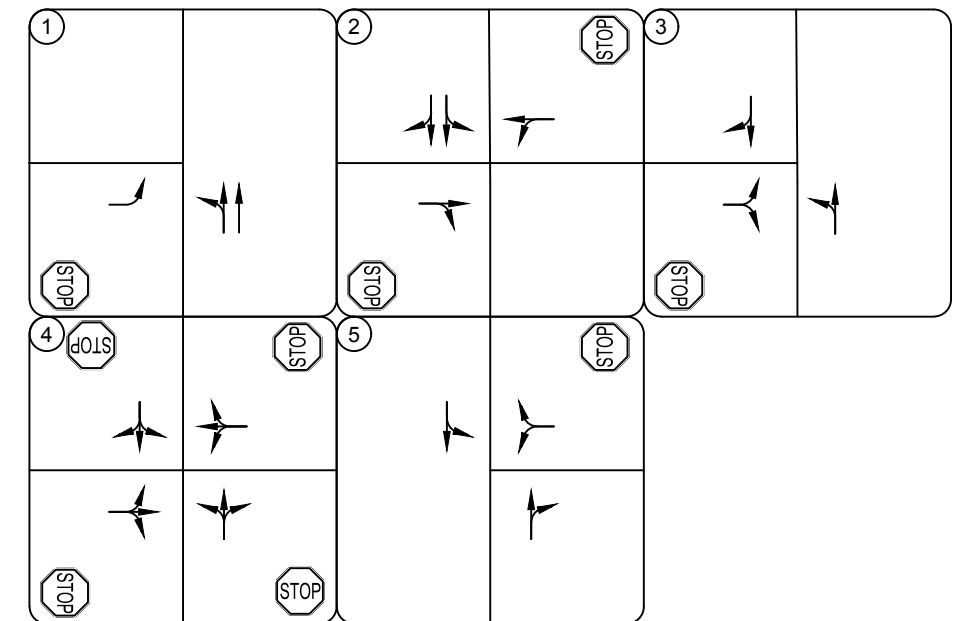
**Figure 3** illustrates the 2023 existing peak hour traffic volumes.



### Study Area Intersections

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

### 2023 Existing Lane Configuration and Control



### Legend

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



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

**Figure 2**



2023 Existing Peak Hour Traffic Volumes

|   |                        |                      |                  |                    |                    |
|---|------------------------|----------------------|------------------|--------------------|--------------------|
| ① |                        | ②                    |                  | ③                  |                    |
|   | 2(0) →                 | ← 1(0)<br>↓ 357(219) | ← 33(89)         | ← 4(8)<br>↓ 37(27) | ↔ 0(6)<br>↔ 20(37) |
|   | ↗ 33(90)<br>↖ 109(445) | ↗ 2(0)<br>↘ 69(50)   |                  | ↗ 7(7)<br>↘ 3(4)   |                    |
| ④ |                        | ⑤                    |                  |                    |                    |
|   | ← 1(0)<br>↓ 0(1)       | ↖ 1(1)<br>↘ 0(3)     | ↖ 0(3)<br>↘ 5(8) |                    |                    |
|   | ↘ 0(2)                 | ↖ 1(0)               | ↖ 10(9)          |                    |                    |

**Legend**

① Study Area Key Intersection

←XX(X) AM(PM) Peak Hour Traffic Volumes

Lemmon Learner Single Family  
2023 Existing Peak Hour Traffic Volumes

Figure 3

### 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

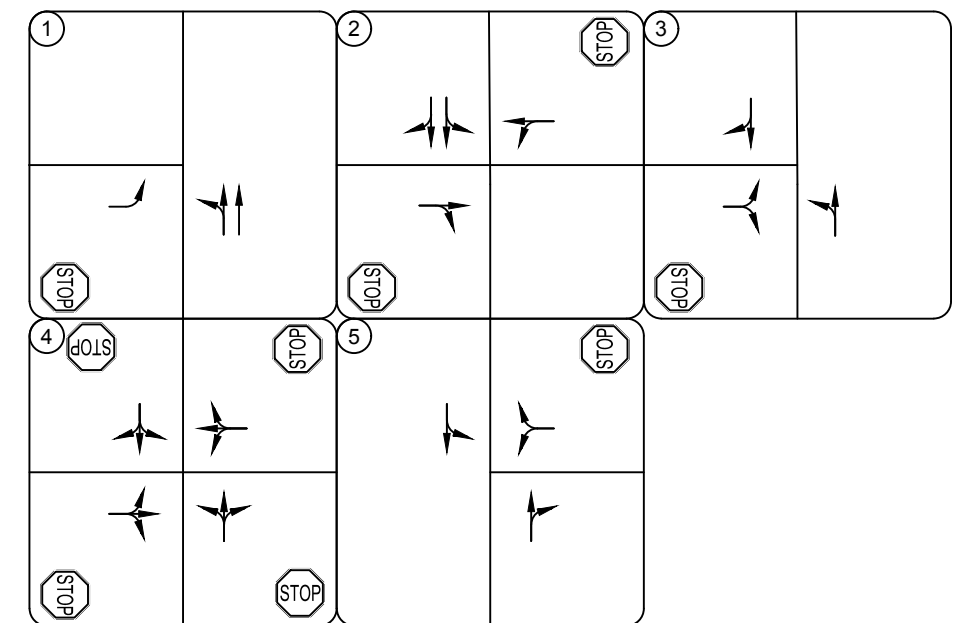




### Study Area Intersections

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

### 2026 Background Lane Configuration and Control



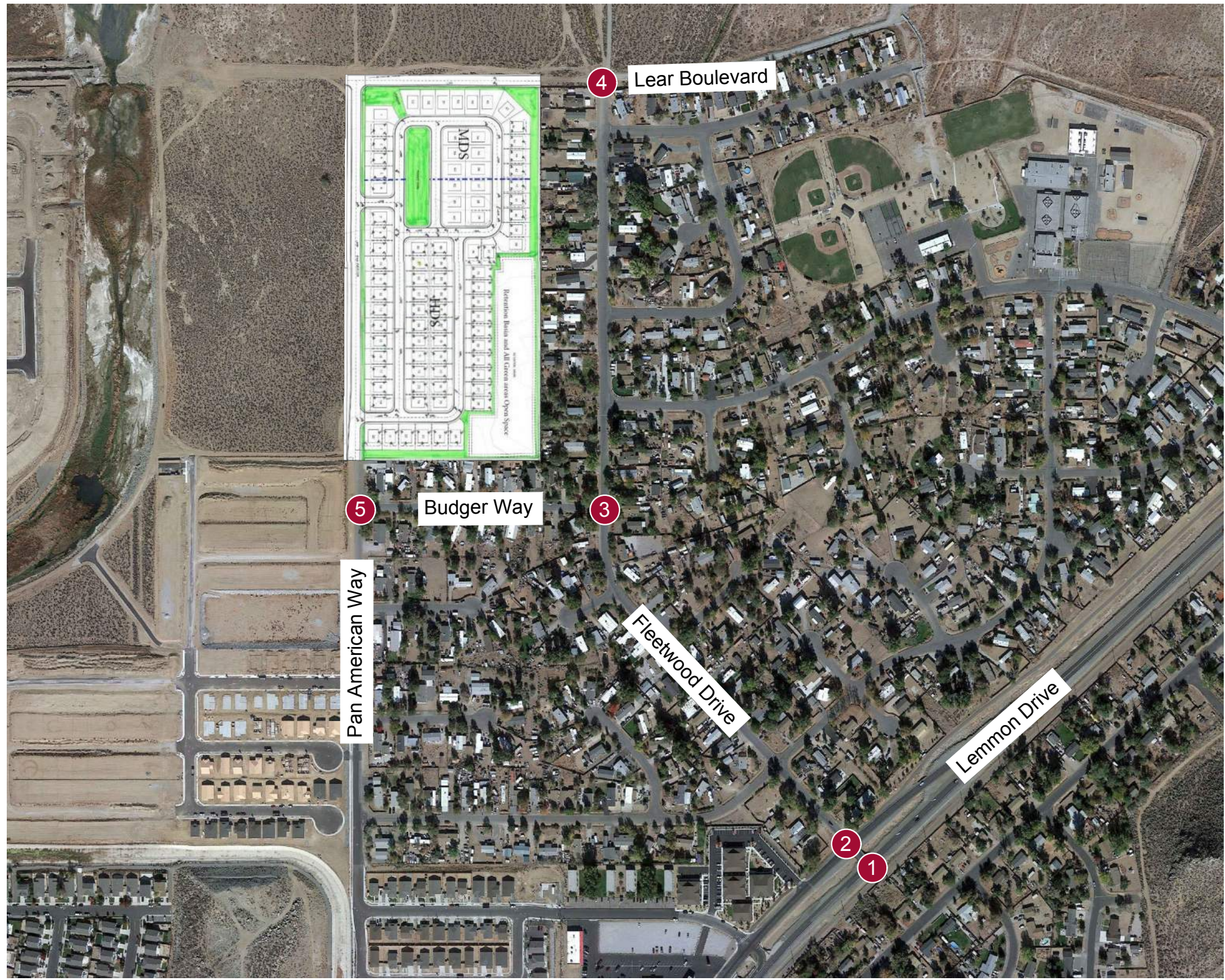
### Legend

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



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

**Figure 4**



2026 Background Peak Hour Traffic Volumes

|   |                        |                      |                  |                    |                    |
|---|------------------------|----------------------|------------------|--------------------|--------------------|
| ① |                        | ②                    |                  | ③                  |                    |
|   | 2(0) →                 | ↙ 1(0)<br>↘ 379(232) | ← 35(94)         | ↙ 4(8)<br>↘ 39(29) | ↖ 0(6)<br>↗ 21(39) |
|   | ↖ 35(95)<br>↗ 116(472) | 2(0) →<br>↘ 73(53)   |                  | 7(7) →<br>↘ 3(4)   |                    |
| ④ |                        | ⑤                    |                  |                    |                    |
|   | ↙ 1(0)<br>↘ 0(1)       | ↙ 1(1)<br>↘ 0(3)     | ↖ 0(3)<br>↗ 5(8) |                    |                    |
|   | 0(2) →                 | 1(0) →               | ↖ 11(10)         |                    |                    |

**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**



**Learner Lemmon Single Family  
2050 Background Peak Hour Volumes**

**2050 Background Project Peak Hour Volumes**

|                  |                         |                      |                     |
|------------------|-------------------------|----------------------|---------------------|
| ①                |                         | ②                    | ③                   |
| 3(0) →           | ↗ 48(130)<br>↖ 158(646) | ↘ 1(0)<br>↙ 518(318) | ← 48(129)           |
|                  |                         | 3(0) →<br>100(73) ↘  | ↘ 6(12)<br>↙ 54(39) |
|                  |                         |                      | 10(10) →<br>4(6) ↘  |
|                  |                         |                      | ↖ 0(9)<br>↗ 29(54)  |
| ④                |                         | ⑤                    |                     |
| ↘ 1(0)<br>↙ 0(1) |                         | ↘ 1(1)<br>↙ 0(4)     | ↖ 0(4)              |
| 0(3) ↘           | 1(0) →                  | ↖ 7(12)              |                     |
|                  |                         |                      | 15(13) ↘            |

**Legend**

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

**Figure 6**

### 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, 11<sup>th</sup> 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               |
| <b>Total</b> |                                |                | <b>15</b>    | <b>46</b> | <b>61</b> | <b>52</b>    | <b>30</b> | <b>82</b> | <b>820</b>        |

Source: ITE Trip Generation Manual, 11<sup>th</sup> 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.

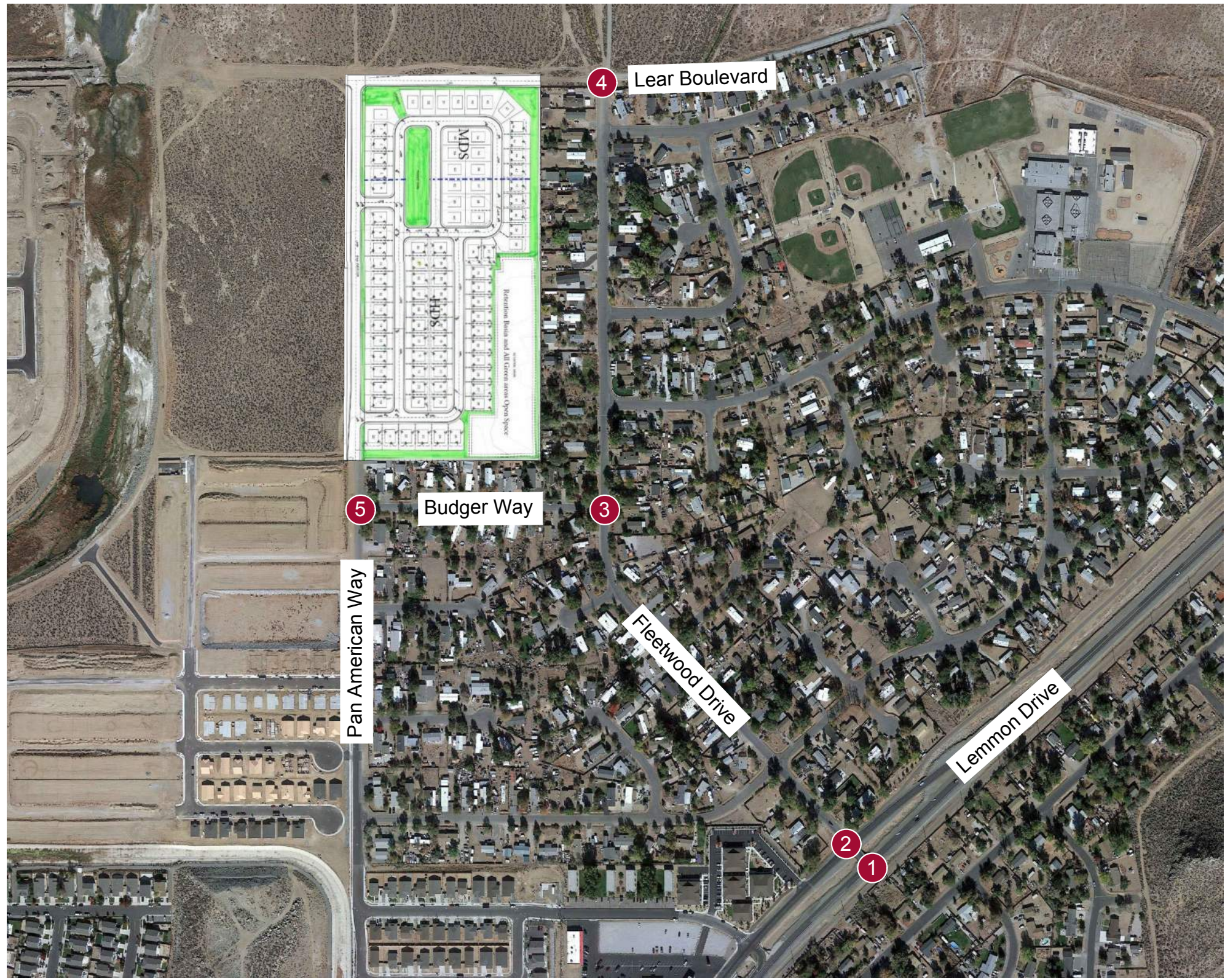
### 3.6. Traffic Assignment

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.



Project Trip Distribution

|           |           |                        |                        |
|-----------|-----------|------------------------|------------------------|
| ①         |           | ②                      | ③                      |
| 0%(10%) → | 90%(0%) → | 10%(0%) ↓<br>← 90%(0%) | 0%(15%) ↓<br>← 0%(85%) |
|           |           | 0%(10%) →<br>0%(90%) ↓ | 85%(0%) ↑<br>15%(0%) ↑ |
| ④         |           | ⑤                      |                        |
| 0%(15%) ↓ | 15%(0%) → | 0%(85%) ↓              | 85%(0%) ↑              |

**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



Project Traffic Assignment

|   |          |                    |          |          |                    |
|---|----------|--------------------|----------|----------|--------------------|
| ① |          | ②                  |          | ③        |                    |
|   | 5(3) →   | ← 2(5)             | ← 14(47) | ← 7(5)   |                    |
|   | 14(47) → | 5(3) →<br>41(29) → |          | 39(27) → | 13(44) →<br>2(8) → |
| ④ |          | ⑤                  |          |          |                    |
|   | 7(5) →   | ← 39(27)           | ← 13(44) |          |                    |
|   | 2(8) →   |                    |          |          |                    |

**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



2026 Background Plus Project Peak Hour Volumes

|   |                         |                            |                      |
|---|-------------------------|----------------------------|----------------------|
| ① |                         | ②                          | ③                    |
|   | 7(3) →                  | 3(5)<br>↕<br>379(232)<br>↕ | ← 49(141)            |
|   | ↖ 49(142)<br>↗ 116(472) | 7(3) →<br>↘ 114(82)        | ↖ 4(8)<br>↘ 46(34)   |
|   |                         |                            | ↖ 7(7)<br>↘ 42(31)   |
|   |                         |                            | ↖ 13(60)<br>↘ 23(47) |
| ④ | ↖ 1(0)<br>↘ 0(1)        | ⑤                          |                      |
|   | 7(7) →                  | ↖ 1(1)<br>↘ 39(30)         | ↖ 13(47)<br>↘ 5(8)   |
|   | ↖ 2(8)<br>↘ 1(0)        |                            | ↖ 11(10)             |

**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**





2050 Background Plus Project Peak Hour Volumes

|   |                         |                      |                                              |
|---|-------------------------|----------------------|----------------------------------------------|
| ① |                         | ②                    | ③                                            |
|   | 8(3) →                  | 3(5) ↓<br>518(318) ↓ | ← 62(176)<br>6(12) ↓<br>61(44) ↓             |
|   | 62(177) ↗<br>158(646) ↗ | 8(3) →<br>141(102) ↘ | 10(10) ↗<br>43(33) ↘<br>13(63) ↗<br>31(62) ↗ |
| ④ | 1(0) ↓<br>0(1) ↓        | 7(8) ↘               | 2(8) ↗<br>1(0) ↗                             |
|   |                         | ⑤                    |                                              |
|   |                         | 1(1) ↓<br>39(31) ↓   | 13(48) ↗<br>7(12) ↗                          |
|   |                         |                      | 15(13) ↗                                     |

**Legend**

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

Learner Lemmon Single Family  
2050 Background Plus Project Peak Hour Volumes

Figure 10

## 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” 6<sup>th</sup> 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<br>Average Total Delay (sec/veh) | Unsignalized Intersection<br>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, 6<sup>th</sup> 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)          |
| <b>Fleetwood Drive and Lemmon Drive (#1)</b><br>Two-Way Stop Control<br>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)             |
| <b>Fleetwood Drive and Lemmon Drive (#2)</b><br>Two-Way Stop Control<br>Eastbound<br>Westbound | 10.0 (B)<br>12.2 (B) | 9.3 (A)<br>11.6 (B) | 10.1 (B)<br>12.5 (B) | 9.3 (A)<br>11.8 (B) | 10.7 (B)<br>12.7 (B)         | 9.6 (A)<br>12.6 (B) | 11.2 (B)<br>14.7 (B) | 9.8 (A)<br>13.7 (B) | 11.9 (A)<br>15.1 (C)         | 10.2 (B)<br>15.1 (C) |
| <b>Fleetwood Drive and Budget Way (#3)</b><br>Two-Way Stop Control<br>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)              |
| <b>Fleetwood Drive and Lear Boulevard (#4)</b><br>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)              |
| <b>Budger Way and Pan American Way (#5)</b><br>Two-Way Stop Control<br>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%)        |
| <b>Total</b> |                                    | <b>2</b>      | <b>2 (100%)</b>      | <b>0 (0%)</b> | <b>0 (0%)</b> |

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: Giacomini, David <[david.giacomini@kimley-horn.com](mailto:david.giacomini@kimley-horn.com)>  
Sent: Thursday, January 26, 2023 2:41 PM  
To: Fink, Mitchell <[MFink@washoecounty.gov](mailto: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, 11<sup>th</sup> 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 Giacomini, P.E., PTOE, RSP<sub>1</sub>**  
**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: Giacomini, 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 Giacomini, P.E., PTOE, RSP<sub>1</sub>**  
**Kimley-Horn** | 7900 Rancharra 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: Giacomini, David <david.giacomini@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](mailto:mfink@washoecounty.gov) | Office: 775.328.2050  
1001 E. 9<sup>th</sup> Street, Reno, NV 89512  
For additional information, email [engineering@washoecounty.gov](mailto: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](mailto:allstars@washoecounty.gov)*

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**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 Direction                         | Lemmon Drive Northbound |       |      |       | Lemmon Drive Southbound |       |    |       | Fleetwood Drive Eastbound |      |    |       | Int   |
|---------------------------------------|-------------------------|-------|------|-------|-------------------------|-------|----|-------|---------------------------|------|----|-------|-------|
|                                       | T                       | L     | U    | App   | R                       | T     | U  | App   | R                         | L    | U  | App   |       |
| 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     |
| <b>Total</b>                          | 1124                    | 245   | 5    | 1374  | 6                       | 1025  | 0  | 1031  | 238                       | 7    | 0  | 245   | 2650  |
| <b>% Approach</b>                     | 81.8%                   | 17.8% | 0.4% | -     | 0.6%                    | 99.4% | 0% | -     | 97.1%                     | 2.9% | 0% | -     | -     |
| <b>% Total</b>                        | 42.4%                   | 9.2%  | 0.2% | 51.8% | 0.2%                    | 38.7% | 0% | 38.9% | 9.0%                      | 0.3% | 0% | 9.2%  | -     |
| <b>Lights</b>                         | 1107                    | 241   | 5    | 1353  | 5                       | 1006  | 0  | 1011  | 234                       | 7    | 0  | 241   | 2605  |
| <b>% Lights</b>                       | 98.5%                   | 98.4% | 100% | 98.5% | 83.3%                   | 98.1% | 0% | 98.1% | 98.3%                     | 100% | 0% | 98.4% | 98.3% |
| <b>Articulated Trucks</b>             | 2                       | 0     | 0    | 2     | 0                       | 1     | 0  | 1     | 0                         | 0    | 0  | 0     | 3     |
| <b>% Articulated Trucks</b>           | 0.2%                    | 0%    | 0%   | 0.1%  | 0%                      | 0.1%  | 0% | 0.1%  | 0%                        | 0%   | 0% | 0%    | 0.1%  |
| <b>Buses and Single-Unit Trucks</b>   | 15                      | 4     | 0    | 19    | 1                       | 18    | 0  | 19    | 4                         | 0    | 0  | 4     | 42    |
| <b>% Buses and Single-Unit Trucks</b> | 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

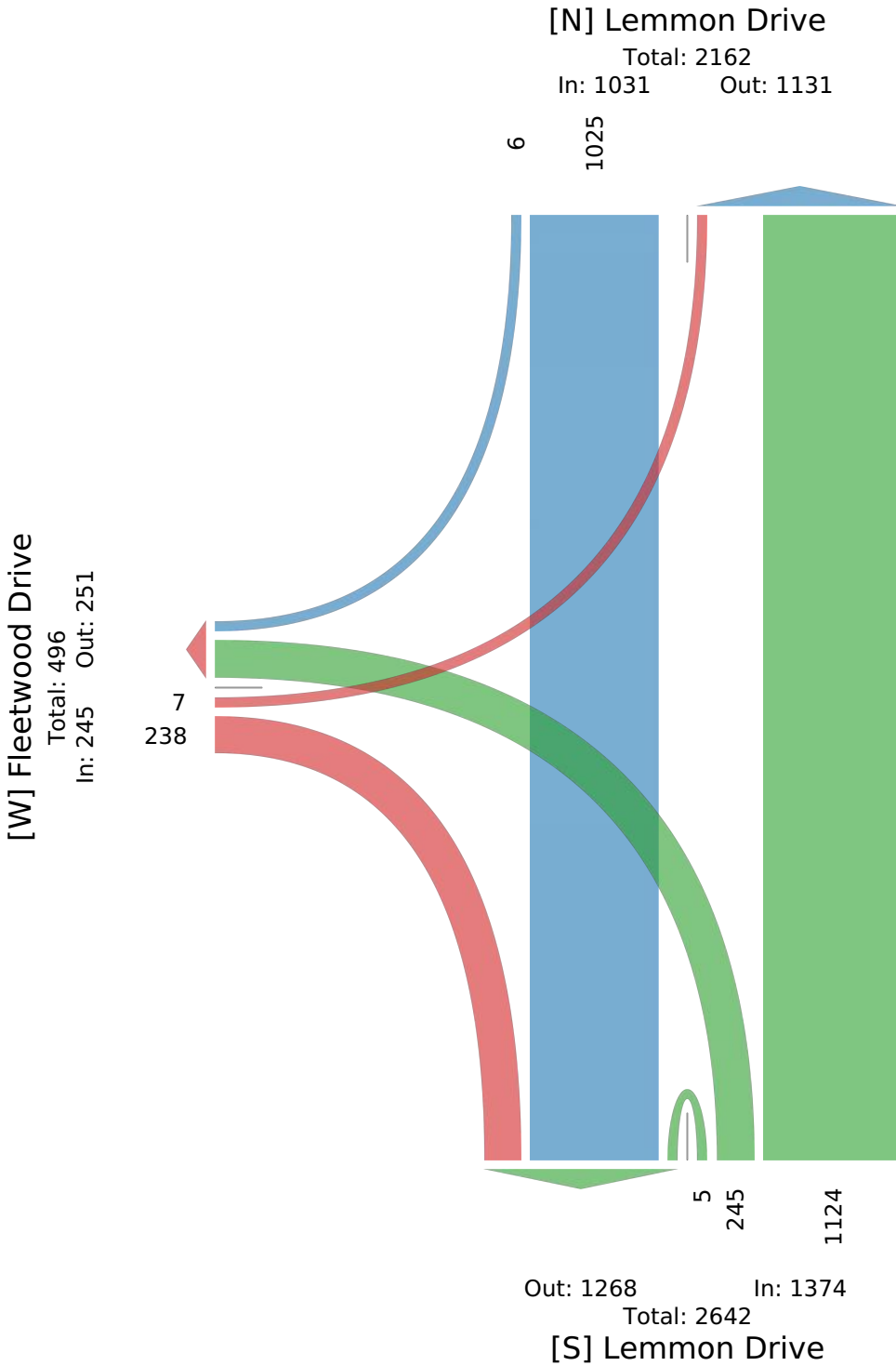
Full Length (7 AM-9 AM, 4 PM-6 PM)

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**

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

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

| Leg Direction                         | Lemmon Drive Northbound |       |    |       | Lemmon Drive Southbound |       |    |       | Fleetwood Drive Eastbound |       |    |       | Int   |
|---------------------------------------|-------------------------|-------|----|-------|-------------------------|-------|----|-------|---------------------------|-------|----|-------|-------|
|                                       | T                       | L     | U  | App   | R                       | T     | U  | App   | R                         | L     | U  | App   |       |
| 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   |
| <b>Total</b>                          | 109                     | 33    | 0  | 142   | 1                       | 357   | 0  | 358   | 69                        | 2     | 0  | 71    | 571   |
| <b>% Approach</b>                     | 76.8%                   | 23.2% | 0% | -     | 0.3%                    | 99.7% | 0% | -     | 97.2%                     | 2.8%  | 0% | -     | -     |
| <b>% Total</b>                        | 19.1%                   | 5.8%  | 0% | 24.9% | 0.2%                    | 62.5% | 0% | 62.7% | 12.1%                     | 0.4%  | 0% | 12.4% | -     |
| <b>PHF</b>                            | 0.779                   | 0.750 | -  | 0.772 | 0.250                   | 0.920 | -  | 0.913 | 0.690                     | 0.500 | -  | 0.710 | 0.903 |
| <b>Lights</b>                         | 101                     | 31    | 0  | 132   | 1                       | 354   | 0  | 355   | 67                        | 2     | 0  | 69    | 556   |
| <b>% Lights</b>                       | 92.7%                   | 93.9% | 0% | 93.0% | 100%                    | 99.2% | 0% | 99.2% | 97.1%                     | 100%  | 0% | 97.2% | 97.4% |
| <b>Articulated Trucks</b>             | 2                       | 0     | 0  | 2     | 0                       | 0     | 0  | 0     | 0                         | 0     | 0  | 0     | 2     |
| <b>% Articulated Trucks</b>           | 1.8%                    | 0%    | 0% | 1.4%  | 0%                      | 0%    | 0% | 0%    | 0%                        | 0%    | 0% | 0%    | 0.4%  |
| <b>Buses and Single-Unit Trucks</b>   | 6                       | 2     | 0  | 8     | 0                       | 3     | 0  | 3     | 2                         | 0     | 0  | 2     | 13    |
| <b>% Buses and Single-Unit Trucks</b> | 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

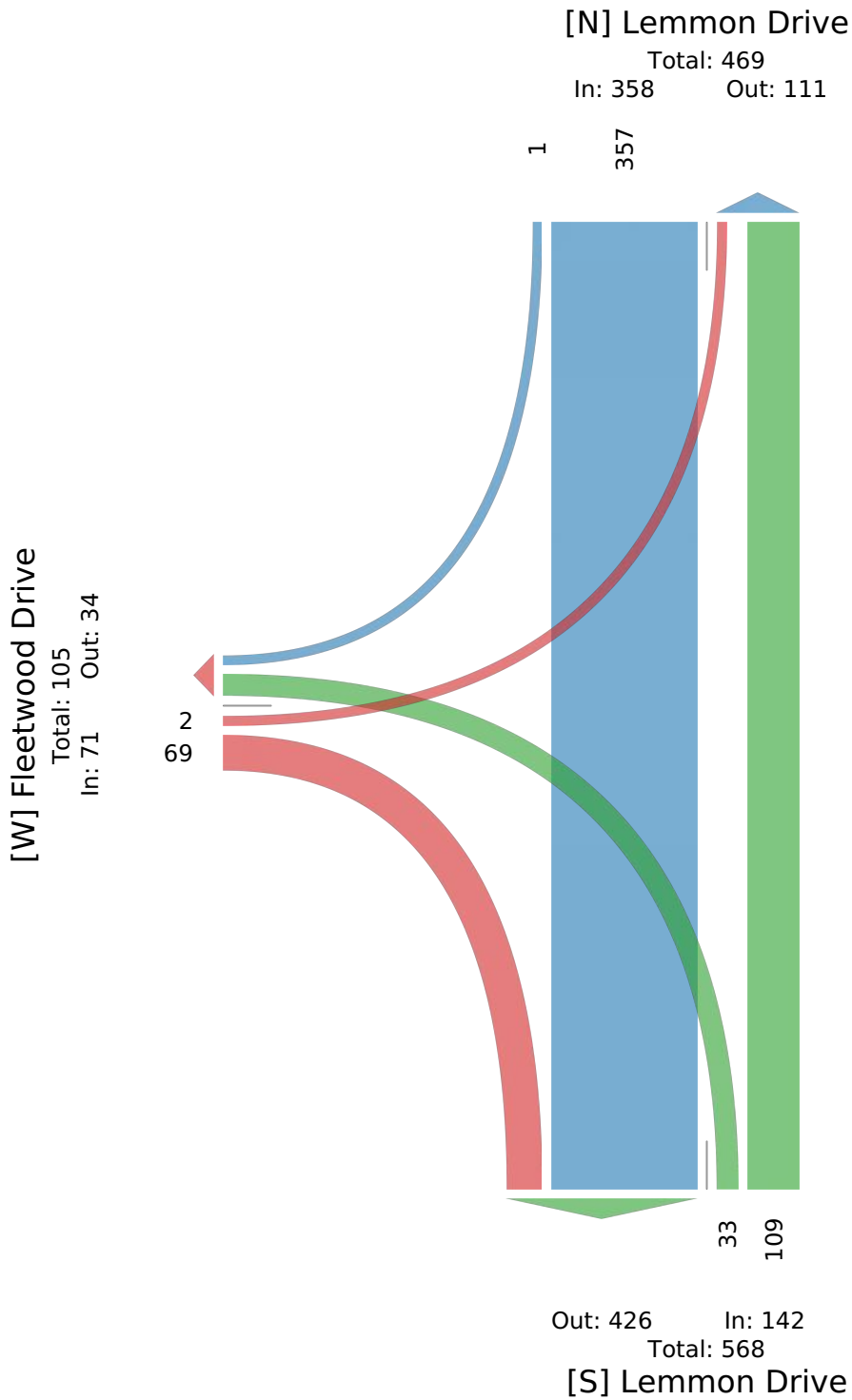
AM Peak (7 AM - 8 AM)

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<br>Direction                      | Lemmon Drive<br>Northbound |       |       |       | Lemmon Drive<br>Southbound |       |    |       | Fleetwood Drive<br>Eastbound |    |    |       | Int   |
|---------------------------------------|----------------------------|-------|-------|-------|----------------------------|-------|----|-------|------------------------------|----|----|-------|-------|
|                                       | T                          | L     | U     | App   | R                          | T     | U  | App   | R                            | L  | U  | App   |       |
| 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   |
| <b>Total</b>                          | 445                        | 89    | 1     | 535   | 0                          | 219   | 0  | 219   | 50                           | 0  | 0  | 50    | 804   |
| <b>% Approach</b>                     | 83.2%                      | 16.6% | 0.2%  | -     | 0%                         | 100%  | 0% | -     | 100%                         | 0% | 0% | -     | -     |
| <b>% Total</b>                        | 55.3%                      | 11.1% | 0.1%  | 66.5% | 0%                         | 27.2% | 0% | 27.2% | 6.2%                         | 0% | 0% | 6.2%  | -     |
| <b>PHF</b>                            | 0.818                      | 0.601 | 0.250 | 0.773 | -                          | 0.793 | -  | 0.793 | 0.694                        | -  | -  | 0.694 | 0.866 |
| <b>Lights</b>                         | 442                        | 87    | 1     | 530   | 0                          | 215   | 0  | 215   | 49                           | 0  | 0  | 49    | 794   |
| <b>% Lights</b>                       | 99.3%                      | 97.8% | 100%  | 99.1% | 0%                         | 98.2% | 0% | 98.2% | 98.0%                        | 0% | 0% | 98.0% | 98.8% |
| <b>Articulated Trucks</b>             | 0                          | 0     | 0     | 0     | 0                          | 0     | 0  | 0     | 0                            | 0  | 0  | 0     | 0     |
| <b>% Articulated Trucks</b>           | 0%                         | 0%    | 0%    | 0%    | 0%                         | 0%    | 0% | 0%    | 0%                           | 0% | 0% | 0%    | 0%    |
| <b>Buses and Single-Unit Trucks</b>   | 3                          | 2     | 0     | 5     | 0                          | 4     | 0  | 4     | 1                            | 0  | 0  | 1     | 10    |
| <b>% Buses and Single-Unit Trucks</b> | 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

[N] Lemmon Drive

Total: 664  
In: 219 Out: 445

219

[W] Fleetwood Drive

Total: 139  
In: 50 Out: 89

50



Out: 270 In: 535  
Total: 805

[S] Lemmon Drive

**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 Direction                         | Fleetwood Drive Northbound |       |    |       | Fleetwood Drive Southbound |       |    |       | Budger Way Eastbound |       |    |       | Int   |
|---------------------------------------|----------------------------|-------|----|-------|----------------------------|-------|----|-------|----------------------|-------|----|-------|-------|
|                                       | T                          | L     | U  | App   | R                          | T     | U  | App   | R                    | L     | U  | App   |       |
| 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     |
| <b>Total</b>                          | 120                        | 12    | 0  | 132   | 17                         | 109   | 0  | 126   | 17                   | 28    | 0  | 45    | 303   |
| <b>% Approach</b>                     | 90.9%                      | 9.1%  | 0% | -     | 13.5%                      | 86.5% | 0% | -     | 37.8%                | 62.2% | 0% | -     | -     |
| <b>% Total</b>                        | 39.6%                      | 4.0%  | 0% | 43.6% | 5.6%                       | 36.0% | 0% | 41.6% | 5.6%                 | 9.2%  | 0% | 14.9% | -     |
| <b>Lights</b>                         | 120                        | 11    | 0  | 131   | 17                         | 106   | 0  | 123   | 17                   | 27    | 0  | 44    | 298   |
| <b>% Lights</b>                       | 100%                       | 91.7% | 0% | 99.2% | 100%                       | 97.2% | 0% | 97.6% | 100%                 | 96.4% | 0% | 97.8% | 98.3% |
| <b>Articulated Trucks</b>             | 0                          | 0     | 0  | 0     | 0                          | 0     | 0  | 0     | 0                    | 0     | 0  | 0     | 0     |
| <b>% Articulated Trucks</b>           | 0%                         | 0%    | 0% | 0%    | 0%                         | 0%    | 0% | 0%    | 0%                   | 0%    | 0% | 0%    | 0%    |
| <b>Buses and Single-Unit Trucks</b>   | 0                          | 1     | 0  | 1     | 0                          | 3     | 0  | 3     | 0                    | 1     | 0  | 1     | 5     |
| <b>% Buses and Single-Unit Trucks</b> | 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

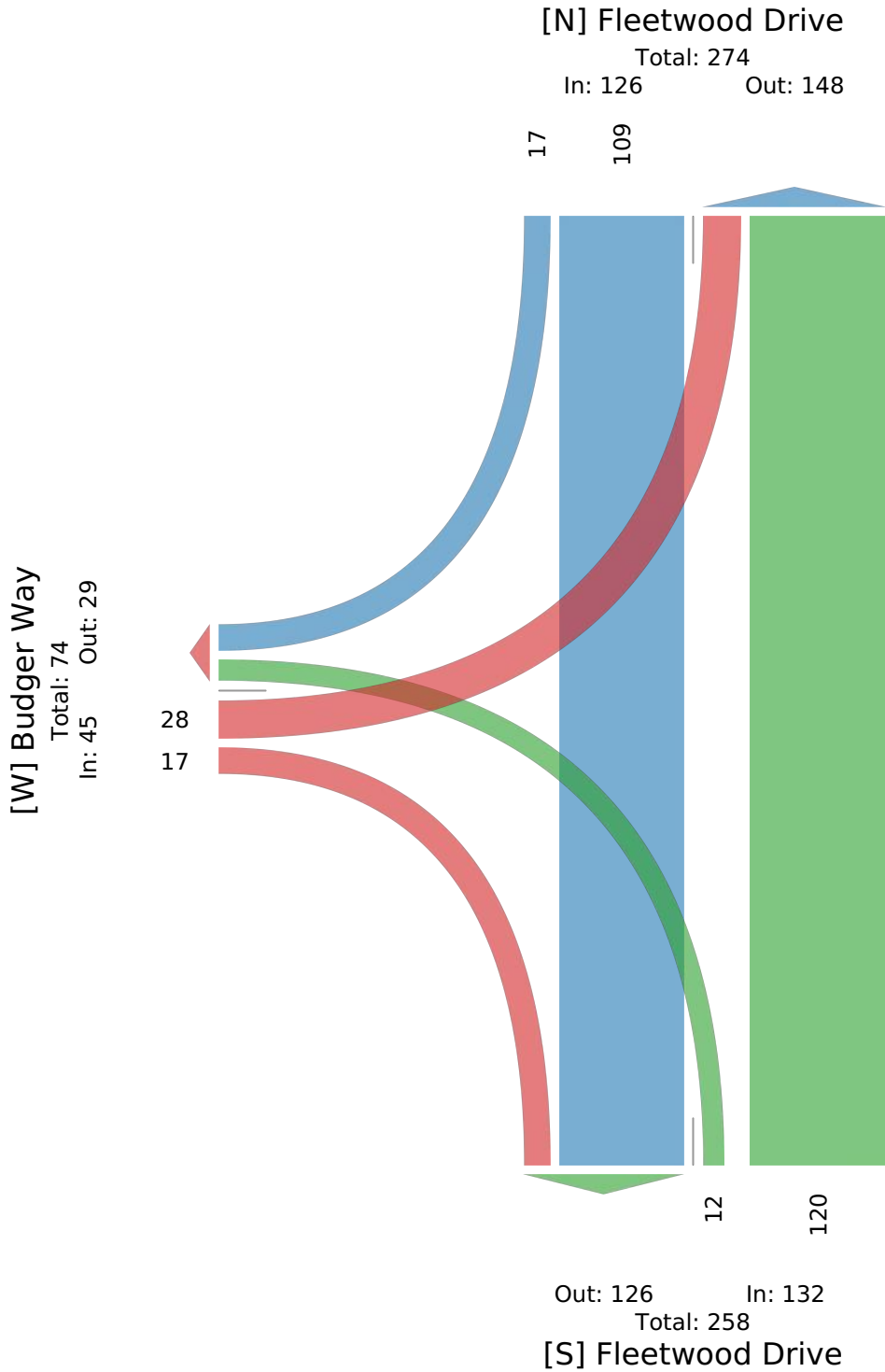
Full Length (7 AM-9 AM, 4 PM-6 PM)

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    |
| <b>Total</b>                          | 20                         | 0  | 0  | 20    | 4                          | 37    | 0  | 41    | 3                    | 7     | 0  | 10    | 71    |
| <b>% Approach</b>                     | 100%                       | 0% | 0% | -     | 9.8%                       | 90.2% | 0% | -     | 30.0%                | 70.0% | 0% | -     | -     |
| <b>% Total</b>                        | 28.2%                      | 0% | 0% | 28.2% | 5.6%                       | 52.1% | 0% | 57.7% | 4.2%                 | 9.9%  | 0% | 14.1% | -     |
| <b>PHF</b>                            | 0.833                      | -  | -  | 0.833 | 0.333                      | 0.712 | -  | 0.641 | 0.375                | 0.583 | -  | 0.500 | 0.683 |
| <b>Lights</b>                         | 20                         | 0  | 0  | 20    | 4                          | 36    | 0  | 40    | 3                    | 7     | 0  | 10    | 70    |
| <b>% Lights</b>                       | 100%                       | 0% | 0% | 100%  | 100%                       | 97.3% | 0% | 97.6% | 100%                 | 100%  | 0% | 100%  | 98.6% |
| <b>Articulated Trucks</b>             | 0                          | 0  | 0  | 0     | 0                          | 0     | 0  | 0     | 0                    | 0     | 0  | 0     | 0     |
| <b>% Articulated Trucks</b>           | 0%                         | 0% | 0% | 0%    | 0%                         | 0%    | 0% | 0%    | 0%                   | 0%    | 0% | 0%    | 0%    |
| <b>Buses and Single-Unit Trucks</b>   | 0                          | 0  | 0  | 0     | 0                          | 1     | 0  | 1     | 0                    | 0     | 0  | 0     | 1     |
| <b>% Buses and Single-Unit Trucks</b> | 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

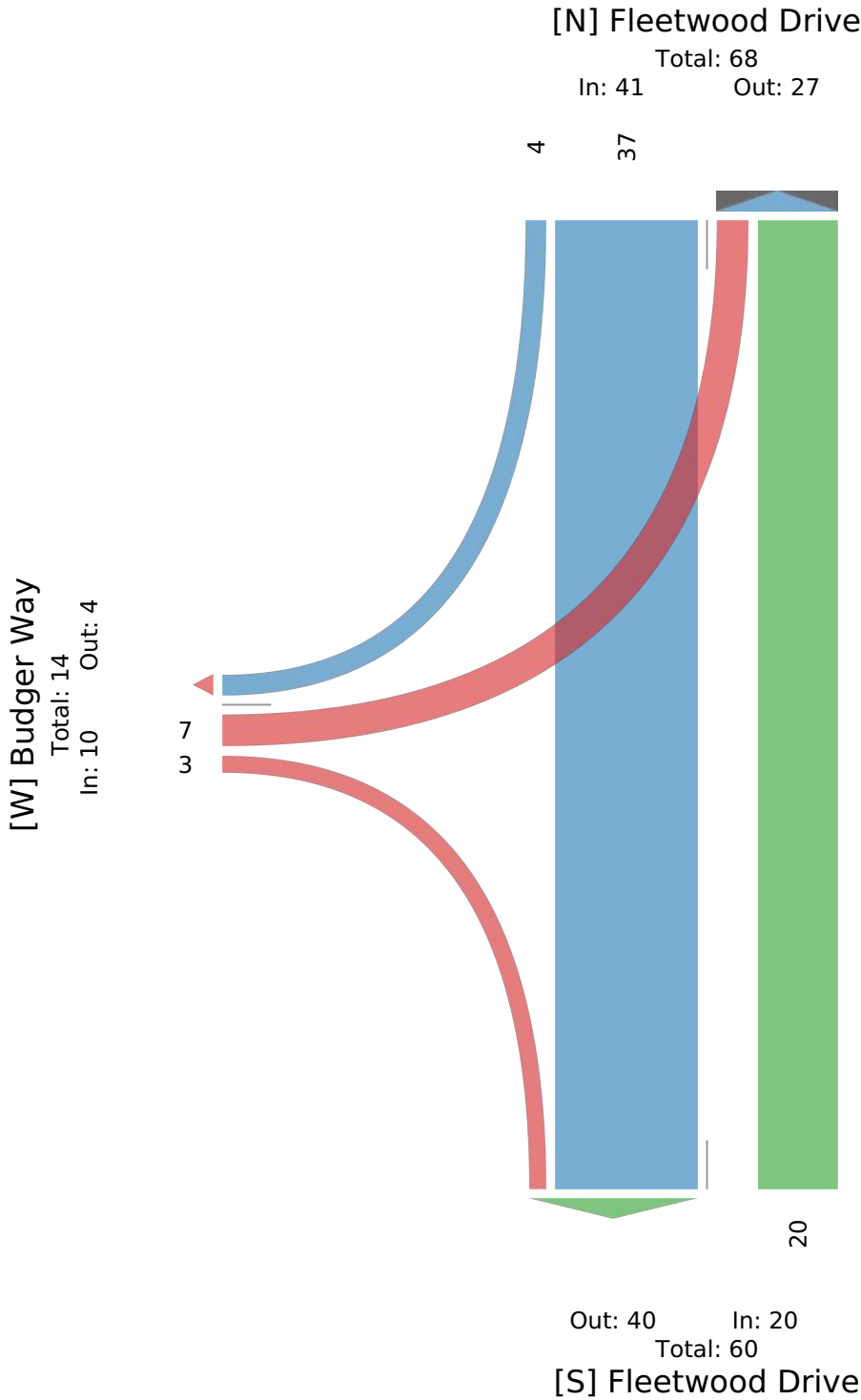
AM Peak (7 AM - 8 AM)

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**

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

| Leg<br>Direction                      | Fleetwood Drive<br>Northbound |       |    |       | Fleetwood Drive<br>Southbound |       |    |       | Budger Way<br>Eastbound |       |    |       | Int   |
|---------------------------------------|-------------------------------|-------|----|-------|-------------------------------|-------|----|-------|-------------------------|-------|----|-------|-------|
|                                       | T                             | L     | U  | App   | R                             | T     | U  | App   | R                       | L     | U  | App   |       |
| 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    |
| <b>Total</b>                          | 37                            | 6     | 0  | 43    | 8                             | 27    | 0  | 35    | 4                       | 7     | 0  | 11    | 89    |
| <b>% Approach</b>                     | 86.0%                         | 14.0% | 0% | -     | 22.9%                         | 77.1% | 0% | -     | 36.4%                   | 63.6% | 0% | -     | -     |
| <b>% Total</b>                        | 41.6%                         | 6.7%  | 0% | 48.3% | 9.0%                          | 30.3% | 0% | 39.3% | 4.5%                    | 7.9%  | 0% | 12.4% | -     |
| <b>PHF</b>                            | 0.712                         | 0.750 | -  | 0.717 | 0.400                         | 0.675 | -  | 0.795 | 0.500                   | 0.438 | -  | 0.550 | 0.927 |
| <b>Lights</b>                         | 37                            | 6     | 0  | 43    | 8                             | 27    | 0  | 35    | 4                       | 7     | 0  | 11    | 89    |
| <b>% Lights</b>                       | 100%                          | 100%  | 0% | 100%  | 100%                          | 100%  | 0% | 100%  | 100%                    | 100%  | 0% | 100%  | 100%  |
| <b>Articulated Trucks</b>             | 0                             | 0     | 0  | 0     | 0                             | 0     | 0  | 0     | 0                       | 0     | 0  | 0     | 0     |
| <b>% Articulated Trucks</b>           | 0%                            | 0%    | 0% | 0%    | 0%                            | 0%    | 0% | 0%    | 0%                      | 0%    | 0% | 0%    | 0%    |
| <b>Buses and Single-Unit Trucks</b>   | 0                             | 0     | 0  | 0     | 0                             | 0     | 0  | 0     | 0                       | 0     | 0  | 0     | 0     |
| <b>% Buses and Single-Unit Trucks</b> | 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

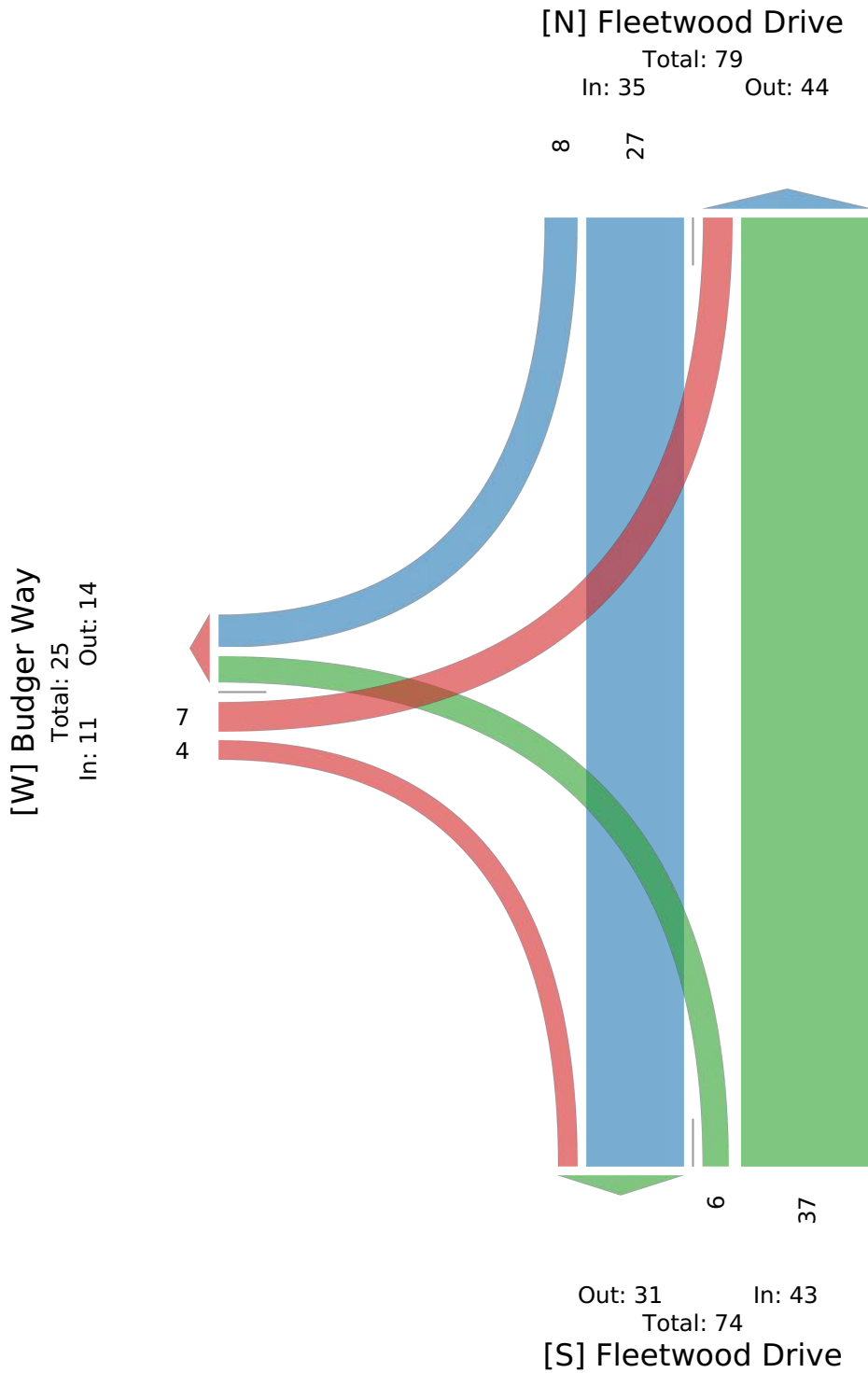
PM Peak (4:45 PM - 5:45 PM) - Overall Peak Hour

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

**[N] Pan American Drive**

Total: 14  
In: 7 Out: 7

3 22



3  
21  
Out: 38 In: 24  
Total: 62  
[E] Budger Way

Out: 24 In: 38  
Total: 62

**[S] Pan American Drive**

**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.  
767 Eustis Street, Suite 100, Saint Paul, MN, 55114, US

| Leg<br>Direction                      | Pan American Drive<br>Northbound |    |    |       | Pan American Drive<br>Southbound |    |    |       | Budger Way<br>Westbound |       |    |       | Int   |
|---------------------------------------|----------------------------------|----|----|-------|----------------------------------|----|----|-------|-------------------------|-------|----|-------|-------|
|                                       | R                                | T  | U  | App   | T                                | L  | U  | App   | R                       | L     | U  | App   |       |
| 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     |
| <b>Total</b>                          | 10                               | 0  | 0  | 10    | 1                                | 0  | 0  | 1     | 0                       | 5     | 0  | 5     | 16    |
| <b>% Approach</b>                     | 100%                             | 0% | 0% | -     | 100%                             | 0% | 0% | -     | 0%                      | 100%  | 0% | -     | -     |
| <b>% Total</b>                        | 62.5%                            | 0% | 0% | 62.5% | 6.3%                             | 0% | 0% | 6.3%  | 0%                      | 31.3% | 0% | 31.3% | -     |
| <b>PHF</b>                            | 0.625                            | -  | -  | 0.625 | 0.250                            | -  | -  | 0.250 | -                       | 0.417 | -  | 0.417 | 0.571 |
| <b>Lights</b>                         | 10                               | 0  | 0  | 10    | 1                                | 0  | 0  | 1     | 0                       | 5     | 0  | 5     | 16    |
| <b>% Lights</b>                       | 100%                             | 0% | 0% | 100%  | 100%                             | 0% | 0% | 100%  | 0%                      | 100%  | 0% | 100%  | 100%  |
| <b>Articulated Trucks</b>             | 0                                | 0  | 0  | 0     | 0                                | 0  | 0  | 0     | 0                       | 0     | 0  | 0     | 0     |
| <b>% Articulated Trucks</b>           | 0%                               | 0% | 0% | 0%    | 0%                               | 0% | 0% | 0%    | 0%                      | 0%    | 0% | 0%    | 0%    |
| <b>Buses and Single-Unit Trucks</b>   | 0                                | 0  | 0  | 0     | 0                                | 0  | 0  | 0     | 0                       | 0     | 0  | 0     | 0     |
| <b>% Buses and Single-Unit Trucks</b> | 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.  
767 Eustis Street, Suite 100, Saint Paul, MN, 55114, US

**[N] Pan American Drive**

Total: 1  
In: 1    Out: 0

1



5

Out: 10    In: 5  
Total: 15  
[E] Budger Way

10

Out: 6    In: 10  
Total: 16

**[S] Pan American Drive**

**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 Direction                         | Pan American Drive Northbound |    |    |       | Pan American Drive Southbound |       |       |       | Budger Way Westbound |       |    |       | Int   |
|---------------------------------------|-------------------------------|----|----|-------|-------------------------------|-------|-------|-------|----------------------|-------|----|-------|-------|
|                                       | R                             | T  | U  | App   | T                             | L     | U     | App   | R                    | L     | U  | App   |       |
| 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     |
| <b>Total</b>                          | 9                             | 0  | 0  | 9     | 1                             | 1     | 2     | 4     | 3                    | 8     | 0  | 11    | 24    |
| <b>% Approach</b>                     | 100%                          | 0% | 0% | -     | 25.0%                         | 25.0% | 50.0% | -     | 27.3%                | 72.7% | 0% | -     | -     |
| <b>% Total</b>                        | 37.5%                         | 0% | 0% | 37.5% | 4.2%                          | 4.2%  | 8.3%  | 16.7% | 12.5%                | 33.3% | 0% | 45.8% | -     |
| <b>PHF</b>                            | 0.750                         | -  | -  | 0.750 | 0.250                         | 0.250 | 0.250 | 0.333 | 0.750                | 0.333 | -  | 0.393 | 0.667 |
| <b>Lights</b>                         | 9                             | 0  | 0  | 9     | 1                             | 1     | 2     | 4     | 3                    | 8     | 0  | 11    | 24    |
| <b>% Lights</b>                       | 100%                          | 0% | 0% | 100%  | 100%                          | 100%  | 100%  | 100%  | 100%                 | 100%  | 0% | 100%  | 100%  |
| <b>Articulated Trucks</b>             | 0                             | 0  | 0  | 0     | 0                             | 0     | 0     | 0     | 0                    | 0     | 0  | 0     | 0     |
| <b>% Articulated Trucks</b>           | 0%                            | 0% | 0% | 0%    | 0%                            | 0%    | 0%    | 0%    | 0%                   | 0%    | 0% | 0%    | 0%    |
| <b>Buses and Single-Unit Trucks</b>   | 0                             | 0  | 0  | 0     | 0                             | 0     | 0     | 0     | 0                    | 0     | 0  | 0     | 0     |
| <b>% Buses and Single-Unit Trucks</b> | 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.  
767 Eustis Street, Suite 100, Saint Paul, MN, 55114, US

**[N] Pan American Drive**

Total: 9  
In: 4    Out: 5

1 1 2



3  
8  
Out: 10    In: 11  
Total: 21  
**[E] Budger Way**

Out: 9    In: 9  
Total: 18

**[S] Pan American Drive**

**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 Direction                         | Fleetwood Drive Northbound |       |    |    |       | Fleetwood Drive Southbound |       |    |    |       | Lear Boulevard Eastbound |    |    |    |       | Lear Boulevard Westbound |    |    |    |     | Int |    |    |    |    |      |
|---------------------------------------|----------------------------|-------|----|----|-------|----------------------------|-------|----|----|-------|--------------------------|----|----|----|-------|--------------------------|----|----|----|-----|-----|----|----|----|----|------|
|                                       | R                          | T     | L  | U  | App   | R                          | T     | L  | U  | App   | R                        | T  | L  | U  | App   | R                        | T  | L  | U  | App |     |    |    |    |    |      |
| 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   | 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   | 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   | 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   | 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   | 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   | 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   | 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   | 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   | 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   | 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   | 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   | 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   | 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   | 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   | 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   | 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   | 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   | 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   | 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   | 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   | 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   | 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   | 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   | 0  | 0  | 0  | 0  | 0    |
| <b>Total</b>                          | 0                          | 1     | 0  | 0  | 1     | 0                          | 2     | 0  | 0  | 2     | 2                        | 0  | 0  | 0  | 2     | 0                        | 0  | 0  | 0  | 0   | 0   | 0  | 0  | 0  | 0  | 5    |
| <b>% Approach</b>                     | 0%                         | 100%  | 0% | 0% | -     | 0%                         | 100%  | 0% | 0% | -     | 100%                     | 0% | 0% | 0% | -     | 0%                       | 0% | 0% | 0% | -   | -   | -  | -  | -  | -  | -    |
| <b>% Total</b>                        | 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%  | 0%  | 0% | 0% | 0% | 0% | -    |
| <b>Lights</b>                         | 0                          | 1     | 0  | 0  | 1     | 0                          | 2     | 0  | 0  | 2     | 2                        | 0  | 0  | 0  | 2     | 0                        | 0  | 0  | 0  | 0   | 0   | 0  | 0  | 0  | 0  | 5    |
| <b>% Lights</b>                       | 0%                         | 100%  | 0% | 0% | 100%  | 0%                         | 100%  | 0% | 0% | 100%  | 100%                     | 0% | 0% | 0% | 100%  | 0%                       | 0% | 0% | 0% | 0%  | -   | -  | -  | -  | -  | 100% |
| <b>Articulated Trucks</b>             | 0                          | 0     | 0  | 0  | 0     | 0                          | 0     | 0  | 0  | 0     | 0                        | 0  | 0  | 0  | 0     | 0                        | 0  | 0  | 0  | 0   | 0   | 0  | 0  | 0  | 0  | 0    |
| <b>% Articulated Trucks</b>           | 0%                         | 0%    | 0% | 0% | 0%    | 0%                         | 0%    | 0% | 0% | 0%    | 0%                       | 0% | 0% | 0% | 0%    | 0%                       | 0% | 0% | 0% | 0%  | -   | -  | -  | -  | -  | 0%   |
| <b>Buses and Single-Unit Trucks</b>   | 0                          | 0     | 0  | 0  | 0     | 0                          | 0     | 0  | 0  | 0     | 0                        | 0  | 0  | 0  | 0     | 0                        | 0  | 0  | 0  | 0   | 0   | 0  | 0  | 0  | 0  | 0    |
| <b>% Buses and Single-Unit Trucks</b> | 0%                         | 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

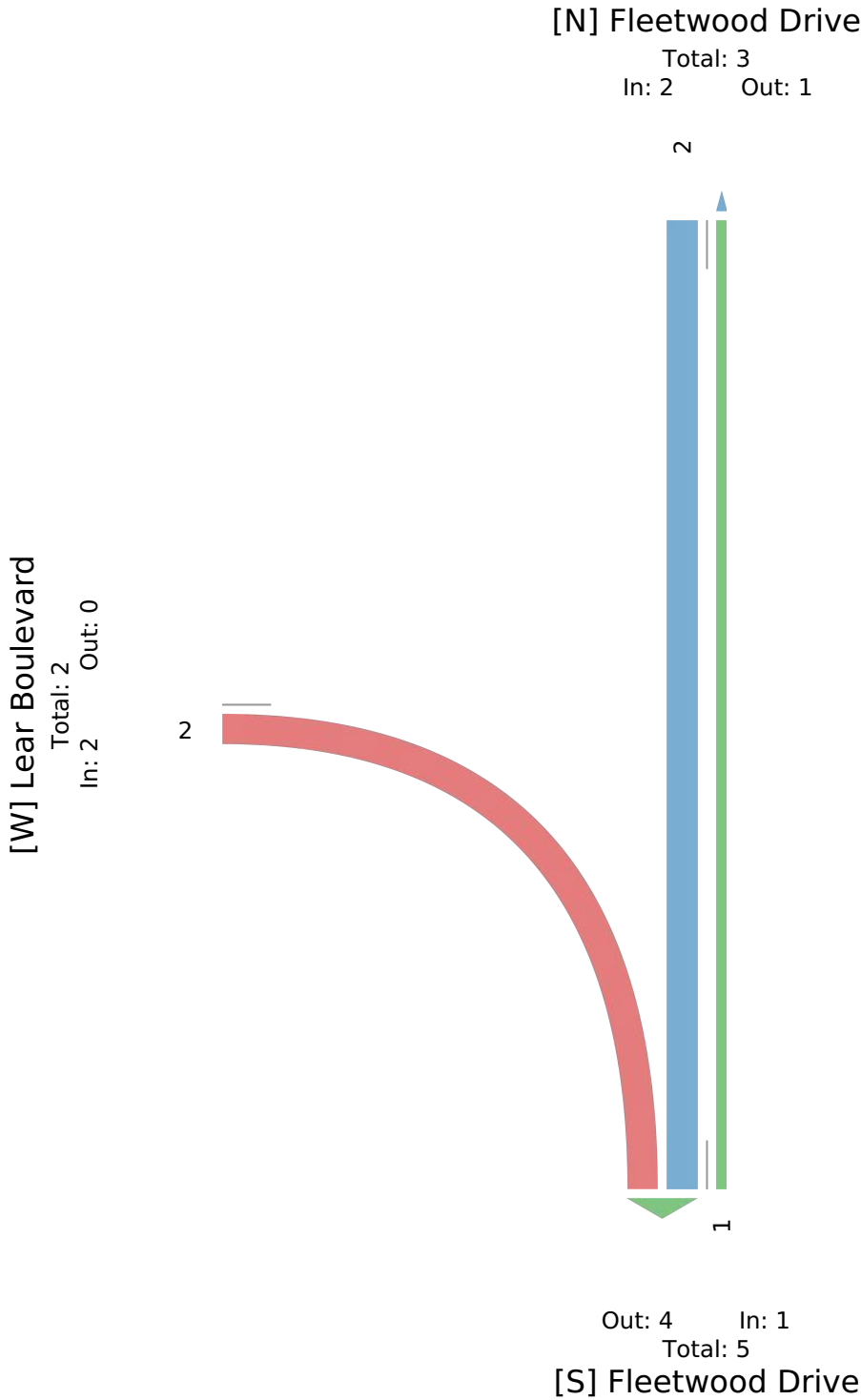
Full Length (7 AM-9 AM, 4 PM-6 PM)

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

All Movements

ID: 1035398, Location: 39.646782, -119.843895

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**Fleetwood Drive and Lear Boulevard - TMC**

Provided by: Kimley-Horn and Associates, Inc.  
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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

| Leg Direction                         | Fleetwood Drive Northbound |       |    |    |       | Fleetwood Drive Southbound |       |    |    |       | Lear Boulevard Eastbound |    |    |    |     | Lear Boulevard Westbound |    |    |    |     | Int   |
|---------------------------------------|----------------------------|-------|----|----|-------|----------------------------|-------|----|----|-------|--------------------------|----|----|----|-----|--------------------------|----|----|----|-----|-------|
|                                       | R                          | T     | L  | U  | App   | R                          | T     | L  | U  | App   | R                        | T  | L  | U  | App | R                        | T  | L  | U  | App |       |
| 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     |
| <b>Total</b>                          | 0                          | 1     | 0  | 0  | 1     | 0                          | 1     | 0  | 0  | 1     | 0                        | 0  | 0  | 0  | 0   | 0                        | 0  | 0  | 0  | 0   | 2     |
| <b>% Approach</b>                     | 0%                         | 100%  | 0% | 0% | -     | 0%                         | 100%  | 0% | 0% | -     | 0%                       | 0% | 0% | 0% | -   | 0%                       | 0% | 0% | 0% | -   | -     |
| <b>% Total</b>                        | 0%                         | 50.0% | 0% | 0% | 50.0% | 0%                         | 50.0% | 0% | 0% | 50.0% | 0%                       | 0% | 0% | 0% | 0%  | 0%                       | 0% | 0% | 0% | 0%  | -     |
| <b>PHF</b>                            | -                          | 0.250 | -  | -  | 0.250 | -                          | 0.250 | -  | -  | 0.250 | -                        | -  | -  | -  | -   | -                        | -  | -  | -  | -   | 0.250 |
| <b>Lights</b>                         | 0                          | 1     | 0  | 0  | 1     | 0                          | 1     | 0  | 0  | 1     | 0                        | 0  | 0  | 0  | 0   | 0                        | 0  | 0  | 0  | 0   | 2     |
| <b>% Lights</b>                       | 0%                         | 100%  | 0% | 0% | 100%  | 0%                         | 100%  | 0% | 0% | 100%  | 0%                       | 0% | 0% | 0% | -   | 0%                       | 0% | 0% | 0% | -   | 100%  |
| <b>Articulated Trucks</b>             | 0                          | 0     | 0  | 0  | 0     | 0                          | 0     | 0  | 0  | 0     | 0                        | 0  | 0  | 0  | 0   | 0                        | 0  | 0  | 0  | 0   | 0     |
| <b>% Articulated Trucks</b>           | 0%                         | 0%    | 0% | 0% | 0%    | 0%                         | 0%    | 0% | 0% | 0%    | 0%                       | 0% | 0% | 0% | -   | 0%                       | 0% | 0% | 0% | -   | 0%    |
| <b>Buses and Single-Unit Trucks</b>   | 0                          | 0     | 0  | 0  | 0     | 0                          | 0     | 0  | 0  | 0     | 0                        | 0  | 0  | 0  | 0   | 0                        | 0  | 0  | 0  | 0   | 0     |
| <b>% Buses and Single-Unit Trucks</b> | 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

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

**[N] Fleetwood Drive**

Total: 2

In: 1      Out: 1



Out: 1      In: 1

Total: 2

**[S] Fleetwood Drive**

**Fleetwood Drive and Lear Boulevard - TMC**

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

Thu Feb 2, 2023

PM Peak (4:15 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

| Leg Direction                         | Fleetwood Drive Northbound |    |    |    |     | Fleetwood Drive Southbound |       |    |    |       | Lear Boulevard Eastbound |    |    |    |       | Lear Boulevard Westbound |    |    |    |     | Int   |
|---------------------------------------|----------------------------|----|----|----|-----|----------------------------|-------|----|----|-------|--------------------------|----|----|----|-------|--------------------------|----|----|----|-----|-------|
|                                       | R                          | T  | L  | U  | App | R                          | T     | L  | U  | App   | R                        | T  | L  | U  | App   | R                        | T  | L  | U  | App |       |
| 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     |
| <b>Total</b>                          | 0                          | 0  | 0  | 0  | 0   | 0                          | 1     | 0  | 0  | 1     | 2                        | 0  | 0  | 0  | 2     | 0                        | 0  | 0  | 0  | 0   | 3     |
| <b>% Approach</b>                     | 0%                         | 0% | 0% | 0% | -   | 0%                         | 100%  | 0% | 0% | -     | 100%                     | 0% | 0% | 0% | -     | 0%                       | 0% | 0% | 0% | -   | -     |
| <b>% Total</b>                        | 0%                         | 0% | 0% | 0% | 0%  | 0%                         | 33.3% | 0% | 0% | 33.3% | 66.7%                    | 0% | 0% | 0% | 66.7% | 0%                       | 0% | 0% | 0% | 0%  | -     |
| <b>PHF</b>                            | -                          | -  | -  | -  | -   | -                          | 0.250 | -  | -  | 0.250 | 0.250                    | -  | -  | -  | 0.250 | -                        | -  | -  | -  | -   | 0.375 |
| <b>Lights</b>                         | 0                          | 0  | 0  | 0  | 0   | 0                          | 1     | 0  | 0  | 1     | 2                        | 0  | 0  | 0  | 2     | 0                        | 0  | 0  | 0  | 0   | 3     |
| <b>% Lights</b>                       | 0%                         | 0% | 0% | 0% | -   | 0%                         | 100%  | 0% | 0% | 100%  | 100%                     | 0% | 0% | 0% | 100%  | 0%                       | 0% | 0% | 0% | -   | 100%  |
| <b>Articulated Trucks</b>             | 0                          | 0  | 0  | 0  | 0   | 0                          | 0     | 0  | 0  | 0     | 0                        | 0  | 0  | 0  | 0     | 0                        | 0  | 0  | 0  | 0   | 0     |
| <b>% Articulated Trucks</b>           | 0%                         | 0% | 0% | 0% | -   | 0%                         | 0%    | 0% | 0% | 0%    | 0%                       | 0% | 0% | 0% | 0%    | 0%                       | 0% | 0% | 0% | -   | 0%    |
| <b>Buses and Single-Unit Trucks</b>   | 0                          | 0  | 0  | 0  | 0   | 0                          | 0     | 0  | 0  | 0     | 0                        | 0  | 0  | 0  | 0     | 0                        | 0  | 0  | 0  | 0   | 0     |
| <b>% Buses and Single-Unit Trucks</b> | 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

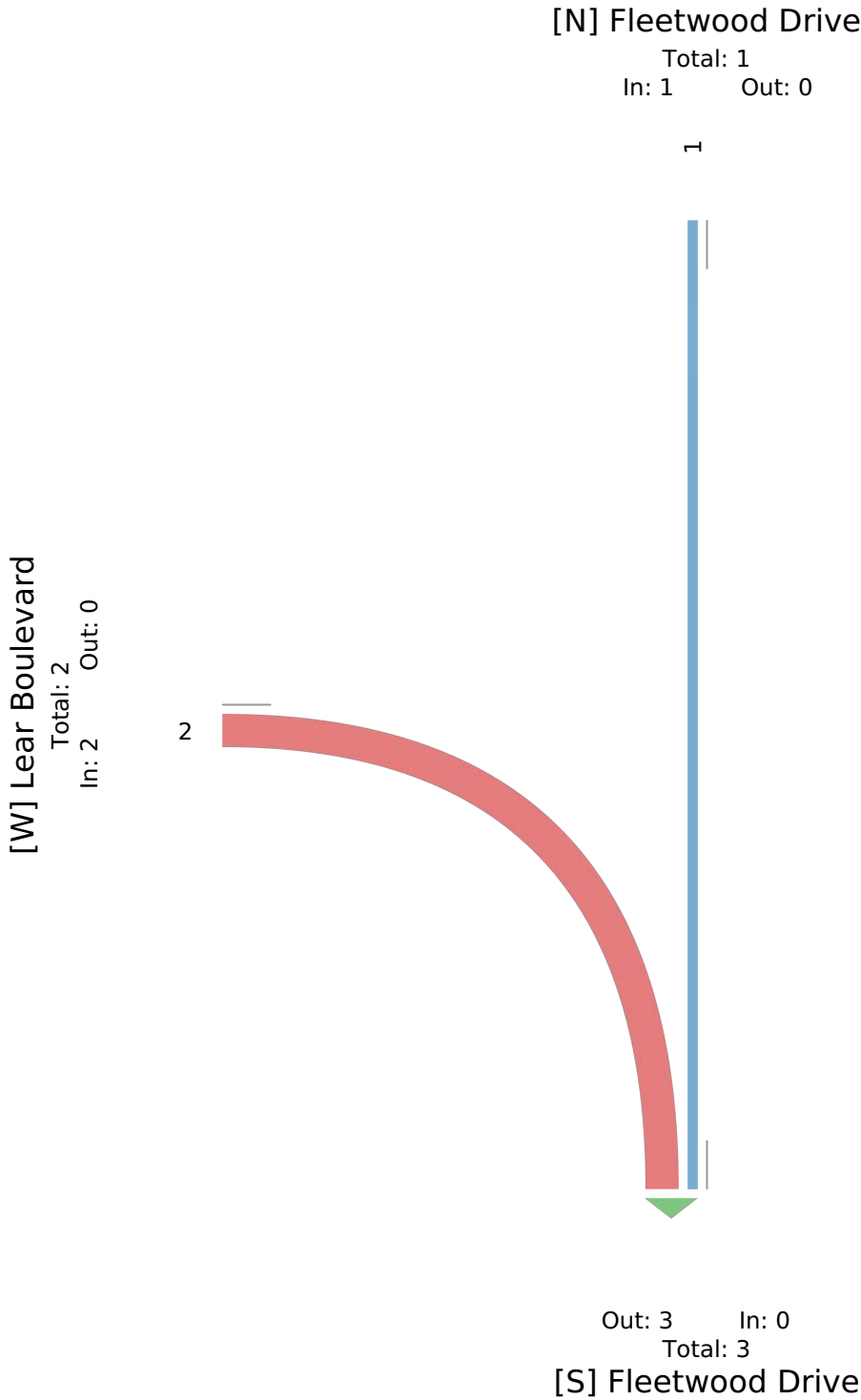
PM Peak (4:15 PM - 5:15 PM) - Overall Peak Hour

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**

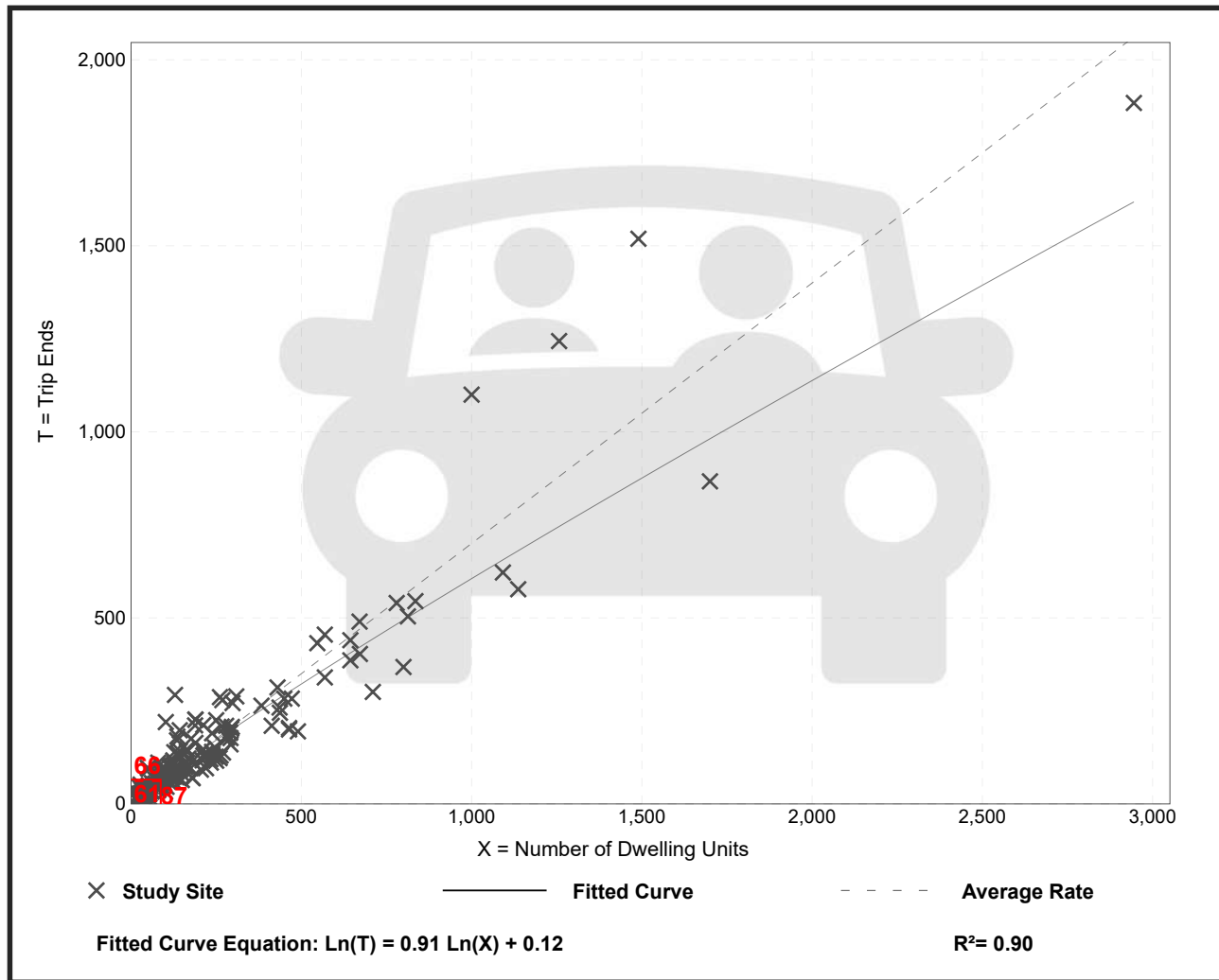
# Single-Family Detached Housing (210)

**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



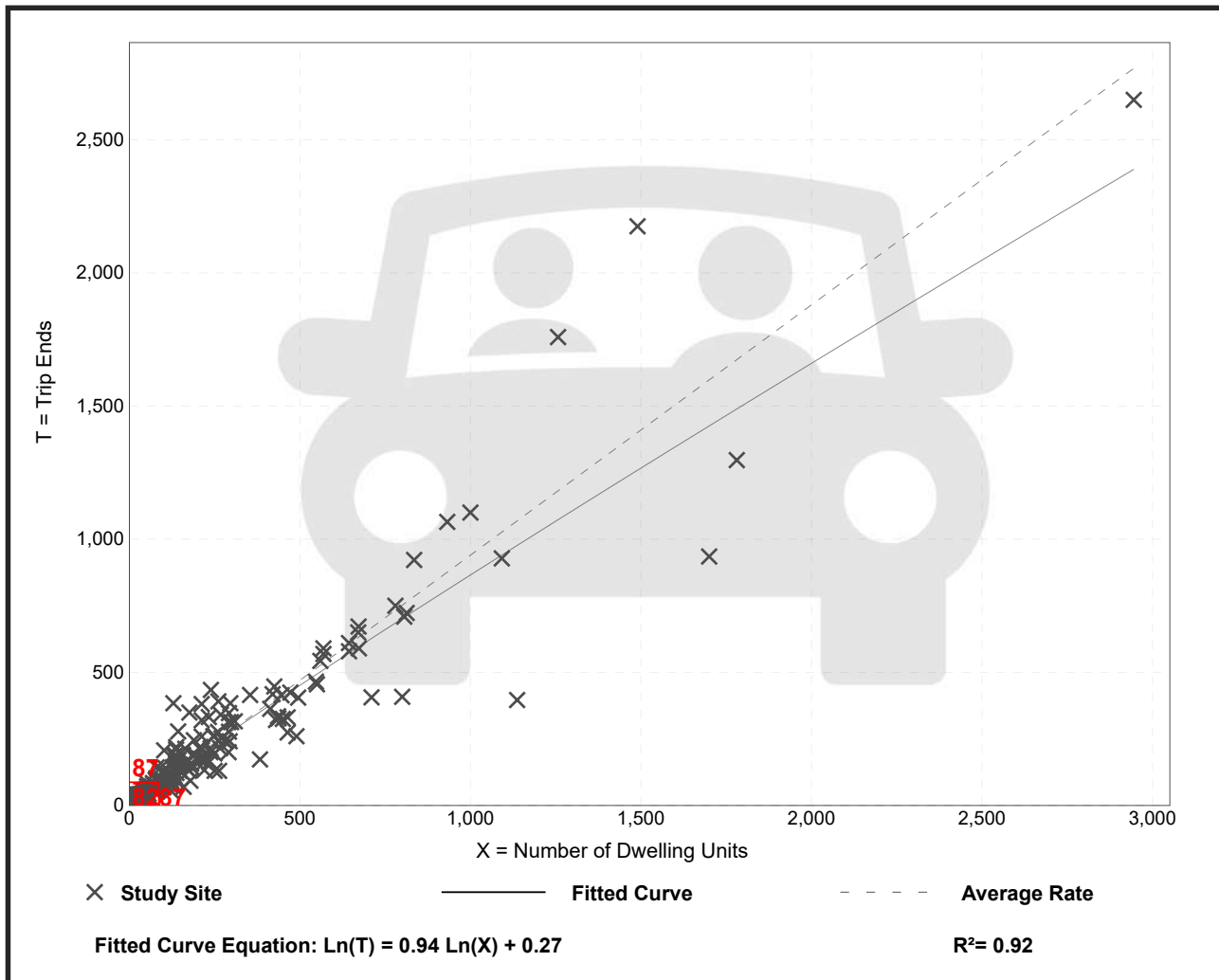
# Single-Family Detached Housing (210)

**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



# Single-Family Detached Housing (210)

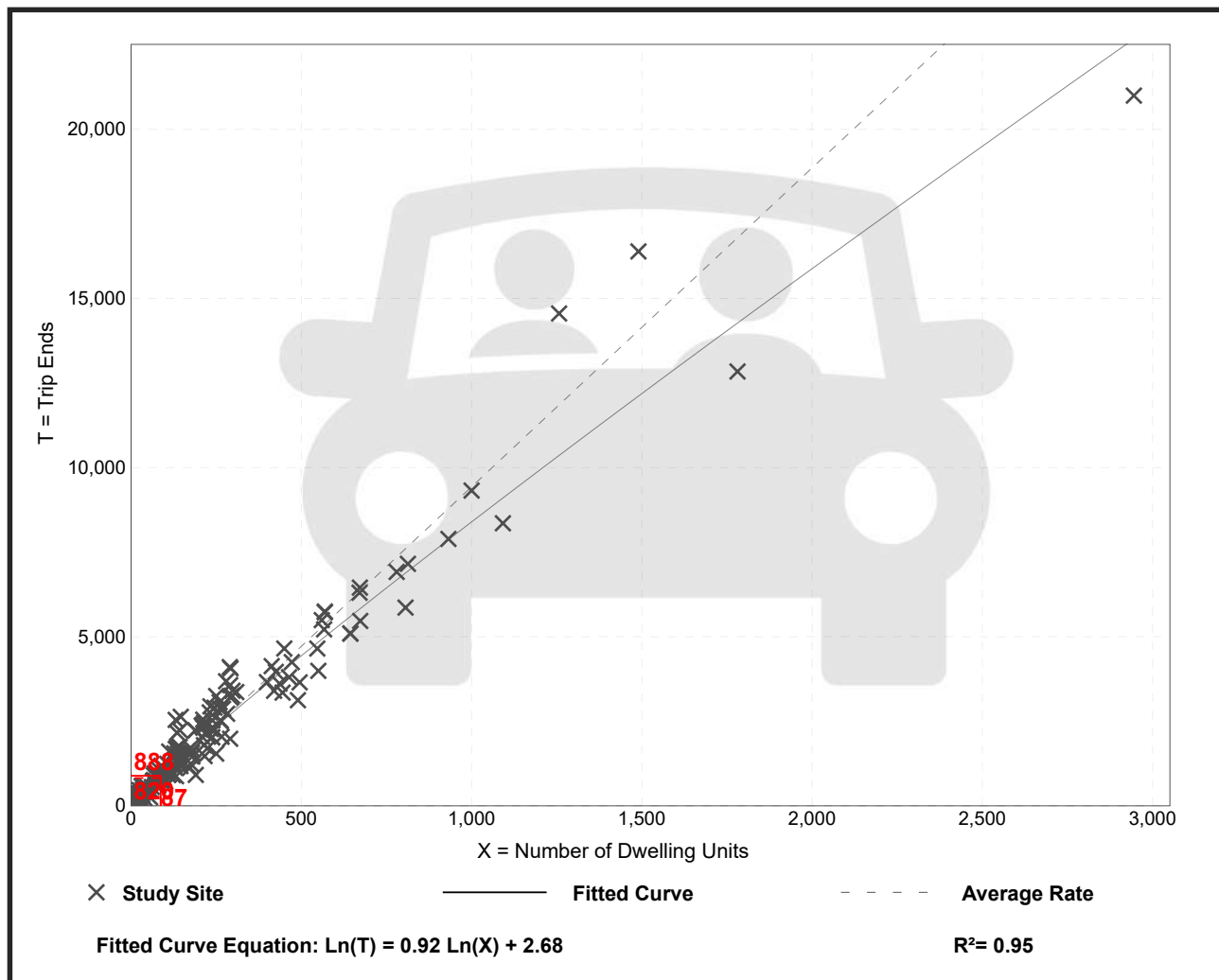
Vehicle Trip Ends vs: Dwelling Units  
On a: Weekday

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



**APPENDIX D**

**KEY INTERSECTION PEAK HOUR LOS CALCULATIONS**

HCM 6th TWSC  
1: Lemmon Drive & Fleetwood Drive

02/28/2023

| 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    |
| 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     |

HCM 6th TWSC  
2: Fleetwood Drive & Lemmon Drive

02/28/2023

| 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 | EBLn1WBLn1 |       | 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   | -   | -   | -   |



HCM 6th TWSC  
3: Fleetwood Drive & Budger Way

02/28/2023

| 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     | -   | -   |

HCM 6th AWSC  
4: Fleetwood Drive & Lear Boulevard

02/28/2023

| 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 | NBRWBLn1 | 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    |

HCM 6th TWSC  
1: Lemmon Drive & Fleetwood Drive

02/28/2023

| 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    |
| 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) | -   | -   | -     |

HCM 6th TWSC  
2: Fleetwood Drive & Lemmon Drive

02/28/2023

| 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 | EBLn1WBLn1 |       | 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   | -   | -   | -   |

HCM 6th TWSC  
 3: Fleetwood Drive & Budger Way

02/28/2023

| 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     | -   | -   |

HCM 6th AWSC  
4: Fleetwood Drive & Lear Boulevard

02/28/2023

| 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 NBRWBLn1 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     | - |



HCM 6th TWSC  
1: Lemmon Drive & Fleetwood Drive

02/28/2023

| 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    |
| 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     |

HCM 6th TWSC  
2: Fleetwood Drive & Lemmon Drive

02/28/2023

| 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 | EBLn1WBLn1 |       | 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   | -   | -   | -   |

HCM 6th TWSC  
3: Fleetwood Drive & Budger Way

02/28/2023

| 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     | -   | -   |

HCM 6th AWSC  
4: Fleetwood Drive & Lear Boulevard

02/28/2023

| 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     |

HCM 6th TWSC  
 5: Pan American Court & Budger Way

02/28/2023

| 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    |
| 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 | NBRWBLn1 | 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    |

HCM 6th TWSC  
1: Lemmon Drive & Fleetwood Drive

02/28/2023

| 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    |
| 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) | -   | -   | -     |

HCM 6th TWSC  
2: Fleetwood Drive & Lemmon Drive

02/28/2023

| 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 | EBLn1WBLn1 |       | 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   | -   | -   | -   |

HCM 6th TWSC  
3: Fleetwood Drive & Budger Way

02/28/2023

| 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     | -   | -   |



HCM 6th AWSC  
4: Fleetwood Drive & Lear Boulevard

02/28/2023

| 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 NBRWBLn1 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    |
| 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     |

HCM 6th TWSC  
2: Fleetwood Drive & Lemmon Drive

11/28/2023

| 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 | EBLn1WBLn1 |       | 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   | -   | -   | -   |

HCM 6th TWSC  
3: Fleetwood Drive & Budger Way

11/28/2023

| Intersection             |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh         | 4    |      |      |      |      |      |
| Movement                 | EBL  | EBR  | NBL  | NBT  | SBT  | SBR  |
| Lane Configurations      | T    |      |      | T    |      |      |
| 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   | -   | -   |

HCM 6th AWSC  
4: Fleetwood Drive & Lear Boulevard

11/28/2023

| 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     |

HCM 6th TWSC  
5: Pan American Court & Budger Way

11/28/2023

| 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    |
| 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 | NBRWBLn1 | SBL   | SBT   |
|-----------------------|-----|----------|-------|-------|
| Capacity (veh/h)      | -   | -        | 982   | 1597  |
| HCM Lane V/C Ratio    | -   | -        | 0.032 | 0.043 |
| HCM Control Delay (s) | -   | -        | 8.8   | 7.4   |
| HCM Lane LOS          | -   | -        | A     | A     |
| HCM 95th %tile Q(veh) | -   | -        | 0.1   | 0.1   |

HCM 6th TWSC  
1: Lemmon Drive & Fleetwood Drive

11/28/2023

| 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    |
| 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     |



HCM 6th TWSC  
2: Fleetwood Drive & Lemmon Drive

11/28/2023

| 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 | EBLn1WBLn1 |       | 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     | -   | -   | -   |

HCM 6th TWSC  
3: Fleetwood Drive & Budger Way

11/28/2023

| Intersection             |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh         | 4    |      |      |      |      |      |
| Movement                 | EBL  | EBR  | NBL  | NBT  | SBT  | SBR  |
| Lane Configurations      | T    |      | T    |      | T    |      |
| 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   | -   | -   |

HCM 6th AWSC  
4: Fleetwood Drive & Lear Boulevard

11/28/2023

| 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     |

HCM 6th TWSC  
5: Pan American Court & Budger Way

11/28/2023

| 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    |
| 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 | NBRWBLn1 | SBL   | SBT   |
|-----------------------|-----|----------|-------|-------|
| Capacity (veh/h)      | -   | -        | 1040  | 1603  |
| HCM Lane V/C Ratio    | -   | -        | 0.079 | 0.028 |
| HCM Control Delay (s) | -   | -        | 8.8   | 7.3   |
| HCM Lane LOS          | -   | -        | 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    |
| 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     |

HCM 6th TWSC  
2: Fleetwood Drive & Lemmon Drive

11/27/2023

| 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 | EBLn1WBLn1 |       | 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   | -   | -   | -   |

HCM 6th TWSC  
3: Fleetwood Drive & Budger Way

11/27/2023

| 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   | -   | -   |

HCM 6th AWSC  
4: Fleetwood Drive & Lear Boulevard

11/27/2023

| 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     |



HCM 6th TWSC  
 5: Pan American Court & Budger Way

11/27/2023

| 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    |
| 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 | NBRWBLn1 | 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    |

HCM 6th TWSC  
1: Lemmon Drive & Fleetwood Drive

11/27/2023

| 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    |
| 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) | -   | -   | -     |

HCM 6th TWSC  
2: Fleetwood Drive & Lemmon Drive

11/27/2023

| 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 | EBLn1WBLn1 |       | 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   | -   | -   | -   |

HCM 6th TWSC  
 3: Fleetwood Drive & Budger Way

11/27/2023

| 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   | -   | -   |

HCM 6th AWSC  
4: Fleetwood Drive & Lear Boulevard

11/27/2023

| 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 NBRWBLn1 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    |
| 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     |

HCM 6th TWSC  
2: Fleetwood Drive & Lemmon Drive

11/28/2023

| 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   | -   | -   | -   |



HCM 6th TWSC  
3: Fleetwood Drive & Budger Way

11/28/2023

| 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   | -   | -   |

HCM 6th AWSC  
4: Fleetwood Drive & Lear Boulevard

11/28/2023

| 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     |

HCM 6th TWSC  
5: Pan American Court & Budger Way

11/28/2023

| 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 | NBRWBLn1 | SBL   | SBT   |
|-----------------------|-----|----------|-------|-------|
| Capacity (veh/h)      | -   | -        | 958   | 1588  |
| HCM Lane V/C Ratio    | -   | -        | 0.037 | 0.043 |
| HCM Control Delay (s) | -   | -        | 8.9   | 7.4   |
| HCM Lane LOS          | -   | -        | A     | A     |
| HCM 95th %tile Q(veh) | -   | -        | 0.1   | 0.1   |

HCM 6th TWSC  
1: Lemmon Drive & Fleetwood Drive

11/28/2023

| 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    |
| 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     |

HCM 6th TWSC  
2: Fleetwood Drive & Lemmon Drive

11/28/2023

| 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 | EBLn1WBLn1 |       | 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   | -   | -   | -   |

HCM 6th TWSC  
3: Fleetwood Drive & Budger Way

11/28/2023

| Intersection             |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh         | 3.7  |      |      |      |      |      |
| Movement                 | EBL  | EBR  | NBL  | NBT  | SBT  | SBR  |
| Lane Configurations      | T    |      |      | T    |      | T    |
| 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     |

HCM 6th TWSC  
5: Pan American Court & Budger Way

11/28/2023

| 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    | -      | -      | - | -     | - |

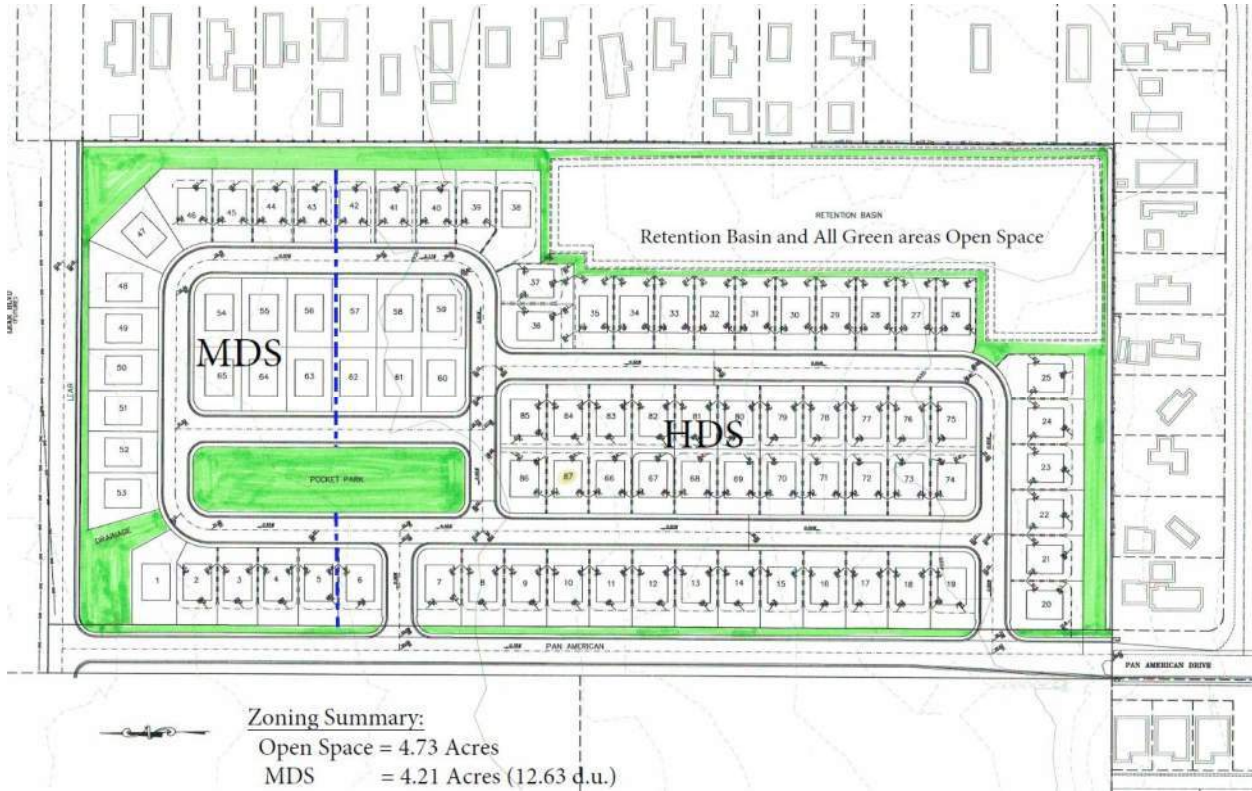
| Approach             | WB  | NB | SB  |
|----------------------|-----|----|-----|
| HCM Control Delay, s | 8.9 | 0  | 7.1 |
| HCM LOS              | A   |    |     |

| Minor Lane/Major Mvmt | NBT | NBRWBLn1 | SBL   | SBT   |
|-----------------------|-----|----------|-------|-------|
| Capacity (veh/h)      | -   | -        | 1023  | 1597  |
| HCM Lane V/C Ratio    | -   | -        | 0.088 | 0.029 |
| HCM Control Delay (s) | -   | -        | 8.9   | 7.3   |
| HCM Lane LOS          | -   | -        | A     | A     |
| HCM 95th %tile Q(veh) | -   | -        | 0.3   | 0.1   |



**APPENDIX E**  
**SITE PLAN**

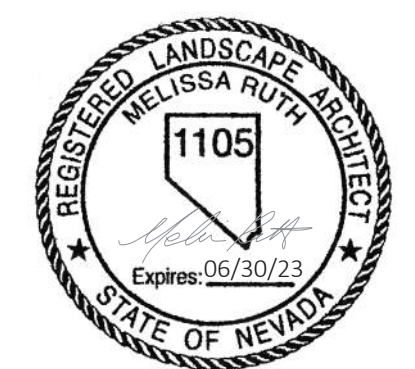
**Exhibit "A"**





**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)

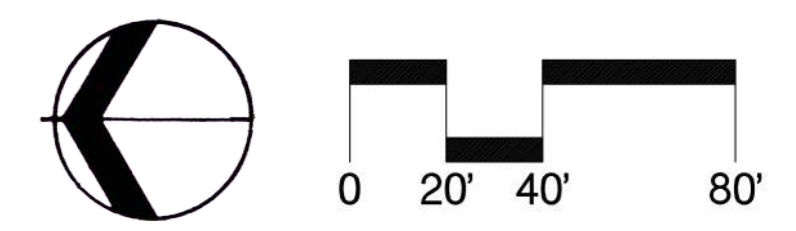


# LEARNER LEMMON PRELIMINARY LANDSCAPE PLAN

Washoe County, Nevada

CALLANDER PROJECT NUMBER: 23019 | DATE: 12.08.2023 | CALLANDER ASSOCIATES

L1





PAN AMERICAN WAY

SHRUB, TYP.  
 PLANTING AREA, TYP.  
 POCKET PARK W/  
 CHILDREN'S PLAY AREA  
 PARK SIGN  
 FENCE

SHADE TREE, TYP.  
 12' WIDE COUNTY ACCESS GRAVEL ROAD W/ PIPE GATE  
 EVERGREEN TREE, TYP.

TURF

8' WIDE DECOMPOSED GRANITE TRAIL

S89°

BOLLARD

SHADE SHELTER  
 BIKE PARKING

ACCENT TREE, TYP.  
 PICNIC AREA

DECOMPOSED  
 GRANITE, TYP.

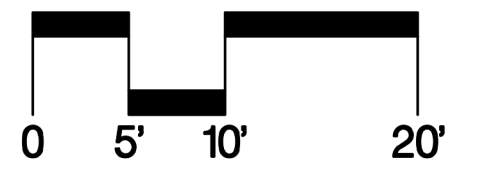
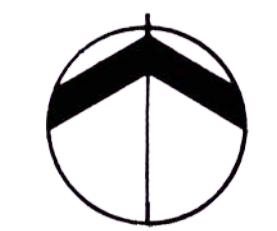
CONCRETE PATH, TYP.  
 BOLLARD

# LEARNER LEMMON POCKET PARK PRELIMINARY PLAN

Washoe County, Nevada

CALLANDER PROJECT NUMBER: 23019 | DATE: 12.08.2023 | CALLANDER ASSOCIATES

L2



# TENTATIVE MAP APPLICATION LEARNER - LEMMON PROPERTY

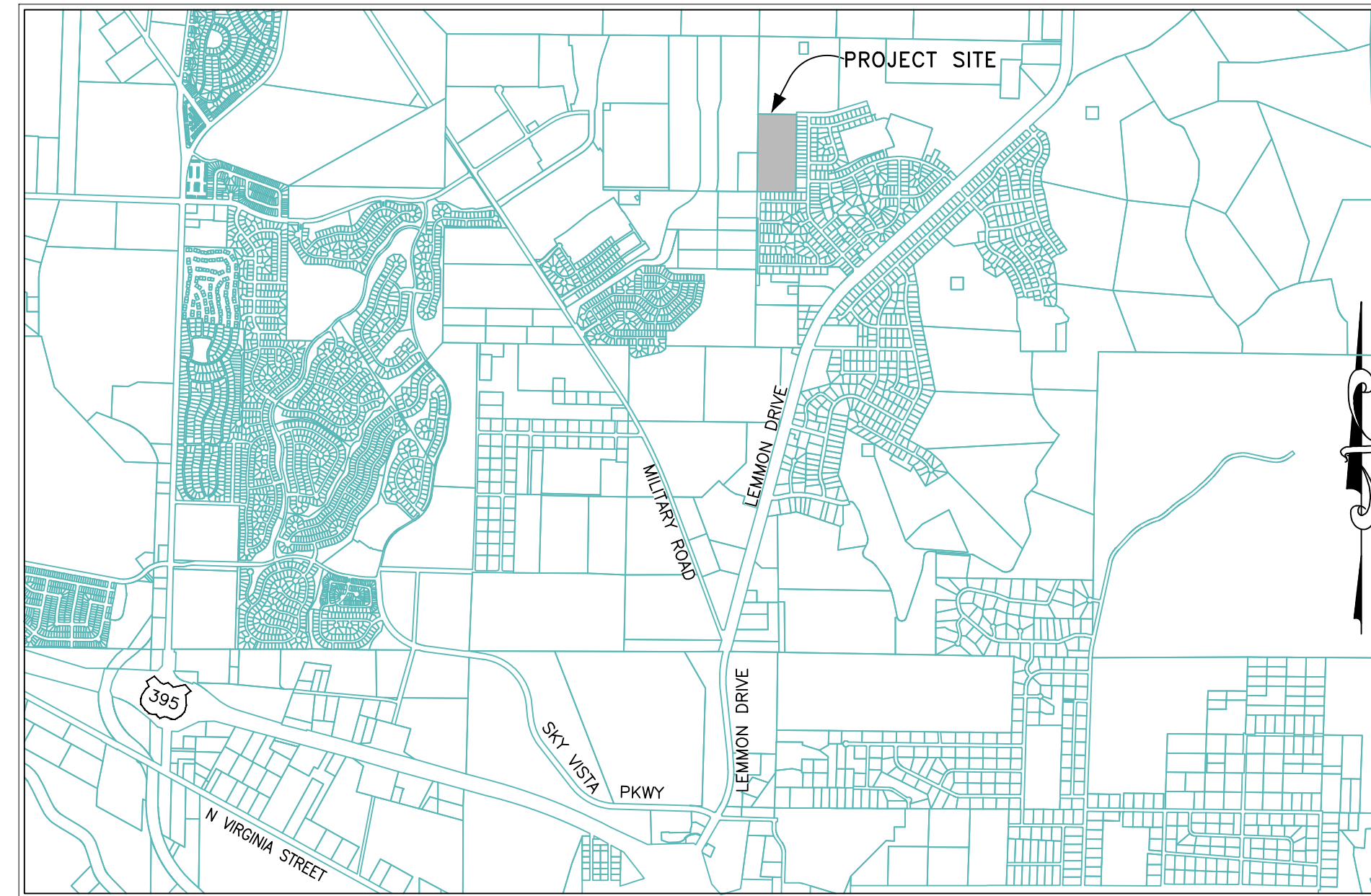
WASHOE COUNTY, NEVADA

## 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



VICINITY MAP

N.T.S.

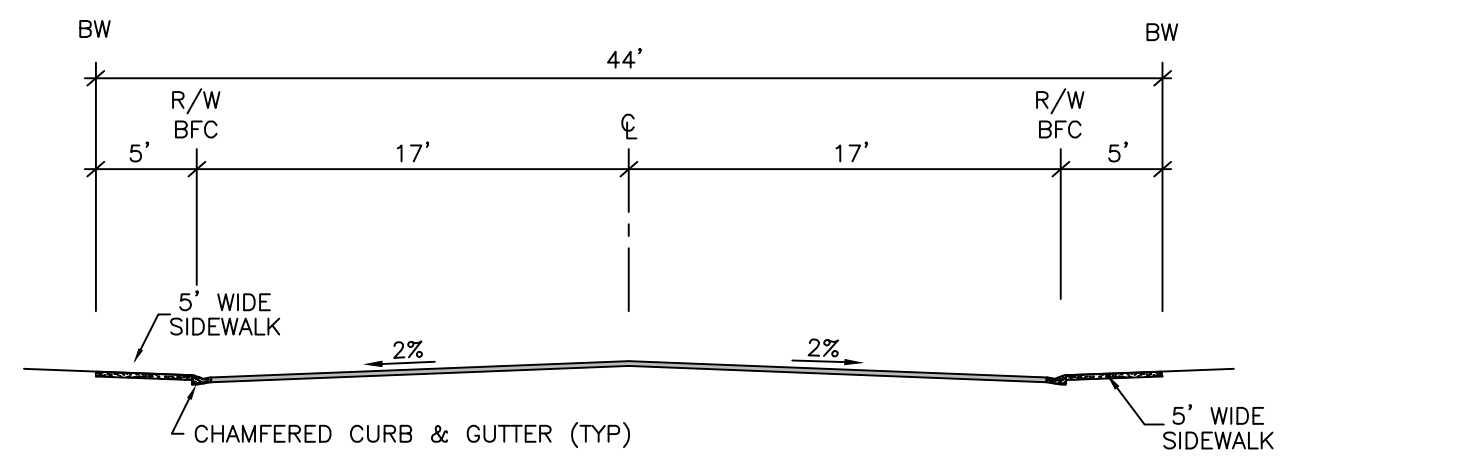
## ENGINEER



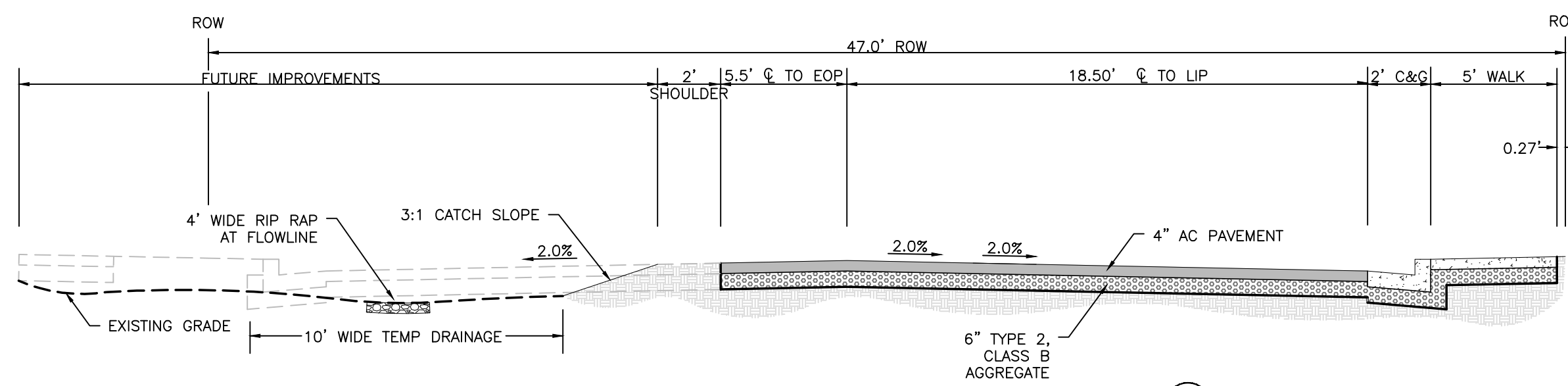
683 EDISON WAY - RENO, NEVADA 89502  
PH 775-771-7983 / ryan@axionengineering.net

## SHEET INDEX

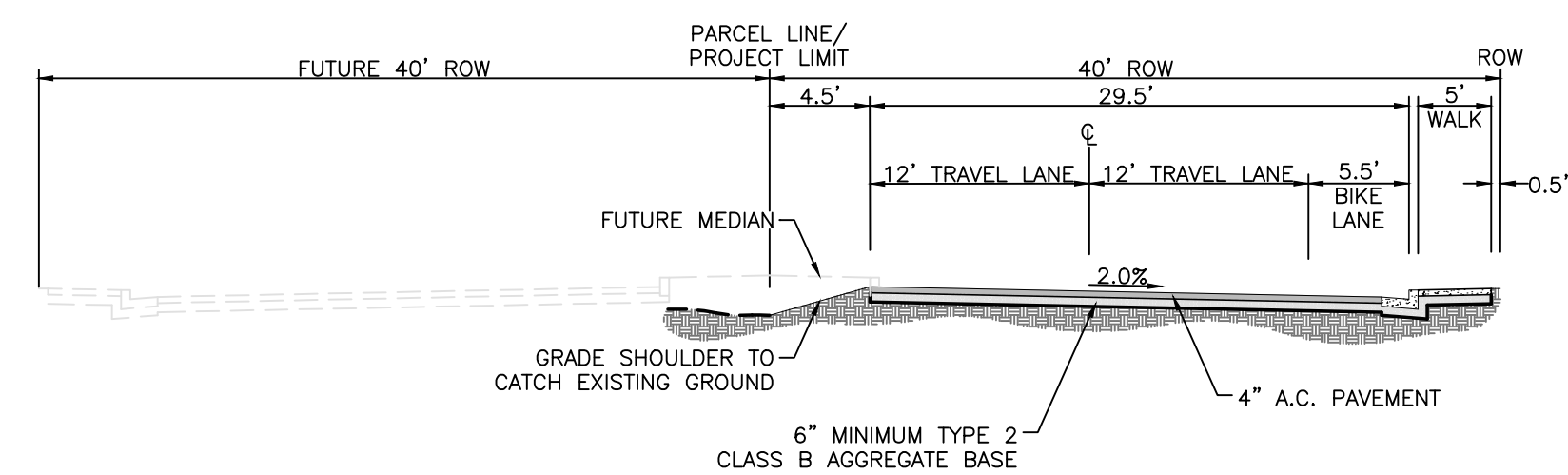
- C1 .....TITLE SHEET
- C2 .....SITE PLAN
- C3 .....GRADING PLAN
- C4 .....UTILITY PLAN
- C5 .....X-SECTIONS
- C6 .....SEWER DISPLAY
- C7 .....STOCKPILE PLAN
- L1 .....LANDSCAPE PLAN



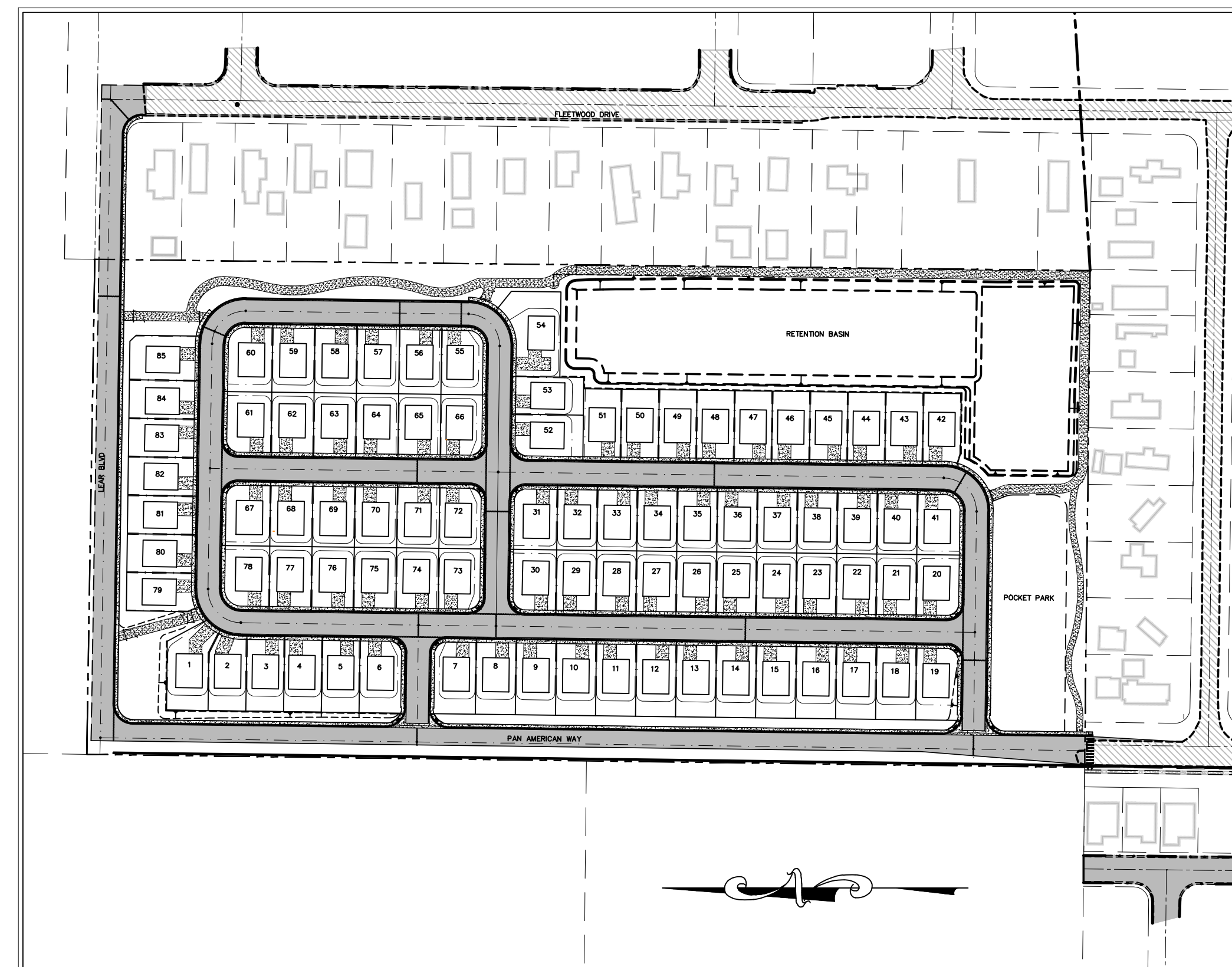
RESIDENTIAL STREET SECTION 1



PAN AMERICAN DRIVE 2



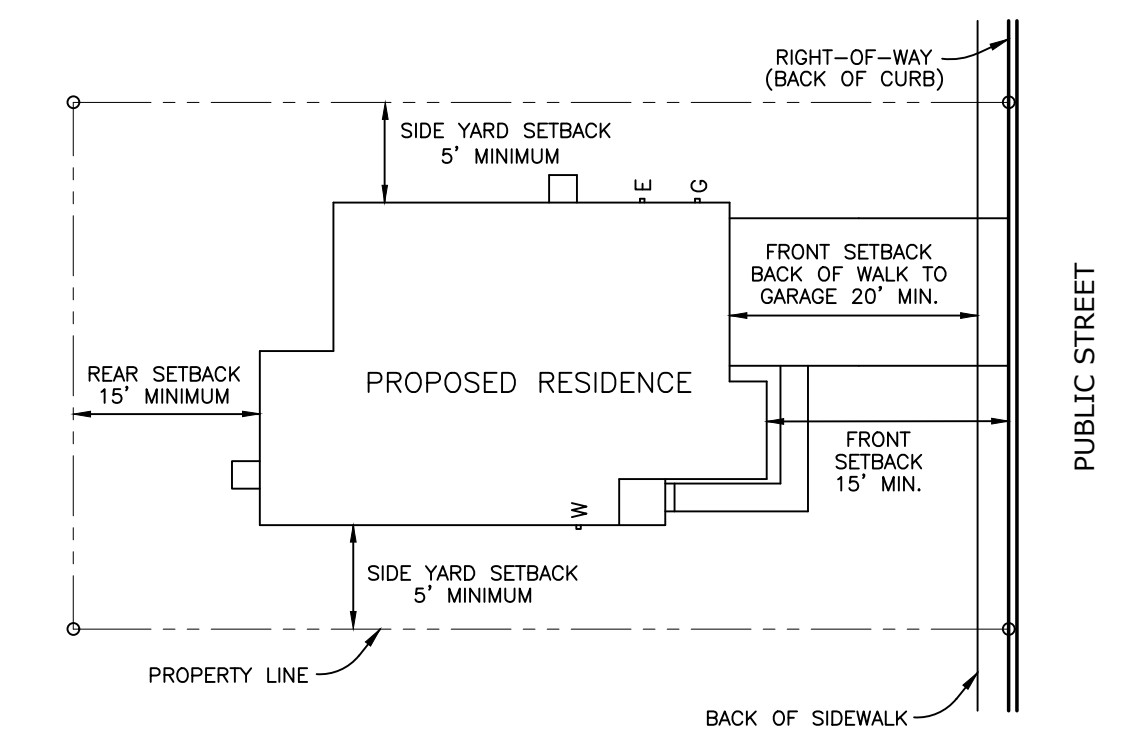
LEAR BOULEVARD 3



SITE

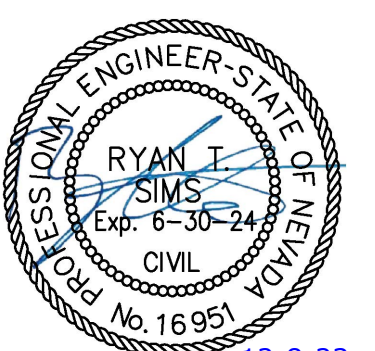
N.T.S.

## 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.

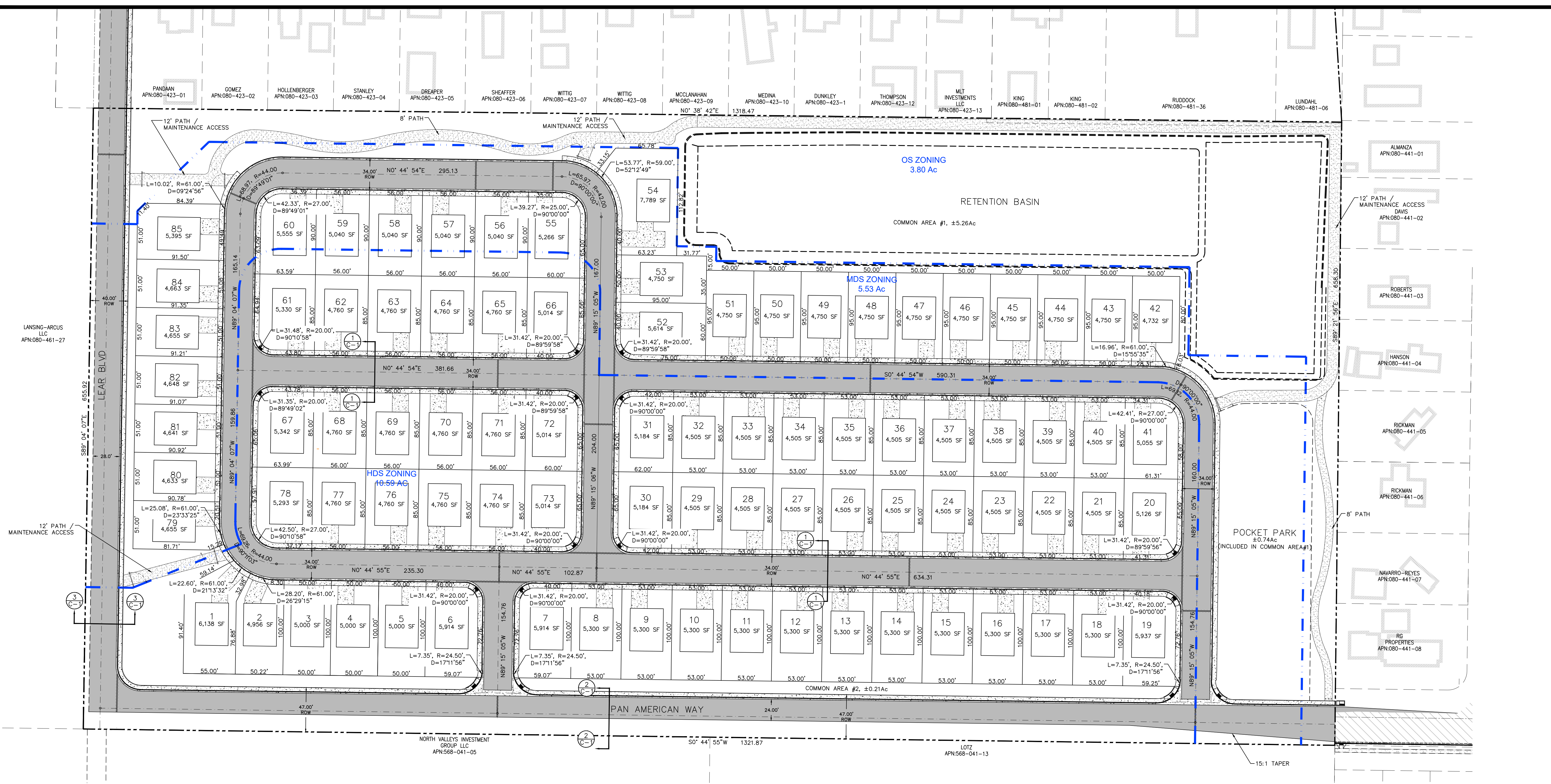


*R. Sims*  
RYAN T. SIMS

P.E. #16951

LEARNER LEMMON PROPERTY

TITLE SHEET C1



**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  |

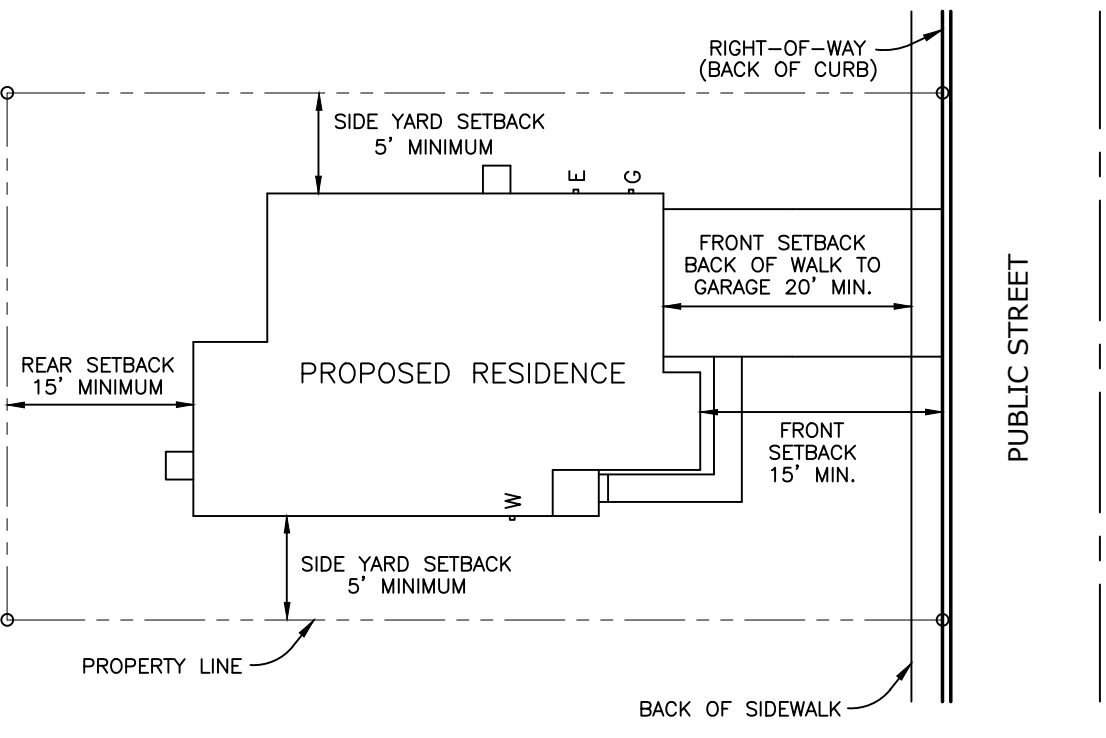
**PROPOSED LOT STANDARDS:**

|                    |                                         |
|--------------------|-----------------------------------------|
| 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<br>8.7 UNITS/AC NET |

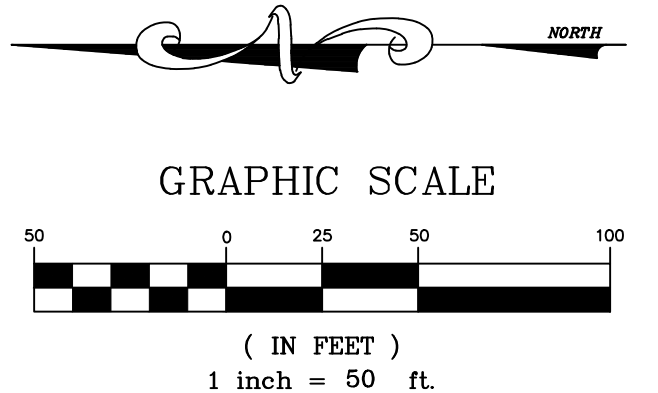
**PARCEL INFORMATION:**

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



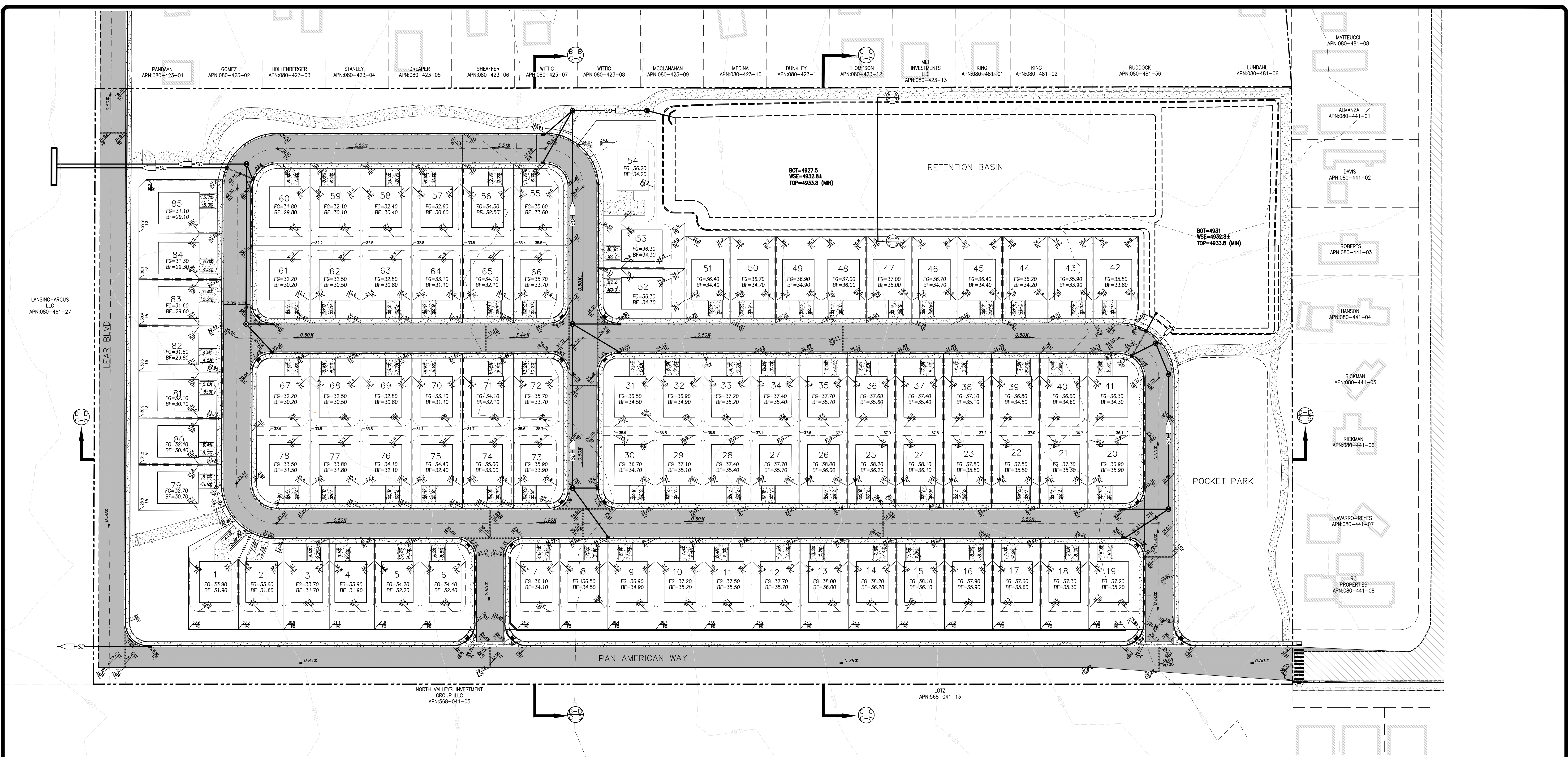
**TYPICAL LOT**



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**SITE PLAN C-2**

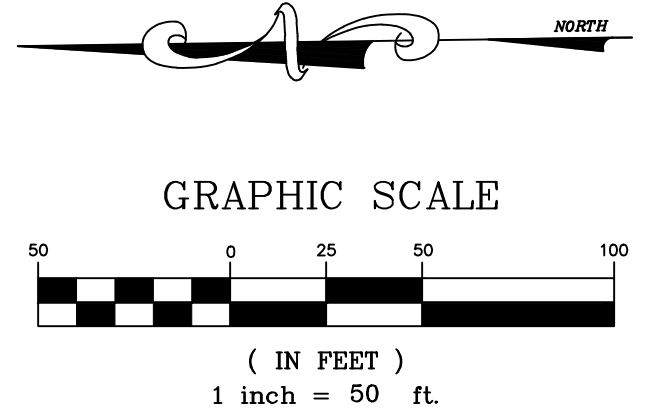
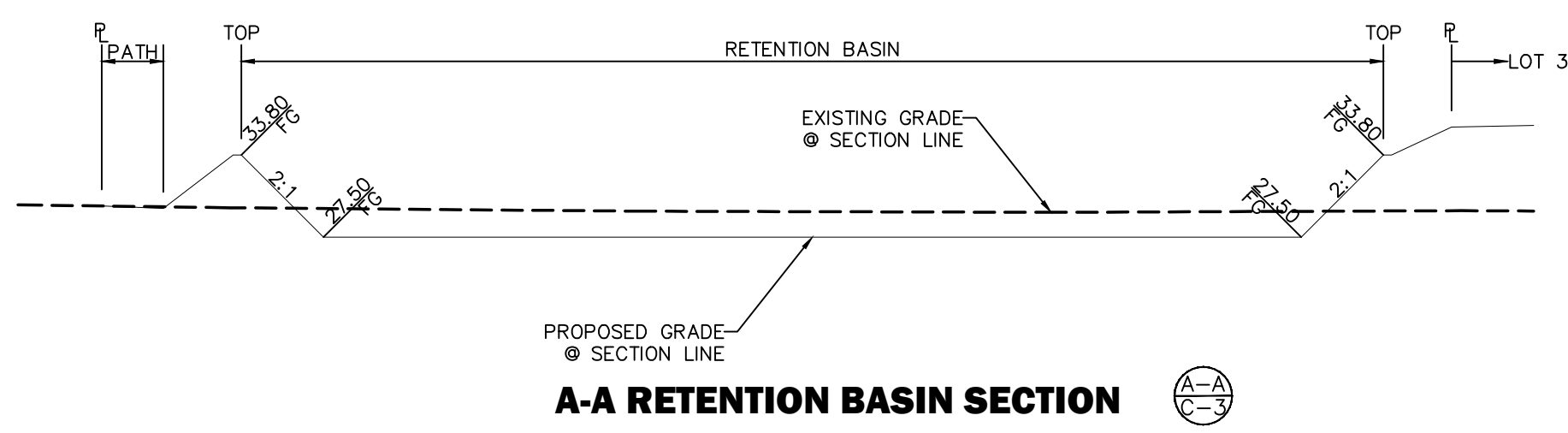


**LEGEND**

|       |                          |
|-------|--------------------------|
|       | GRADE BREAK              |
| 64    | LOT NUMBER               |
|       | EXISTING CONTOUR LINE    |
| 70.00 | FINISHED GRADE ELEVATION |
| 72.57 | TOP OF CURB ELEVATION    |
| 99.20 | 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 AND 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 32031C28386, EFFECTIVE 3/16/2009, THIS PROJECT LIES PARTIALLY WITHIN AN AREA DESIGNATED AS ZONE X (SHADED) AND ZONE X (UNSHADED)

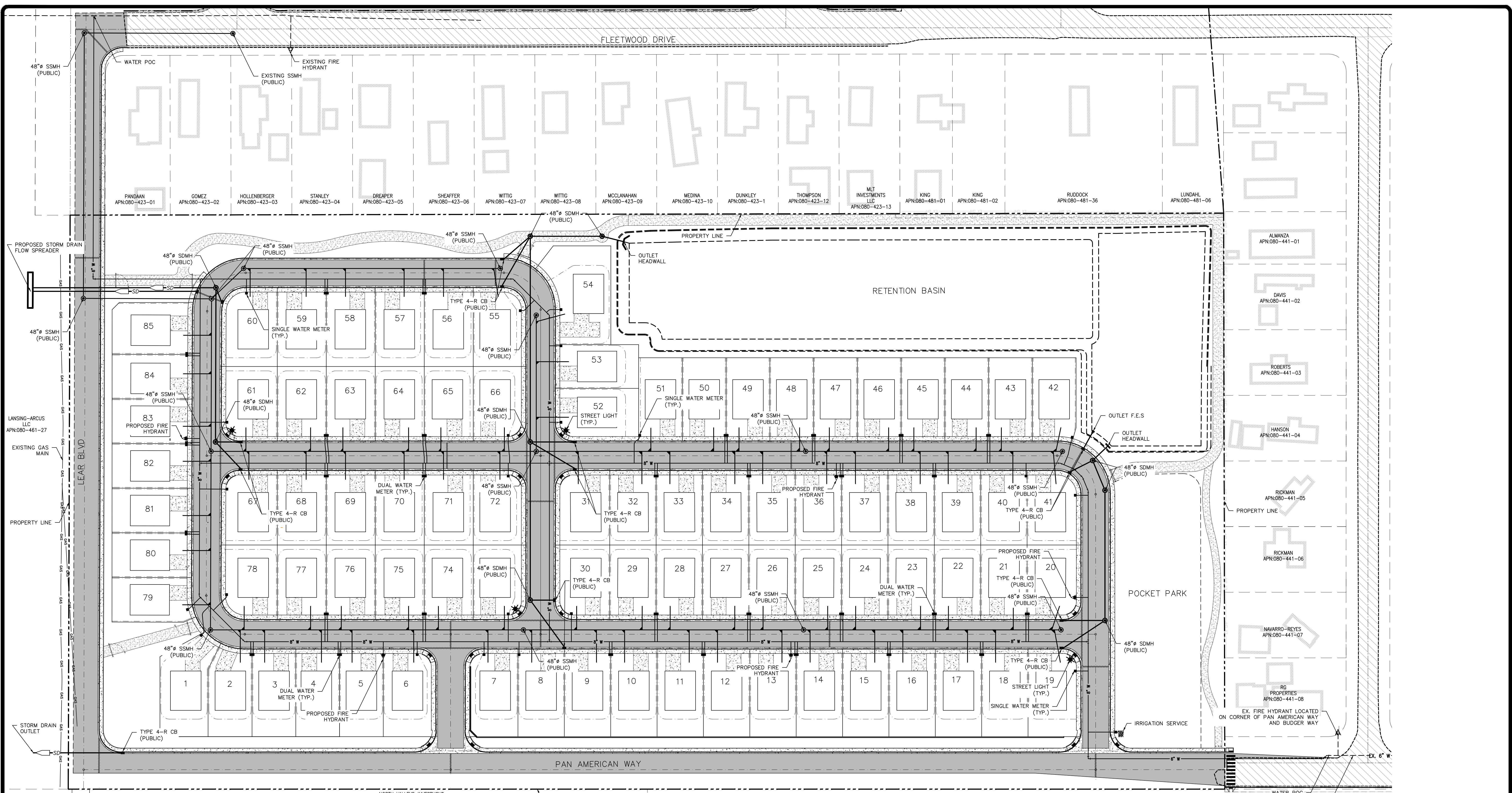


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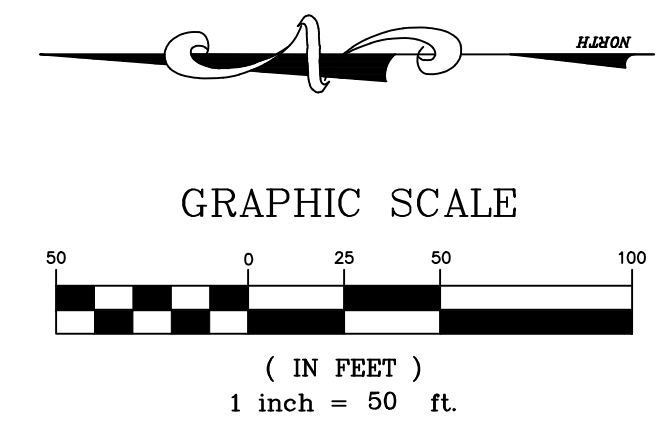
**LEARNER LEMMON PROPERTY**

**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



**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

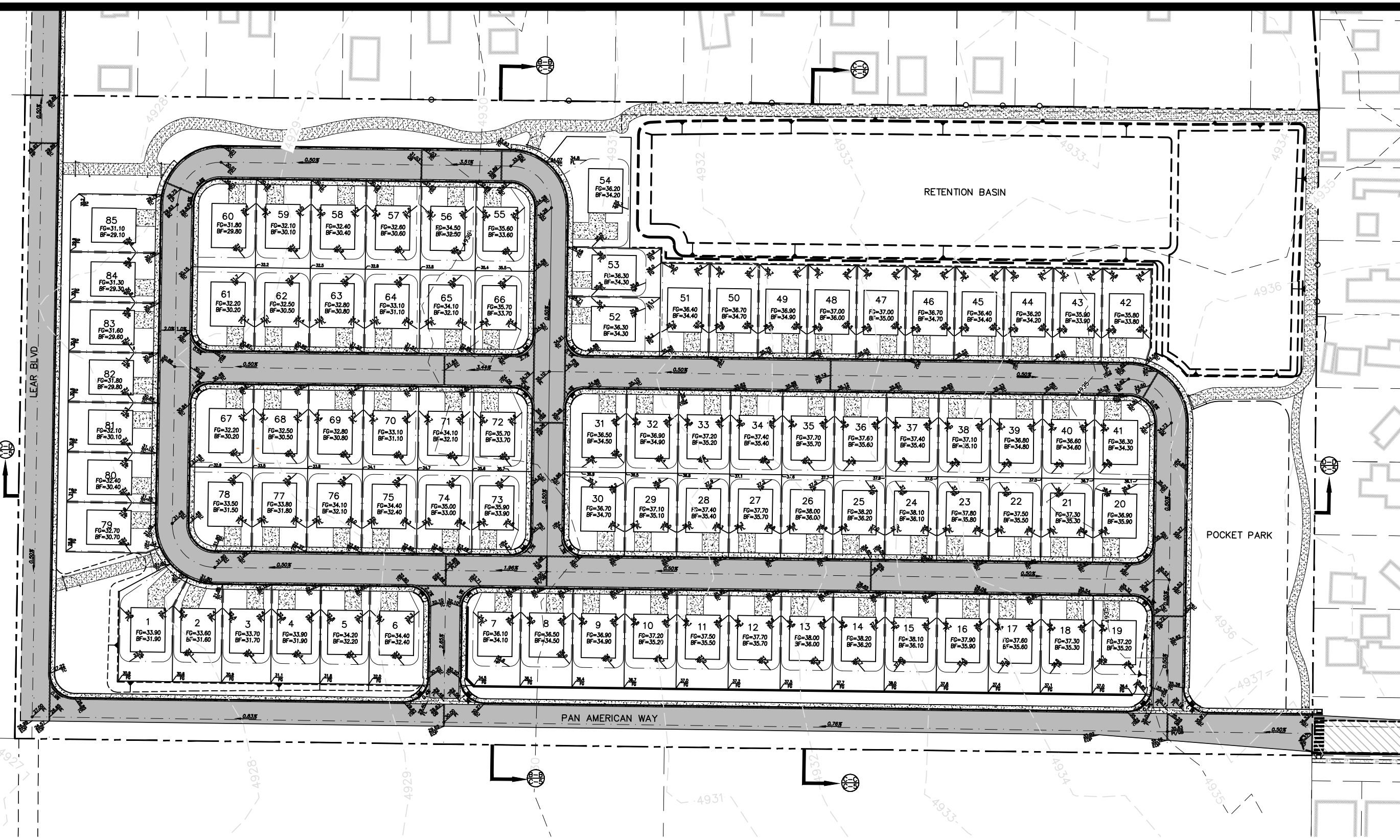


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**LEARNER LEMMON PROPERTY**

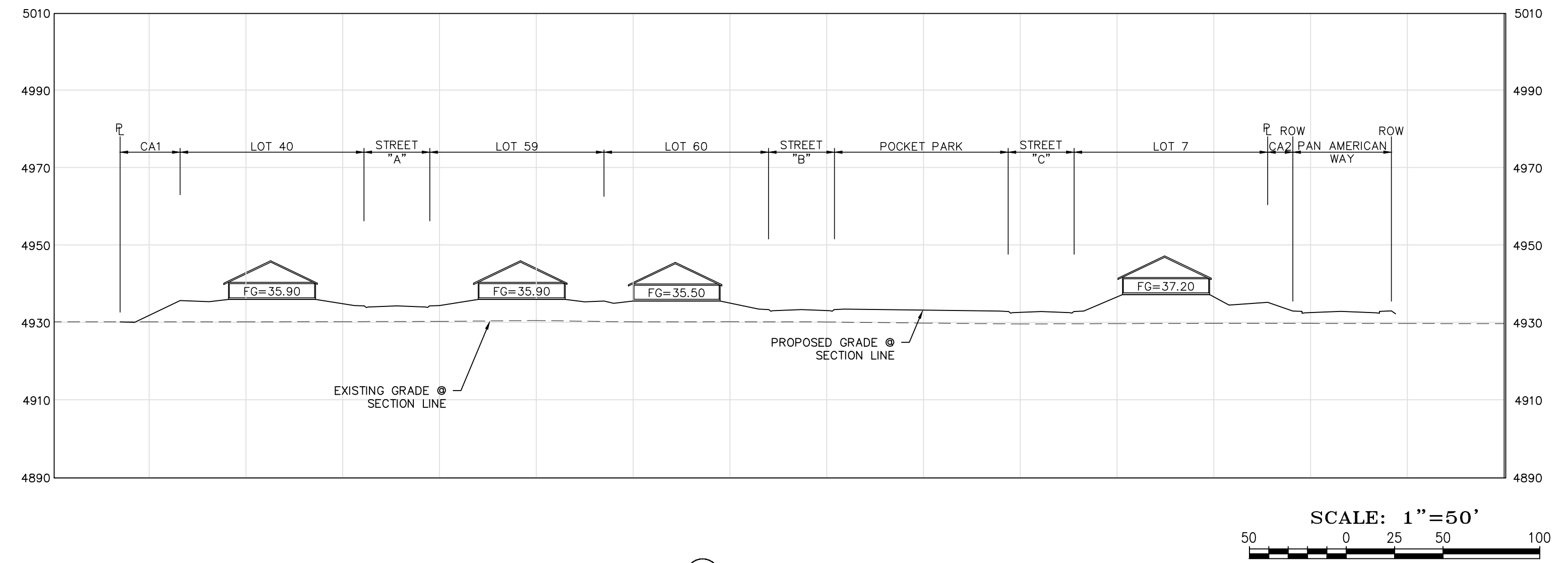
**UTILITY PLAN C-4**





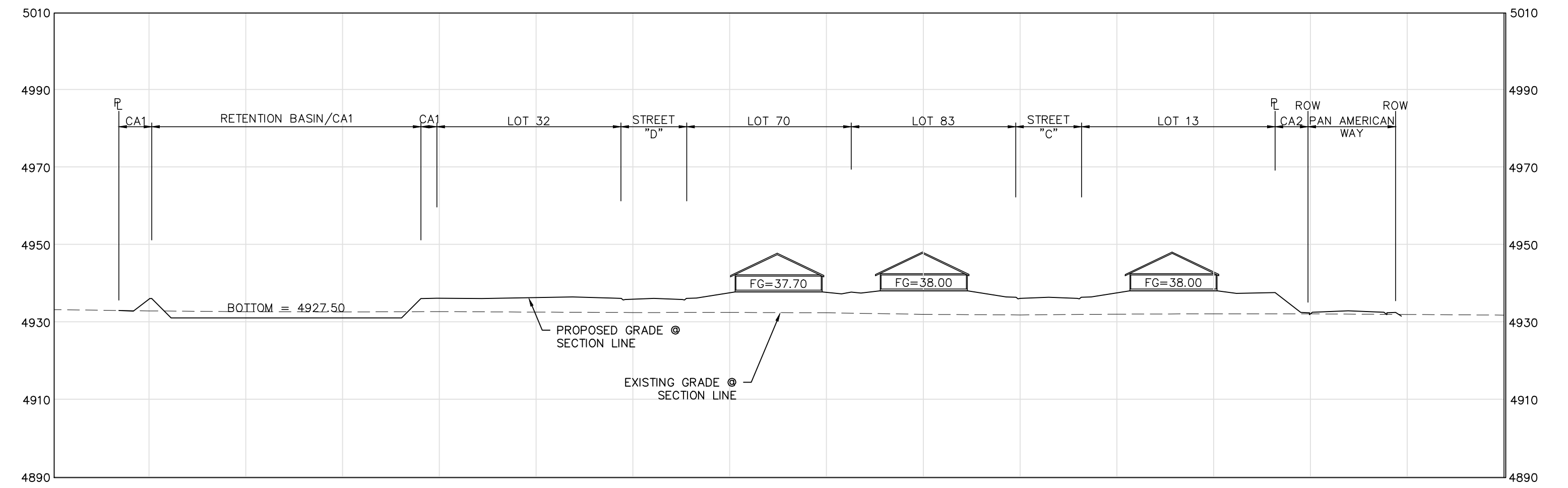
**SITEPLAN**

SCALE: 1"=100'  
 100 0 50 100 200



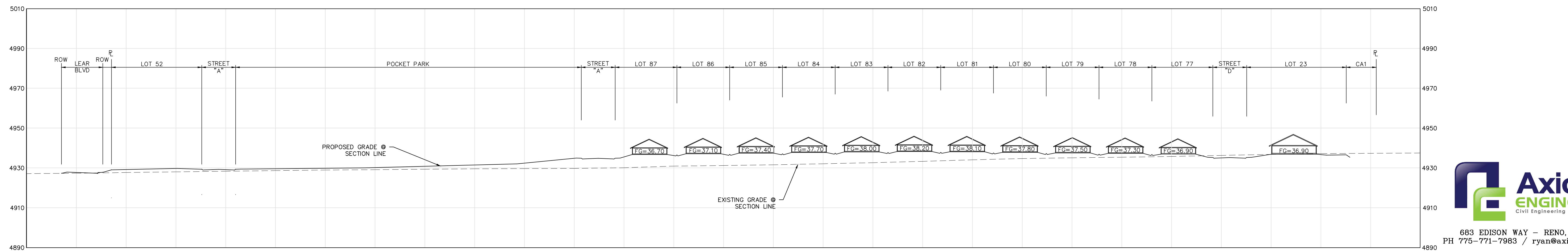
**SECTION B-B**

SCALE: 1"=50'  
 50 0 25 50 100



**SECTION C-C**

SCALE: 1"=50'  
 50 0 25 50 100



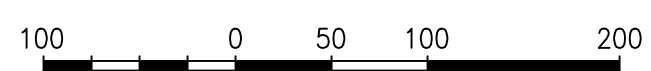
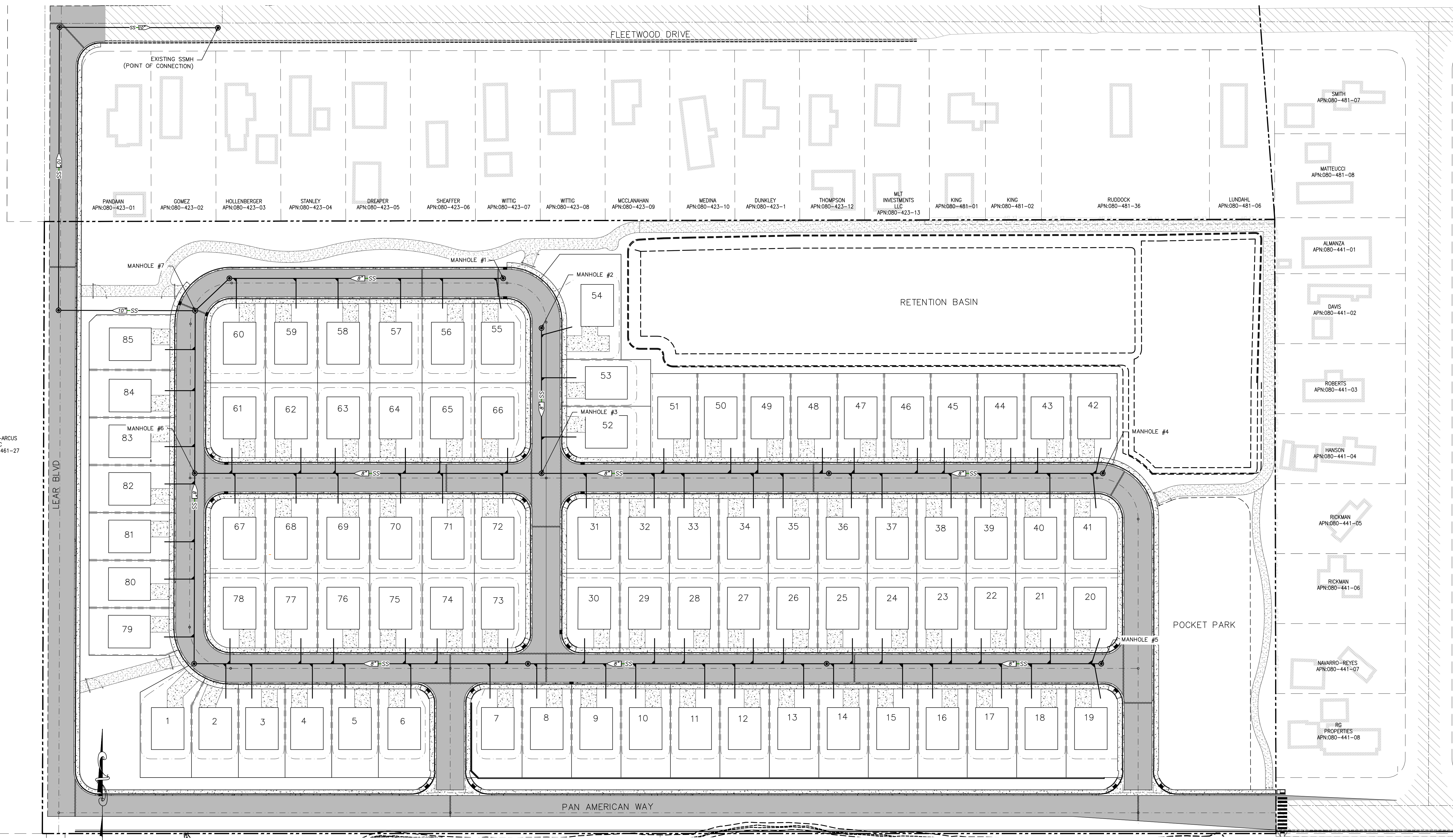
**SECTION D-D**

SCALE: 1"=50'  
 50 0 25 50 100

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**X-SECTIONS C-5**



SCALE: 1"=100'

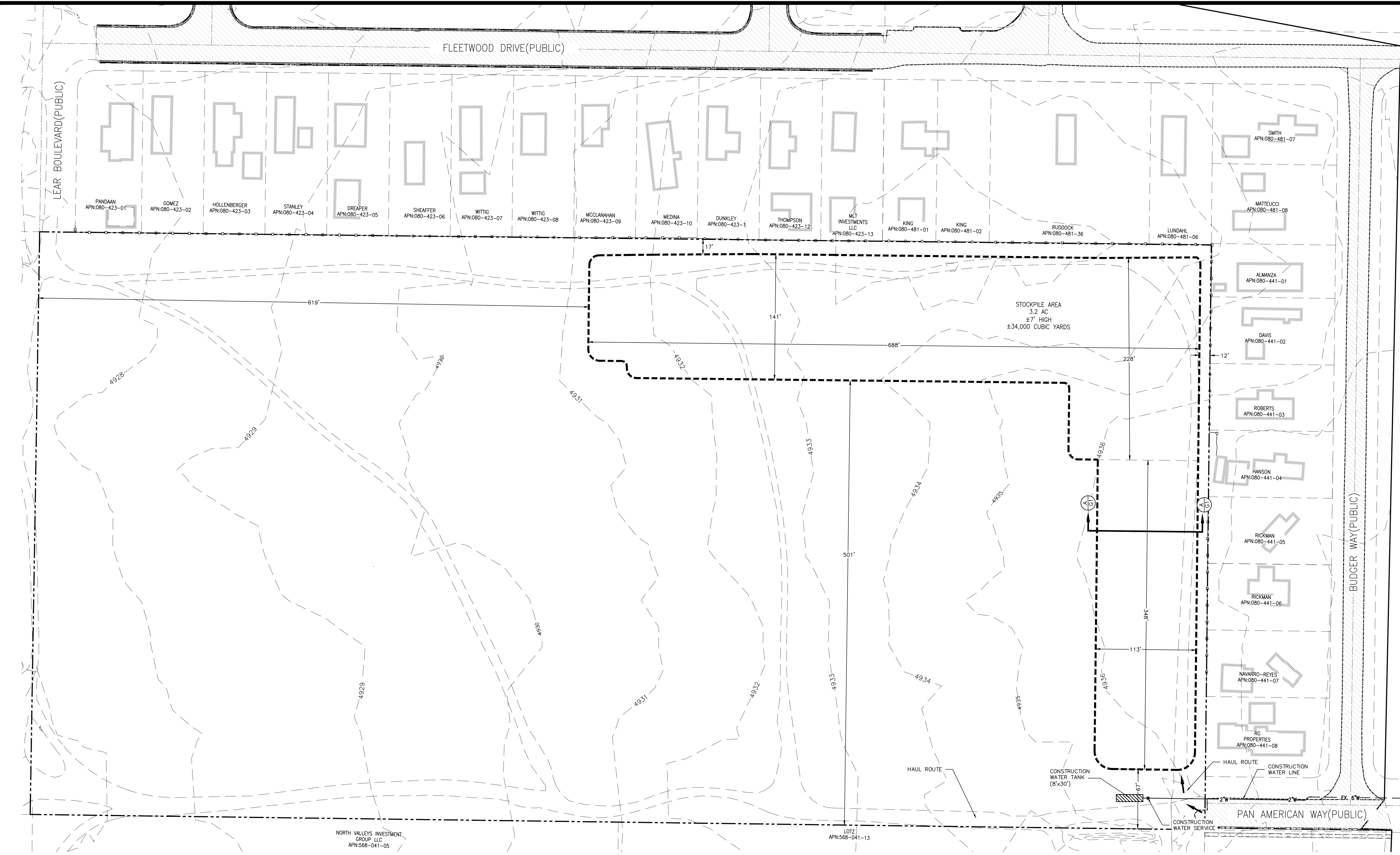


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PH 775-771-7983 / ryan@axionengineering.net

| 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                        |

# LEARNER LEMMON PROPERTY

# SEWER DISPLAY C-6



MATERIAL SOURCE:  
TBD

**FEMA FLOOD HAZARD NOTE:**

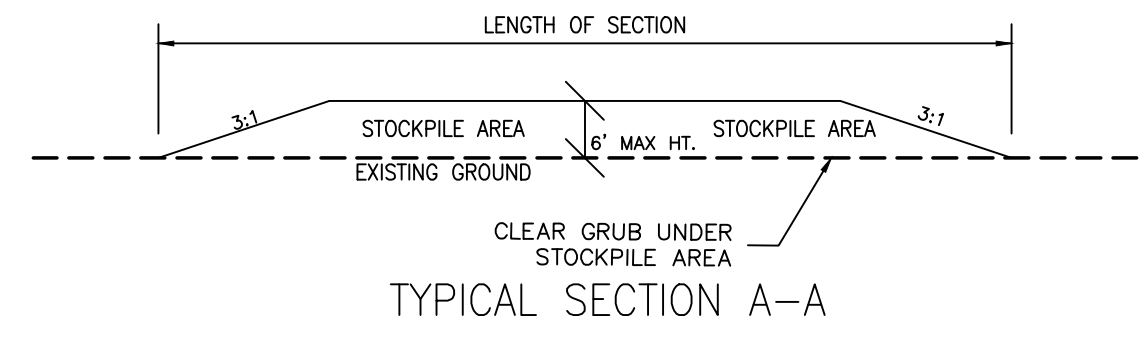
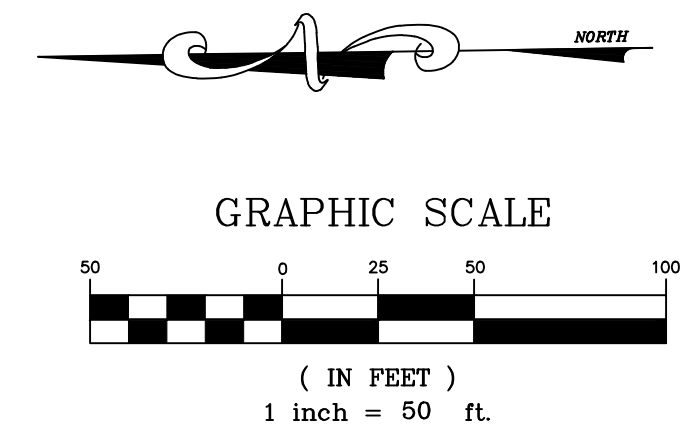
PER FEMA FIRMS PANELS 32031C28386, EFFECTIVE 3/16/2009, THIS PROJECT LIES PARTIALLY WITHIN AN AREA DESIGNATED AS ZONE X (SHADED) AND ZONE X (UNSHADED)

**GRADING NOTES:**

- ALL CONSTRUCTION SHALL CONFORM TO THE STANDARD SPECIFICATIONS, AND THE LATEST STANDARD DETAILS FOR PUBLIC WORKS CONSTRUCTION 2012 ADDITION (AND ANY APPURTENANT SUPPLEMENTS) SPONSORED AND DISTRIBUTED BY RENO, SPARKS, AND WASHOE COUNTY, AND THE PROJECT GEOTECHNICAL INVESTIGATION.
- THE NATURAL VEGETATION AND EXISTING LANDSCAPING SHALL BE PRESERVED AS MUCH AS PRACTICAL DURING SITE IMPROVEMENTS CONSTRUCTION.
- SLOPES STEEPER THAN 3:1 SHALL BE MECHANICALLY STABILIZED WITH ROCK-RIP.

**LEGEND**

- 4962 --- EXISTING MINOR CONTOUR LINE
- 4960 --- EXISTING MAJOR CONTOUR LINE



**LEARNER LEMMON PROPERTY**

**STOCKPILE PLAN C-7**

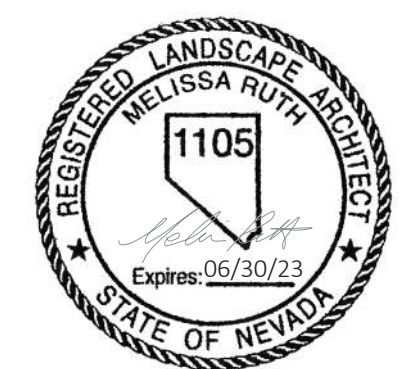


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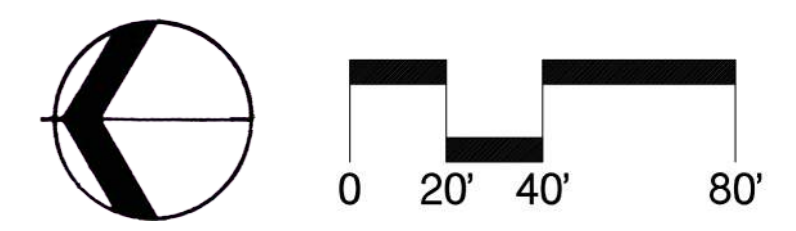
**LEGEND**

- 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)



**LEARNER LEMMON PRELIMINARY LANDSCAPE PLAN**  
Washoe County, Nevada  
CALLANDER PROJECT NUMBER: 23019 | DATE: 12.08.2023 | CALLANDER ASSOCIATES

L1





PAN AMERICAN WAY

SHRUB, TYP.  
 PLANTING AREA, TYP.  
 POCKET PARK W/  
 CHILDREN'S PLAY AREA  
 PARK SIGN  
 FENCE

SHADE TREE, TYP.  
 12' WIDE COUNTY ACCESS GRAVEL ROAD W/ PIPE GATE  
 EVERGREEN TREE, TYP.

TURF

8' WIDE DECOMPOSED GRANITE TRAIL

S89

BOLLARD

SHADE SHELTER  
 BIKE PARKING

ACCENT TREE, TYP.  
 PICNIC AREA

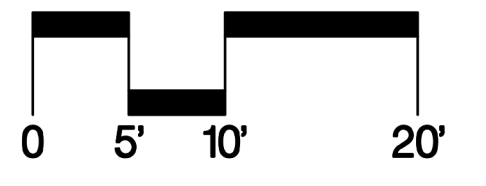
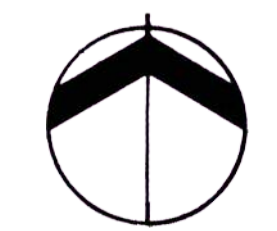
DECOMPOSED  
 GRANITE, TYP.

CONCRETE PATH, TYP.  
 BOLLARD

# LEARNER LEMMON POCKET PARK PRELIMINARY PLAN

Washoe County, Nevada  
 CALLANDER PROJECT NUMBER: 23019 | DATE: 12.08.2023 | CALLANDER ASSOCIATES

L2





November 21, 2023

Jeff Holbrook, Manager  
LC Learner, LLC  
325 Harbour Cove Drive #219  
Sparks, NV, 89434

Via Email:  
[jholbrook@landcapip.com](mailto: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@kcgnev.com)

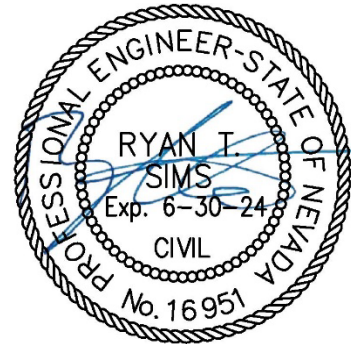
# Preliminary Drainage Report

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



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:**

264 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).

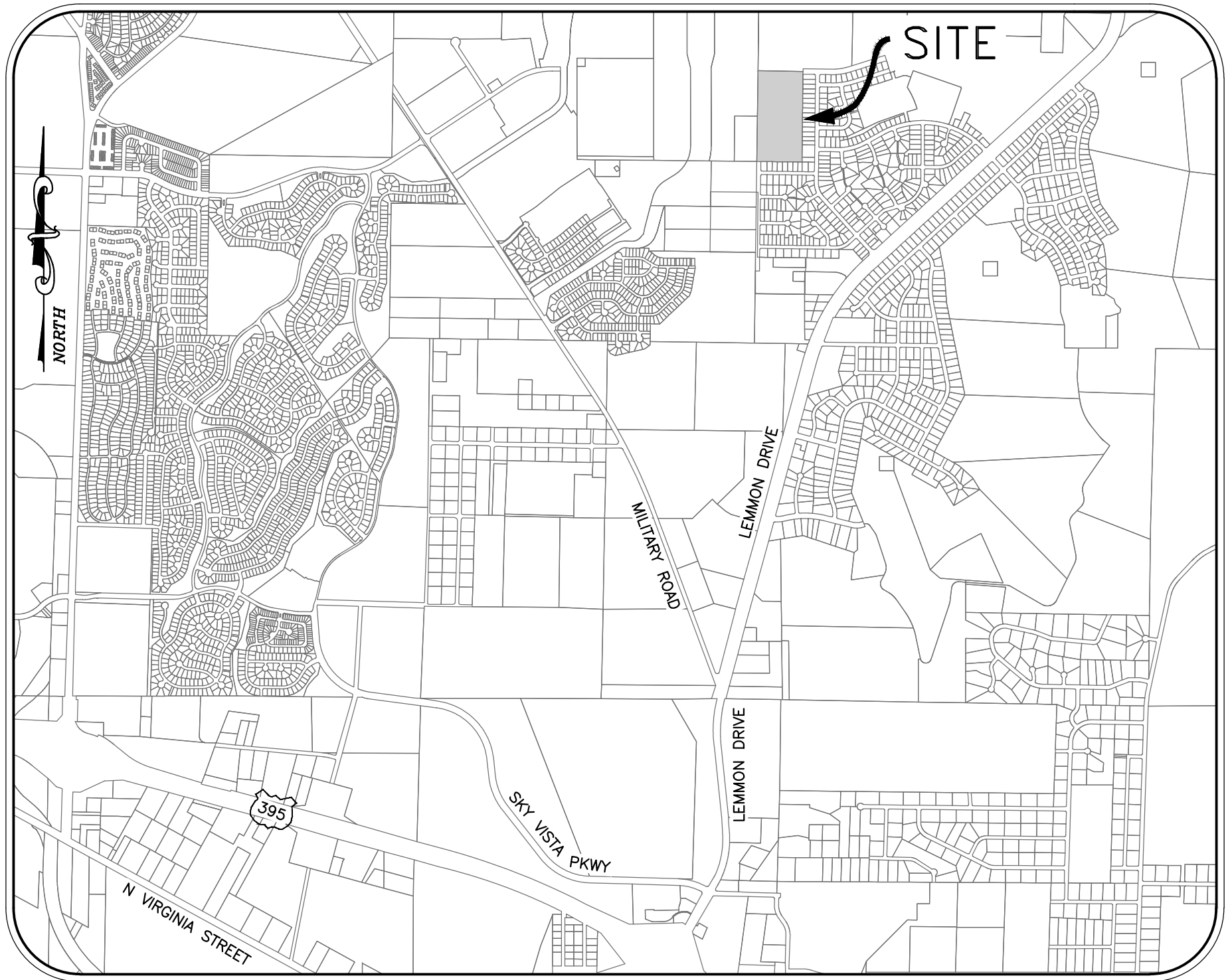
**Retention:**

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:**

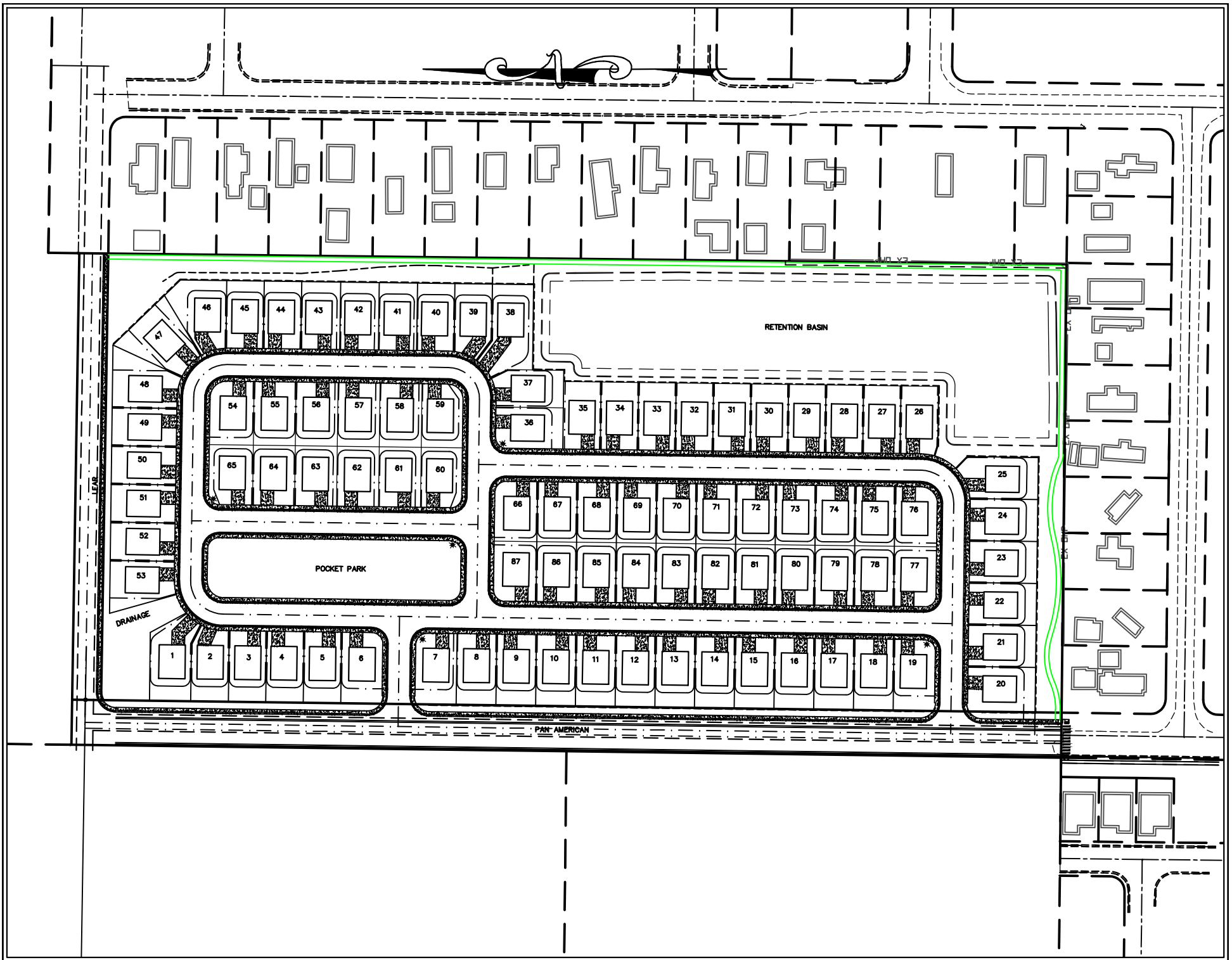
Overall, the 5-year and 100-year peak flow leaving the site will be reduced or remain at the existing flow rates. The Retention basin will retain both the 5-year and 100-year flow increases. Therefore, the effects of the development on all adjacent and downstream properties and drainageways will be reduced. 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



# SITE

## **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**

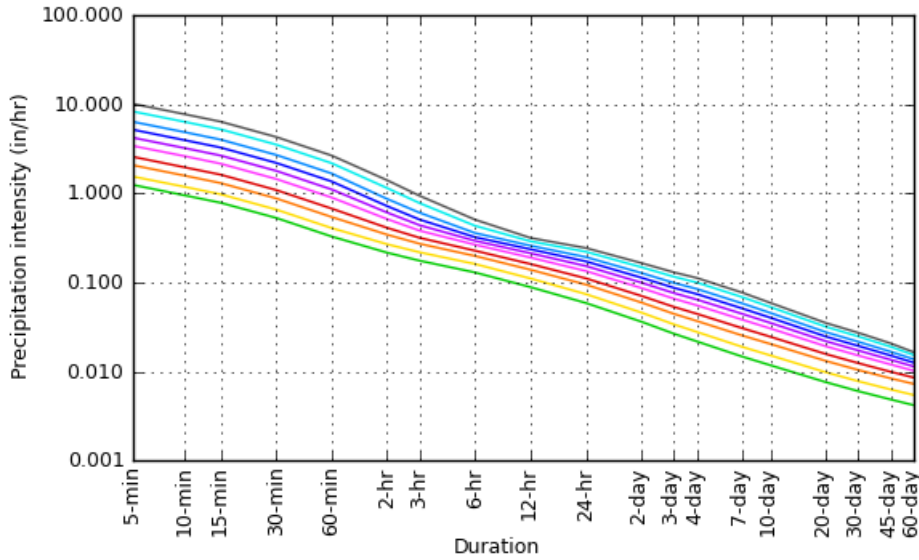
| <b>PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches/hour)<sup>1</sup></b> |                                     |                        |                        |                        |                        |                        |                        |                        |                        |                        |
|---------------------------------------------------------------------------------------------------------------------|-------------------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|
| Duration                                                                                                            | Average recurrence interval (years) |                        |                        |                        |                        |                        |                        |                        |                        |                        |
|                                                                                                                     | 1                                   | 2                      | 5                      | 10                     | 25                     | 50                     | 100                    | 200                    | 500                    | 1000                   |
| 5-min                                                                                                               | 1.25<br>(0.104-1.44)                | 1.55<br>(1.30-1.81)    | 2.08<br>(1.74-2.45)    | 2.58<br>(2.17-3.06)    | 3.42<br>(2.83-4.13)    | 4.22<br>(3.41-5.17)    | 5.20<br>(4.07-6.47)    | 6.37<br>(4.81-8.11)    | 8.32<br>(5.96-10.9)    | 10.1<br>(6.97-13.6)    |
| 10-min                                                                                                              | 0.948<br>(0.798-1.09)               | 1.18<br>(0.990-1.37)   | 1.58<br>(1.33-1.86)    | 1.96<br>(1.65-2.33)    | 2.61<br>(2.15-3.14)    | 3.22<br>(2.59-3.94)    | 3.95<br>(3.10-4.92)    | 4.85<br>(3.67-6.17)    | 6.34<br>(4.54-8.33)    | 7.72<br>(5.30-10.4)    |
| 15-min                                                                                                              | 0.784<br>(0.660-0.904)              | 0.976<br>(0.816-1.14)  | 1.30<br>(1.10-1.54)    | 1.62<br>(1.37-1.92)    | 2.15<br>(1.78-2.60)    | 2.66<br>(2.14-3.26)    | 3.26<br>(2.56-4.07)    | 4.01<br>(3.03-5.10)    | 5.23<br>(3.75-6.88)    | 6.38<br>(4.38-8.58)    |
| 30-min                                                                                                              | 0.530<br>(0.444-0.610)              | 0.658<br>(0.550-0.766) | 0.878<br>(0.740-1.04)  | 1.09<br>(0.920-1.29)   | 1.45<br>(1.20-1.75)    | 1.79<br>(1.44-2.19)    | 2.20<br>(1.72-2.74)    | 2.70<br>(2.04-3.44)    | 3.52<br>(2.53-4.64)    | 4.29<br>(2.95-5.78)    |
| 60-min                                                                                                              | 0.328<br>(0.275-0.377)              | 0.408<br>(0.341-0.475) | 0.543<br>(0.458-0.641) | 0.675<br>(0.569-0.801) | 0.898<br>(0.742-1.08)  | 1.11<br>(0.893-1.36)   | 1.36<br>(1.07-1.70)    | 1.67<br>(1.26-2.13)    | 2.18<br>(1.56-2.87)    | 2.66<br>(1.83-3.58)    |
| 2-hr                                                                                                                | 0.216<br>(0.192-0.248)              | 0.268<br>(0.238-0.309) | 0.344<br>(0.302-0.396) | 0.410<br>(0.356-0.473) | 0.514<br>(0.436-0.597) | 0.609<br>(0.504-0.714) | 0.720<br>(0.581-0.855) | 0.866<br>(0.678-1.07)  | 1.15<br>(0.849-1.45)   | 1.40<br>(1.00-1.81)    |
| 3-hr                                                                                                                | 0.175<br>(0.158-0.198)              | 0.218<br>(0.196-0.248) | 0.272<br>(0.244-0.309) | 0.317<br>(0.281-0.361) | 0.381<br>(0.334-0.436) | 0.439<br>(0.378-0.507) | 0.508<br>(0.429-0.594) | 0.606<br>(0.500-0.719) | 0.778<br>(0.623-0.975) | 0.939<br>(0.734-1.21)  |
| 6-hr                                                                                                                | 0.129<br>(0.117-0.145)              | 0.161<br>(0.145-0.181) | 0.198<br>(0.178-0.223) | 0.227<br>(0.203-0.256) | 0.265<br>(0.234-0.300) | 0.293<br>(0.256-0.333) | 0.322<br>(0.278-0.370) | 0.359<br>(0.305-0.416) | 0.433<br>(0.360-0.509) | 0.507<br>(0.416-0.615) |
| 12-hr                                                                                                               | 0.089<br>(0.080-0.099)              | 0.111<br>(0.100-0.124) | 0.139<br>(0.125-0.155) | 0.161<br>(0.144-0.180) | 0.190<br>(0.168-0.214) | 0.213<br>(0.186-0.241) | 0.236<br>(0.203-0.270) | 0.259<br>(0.220-0.300) | 0.290<br>(0.240-0.342) | 0.316<br>(0.257-0.379) |
| 24-hr                                                                                                               | 0.059<br>(0.053-0.066)              | 0.074<br>(0.066-0.083) | 0.095<br>(0.085-0.106) | 0.111<br>(0.099-0.125) | 0.134<br>(0.119-0.151) | 0.153<br>(0.134-0.173) | 0.172<br>(0.150-0.196) | 0.193<br>(0.165-0.221) | 0.221<br>(0.186-0.256) | 0.243<br>(0.202-0.285) |
| 2-day                                                                                                               | 0.036<br>(0.032-0.041)              | 0.046<br>(0.041-0.052) | 0.059<br>(0.052-0.068) | 0.071<br>(0.062-0.081) | 0.086<br>(0.075-0.099) | 0.099<br>(0.085-0.114) | 0.113<br>(0.096-0.131) | 0.128<br>(0.107-0.150) | 0.148<br>(0.122-0.177) | 0.165<br>(0.133-0.200) |
| 3-day                                                                                                               | 0.027<br>(0.023-0.030)              | 0.034<br>(0.030-0.039) | 0.044<br>(0.039-0.051) | 0.053<br>(0.047-0.061) | 0.066<br>(0.057-0.075) | 0.076<br>(0.065-0.088) | 0.087<br>(0.074-0.101) | 0.099<br>(0.082-0.116) | 0.116<br>(0.094-0.138) | 0.130<br>(0.104-0.157) |
| 4-day                                                                                                               | 0.022<br>(0.019-0.025)              | 0.028<br>(0.024-0.032) | 0.037<br>(0.032-0.042) | 0.044<br>(0.039-0.051) | 0.055<br>(0.048-0.064) | 0.064<br>(0.055-0.074) | 0.074<br>(0.062-0.086) | 0.084<br>(0.070-0.099) | 0.100<br>(0.081-0.119) | 0.112<br>(0.089-0.135) |
| 7-day                                                                                                               | 0.015<br>(0.013-0.017)              | 0.019<br>(0.017-0.022) | 0.025<br>(0.022-0.030) | 0.031<br>(0.027-0.036) | 0.038<br>(0.033-0.045) | 0.045<br>(0.038-0.052) | 0.051<br>(0.043-0.061) | 0.058<br>(0.048-0.070) | 0.069<br>(0.055-0.083) | 0.077<br>(0.061-0.095) |
| 10-day                                                                                                              | 0.012<br>(0.010-0.014)              | 0.015<br>(0.013-0.018) | 0.020<br>(0.018-0.024) | 0.025<br>(0.021-0.028) | 0.030<br>(0.026-0.035) | 0.035<br>(0.030-0.041) | 0.040<br>(0.034-0.047) | 0.046<br>(0.038-0.054) | 0.053<br>(0.043-0.064) | 0.059<br>(0.047-0.072) |
| 20-day                                                                                                              | 0.008<br>(0.007-0.009)              | 0.010<br>(0.009-0.011) | 0.013<br>(0.011-0.015) | 0.016<br>(0.014-0.018) | 0.019<br>(0.017-0.022) | 0.022<br>(0.019-0.025) | 0.025<br>(0.021-0.029) | 0.028<br>(0.023-0.033) | 0.032<br>(0.026-0.038) | 0.035<br>(0.029-0.042) |
| 30-day                                                                                                              | 0.006<br>(0.005-0.007)              | 0.008<br>(0.007-0.009) | 0.010<br>(0.009-0.012) | 0.012<br>(0.011-0.014) | 0.015<br>(0.013-0.017) | 0.017<br>(0.015-0.020) | 0.019<br>(0.016-0.023) | 0.022<br>(0.018-0.025) | 0.025<br>(0.021-0.029) | 0.027<br>(0.022-0.033) |
| 45-day                                                                                                              | 0.005<br>(0.004-0.006)              | 0.006<br>(0.005-0.007) | 0.008<br>(0.007-0.010) | 0.010<br>(0.009-0.011) | 0.012<br>(0.010-0.014) | 0.014<br>(0.012-0.015) | 0.015<br>(0.013-0.017) | 0.017<br>(0.014-0.019) | 0.019<br>(0.016-0.022) | 0.021<br>(0.017-0.024) |
| 60-day                                                                                                              | 0.004<br>(0.004-0.005)              | 0.005<br>(0.005-0.006) | 0.007<br>(0.006-0.008) | 0.009<br>(0.007-0.010) | 0.010<br>(0.009-0.012) | 0.011<br>(0.010-0.013) | 0.013<br>(0.011-0.014) | 0.014<br>(0.012-0.016) | 0.015<br>(0.013-0.018) | 0.016<br>(0.014-0.019) |

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

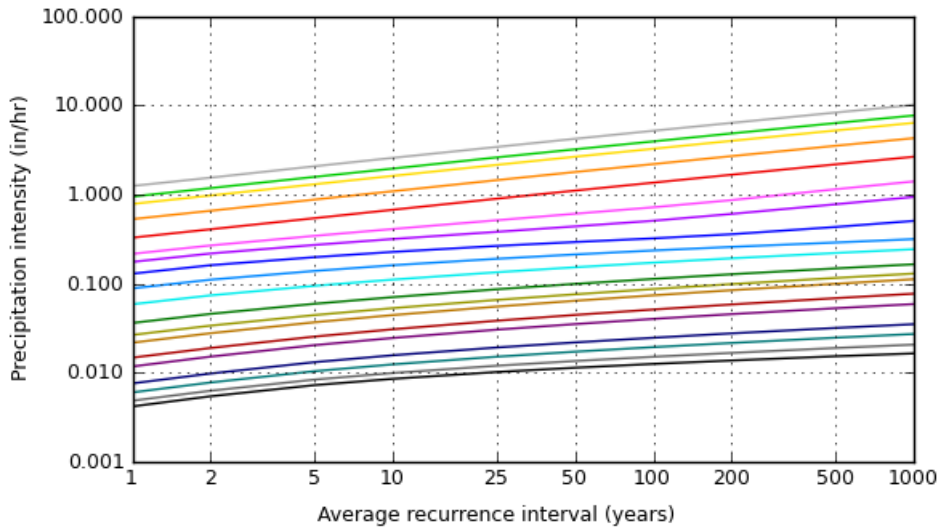
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**PF graphical**

PDS-based intensity-duration-frequency (IDF) curves  
Latitude: 39.6446°, Longitude: -119.8458°



| Average recurrence interval (years) |            |
|-------------------------------------|------------|
| 1                                   | Green      |
| 2                                   | Yellow     |
| 5                                   | Orange     |
| 10                                  | Red        |
| 25                                  | Pink       |
| 50                                  | Purple     |
| 100                                 | Blue       |
| 200                                 | Cyan       |
| 500                                 | Light Blue |
| 1000                                | Grey       |



| Duration |              |
|----------|--------------|
| 5-min    | Grey         |
| 10-min   | Green        |
| 15-min   | Yellow       |
| 30-min   | Orange       |
| 60-min   | Red          |
| 2-hr     | Pink         |
| 3-hr     | Purple       |
| 6-hr     | Blue         |
| 12-hr    | Cyan         |
| 24-hr    | Light Blue   |
| 2-day    | Dark Green   |
| 3-day    | Yellow-Green |
| 4-day    | Orange-Green |
| 7-day    | Red-Orange   |
| 10-day   | Red          |
| 20-day   | Dark Blue    |
| 30-day   | Teal         |
| 45-day   | Grey         |
| 60-day   | Black        |

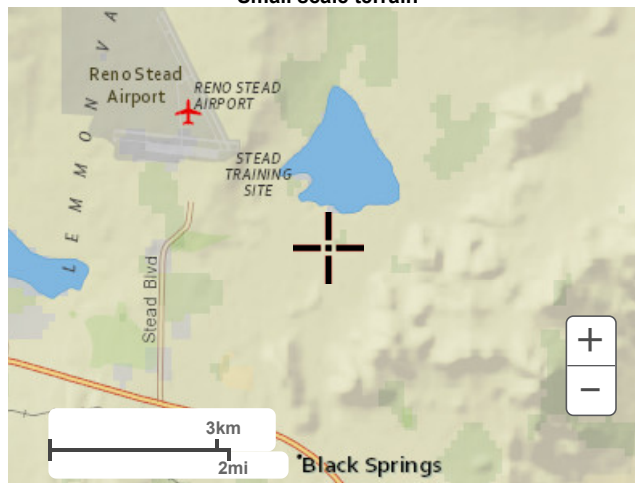
NOAA Atlas 14, Volume 1, Version 5

Created (GMT): Thu Jan 5 18:38:32 2023

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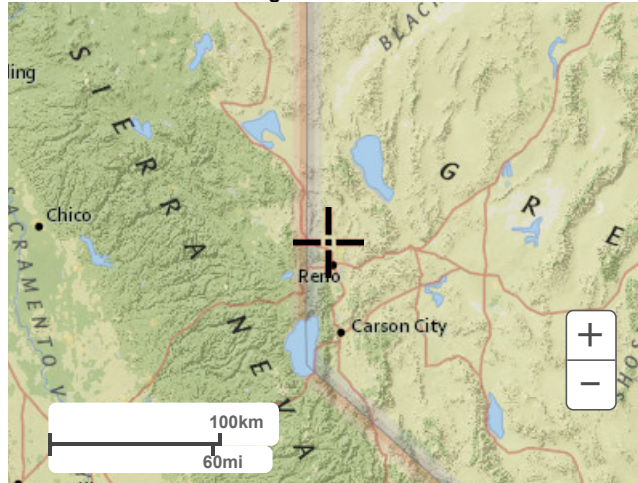
### Maps & aerials

#### Small scale terrain





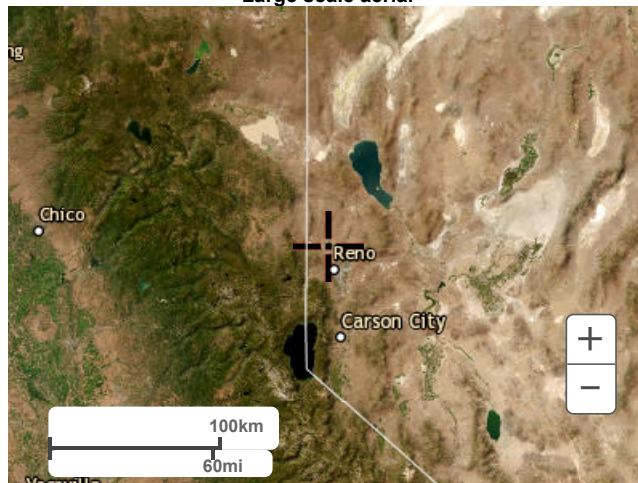
Large scale terrain



Large scale map



Large scale aerial

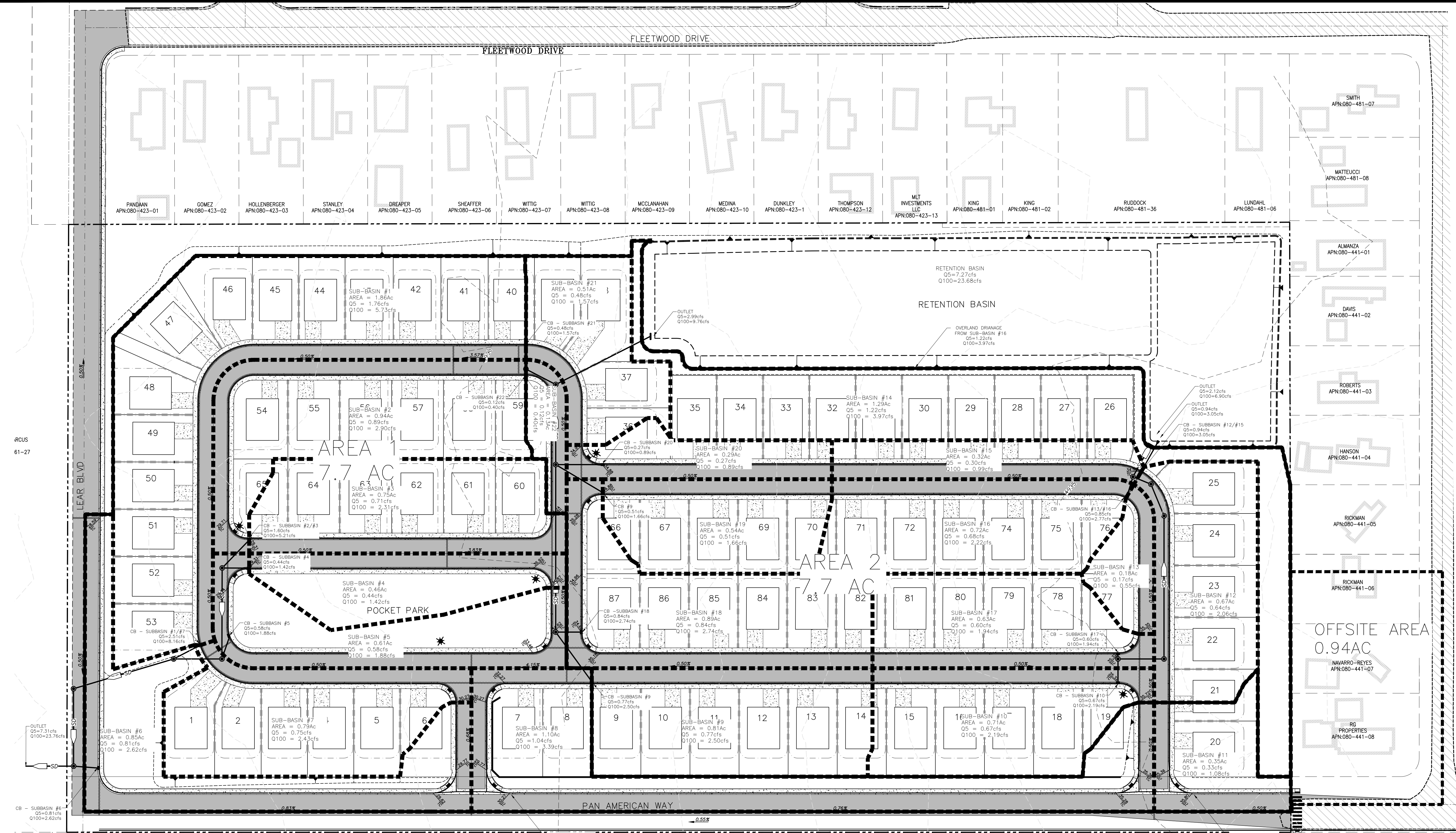


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# Hydrology Display

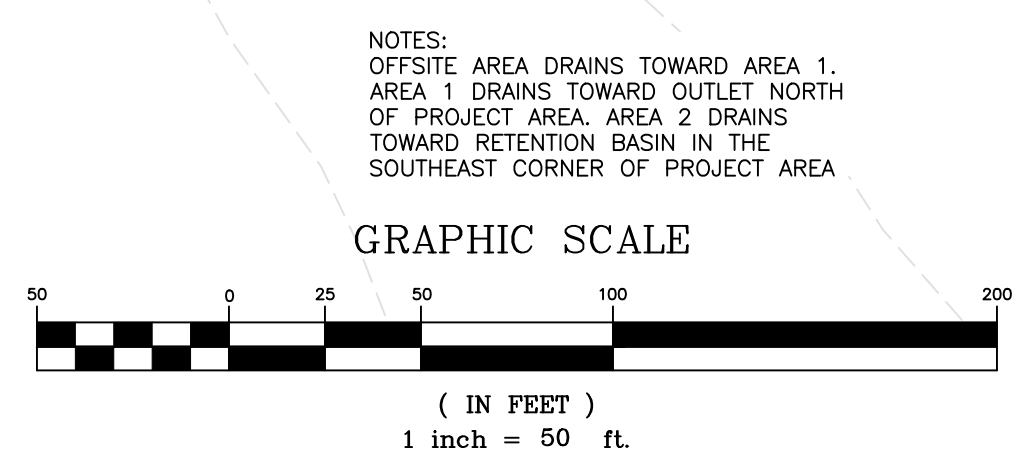


EXISTING RATIONAL METHOD CALCULATIONS

| DRAINAGE SUB-AREA | AREA (acres) | RUNOFF COEFFICIENT |        | Tc (min) | INTENSITY (in/hr) |        | PEAK RUNOFF (cfs) |        |
|-------------------|--------------|--------------------|--------|----------|-------------------|--------|-------------------|--------|
|                   |              | S-YR               | 100-YR |          | S-YR              | 100-YR | S-YR              | 100-YR |
| 1                 | 1.86         | 0.2                | 0.5    | 10       | 1.58              | 3.95   | 0.59              | 3.62   |
| 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              | 1.63   |
| 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   | 0.26              | 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              | 1.43   |
| 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              | 1.03   |
| 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   |
| <b>TOTAL</b>      | <b>4.87</b>  |                    |        |          |                   |        | <b>30.42</b>      |        |

PROPOSED RATIONAL METHOD CALCULATIONS

| DRAINAGE SUB-AREA | AREA (acres) | RUNOFF COEFFICIENT |        | Tc (min) | INTENSITY (in/hr) |        | PEAK RUNOFF (cfs) |        |
|-------------------|--------------|--------------------|--------|----------|-------------------|--------|-------------------|--------|
|                   |              | S-YR               | 100-YR |          | S-YR              | 100-YR | S-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              | 0.98   |
| 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              | 0.88   |
| 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   |
| <b>TOTAL</b>      | <b>14.60</b> |                    |        |          |                   |        | <b>47.45</b>      |        |



# LEARNER LEMMON PROPERTY

# HYDROLOGY DISPLAY C-6

863 EDISON WAY - RENO, NEVADA 89502  
 PH 775-771-5554 / FX 775-357-8421

## **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 <sub>5</sub> ) | 100-Year (C <sub>100</sub> ) |
| <u>Business/Commercial:</u>         |                         |                          |                              |
| Downtown Areas                      | 85                      | .82                      | .85                          |
| Neighborhood Areas                  | 70                      | .65                      | .80                          |
| <u>Residential:</u>                 |                         |                          |                              |
| (Average Lot Size)                  |                         |                          |                              |
| 1/8 Acre or Less (Multi-Unit)       | 65                      | .60                      | .78                          |
| 1/4 Acre                            | 38                      | .50                      | .65                          |
| 1/2 Acre                            | 30                      | .45                      | .60                          |
| 1/2 Acre                            | 25                      | .40                      | .55                          |
| 1 Acre                              | 20                      | .35                      | .50                          |
| <u>Industrial:</u>                  | 72                      | .68                      | .82                          |
| <u>Open Space:</u>                  |                         |                          |                              |
| (Lawns, Parks, Golf Courses)        | 5                       | .05                      | .30                          |
| <u>Undeveloped Areas:</u>           |                         |                          |                              |
| Range                               | 0                       | .20                      | .50                          |
| Forest                              | 0                       | .05                      | .30                          |
| <u>Streets/Roads:</u>               |                         |                          |                              |
| Paved                               | 100                     | .88                      | .93                          |
| Gravel                              | 20                      | .25                      | .50                          |
| <u>Drives/Walks:</u>                | 95                      | .87                      | .90                          |
| <u>Roofs:</u>                       | 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<br><i>Learner Lemmon existing</i> | By      | Date |
| Location                                  | Checked | Date |

Check one:  Present  Developed

## 1. Runoff curve number

| Soil name and hydrologic group<br>(appendix A) | Cover description<br><br>(cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio) | CN <sup>1/</sup> |            |            | Area<br><br><input type="checkbox"/> acres<br><input type="checkbox"/> mi <sup>2</sup><br><input checked="" type="checkbox"/> % | Product of CN x area |
|------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|------------------|------------|------------|---------------------------------------------------------------------------------------------------------------------------------|----------------------|
|                                                |                                                                                                                                             | Table 2-2        | Figure 2-3 | Figure 2-4 |                                                                                                                                 |                      |
| <i>Haybarn loamy sand (A)</i>                  |                                                                                                                                             | <i>51</i>        |            |            | <i>13.6</i>                                                                                                                     | <i>694</i>           |
| <i>Orf variant gravelly sandy loam (C)</i>     |                                                                                                                                             | <i>63</i>        |            |            | <i>66.4</i>                                                                                                                     | <i>5443</i>          |
|                                                |                                                                                                                                             |                  |            |            |                                                                                                                                 |                      |
|                                                |                                                                                                                                             |                  |            |            |                                                                                                                                 |                      |
|                                                |                                                                                                                                             |                  |            |            |                                                                                                                                 |                      |
|                                                |                                                                                                                                             |                  |            |            |                                                                                                                                 |                      |
|                                                |                                                                                                                                             |                  |            |            |                                                                                                                                 |                      |
|                                                |                                                                                                                                             |                  |            |            |                                                                                                                                 |                      |

<sup>1/</sup> Use only one CN source per line

**Totals** ➡

*6137*

CN (weighted) =  $\frac{\text{total product}}{\text{total area}} = \frac{\mathbf{6137}}{\mathbf{100}} = \mathbf{61.37}$  ;

**Use CN** ➡

*61*

## 2. Runoff

|                                               | Storm #1    | Storm #2 | Storm #3 |
|-----------------------------------------------|-------------|----------|----------|
| Frequency ..... yr                            | <i>100</i>  |          |          |
| Rainfall, P ( <i>10-day</i> 24-hour) ..... in | <i>9.66</i> |          |          |
| Runoff, Q ..... in                            | <i>4.75</i> |          |          |

(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<sub>C</sub>) or travel time (T<sub>t</sub>)

|          |         |      |
|----------|---------|------|
| Project  | By      | Date |
| Location | Checked | Date |

Check one:  Present  Developed

Check one:  T<sub>C</sub>  T<sub>t</sub> 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 T<sub>C</sub> 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 <sub>2</sub> ..... 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 <sub>t</sub> ..... hr |            | 0.72  | + | <input type="text"/> |

### Shallow concentrated flow

|                                                              | Segment ID |         |   |                      |
|--------------------------------------------------------------|------------|---------|---|----------------------|
| 7. Surface description (paved or unpaved) .....              |            | Unpaved |   |                      |
| 8. Flow length, L .....ft                                    |            | 129     |   |                      |
| 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 <sub>t</sub> ..... hr |            | 0.22    | + | <input type="text"/> |

Total = 0.94hr

### Channel flow

|                                                                                                                | Segment ID |  |   |                      |
|----------------------------------------------------------------------------------------------------------------|------------|--|---|----------------------|
| 12. Cross sectional flow area, a ..... ft <sup>2</sup>                                                         |            |  |   |                      |
| 13. Wetted perimeter, p <sub>w</sub> ..... 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 <sub>t</sub> ..... hr                                                   |            |  | + | <input type="text"/> |
| 20. Watershed or subarea T <sub>C</sub> or T <sub>t</sub> (add T <sub>t</sub> in steps 6, 11, and 19) ..... Hr |            |  |   | <input type="text"/> |

# 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<sup>2</sup> (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)

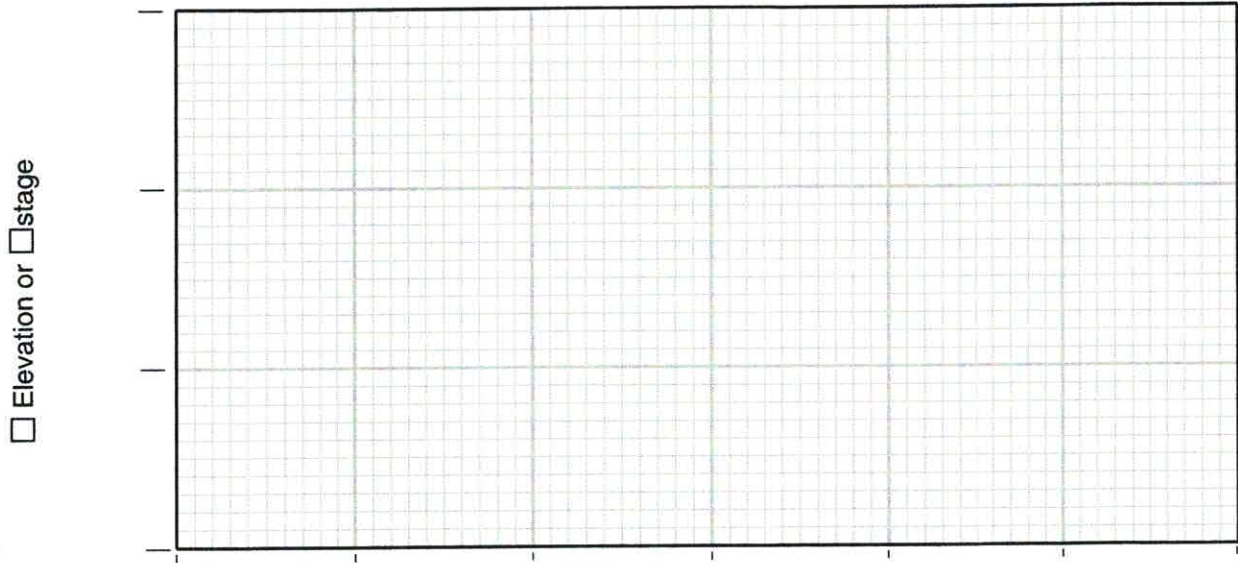
Pond and swamp areas sprea  
throughout watershed ..... = \_\_\_\_\_ percent of  $A_m$  ( \_\_\_\_\_ acres or mi<sup>2</sup> covered)

|                                                                                                                                                                 | Storm #1 | Storm #2 | Storm #3 |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----------|----------|
| 2. Frequency ..... yr                                                                                                                                           | 100      |          |          |
| 3. Rainfall, P <sup>10-day</sup> (24-hour) ..... in                                                                                                             | 9.66     |          |          |
| 4. Initial abstraction, $I_a$ ..... in<br>(Use CN with table 4-1)                                                                                               | 1.279    |          |          |
| 5. Compute $I_a/P$ .....                                                                                                                                        | 0.13     |          |          |
| 6. Unit peak discharge, $q_u$ ..... csm/in<br>(Use $T_c$ and $I_a/P$ with exhibit 4- _____)                                                                     | 360      |          |          |
| 7. Runoff, Q ..... in<br>(From worksheet 2) Figure 2-6                                                                                                          | 4.75     |          |          |
| 8. Pond and swamp adjustment factor, $F_p$ .....<br>(Use percent pond and swamp area<br>with table 4-2. Factor is 1.0 for<br>zero percent pond ans swamp area.) |          |          |          |
| 9. Peak discharge, $q_p$ ..... ft <sup>3</sup> /s<br><br>( Where $q_p = q_u A_m QF_p$ )                                                                         | 53.01    |          |          |

# Worksheet 6a: Detention basin storage, peak outflow discharge ( $q_o$ ) known

|          |         |      |
|----------|---------|------|
| Project  | By      | Date |
| Location | Checked | Date |

Check one:  Present  Developed



Detention basin storage ( acre feet )

1. Data:

Drainage area .....  $A_m = 0.031$  mi<sup>2</sup>  
 Rainfall distribution type ( I, IA, II, III) = \_\_\_\_\_

|           |           |
|-----------|-----------|
| 1st Stage | 2nd Stage |
|-----------|-----------|

2. Frequency ..... yr

3. Peak inflow discharge  $q_i$  ..... ft<sup>3</sup>/s

(from worksheet 4 or 5b)

4. Peak outflow discharge  $q_u$  ..... ft<sup>3</sup>/s

<sup>1/</sup>

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

( $V_r = QA_m 53.33$ )

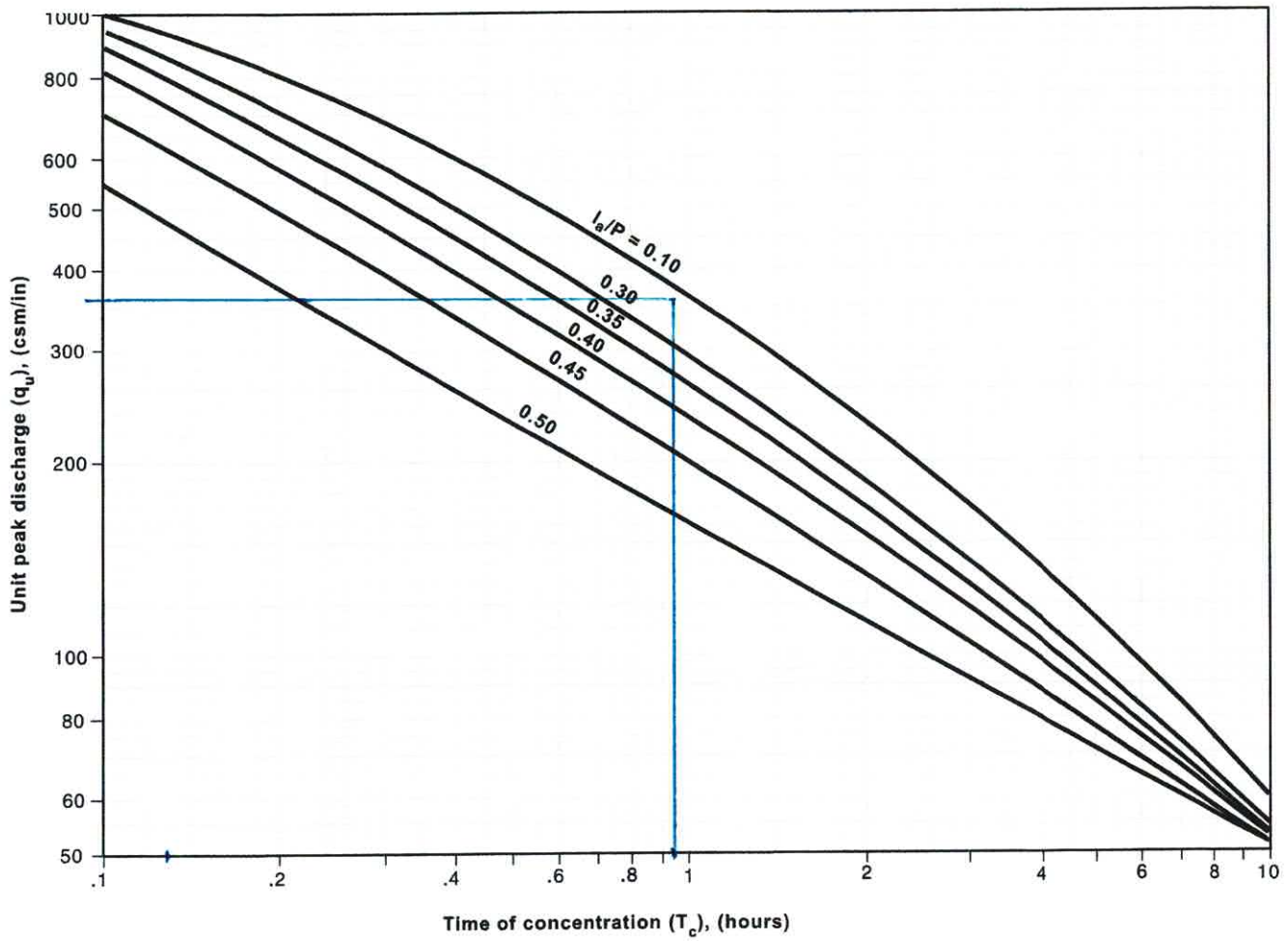
9. Storage volume,  $V_s$  ..... ac-ft

( $V_s = V_r ( \frac{V_s}{V_r} )$ )

10. Maximum storage  $E_{max}$  (from plot)

<sup>1/</sup> 2nd stage  $q_o$  includes 1st stage  $q_o$ .

**Exhibit 4-II** Unit peak discharge ( $q_u$ ) for NRCS (SCS) type II rainfall distribution



# Worksheet 2: Runoff curve number and runoff

|                                        |         |      |
|----------------------------------------|---------|------|
| Project <u>Learner Lemmon Proposed</u> | By      | Date |
| Location                               | Checked | Date |

Check one:  Present  Developed

## 1. Runoff curve number

| Soil name and hydrologic group<br>(appendix A) | Cover description<br><small>(cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)</small> | CN <sup>1/</sup> |            |            | Area<br><input type="checkbox"/> acres<br><input type="checkbox"/> mi <sup>2</sup><br><input checked="" type="checkbox"/> % | Product of CN x area |
|------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|------------|------------|-----------------------------------------------------------------------------------------------------------------------------|----------------------|
|                                                |                                                                                                                                                        | Table 2-2        | Figure 2-3 | Figure 2-4 |                                                                                                                             |                      |
| <u>Impervious</u>                              | <u>Pavement / Buildings</u>                                                                                                                            | <u>98</u>        |            |            | <u>67</u>                                                                                                                   | <u>6,566</u>         |
| <u>Landscaping</u>                             |                                                                                                                                                        | <u>79</u>        |            |            | <u>33</u>                                                                                                                   | <u>2,607</u>         |
|                                                |                                                                                                                                                        |                  |            |            |                                                                                                                             |                      |
|                                                |                                                                                                                                                        |                  |            |            |                                                                                                                             |                      |
|                                                |                                                                                                                                                        |                  |            |            |                                                                                                                             |                      |
|                                                |                                                                                                                                                        |                  |            |            |                                                                                                                             |                      |
|                                                |                                                                                                                                                        |                  |            |            |                                                                                                                             |                      |
|                                                |                                                                                                                                                        |                  |            |            |                                                                                                                             |                      |

<sup>1/</sup> Use only one CN source per line

**Totals** ➡

9,173

CN (weighted) =  $\frac{\text{total product}}{\text{total area}} = \frac{\underline{9,173}}{\underline{100}} = \underline{91.73}$  ;

**Use CN** ➡

92

## 2. Runoff

|                                                  | Storm #1    | Storm #2 | Storm #3 |
|--------------------------------------------------|-------------|----------|----------|
| Frequency ..... yr                               | <u>100</u>  |          |          |
| Rainfall, P <sup>10-day</sup> (24-hour) ..... in | <u>9.66</u> |          |          |
| Runoff, Q ..... in                               | <u>8.69</u> |          |          |

(Use P and CN with table 2-1, figure 2-1, or equations 2-3 and 2-4)

$$Q = \frac{(P-0.25)^2}{(P+0.65)}$$

$$S = \frac{1000}{CN} - 10$$

$$S = 0.87$$

# 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 $T_C$ 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 $\uparrow$ 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       | + | = <span style="border: 1px solid black; display: inline-block; width: 40px; height: 20px;"></span> |

### Shallow concentrated flow

|                                                     | Segment ID |   |                                                                                                    |
|-----------------------------------------------------|------------|---|----------------------------------------------------------------------------------------------------|
| 7. Surface description (paved or unpaved) .....     | paved      |   |                                                                                                    |
| 8. Flow length, L .....ft                           | 1,890      |   |                                                                                                    |
| 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       | + | = <span style="border: 1px solid black; display: inline-block; width: 40px; height: 20px;"></span> |

**Total = 0.47hr**

### Channel flow

|                                                                                     | Segment ID |   |                                                                                                    |
|-------------------------------------------------------------------------------------|------------|---|----------------------------------------------------------------------------------------------------|
| 12. Cross sectional flow area, a ..... ft <sup>2</sup>                              |            |   |                                                                                                    |
| 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                                 |            | + | = <span style="border: 1px solid black; display: inline-block; width: 40px; height: 20px;"></span> |
| 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<sup>2</sup> (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)

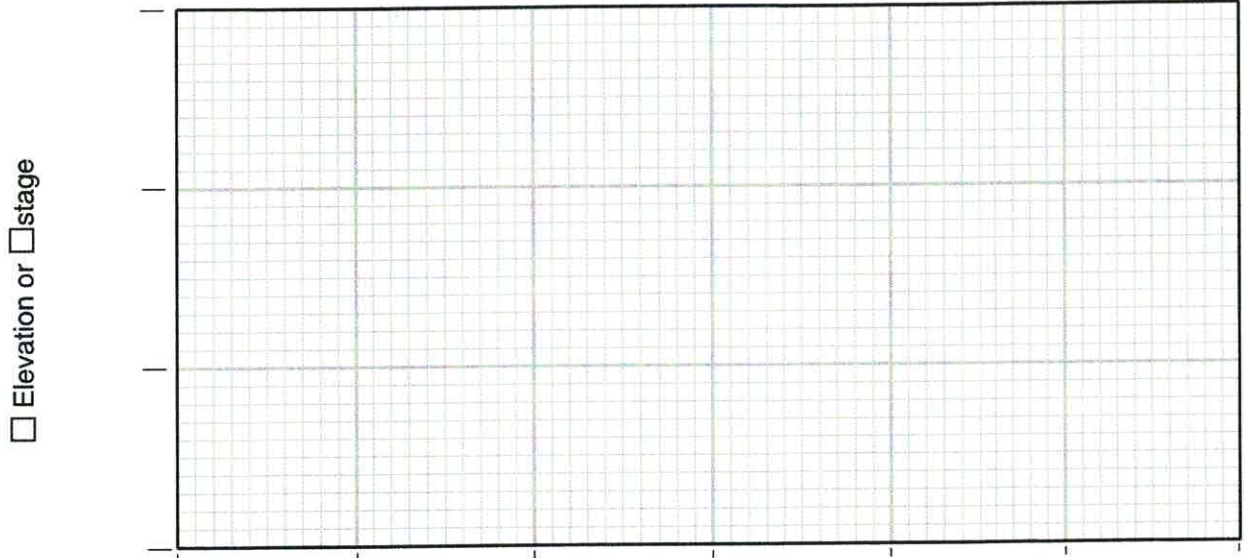
Pond and swamp areas sprea throughout watershed ..... = \_\_\_\_\_ percent of  $A_m$  ( \_\_\_\_\_ acres or mi<sup>2</sup> covered)

|                                                                                                                                                           | Storm #1 | Storm #2 | Storm #3 |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----------|----------|
| 2. Frequency ..... yr                                                                                                                                     | 100      |          |          |
| 3. Rainfall, P ( <sup>10-day</sup> <del>24-hour</del> ) ..... in                                                                                          | 9.66     |          |          |
| 4. Initial abstraction, $I_a$ ..... in<br>(Use CN with table 4-1)                                                                                         | 0.174    |          |          |
| 5. Compute $I_a/P$ .....                                                                                                                                  | 0.02     |          |          |
| 6. Unit peak discharge, $q_u$ ..... csm/in<br>(Use $T_c$ and $I_a/P$ with exhibit 4- _____)                                                               | 550      |          |          |
| 7. Runoff, Q ..... in<br>(From worksheet 2) Figure 2-6                                                                                                    | 8.69     |          |          |
| 8. Pond and swamp adjustment factor, $F_p$ .....<br>(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 <sup>3</sup> /s<br>(Where $q_p = q_u A_m QF_p$ )                                                                        | 146.16   |          |          |

# Worksheet 6a: Detention basin storage, peak outflow discharge ( $q_o$ ) known

|          |         |      |
|----------|---------|------|
| Project  | By      | Date |
| Location | Checked | Date |

Check one:  Present  Developed



Detention basin storage (acre feet)

1. Data:
  - Drainage area .....  $A_m = 0.031$  mi<sup>2</sup>
  - Rainfall distribution type ( I, IA, II, III) = \_\_\_\_\_
2. Frequency ..... yr 

|     |  |
|-----|--|
| 100 |  |
|-----|--|
3. Peak inflow discharge  $q_i$  ..... ft<sup>3</sup>/s 

|  |  |
|--|--|
|  |  |
|--|--|

  
(from worksheet 4 or 5b)
4. Peak outflow discharge  $q_u$  ..... ft<sup>3</sup>/s 

|  |  |
|--|--|
|  |  |
|--|--|

  
<sup>1/</sup>
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 

|       |  |
|-------|--|
| 14.37 |  |
|-------|--|

  
( $V_r = Q A_m$  53.33)
9. Storage volume,  $V_s$  ..... ac-ft 

|  |  |
|--|--|
|  |  |
|--|--|

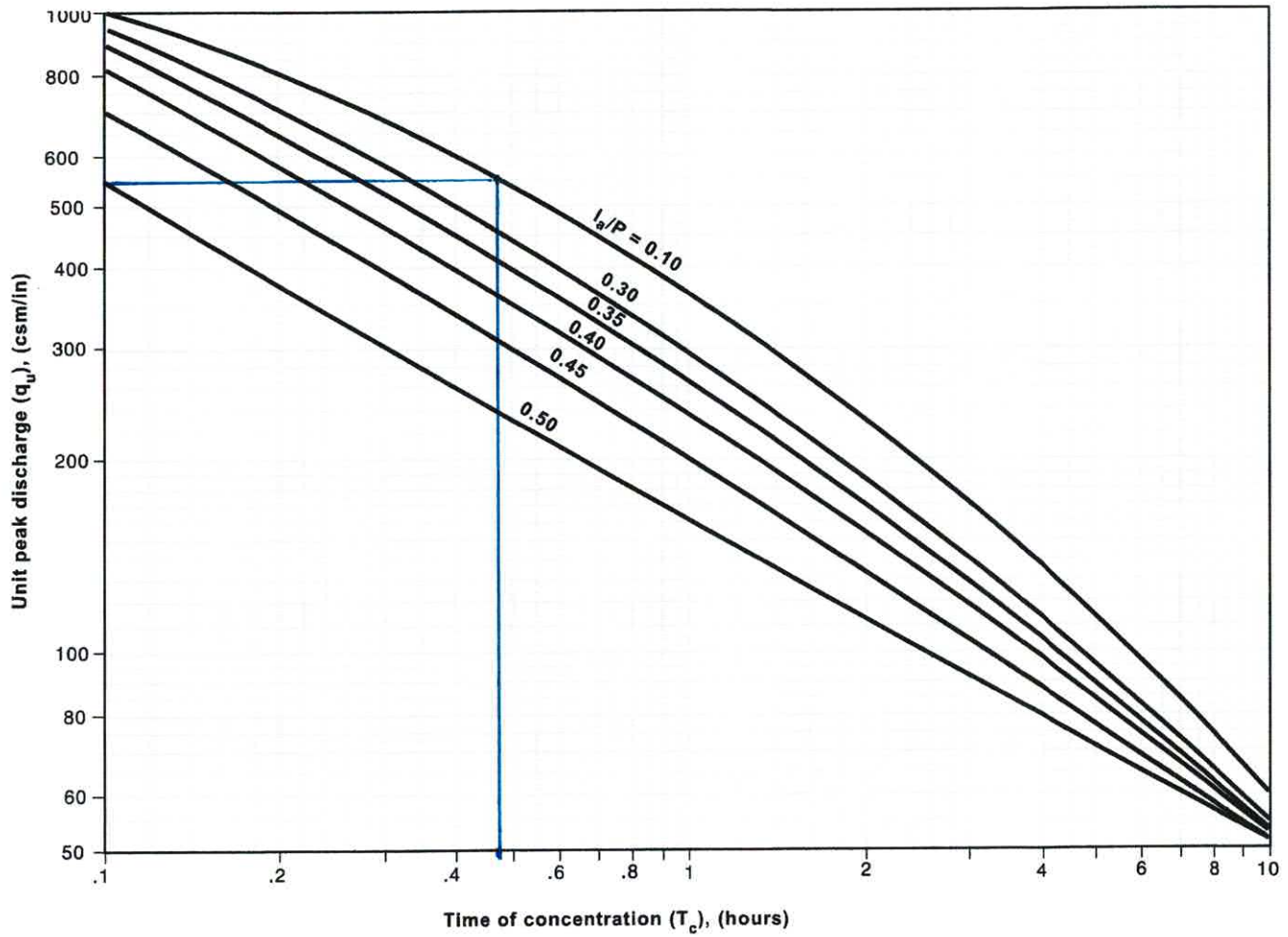
  
( $V_s = V_r ( \frac{V_s}{V_r} )$ )
10. Maximum storage  $E_{max}$  (from plot) 

|  |  |
|--|--|
|  |  |
|--|--|

<sup>1/</sup> 2nd stage  $q_o$  includes 1st stage  $q_o$ .



**Exhibit 4-II** Unit peak discharge ( $q_u$ ) for NRCS (SCS) type II rainfall distribution



# Percolation Testing Report



# WOOD RODGERS

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 <sup>1</sup> (ft) | Percolation Test Elevation <sup>1</sup> (ft) | Free Water Elevation <sup>1</sup> (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 <sup>1</sup> (ft) | Percolation Test Elevation <sup>1</sup> (ft) | Free Water Elevation <sup>1</sup> (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                                   |                                     |
| <sup>3</sup> TP-E @ 2   | 11                        | 4933                                        | 4931                                         | 4922                                   | 4926                                |
| TP-F                    | ---                       | 4934                                        | ---                                          | 4920                                   | 4924                                |
| <sup>2</sup> TP-G @ 2   | 4                         | 4932                                        | 4930                                         | ---                                    | <sup>2</sup> 4922.5                 |
| <sup>2</sup> TP-H @ 3.5 | 37                        | 4933                                        | 4929.5                                       | ---                                    | <sup>2</sup> 4922.5                 |
| <sup>2</sup> TP-I @ 3.5 | 20                        | 4934                                        | 4930.5                                       | ---                                    | <sup>2</sup> 4922.5                 |
| <sup>2</sup> TP-J @ 3   | 21                        | 4933                                        | 4930                                         | ---                                    | <sup>2</sup> 4922.5                 |

Table 1: Summary of Percolation Testing Results

| Test Pit and Depth (ft) | Percolation Rate (min/in) | Existing Ground Elevation <sup>1</sup> (ft) | Percolation Test Elevation <sup>1</sup> (ft) | Free Water Elevation <sup>1</sup> (ft) | Elevation of Wetting Front (ESHGWL) |
|-------------------------|---------------------------|---------------------------------------------|----------------------------------------------|----------------------------------------|-------------------------------------|
| <sup>2</sup> TP-K @ 4   | 2                         | 4933                                        | 4929                                         | ---                                    | <sup>2</sup> 4922.5                 |
| <sup>2</sup> TP-L @ 4   | 3                         | 4935                                        | 4931                                         | ---                                    | <sup>2</sup> 4922.5                 |

<sup>1</sup>Elevations are based on the Washoe County 6ft DEM. (Washoe County, reference date checked)

<sup>2</sup>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.

<sup>3</sup>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

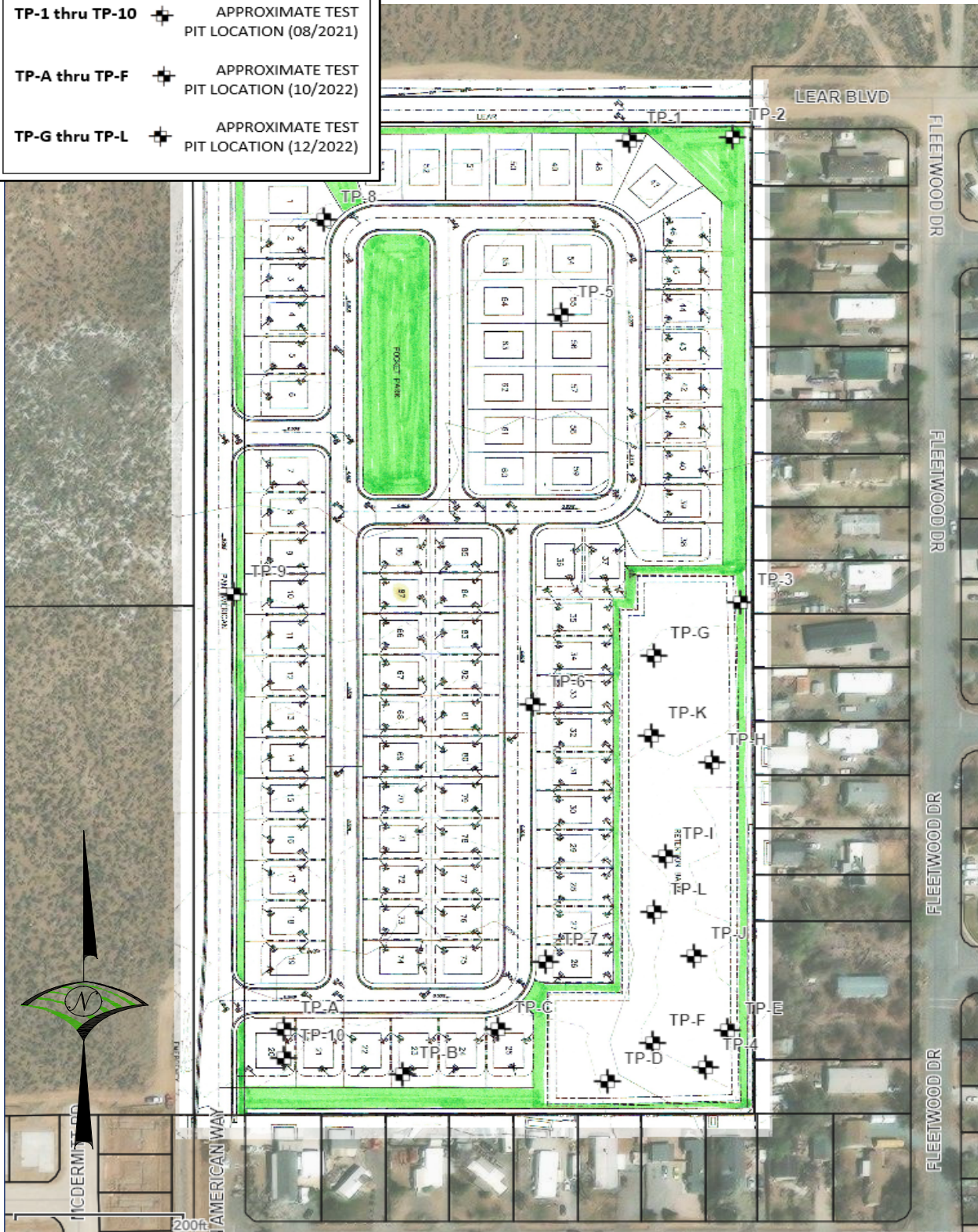


Jackson Beadell, EI  
 Technical Professional

*Enclosures:*

Figure 1 - Site Plan and Approximate Exploration Locations  
 Logs of Explorations and Percolation Tests

| LEGEND          |                                         |
|-----------------|-----------------------------------------|
| TP-1 thru TP-10 | APPROXIMATE TEST PIT LOCATION (08/2021) |
| TP-A thru TP-F  | APPROXIMATE TEST PIT LOCATION (10/2022) |
| TP-G thru TP-L  | APPROXIMATE TEST PIT LOCATION (12/2022) |



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-2

PAGE 1 OF 1

\\WOODRODGERS.LOC\PRODUCTION\DATA\JOBS-RENO\JOBS\4092\_LEARNING\_LEMMON\LEARNING\_LEMMON\_GAIGEO\GINT\LEARNING\_LEMMON.GPJ

**CLIENT** D.R. Horton  
**PROJECT NUMBER** 4092001  
**DATE STARTED** 8/4/21 **COMPLETED** 8/4/21  
**EXCAVATION CONTRACTOR** Joy Engineering  
**EXCAVATION METHOD** CAT 420F Backhoe  
**LOGGED BY** Seth Barton **CHECKED BY** Justin McDougal  
**NOTES:** Elevations: Washoe County Regional Mapping System

**PROJECT NAME** Learner Lemmon  
**PROJECT LOCATION** Washoe County, Nevada  
**GROUND ELEVATION** 4928 ft **TEST PIT SIZE** 24 inches  
**GROUND WATER LEVELS:**  
**AT TIME OF EXCAVATION** ---  
**AT END OF EXCAVATION** ---  
**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 |               |                  | FINES CONTENT (%) |
|------------|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|------------------|-----------------------|---------|--------------------|----------------------|------------------|---------------|------------------|-------------------|
|            |             |                                                                                                                                                                                                                                    |                    |                  |                       |         |                    |                      | LIQUID LIMIT     | PLASTIC LIMIT | PLASTICITY INDEX |                   |
| 0          |             | TOPSOIL, (SM)                                                                                                                                                                                                                      | GB 2A              |                  |                       |         |                    | 1.2                  |                  |               |                  |                   |
| 0-5        |             | SILTY SAND, (SM) medium dense, dry, light brown, nonplastic<br>CLAYEY SAND, (SC) very dense, slightly moist, brown, low plasticity<br>SANDY LEAN CLAY, (CL) very stiff, moist to very moist, brown, medium plasticity, white specs | GB 2B              |                  |                       |         |                    | 9.2                  |                  |               |                  |                   |
| 5-10       |             | SANDY LEAN CLAY, (CL) very stiff, very moist, gray brown, medium to high plasticity, white granular pockets                                                                                                                        | GB 2C              |                  |                       |         |                    | 22.8                 |                  |               |                  |                   |
| 10-12      |             |                                                                                                                                                                                                                                    | GB 2D              |                  |                       |         |                    | 42.3                 |                  |               |                  |                   |
| 10-12      |             |                                                                                                                                                                                                                                    | 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 Time min | Water Fall (in) |
|---------|-------|--------|-------------|---------|------------------|-----------------|
|         | Start | Finish | Start       | Finish  |                  |                 |
| 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  |        | Water Level |         | Elapsed Time min | Water Fall (in) |
|---------|-------|--------|-------------|---------|------------------|-----------------|
|         | Start | Finish | Start       | Finish  |                  |                 |
| 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

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**CLIENT** D.R. Horton  
**PROJECT NUMBER** 4092001  
**DATE STARTED** 8/4/21 **COMPLETED** 8/4/21  
**EXCAVATION CONTRACTOR** Joy Engineering  
**EXCAVATION METHOD** CAT 420F Backhoe  
**LOGGED BY** Seth Barton **CHECKED BY** Justin McDougal  
**NOTES:** Elevations: Washoe County Regional Mapping System

**PROJECT NAME** Learner Lemmon  
**PROJECT LOCATION** Washoe County, Nevada  
**GROUND ELEVATION** 4932 ft **TEST PIT SIZE** 24 inches  
**GROUND WATER LEVELS:**  
**AT TIME OF EXCAVATION** ---  
**AT END OF EXCAVATION** ---  
**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 |               |                  | FINES CONTENT (%) |
|------------|-------------|---------------------------------------------------------------------------------------------------|--------------------|------------------|-----------------------|---------|--------------------|----------------------|------------------|---------------|------------------|-------------------|
|            |             |                                                                                                   |                    |                  |                       |         |                    |                      | LIQUID LIMIT     | PLASTIC LIMIT | PLASTICITY INDEX |                   |
| 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              |                  |                       |         |                    |                      |                  |               |                  |                   |
|            |             |                                                                                                   | 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  |        | Water Level |          | Elapsed Time min | Water Fall (in) |
|---------|-------|--------|-------------|----------|------------------|-----------------|
|         | Start | Finish | Start       | Finish   |                  |                 |
| 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 Time min | Water Fall (in) |
|---------|-------|--------|-------------|----------|------------------|-----------------|
|         | Start | Finish | Start       | Finish   |                  |                 |
| 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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# 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 |               |                  | FINES CONTENT (%) |
|------------|-------------|------------------------------------------------------------------------------|--------------------|------------------|-----------------------|---------|--------------------|----------------------|------------------|---------------|------------------|-------------------|
|            |             |                                                                              |                    |                  |                       |         |                    |                      | LIQUID LIMIT     | PLASTIC LIMIT | PLASTICITY INDEX |                   |
| 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              |                  |                       |         |                    |                      |                  |               |                  |                   |
|            |             | CLAYEY SAND, (SC) slightly moist to moist, low plasticity                    |                    |                  |                       |         |                    |                      |                  |               |                  |                   |
| 5.0        |             |                                                                              |                    |                  |                       |         |                    |                      |                  |               |                  |                   |
| 7.5        |             |                                                                              | GB 4D              |                  |                       |         |                    |                      |                  |               |                  |                   |
|            |             |                                                                              |                    |                  |                       |         |                    |                      |                  |               |                  |                   |
| 10.0       |             | SANDY LEAN CLAY, (CL) very stiff, very moist, gray brown, medium plasticity  | GB 4E              |                  |                       |         |                    |                      |                  |               |                  |                   |

Bottom of Test Pit at 10.0 Feet.

299 GEOTECH BH COLUMNS PLATE - GINT STD US LAB.GDT - 9/28/21 10:27 - \\WOODRODGERS.LOC\PRODUCTION\DATA\JOBS-RENO\JOBS\M092\_LEARNING\_LEMMON\LEARNING\_LEMMON\_OA\GEOTECH\TECH\04\_GINT\LEARNING\_LEMMON.GPJ



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# TEST PIT NUMBER TP-5

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**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 |               |                  | FINES CONTENT (%) |
|------------|-------------|-----------------------------------------------------------------------------------------|--------------------|------------------|-----------------------|---------|--------------------|----------------------|------------------|---------------|------------------|-------------------|
|            |             |                                                                                         |                    |                  |                       |         |                    |                      | LIQUID LIMIT     | PLASTIC LIMIT | PLASTICITY INDEX |                   |
| 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              |                  |                       |         |                    |                      |                  |               |                  |                   |
|            |             | LEAN CLAY WITH SAND, (CL) very stiff, very moist, gray brown, medium plasticity         |                    |                  |                       |         |                    |                      |                  |               |                  |                   |
| 5.0        |             |                                                                                         |                    |                  |                       |         |                    |                      |                  |               |                  |                   |
|            |             |                                                                                         |                    |                  |                       |         |                    |                      |                  |               |                  |                   |
| 7.5        |             | LEAN CLAY, (CL) very stiff, very moist, gray white, medium plasticity                   | GB 5C              |                  |                       |         |                    |                      |                  |               |                  |                   |
|            |             |                                                                                         |                    |                  |                       |         |                    |                      |                  |               |                  |                   |
| 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

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| DEPTH<br>(ft) | GRAPHIC<br>LOG | MATERIAL DESCRIPTION                                                                 | SAMPLE TYPE<br>NUMBER | RECOVERY %<br>(RQD) | BLOW<br>COUNTS<br>(N VALUE) | R-VALUE | DRY UNIT WT.<br>(pcf) | MOISTURE<br>CONTENT (%) | ATTERBERG<br>LIMITS |                  |                     | FINES CONTENT<br>(%) |
|---------------|----------------|--------------------------------------------------------------------------------------|-----------------------|---------------------|-----------------------------|---------|-----------------------|-------------------------|---------------------|------------------|---------------------|----------------------|
|               |                |                                                                                      |                       |                     |                             |         |                       |                         | LIQUID<br>LIMIT     | PLASTIC<br>LIMIT | PLASTICITY<br>INDEX |                      |
| 0.0           |                | TOPSOIL, (SM)<br>SILTY SAND, (SM) medium dense, dry, light brown, nonplastic         | GB<br>6A              |                     |                             |         |                       |                         |                     |                  |                     |                      |
| 2.5           |                | CLAYEY SAND, (SC) very dense, moist, brown, low plasticity                           | GB<br>6B              |                     |                             |         |                       |                         |                     |                  |                     |                      |
| 5.0           |                | LEAN CLAY, (CL) very stiff, moist to very moist, gray brown white, medium plasticity | GB<br>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 NUMBER** 4092001  
**DATE STARTED** 8/4/21 **COMPLETED** 8/4/21  
**EXCAVATION CONTRACTOR** Joy Engineering  
**EXCAVATION METHOD** CAT 420F Backhoe  
**LOGGED BY** Seth Barton **CHECKED BY** Justin McDougal  
**NOTES:** Elevations: Washoe County Regional Mapping System

**PROJECT NAME** Learner Lemmon  
**PROJECT LOCATION** Washoe County, Nevada  
**GROUND ELEVATION** 4936 ft **TEST PIT SIZE** 24 inches  
**GROUND WATER LEVELS:**  
**AT TIME OF EXCAVATION** --- NO FREE WATER ENCOUNTERED  
**AT END OF EXCAVATION** --- NO FREE WATER ENCOUNTERED  
**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 |               |                  | FINES CONTENT (%) |
|------------|-------------|-------------------------------------------------------------------------------------------|--------------------|------------------|-----------------------|---------|--------------------|----------------------|------------------|---------------|------------------|-------------------|
|            |             |                                                                                           |                    |                  |                       |         |                    |                      | LIQUID LIMIT     | PLASTIC LIMIT | PLASTICITY INDEX |                   |
| 0.0        |             | TOPSOIL, (SM)                                                                             |                    |                  |                       |         |                    |                      |                  |               |                  |                   |
|            |             | SILTY SAND, (SM) medium dense, dry, brown, nonplastic                                     | GB 7A              |                  |                       |         |                    | 2.4                  |                  |               |                  |                   |
| 2.5        |             | CLAYEY SAND, (SC) very dense, slightly moist to moist, brown, low plasticity, white specs | SH 7B              |                  |                       |         |                    | 6.5                  |                  |               |                  |                   |
| 5.0        |             |                                                                                           |                    |                  |                       |         |                    |                      |                  |               |                  |                   |
| 7.5        |             |                                                                                           | GB 7C              |                  |                       |         |                    | 9.1                  | 25               | 17            | 8                | 48.5              |
| 10.0       |             |                                                                                           |                    |                  |                       |         |                    |                      |                  |               |                  |                   |

Bottom of Test Pit at 10.0 Feet.



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# TEST PIT NUMBER TP-8

PAGE 1 OF 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

303 GEOTECH BH COLUMNS PLATE - GINT STD US LAB.GDT - 9/28/21 10:27 - \\WOODRODGERS.LOC\PRODUCTION\DATA\JOBS-RENO\JOBS\M092.Learning.LEMMON\LEARNING.LEMMON\_OA\GEOTECH\TECH\04.GINT\LEARNING.LEMMON.GPJ

| 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 |               |                  | FINES CONTENT (%) |
|------------|-------------|---------------------------------------------------------------------------------|--------------------|------------------|-----------------------|---------|--------------------|----------------------|------------------|---------------|------------------|-------------------|
|            |             |                                                                                 |                    |                  |                       |         |                    |                      | LIQUID LIMIT     | PLASTIC LIMIT | PLASTICITY INDEX |                   |
| 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<br>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           | GB 8F              |                  |                       |         |                    |                      |                  |               |                  |                   |
| 10.0       |             |                                                                                 |                    |                  |                       |         |                    |                      |                  |               |                  |                   |

Bottom of Test Pit at 11.0 Feet.



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# TEST PIT NUMBER TP-9

**CLIENT** D.R. Horton  
**PROJECT NUMBER** 4092001  
**DATE STARTED** 8/4/21 **COMPLETED** 8/4/21  
**EXCAVATION CONTRACTOR** Joy Engineering  
**EXCAVATION METHOD** CAT 420F Backhoe  
**LOGGED BY** Seth Barton **CHECKED BY** Justin McDougal  
**NOTES:** Elevations: Washoe County Regional Mapping System

**PROJECT NAME** Learner Lemmon  
**PROJECT LOCATION** Washoe County, Nevada  
**GROUND ELEVATION** 4931 ft **TEST PIT SIZE** 24 inches  
**GROUND WATER LEVELS:**  
**AT TIME OF EXCAVATION** --- NO FREE WATER ENCOUNTERED  
**AT END OF EXCAVATION** --- NO FREE WATER ENCOUNTERED  
**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 |               |                  | FINES CONTENT (%) |
|------------|-------------|------------------------------------------------------------------------------------------|--------------------|------------------|-----------------------|---------|--------------------|----------------------|------------------|---------------|------------------|-------------------|
|            |             |                                                                                          |                    |                  |                       |         |                    |                      | LIQUID LIMIT     | PLASTIC LIMIT | PLASTICITY INDEX |                   |
| 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<br>GB 9C     |                  |                       |         |                    | 10.3                 | 22               | 21            | 1                | 26.0              |
| 2.5        |             |                                                                                          |                    |                  |                       |         |                    |                      |                  |               |                  |                   |
| 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.

304 GEOTECH BH COLUMNS PLATE - GINT STD US LAB.GDT - 9/28/21 10:27 - \\WOODRODGERS.LOC\PRODUCTION\DATA\JOBS-RENO\JOBS\M092\_LEARNING\_LEMMON\LEARNING\_LEMMON\LEARNING\_LEMMON\_OA\GEOTECH\GINT\GINT\LEARNING\_LEMMON.GPJ





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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 |               |                  | FINES CONTENT (%) |
|------------|-------------|-------------------------------------------------------------------------------------------|--------------------|------------------|-----------------------|---------|--------------------|----------------------|------------------|---------------|------------------|-------------------|
|            |             |                                                                                           |                    |                  |                       |         |                    |                      | LIQUID LIMIT     | PLASTIC LIMIT | PLASTICITY INDEX |                   |
| 0.0        |             | TOPSOIL, (SM)<br>SILTY, CLAYEY SAND, (SC-SM) medium dense, dry, light brown               | GB 10A             |                  |                       |         |                    |                      |                  |               |                  |                   |
| 2.5        |             | CLAYEY SAND, (SC) medium dense to very dense, slightly moist, brown white, low plasticity |                    |                  |                       |         |                    |                      |                  |               |                  |                   |
| 7.5        |             |                                                                                           | GB 10B             |                  |                       |         |                    |                      |                  |               |                  |                   |
| 10.0       |             | Moist                                                                                     |                    |                  |                       |         |                    |                      |                  |               |                  |                   |

Bottom of Test Pit at 10.0 Feet.

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3306 GEOTECH BH COLUMNS PLATE - GINT STD US LAB.GDT - 1/3/23 11:16 - \\WOODRODGERS.LOC\PRODUCTION\DATA\JOBS-RENO\JOBS-4092 LEARNER LEMMON\LEARNING LEMMON\_OA\GEOTECH\GEO\GINT\10.2022\LEARNER LEMMON PERC TESTING



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# TEST PIT NUMBER TP-A

PAGE 1 OF 1

**CLIENT** LC Learner, LLC

**PROJECT NUMBER** 4092003

**DATE STARTED** 10/6/22 **COMPLETED** 10/6/22

**EXCAVATION CONTRACTOR** Joy Engineering

**EXCAVATION METHOD** Komatsu 290

**LOGGED BY** Seth Barton **CHECKED BY** Justin McDougal

**NOTES:** Elevations: Washoe County 6ft DEM

**PROJECT NAME** Learner Lemmon

**PROJECT LOCATION** Washoe County, Nevada

**GROUND ELEVATION** 4935.7 ft **TEST PIT SIZE** 48 inches

**GROUND WATER LEVELS:**

▽ **AT TIME OF EXCAVATION** 15.0 ft

▼ **AT END OF EXCAVATION** 15.0 ft

▼ **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 |               |                  | FINES CONTENT (%) |
|------------|-------------|-------------------------------------------------------------------------------------------|--------------------|------------------|-----------------------|---------|--------------------|----------------------|------------------|---------------|------------------|-------------------|
|            |             |                                                                                           |                    |                  |                       |         |                    |                      | LIQUID LIMIT     | PLASTIC LIMIT | PLASTICITY INDEX |                   |
| 0          |             | SILTY, CLAYEY SAND, (SC-SM) loose to medium dense, dry, light brown, nonplastic           | GB 1A              |                  |                       |         |                    |                      |                  |               |                  |                   |
| 5          |             | CLAYEY SAND, (SC) very dense, dry to slightly moist, medium brown, low plasticity         | GB 2A<br>GB 3A     |                  |                       |         |                    | 6.4                  |                  |               |                  | 28.9              |
| 10         |             | SANDY LEAN CLAY, (CL) very stiff, slightly moist to moist, light brown, medium plasticity | GB 4A              |                  |                       |         |                    |                      |                  |               |                  |                   |
| 15         |             | LEAN CLAY, (CL) very stiff, moist to very moist, gray, medium to high plasticity          | GB 5A<br>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    |          | Water Level |        | Elapsed Time min | Water Fall (in) |
|---------|---------|----------|-------------|--------|------------------|-----------------|
|         | Start   | Finish   | Start       | Finish |                  |                 |
| 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    |          | Water Level |        | Elapsed Time min | Water Fall (in) |
|---------|---------|----------|-------------|--------|------------------|-----------------|
|         | Start   | Finish   | Start       | Finish |                  |                 |
| 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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 GEOTECH BH COLUMNS PLATE - GINT STD US LAB.GDT - 7/3/23 11:16 - \\WOODRODGERS.LOC\PRODUCT\IONDATA\JOBS-RENO\JOBS4092 LEARNER LEMMON\LEARNING LEMMON\_OA\GEOTECH\GEO\GINT\10.2022\LEARNER LEMMON PERC TESTING



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# TEST PIT NUMBER TP-B

PAGE 1 OF 1

**CLIENT** LC Learner, LLC  
**PROJECT NUMBER** 4092003  
**DATE STARTED** 10/6/22 **COMPLETED** 10/6/22  
**EXCAVATION CONTRACTOR** Joy Engineering  
**EXCAVATION METHOD** Komatsu 290  
**LOGGED BY** Seth Barton **CHECKED BY** Justin McDougal  
**NOTES:** Elevations: Washoe County 6ft DEM

**PROJECT NAME** Learner Lemmon  
**PROJECT LOCATION** Washoe County, Nevada  
**GROUND ELEVATION** 4937.2 ft **TEST PIT SIZE** 48 inches  
**GROUND WATER LEVELS:**  
**AT TIME OF EXCAVATION** ---  
**AT END OF EXCAVATION** ---  
**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 |               |                  | FINES CONTENT (%) |
|------------|-------------|-----------------------------------------------------------------------------------------------------|--------------------|------------------|-----------------------|---------|--------------------|----------------------|------------------|---------------|------------------|-------------------|
|            |             |                                                                                                     |                    |                  |                       |         |                    |                      | LIQUID LIMIT     | PLASTIC LIMIT | PLASTICITY INDEX |                   |
| 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              |                  |                       |         |                    |                      |                  |               |                  |                   |
|            |             | SANDY LEAN CLAY, (CL) very stiff, slightly moist, medium brown with white, low to medium plasticity | GB 3B              |                  |                       |         |                    |                      |                  |               |                  |                   |
|            |             |                                                                                                     | GB 4B              |                  |                       |         |                    |                      |                  |               |                  |                   |
|            |             | LEAN CLAY, (CL) very stiff, slightly moist to moist, gray with white, medium to high plasticity     | GB 5B              |                  |                       |         |                    |                      |                  |               |                  |                   |
|            |             |                                                                                                     | GB 6B              |                  |                       |         |                    |                      |                  |               |                  |                   |
| 15         |             | 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.

**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 # : B1 Diameter : 7 Depth : 12 Soil Type : SC-SM

Date of percolation test : 7-Oct  
 Hole # : B2 Diameter : 8 Depth : 12 Soil Type : CL

| Reading | Time    |          | Water Level |        | Elapsed Time min | Water Fall (in) |
|---------|---------|----------|-------------|--------|------------------|-----------------|
|         | Start   | Finish   | Start       | Finish |                  |                 |
| 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       |         |          |             |        |                  |                 |

| Reading | Time    |          | Water Level |        | Elapsed Time min | Water Fall (in) |
|---------|---------|----------|-------------|--------|------------------|-----------------|
|         | Start   | Finish   | Start       | Finish |                  |                 |
| 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

Stabilized Rate : 240.0 Min/inch  
 Tested by: J. Beadell  
 Checked by: J. McDougal

3308 GEOTECH BH COLUMNS PLATE - GINT STD US LAB.GDT - 1/3/23 11:16 - \\WOODRODGERS.LOC\PRODUCTIONDATA\JOBS-RENO\JOBS4092\_LEARNER\_LEMMON\LEARNING\_LEMMON\LEARNER\_LEMMON\LEARNER\_LEMMON\LEARNER\_LEMMON\PERC TESTING



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**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 |               |                  | FINES CONTENT (%) |
|------------|-------------|-----------------------------------------------------------------------------------|--------------------|------------------|-----------------------|---------|--------------------|----------------------|------------------|---------------|------------------|-------------------|
|            |             |                                                                                   |                    |                  |                       |         |                    |                      | LIQUID LIMIT     | PLASTIC LIMIT | PLASTICITY INDEX |                   |
| 0          |             | SILTY, CLAYEY SAND, (SC-SM) loose to medium dense, dry, light brown, nonplastic   | GB 1C              |                  |                       |         |                    |                      |                  |               |                  |                   |
| 5          |             | CLAYEY SAND, (SC) very dense, dry to slightly moist, medium brown, low plasticity | GB 2C              |                  |                       |         |                    |                      |                  |               |                  |                   |
| 10         |             | SANDY LEAN CLAY, (CL) very stiff, slightly moist, light brown, medium plasticity  | GB 3C              |                  |                       |         |                    |                      |                  |               |                  |                   |
| 15         |             | LEAN CLAY, (CL) very stiff, moist to very moist, gray, medium to high plasticity  | GB 4C              |                  |                       |         |                    |                      |                  |               |                  |                   |
|            |             |                                                                                   | 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     |          | Water Level |        | Elapsed Time min | Water Fall (in) |
|---------|----------|----------|-------------|--------|------------------|-----------------|
|         | Start    | Finish   | Start       | Finish |                  |                 |
| 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

309 WOODRODGERS, LOCIPRODUCTIONDATAJOBS-RENOJOBS4092 LEARNER LEMMONLEARNING LEMMON\_OAIGEOTECHGEO04 GINTY10.2022LEARNER LEMMON PERC TESTING



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# TEST PIT NUMBER TP-D

PAGE 1 OF 1

**CLIENT** LC Learner, LLC  
**PROJECT NUMBER** 4092003  
**DATE STARTED** 10/6/22 **COMPLETED** 10/6/22  
**EXCAVATION CONTRACTOR** Joy Engineering  
**EXCAVATION METHOD** Komatsu 290  
**LOGGED BY** Seth Barton **CHECKED BY** Justin McDougal  
**NOTES:** Elevations: Washoe County 6ft DEM

**PROJECT NAME** Learner Lemmon  
**PROJECT LOCATION** Washoe County, Nevada  
**GROUND ELEVATION** 4936.1 ft **TEST PIT SIZE** 48 inches  
**GROUND WATER LEVELS:**  
**AT TIME OF EXCAVATION** ---  
**AT END OF EXCAVATION** ---  
**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 |               |                  | FINES CONTENT (%) |
|------------|-------------|-------------------------------------------------------------------------------------------------|--------------------|------------------|-----------------------|---------|--------------------|----------------------|------------------|---------------|------------------|-------------------|
|            |             |                                                                                                 |                    |                  |                       |         |                    |                      | LIQUID LIMIT     | PLASTIC LIMIT | PLASTICITY INDEX |                   |
| 0          |             | SILTY, CLAYEY SAND, (SC-SM) medium dense, dry, light brown, nonplastic                          |                    |                  |                       |         |                    |                      |                  |               |                  |                   |
| 5          |             | SANDY LEAN CLAY, (CL) very stiff, dry to slightly moist, medium brown, low to medium plasticity | GB 1D<br>GB 2D     |                  |                       |         |                    | 11.8                 | 28               | 15            | 13               | 52.7              |
| 10         |             | CLAYEY SAND, (SC) very dense, slightly moist, medium brown with white, low plasticity           | GB 3D              |                  |                       |         |                    | 11.3                 | 25               | 17            | 8                | 44.2              |
| 15         |             | LEAN CLAY, (CL) very stiff, slightly moist to moist, gray with white, medium to high plasticity | 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    |          | Water Level |         | Elapsed Time min | Water Fall (in) |
|---------|---------|----------|-------------|---------|------------------|-----------------|
|         | Start   | Finish   | Start       | Finish  |                  |                 |
| 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     |          | Water Level |        | Elapsed Time min | Water Fall (in) |
|---------|----------|----------|-------------|--------|------------------|-----------------|
|         | Start    | Finish   | Start       | Finish |                  |                 |
| 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

PAGE 1 OF 1

**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 |               |                  | FINES CONTENT (%) |
|------------|-------------|-----------------------------------------------------------------------------------------------------------------|--------------------|------------------|-----------------------|---------|--------------------|----------------------|------------------|---------------|------------------|-------------------|
|            |             |                                                                                                                 |                    |                  |                       |         |                    |                      | LIQUID LIMIT     | PLASTIC LIMIT | PLASTICITY INDEX |                   |
| 0          |             | SILTY SAND, (SM) medium dense, dry, light brown, nonplastic                                                     |                    |                  |                       |         |                    |                      |                  |               |                  |                   |
| 5          | ▽           | CLAYEY SAND TO SANDY LEAN CLAY, (SC-CL) very dense to very stiff, moist, medium brown, low to medium plasticity | GB 1E              |                  |                       |         |                    | 4.7                  | 19               | 17            | 2                | 28.6              |
|            |             |                                                                                                                 | GB 2E              |                  |                       |         |                    | 10.4                 |                  |               |                  |                   |
|            |             |                                                                                                                 | GB 3E              |                  |                       |         |                    | 14.3                 |                  |               |                  |                   |
| 10         | ▽           | LEAN CLAY, (CL) stiff, very moist, gray, medium to high plasticity                                              | GB 4E              |                  |                       |         |                    |                      |                  |               |                  |                   |
|            |             |                                                                                                                 | 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 Time min | Water Fall (in) |
|---------|----------|----------|-------------|---------|------------------|-----------------|
|         | Start    | Finish   | Start       | Finish  |                  |                 |
| 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

G:\SEOTECH BH COLUMNS PLATE - GINT STD US LAB.GDT - 1/3/23 11:16 - \\WOODRODGERS.LOC\PRODUCTION\DATA\JOBS-RENO\JOBS4092 LEARNER LEMMON\LEARNING LEMMON\_OA\GEOTECH\GEO\GINT\10.2022\LEARNER LEMMON PERC TESTING



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# TEST PIT NUMBER TP-F

PAGE 1 OF 1

**CLIENT** LC Learner, LLC  
**PROJECT NUMBER** 4092003  
**DATE STARTED** 10/7/22 **COMPLETED** 10/7/22  
**EXCAVATION CONTRACTOR** Joy Engineering  
**EXCAVATION METHOD** Komatsu 290  
**LOGGED BY** Seth Barton **CHECKED BY** Justin McDougal  
**NOTES:** Elevations: Washoe County 6ft DEM

**PROJECT NAME** Learner Lemmon  
**PROJECT LOCATION** Washoe County, Nevada  
**GROUND ELEVATION** 4934.1 ft **TEST PIT SIZE** 48 inches  
**GROUND WATER LEVELS:**  
 ▽ **AT TIME OF EXCAVATION** 14.5 ft  
 ▽ **AT END OF EXCAVATION** ---  
 ▽ **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 |               |                  | FINES CONTENT (%) |
|------------|-------------|-----------------------------------------------------------------------------------------------|--------------------|------------------|-----------------------|---------|--------------------|----------------------|------------------|---------------|------------------|-------------------|
|            |             |                                                                                               |                    |                  |                       |         |                    |                      | LIQUID LIMIT     | PLASTIC LIMIT | PLASTICITY INDEX |                   |
| 0          |             | SILTY, CLAYEY SAND, (SC-SM) medium dense, dry, light brown, nonplastic                        |                    |                  |                       |         |                    |                      |                  |               |                  |                   |
| 5          |             | SILTY, CLAYEY SAND, (SC-SM) very dense, dry to slightly moist, medium brown, slightly plastic | GB 1F              |                  |                       |         |                    | 14.7                 | 26               | 21            | 5                | 48.4              |
| 10         |             | CLAYEY SAND, (SC) very dense, slightly moist, light brown, low plasticity                     | GB 2F              |                  |                       |         |                    | 16.8                 | 25               | 17            | 8                | 36.2              |
| 15         |             | LEAN CLAY, (CL) very stiff, moist to very moist, gray, medium to high plasticity              | GB 3F              |                  |                       |         |                    |                      |                  |               |                  |                   |
|            |             |                                                                                               | GB 4F              |                  |                       |         |                    |                      |                  |               |                  |                   |

Bottom of Test Pit at 17.0 Feet.

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# 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 |               |                  | FINES CONTENT (%) |
|------------|-------------|--------------------------------------------------------------|--------------------|------------------|-----------------------|---------|--------------------|----------------------|------------------|---------------|------------------|-------------------|
|            |             |                                                              |                    |                  |                       |         |                    |                      | LIQUID LIMIT     | PLASTIC LIMIT | PLASTICITY INDEX |                   |
| 0.0        |             | SILTY SAND, (SM) medium dense, moist, dark brown, nonplastic | GB<br>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 Time min | Water Fall (in) |
|---------|----------|----------|-------------|--------|------------------|-----------------|
|         | Start    | Finish   | Start       | Finish |                  |                 |
| 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



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# 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 |               |                  | FINES CONTENT (%) |
|------------|-------------|---------------------------------------------------------------------------------------|--------------------|------------------|-----------------------|---------|--------------------|----------------------|------------------|---------------|------------------|-------------------|
|            |             |                                                                                       |                    |                  |                       |         |                    |                      | LIQUID LIMIT     | PLASTIC LIMIT | PLASTICITY INDEX |                   |
| 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 Time min | Water Fall (in) |
|---------|---------|----------|-------------|---------|------------------|-----------------|
|         | Start   | Finish   | Start       | Finish  |                  |                 |
| 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

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|                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                             |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>CLIENT</b> <u>LC Learner, LLC</u><br><b>PROJECT NUMBER</b> <u>4092003</u><br><b>DATE STARTED</b> <u>12/22/22</u> <b>COMPLETED</b> <u>12/22/22</u><br><b>EXCAVATION CONTRACTOR</b> <u>Joy Engineering</u><br><b>EXCAVATION METHOD</b> <u>CAT 420F Backhoe</u><br><b>LOGGED BY</b> <u>Jackson Beadell</u> <b>CHECKED BY</b> <u>Justin McDougal</u><br><b>NOTES:</b> <u>Elevations: Washoe County 6ft DEM</u> | <b>PROJECT NAME</b> <u>Learner Lemmon</u><br><b>PROJECT LOCATION</b> <u>Washoe County, Nevada</u><br><b>GROUND ELEVATION</b> <u>4933.8 ft</u> <b>TEST PIT SIZE</b> <u>24 inches</u><br><b>GROUND WATER LEVELS:</b><br><b>AT TIME OF EXCAVATION</b> <u>--- NO FREE WATER ENCOUNTERED</u><br><b>AT END OF EXCAVATION</b> <u>--- NO FREE WATER ENCOUNTERED</u><br><b>AFTER EXCAVATION</b> <u>--- NO FREE WATER ENCOUNTERED</u> |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

| 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 |               |                  | FINES CONTENT (%) |
|------------|-------------------------|--------------------------------------------------------------------------------------------------------|--------------------|------------------|-----------------------|---------|--------------------|----------------------|------------------|---------------|------------------|-------------------|
|            |                         |                                                                                                        |                    |                  |                       |         |                    |                      | LIQUID LIMIT     | PLASTIC LIMIT | PLASTICITY INDEX |                   |
| 0.0        |                         | SILTY SAND, (SM) medium dense, moist, dark brown, nonplastic                                           |                    |                  |                       |         |                    |                      |                  |               |                  |                   |
|            | [Hatched Pattern]       | FAT CLAY, (CH) stiff, moist, dark brown, medium to high plasticity                                     | [Hand Icon] GB I1  |                  |                       |         |                    |                      |                  |               |                  |                   |
|            | [Diagonal Line Pattern] | CLAYEY SAND TO SANDY LEAN CLAY, (SC-CL) dense to very stiff, slightly moist, tan brown, low plasticity | [Hand Icon] GB I2  |                  |                       |         |                    |                      |                  |               |                  |                   |
| 2.5        |                         |                                                                                                        |                    |                  |                       |         |                    |                      |                  |               |                  |                   |

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 Time min | Water Fall (in) |
|---------|---------|----------|-------------|---------|------------------|-----------------|
|         | Start   | Finish   | Start       | Finish  |                  |                 |
| 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

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# TEST PIT NUMBER TP-J

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**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 |               |                  | FINES CONTENT (%) |
|------------|-------------|---------------------------------------------------------------------------------------|--------------------|------------------|-----------------------|---------|--------------------|----------------------|------------------|---------------|------------------|-------------------|
|            |             |                                                                                       |                    |                  |                       |         |                    |                      | LIQUID LIMIT     | PLASTIC LIMIT | PLASTICITY INDEX |                   |
| 0.0        |             | SILTY SAND, (SM) medium dense, moist, dark brown, nonplastic                          |                    |                  |                       |         |                    |                      |                  |               |                  |                   |
| 2.5        |             | SANDY LEAN CLAY, (CL) very stiff, slightly moist, light tan, low to medium plasticity | 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

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# TEST PIT NUMBER TP-K

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**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 |               |                  | FINES CONTENT (%) |
|------------|-------------|-----------------------------------------------------------------------------------------------------------------------------------------|--------------------|------------------|-----------------------|---------|--------------------|----------------------|------------------|---------------|------------------|-------------------|
|            |             |                                                                                                                                         |                    |                  |                       |         |                    |                      | LIQUID LIMIT     | PLASTIC LIMIT | PLASTICITY INDEX |                   |
| 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 Time min | Water Fall (in) |
|---------|----------|----------|-------------|---------|------------------|-----------------|
|         | Start    | Finish   | Start       | Finish  |                  |                 |
| 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

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# TEST PIT NUMBER TP-L

PAGE 1 OF 1

|                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                             |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>CLIENT</b> <u>LC Learner, LLC</u><br><b>PROJECT NUMBER</b> <u>4092003</u><br><b>DATE STARTED</b> <u>12/22/22</u> <b>COMPLETED</b> <u>12/22/22</u><br><b>EXCAVATION CONTRACTOR</b> <u>Joy Engineering</u><br><b>EXCAVATION METHOD</b> <u>CAT 420F Backhoe</u><br><b>LOGGED BY</b> <u>Jackson Beadell</u> <b>CHECKED BY</b> <u>Justin McDougal</u><br><b>NOTES:</b> <u>Elevations: Washoe County 6ft DEM</u> | <b>PROJECT NAME</b> <u>Learner Lemmon</u><br><b>PROJECT LOCATION</b> <u>Washoe County, Nevada</u><br><b>GROUND ELEVATION</b> <u>4934.5 ft</u> <b>TEST PIT SIZE</b> <u>24 inches</u><br><b>GROUND WATER LEVELS:</b><br><b>AT TIME OF EXCAVATION</b> <u>--- NO FREE WATER ENCOUNTERED</u><br><b>AT END OF EXCAVATION</b> <u>--- NO FREE WATER ENCOUNTERED</u><br><b>AFTER EXCAVATION</b> <u>--- NO FREE WATER ENCOUNTERED</u> |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

| 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 |               |                  | FINES CONTENT (%) |
|------------|-------------|-------------------------------------------------------------------------------------------------|--------------------|------------------|-----------------------|---------|--------------------|----------------------|------------------|---------------|------------------|-------------------|
|            |             |                                                                                                 |                    |                  |                       |         |                    |                      | LIQUID LIMIT     | PLASTIC LIMIT | PLASTICITY INDEX |                   |
| 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 |                    |                  |                       |         |                    |                      |                  |               |                  |                   |
|            |             | 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 Time min | Water Fall (in) |
|---------|----------|----------|-------------|---------|------------------|-----------------|
|         | Start    | Finish   | Start       | Finish  |                  |                 |
| 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

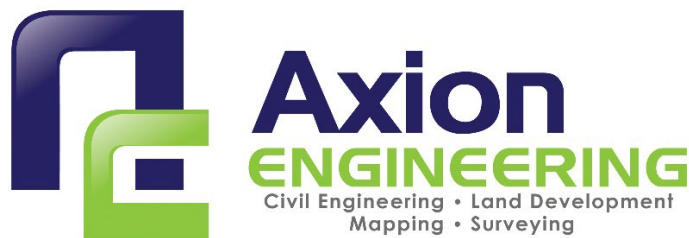
For

## Learner – Lemmon Property

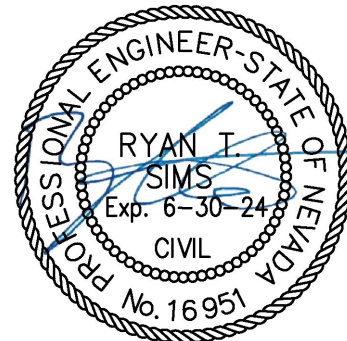
Prepared for:

**LC Learner, LLC**  
**27132 B Paseo Espanda, Suite 1226**  
**San Juan Capistrano, CA 92675**

Prepared by:



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:  $(270 \text{ gal/day/lot}) \times (87 \text{ Lots}) \times (3) = \mathbf{68,850 \text{ gal/day}}$

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.

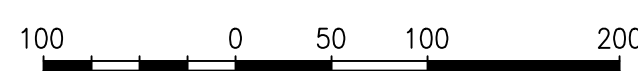
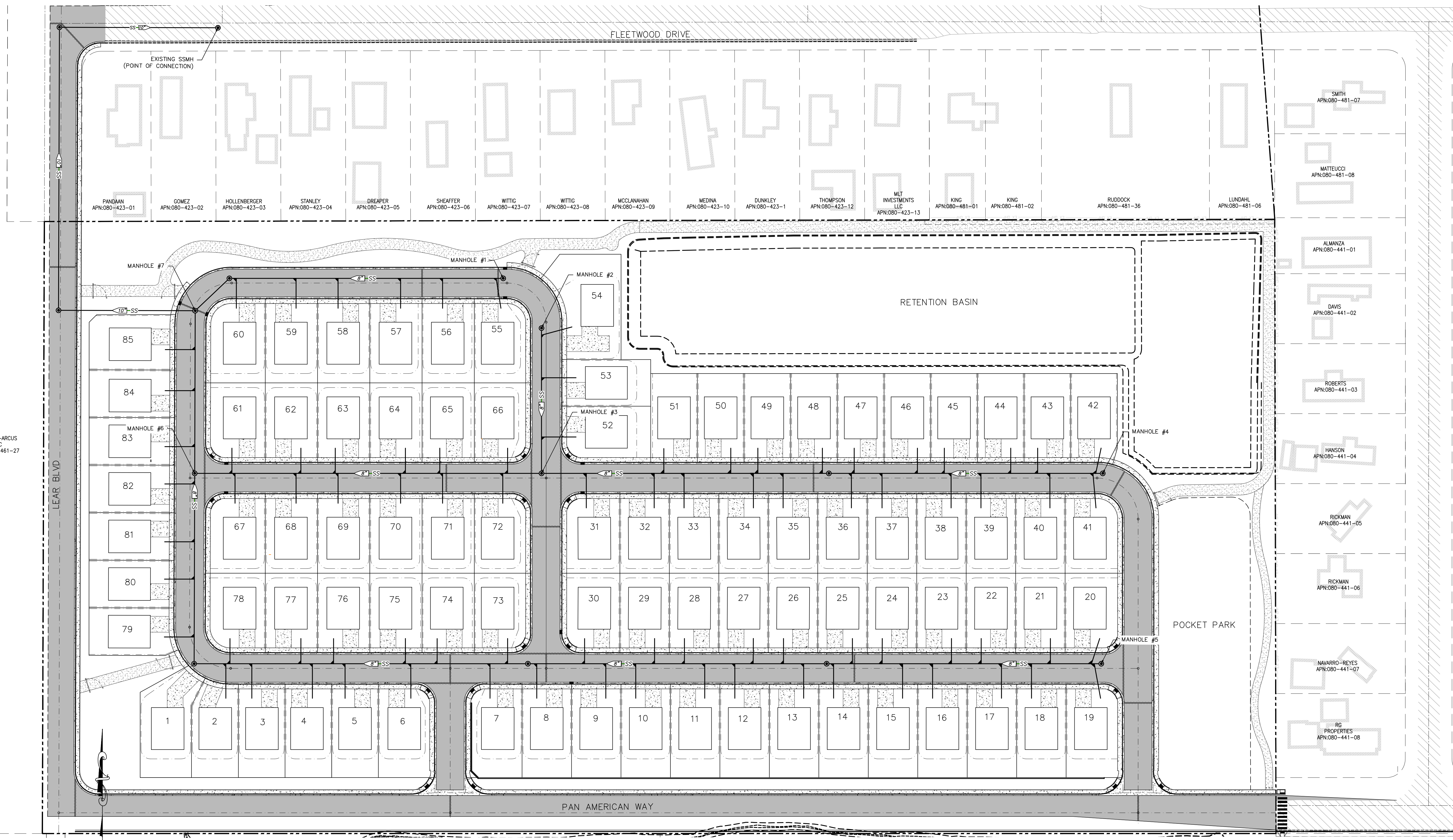
The onsite sewer system is expected to have a minimum 8” pipe slope of 0.50%. This produces a half-full velocity of 2.30 feet per second.

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.





SCALE: 1"=100'

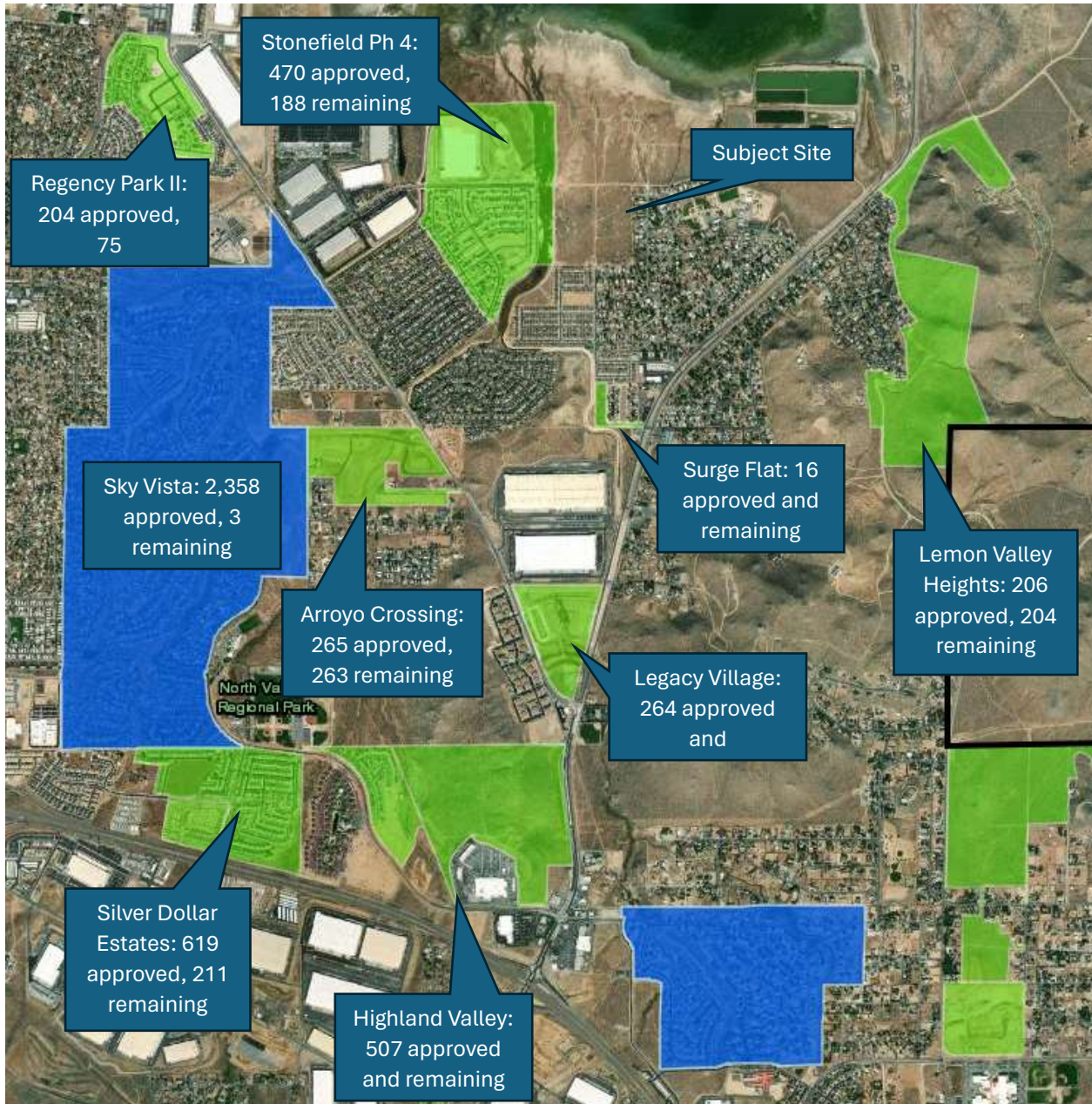


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 PH 775-771-7983 / ryan@axionengineering.net

| 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                        |

# LEARNER LEMMON PROPERTY

# SEWER DISPLAY C-6



**Approved Unbuilt Map**



# WOOD RODGERS

January 15, 2024  
Project No. 4092003

**LC LEARNER, LLC**  
c/o Jeffrey Holbrook  
27132 B Paseo Espada, Suite 1226  
San Juan Capistrano, CA 92675

RE: Addendum #1  
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 (C-3)  
January 2024

Dear Jeffrey:

Wood Rodgers is pleased to present this update letter clarifying separation distances between Estimated Seasonal High Groundwater Level (ESHGWL) and bottom of southeastern retention basin for the Learner Lemmon project located in Washoe County, Nevada. The attached Figure 1/1 TERRACED BASIN PLAN AND PROFILE CROSS-SECTION indicates ESGWL at discrete locations and current infiltration basin perimeter. Within that plan view, Figure 1/1 also indicates potential terrace elevations for a terraced infiltration basin approach with overflow weirs present between terraces. Final contours, overflow and weir locations and dimensions shall be established by the civil engineer based on required impound times and flood water accumulation so that the basin functions as a whole overall. Terracing the basin bottom allows the minimum separation requirements from ESHGWL to be maintained while providing the required infiltration area.

Overflow weirs are anticipated to be a maximum of 1 ½-feet high (pending civil analysis) with 2:1 (H:V) side slopes. An HDPE liner has been recommended at, and extending 10' beyond, the overflow zone. Because the basin is an infiltration basin, the purpose of the HDPE liner is to provide an erosion resistant membrane proximate to the overflow zone, not to maintain or develop a water-tight barrier between the terraces. All embankments within the basin are to be armored with Class 150 riprap, placed and bedded in accordance with the Standard Specifications for Public Works Construction.

**LC LEARNER, LLC**  
c/o Jeffrey Holbrook  
January 15, 2024  
Page **2** of **2**

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  
RE Number 24474  
Expires 12/31/2024

DocuSigned by:

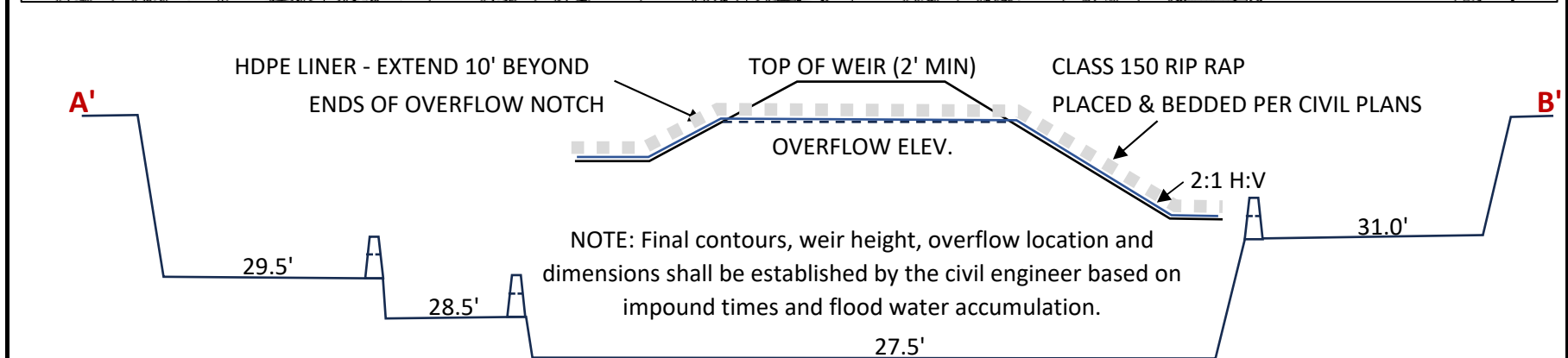
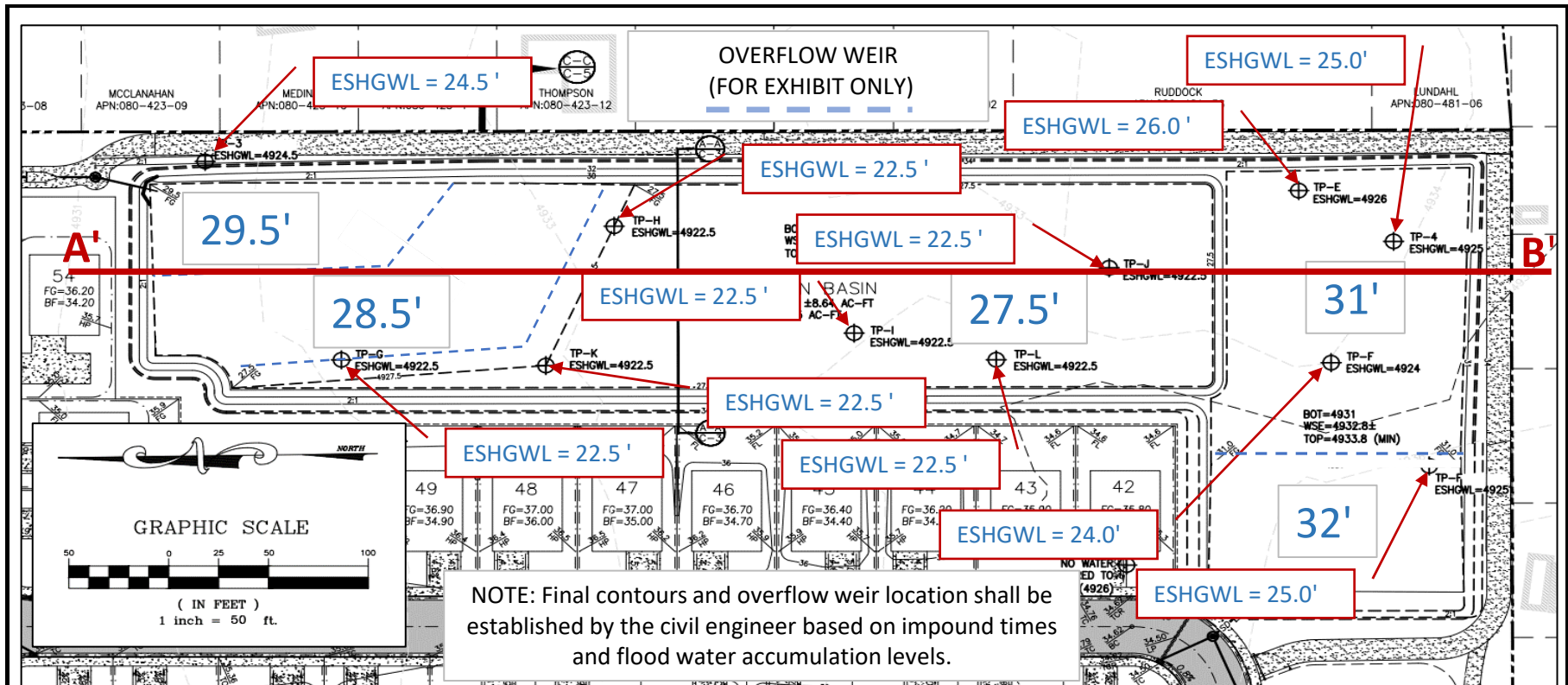
*Mischelle J. Smith*

3A03CA8CE235407  
Mischelle J. Smith, PE  
Senior Engineer  
RE Number 6972  
Expires 6/30/2024



1/16/2024

Attachments:  
Figure 1/1 – TERRACED BASIN – PLAN AND PROFILE CROSS-SECTION (NTS)



|                                                        |                                                        |                |       |
|--------------------------------------------------------|--------------------------------------------------------|----------------|-------|
| WOOD RODGERS, INCORPORATED<br>LC LERNER, LLC (4092003) | TERRACED BASIN<br>PLAN AND PROFILE CROSS-SECTION (NTS) | MJS<br>1/15/24 | 1 / 1 |
|--------------------------------------------------------|--------------------------------------------------------|----------------|-------|

# TENTATIVE MAP APPLICATION LEARNER - LEMMON PROPERTY

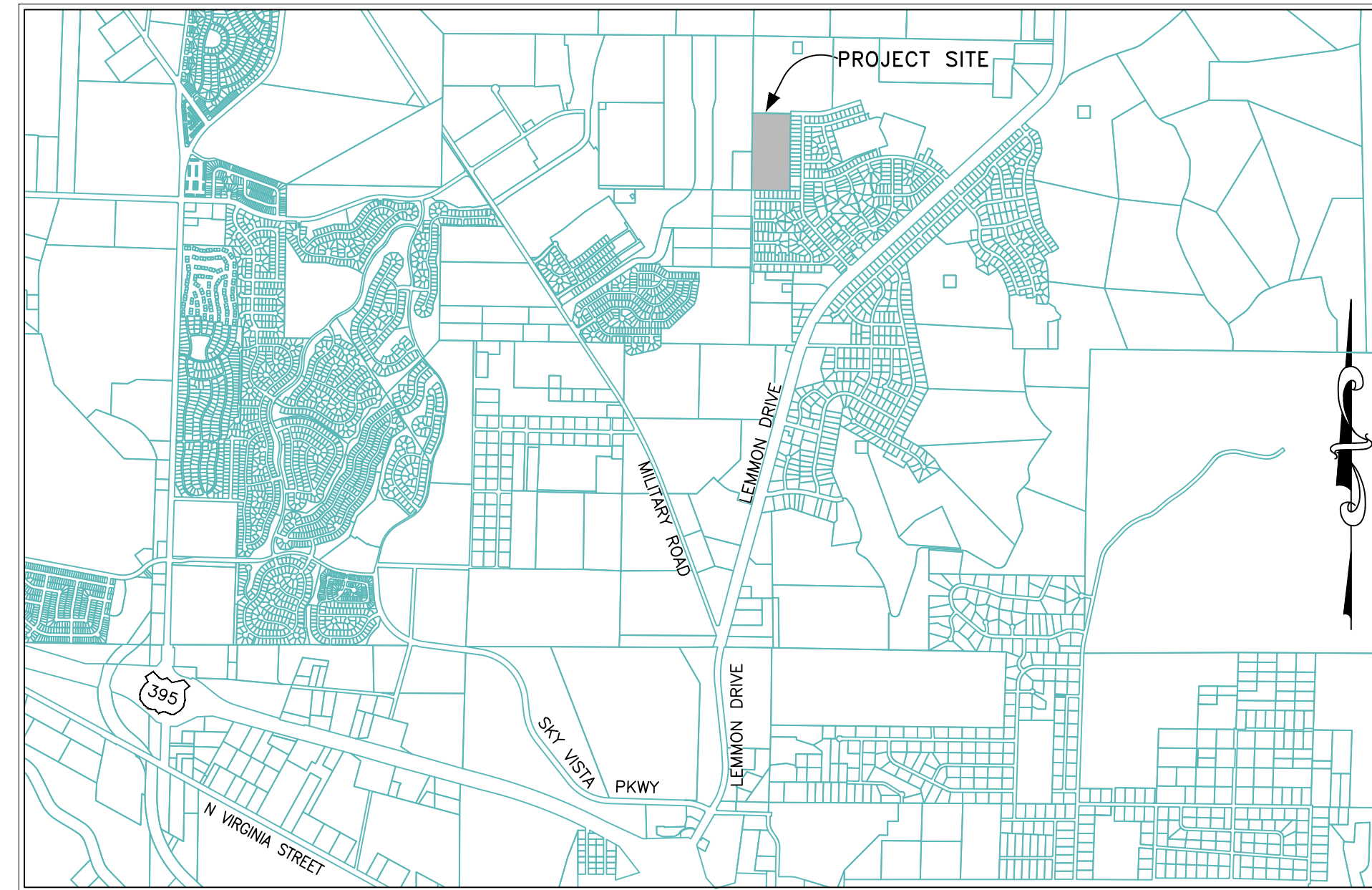
WASHOE COUNTY, NEVADA

## 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



VICINITY MAP

N.T.S.

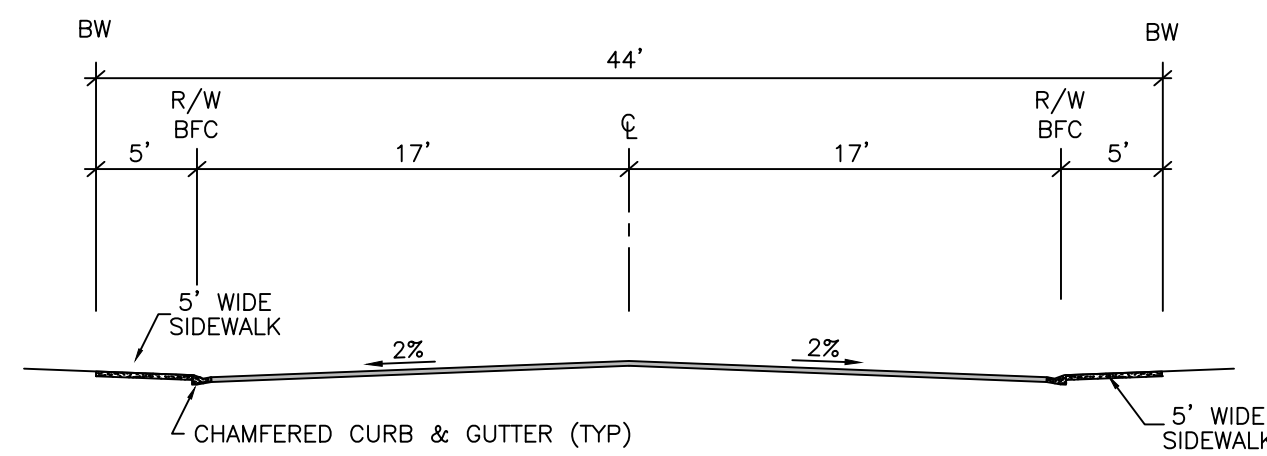
## ENGINEER



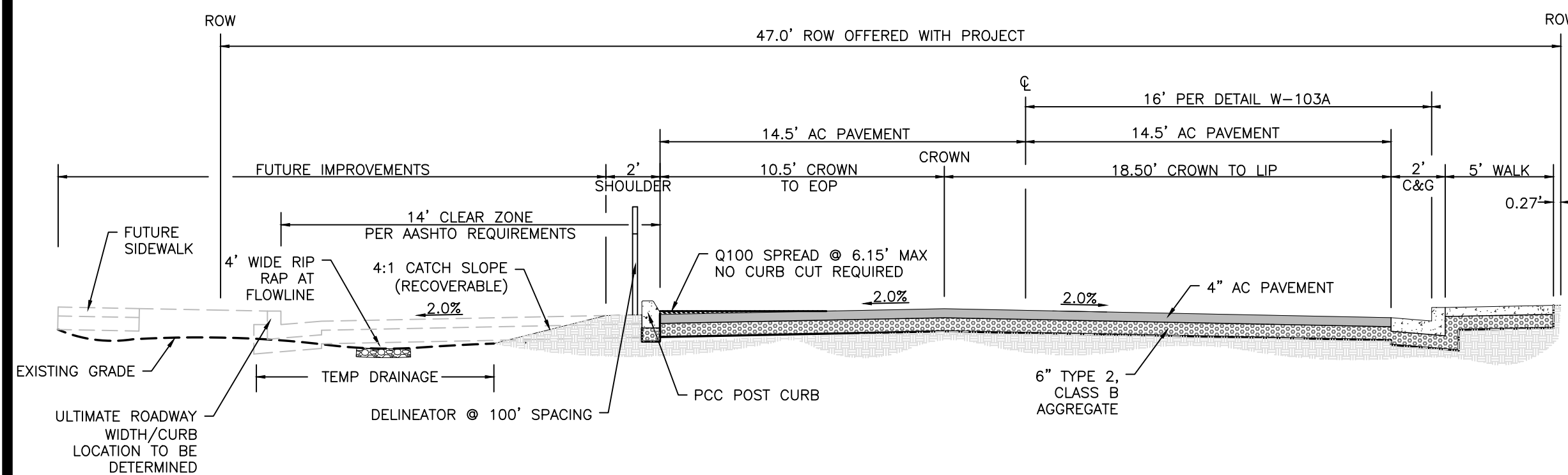
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## SHEET INDEX

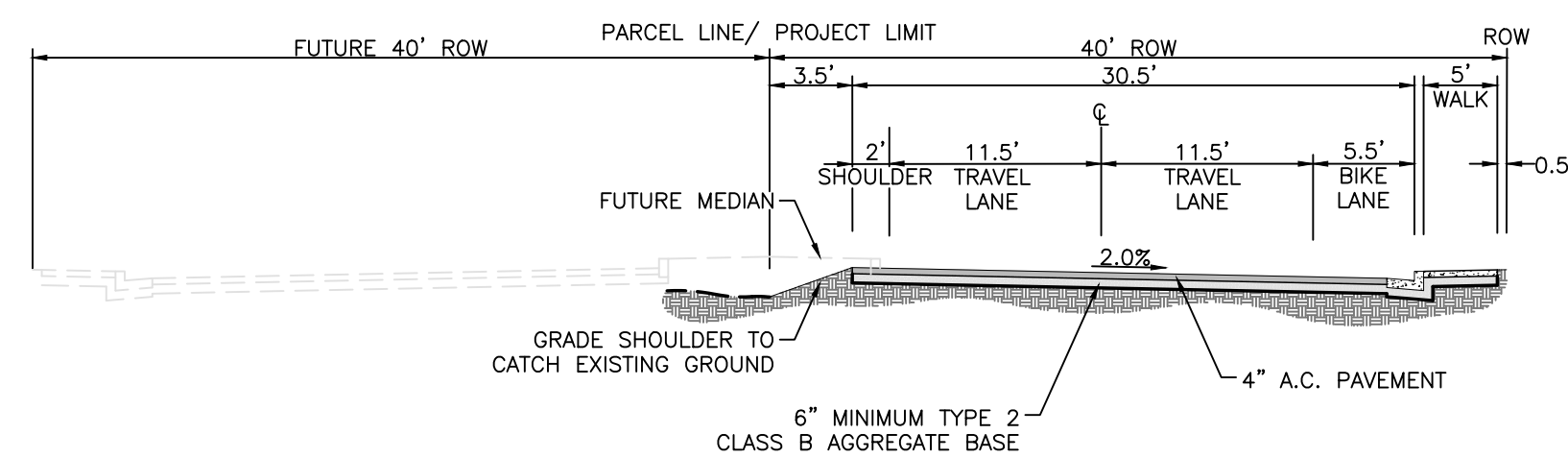
- C1 .....TITLE SHEET
- C2 .....SITE PLAN
- C3 .....GRADING PLAN
- C4 .....UTILITY PLAN
- C5 .....X-SECTIONS
- C6 .....SEWER DISPLAY
- C7 .....STOCKPILE PLAN
- L1 .....LANDSCAPE PLAN



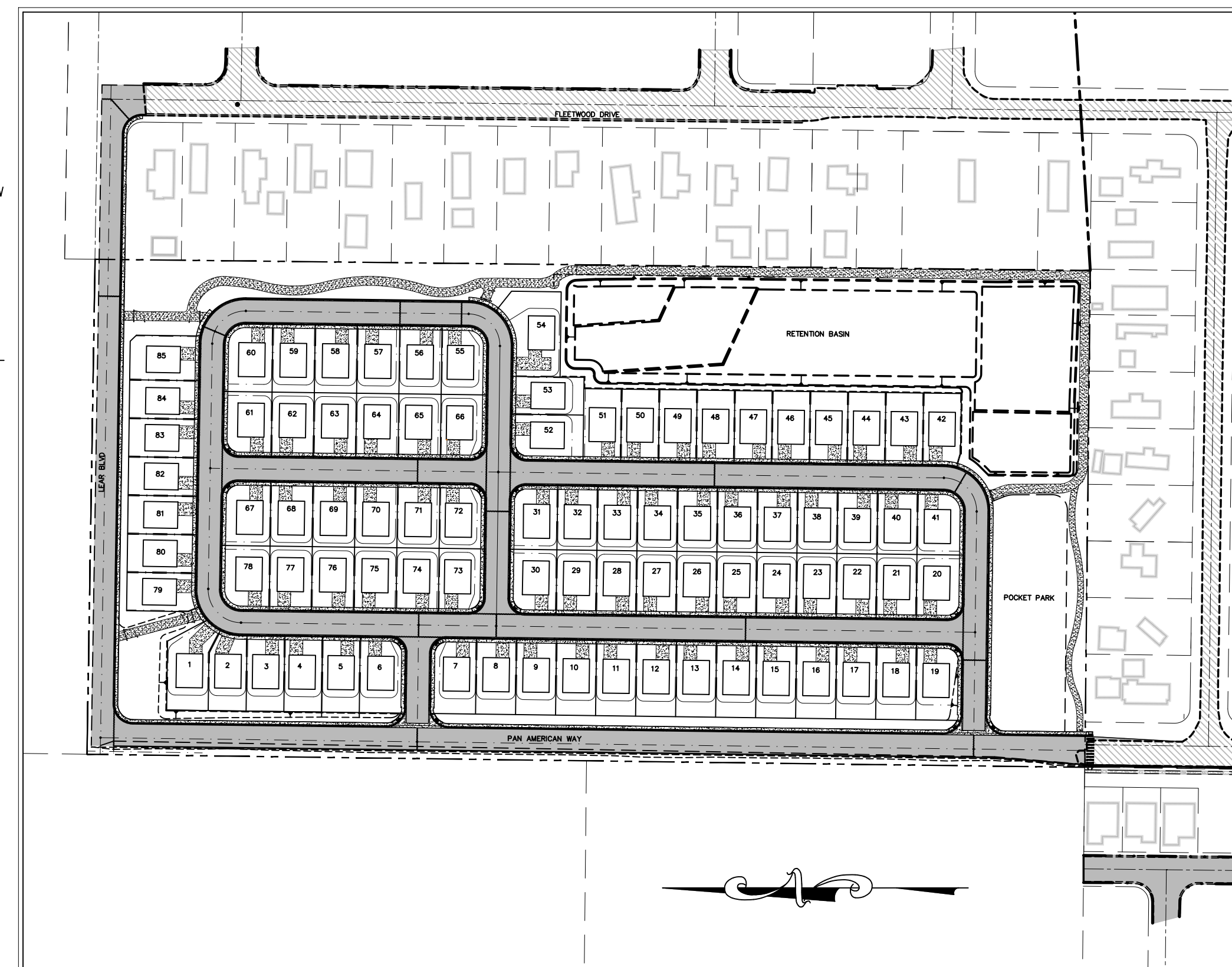
RESIDENTIAL STREET SECTION ①



PAN AMERICAN DRIVE ②



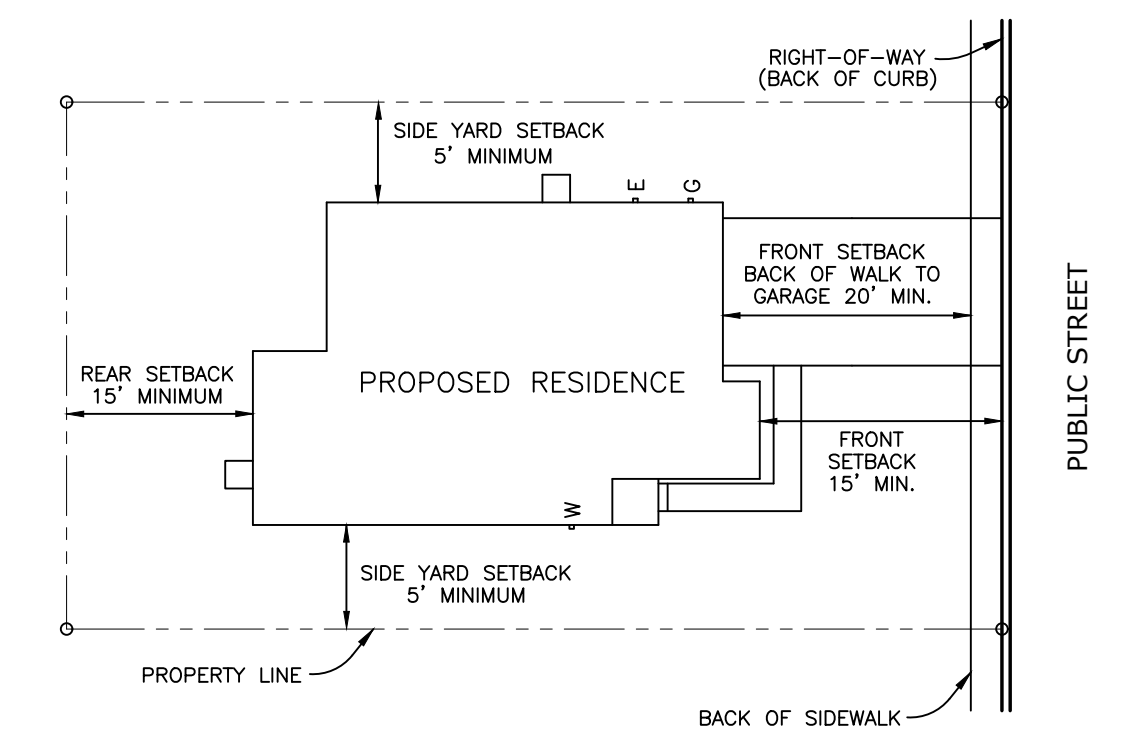
LEAR BOULEVARD ③



SITE

N.T.S.

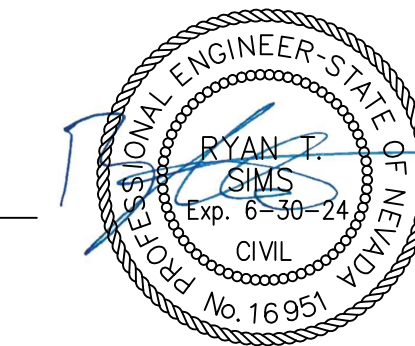
## MINIMUM SETBACKS



## 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 15th DAY OF JANUARY, 2024.

RYAN T. SIMS

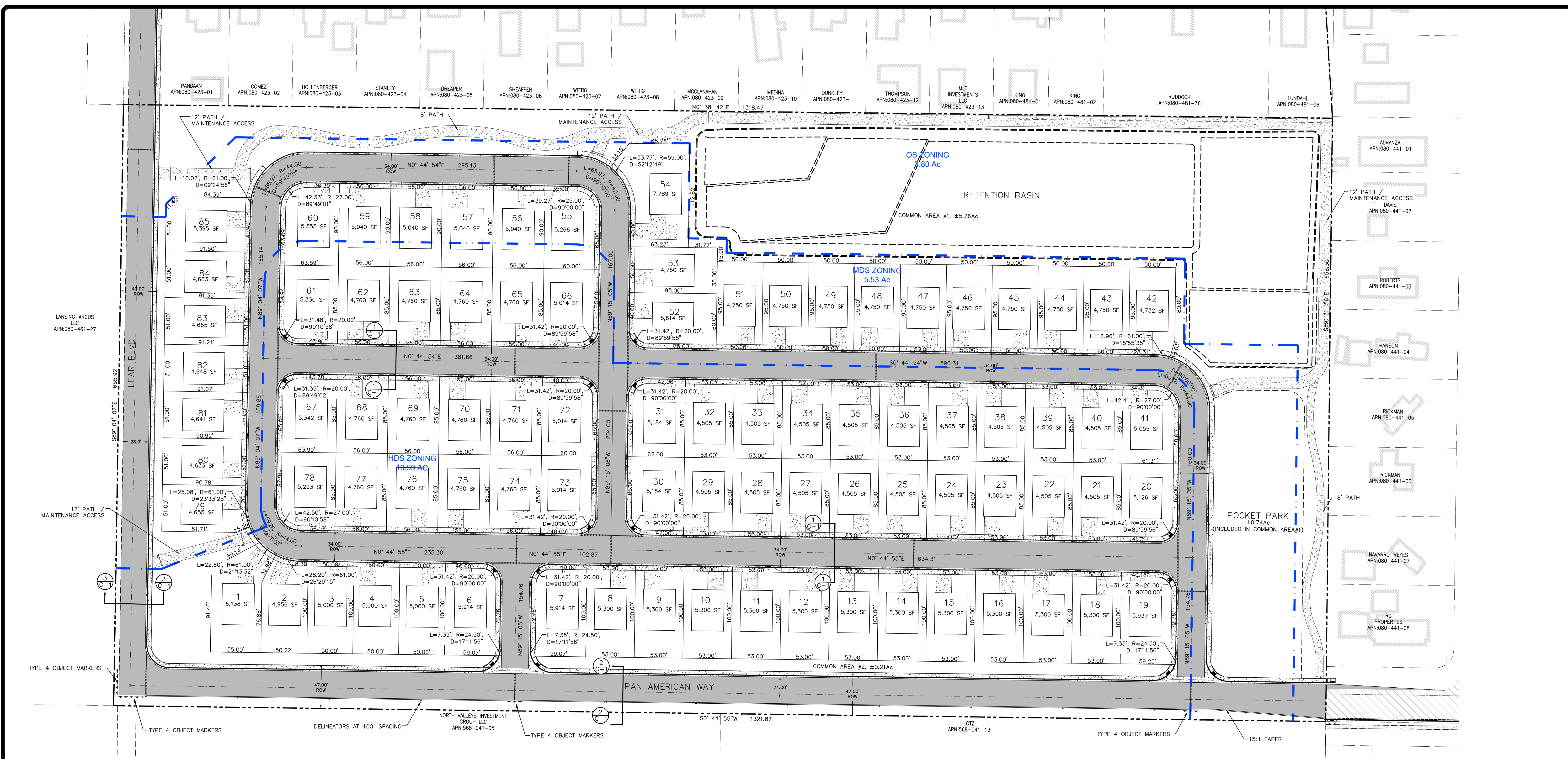


P.E. #16951

1/16/24

LEARNER LEMMON PROPERTY

TITLE SHEET C1



**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

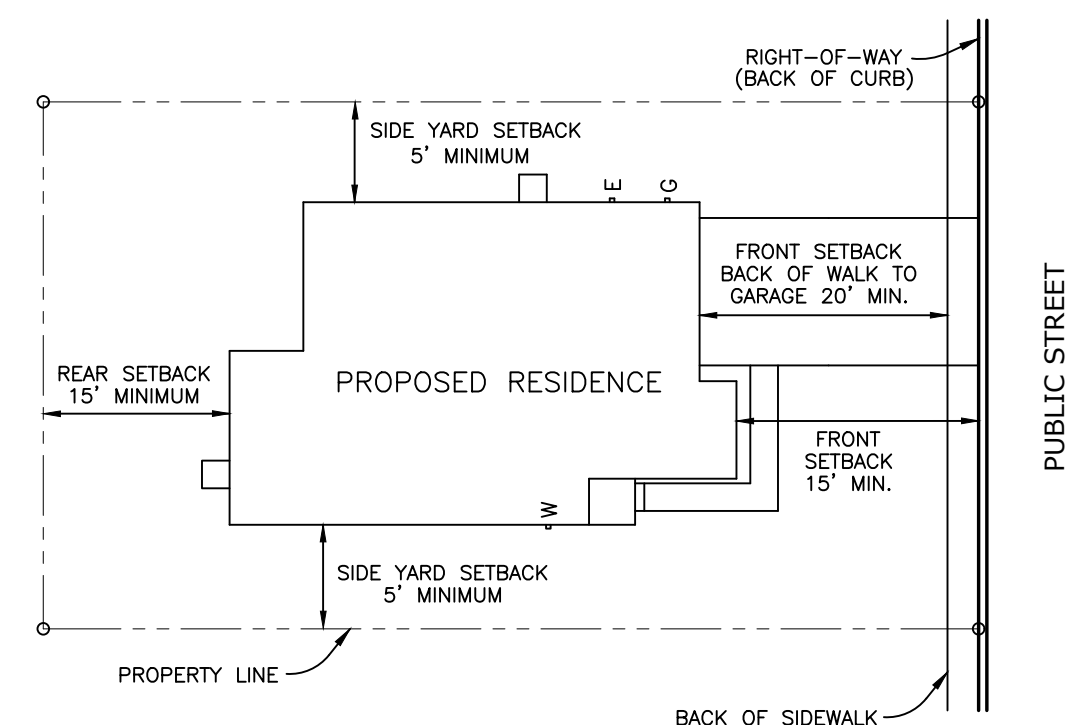
POLICE: WASHOE COUNTY SHERIFFS OFFICE

WILDFIRE:

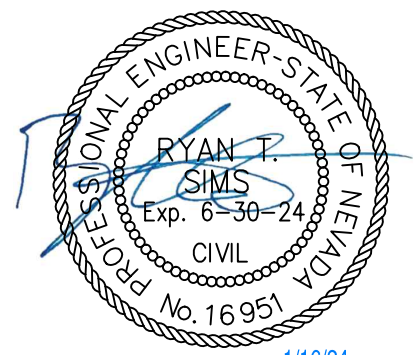
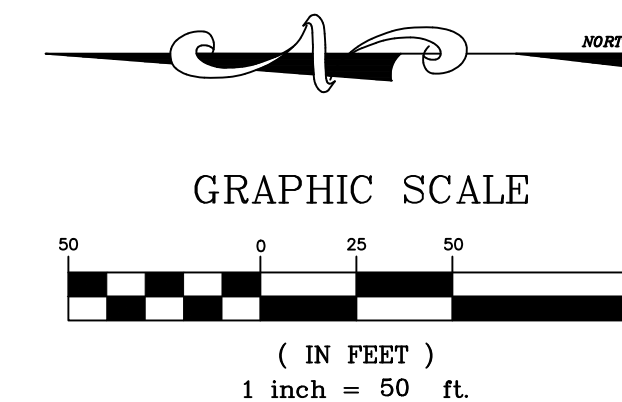
PARCEL FIRE RISK RATING: MODERATE

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



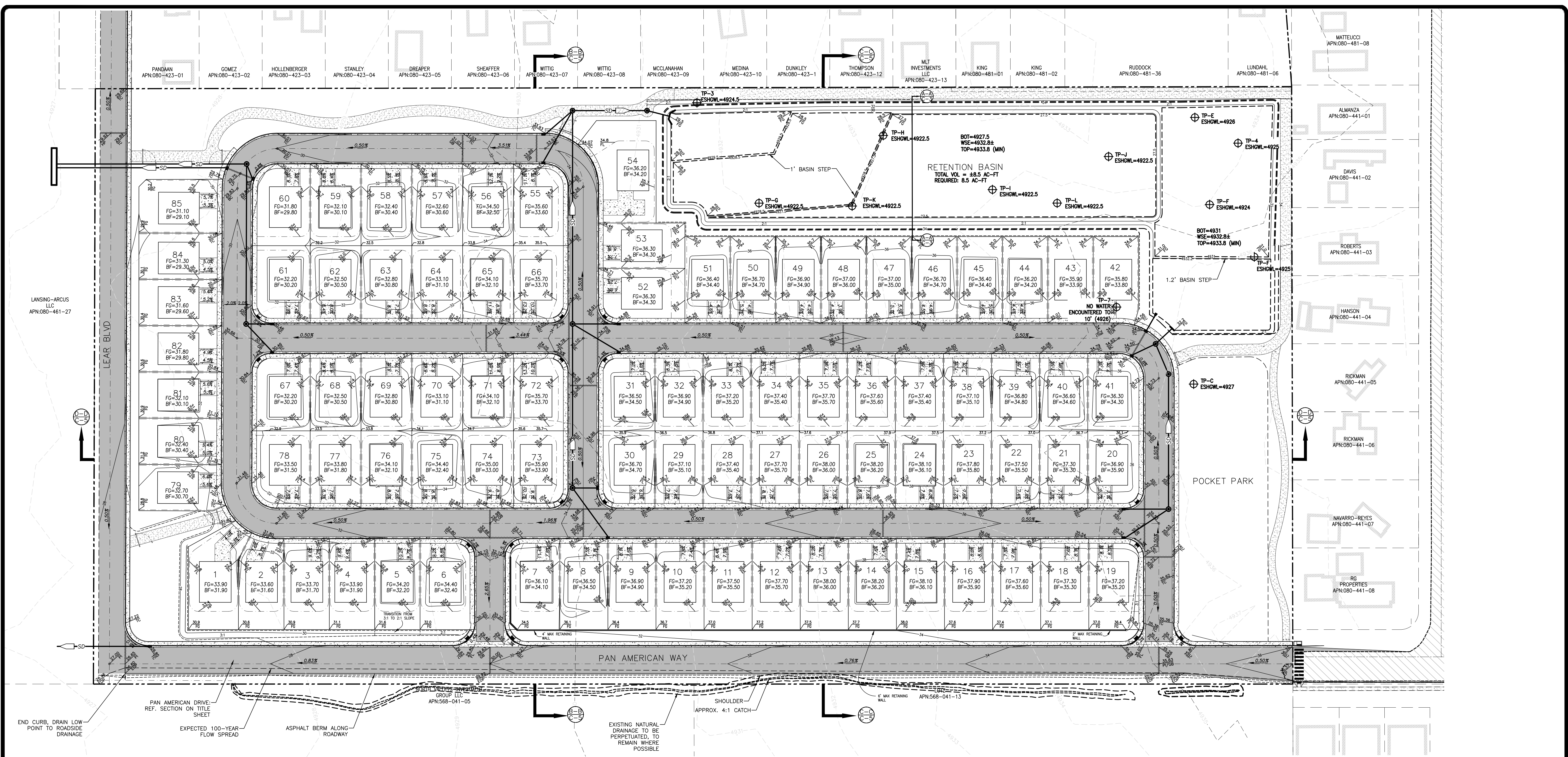
**TYPICAL LOT**



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**LEARNER LEMMON PROPERTY**

**SITE PLAN C-2**

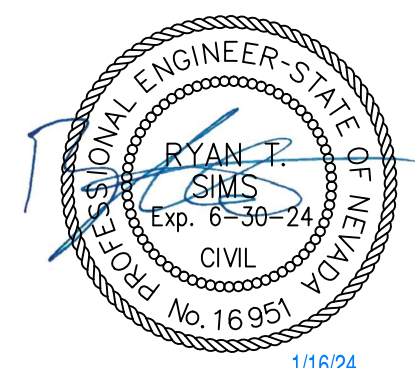
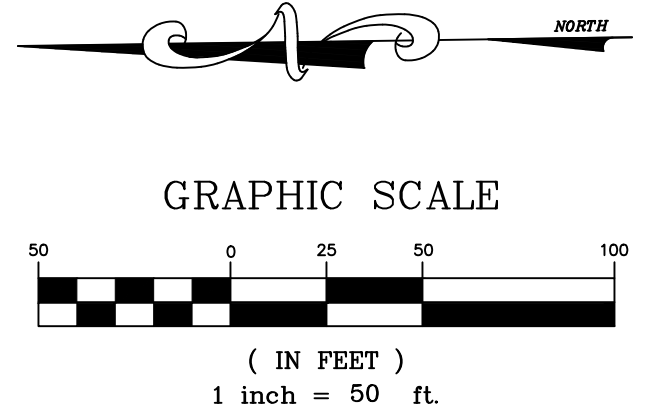
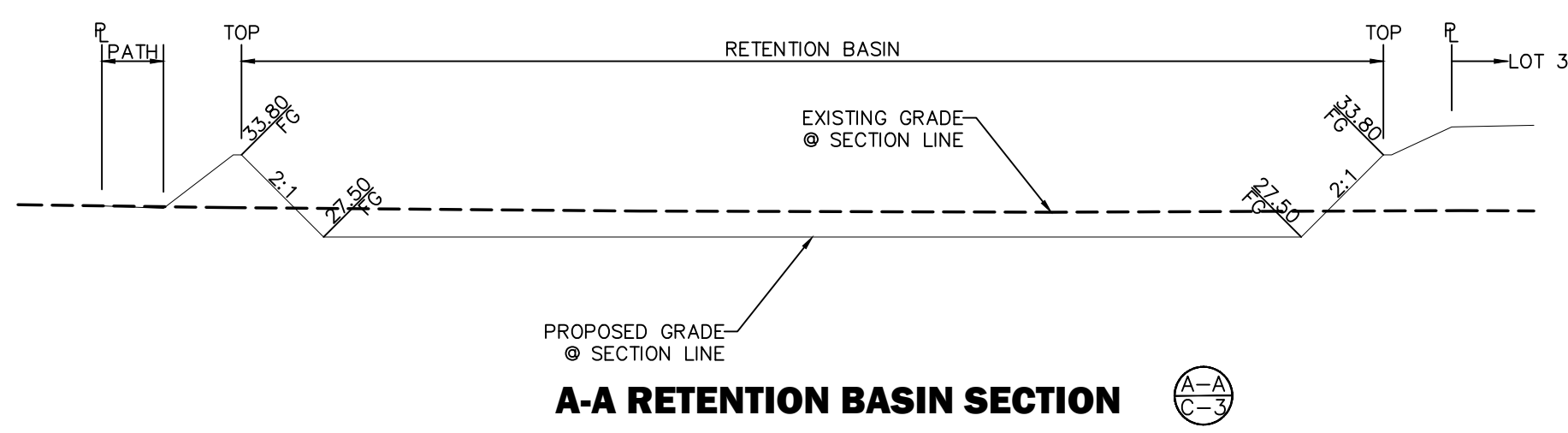


**LEGEND**

|       |                          |
|-------|--------------------------|
|       | GRADE BREAK              |
| 64    | LOT NUMBER               |
|       | EXISTING CONTOUR LINE    |
| 70.00 | FINISHED GRADE ELEVATION |
| 72.57 | TOP OF CURB ELEVATION    |
| 99.20 | 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 AND 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 32031C28386, EFFECTIVE 3/16/2009, THIS PROJECT LIES PARTIALLY WITHIN AN AREA DESIGNATED AS ZONE X (SHADED) AND ZONE X (UNSHADED)

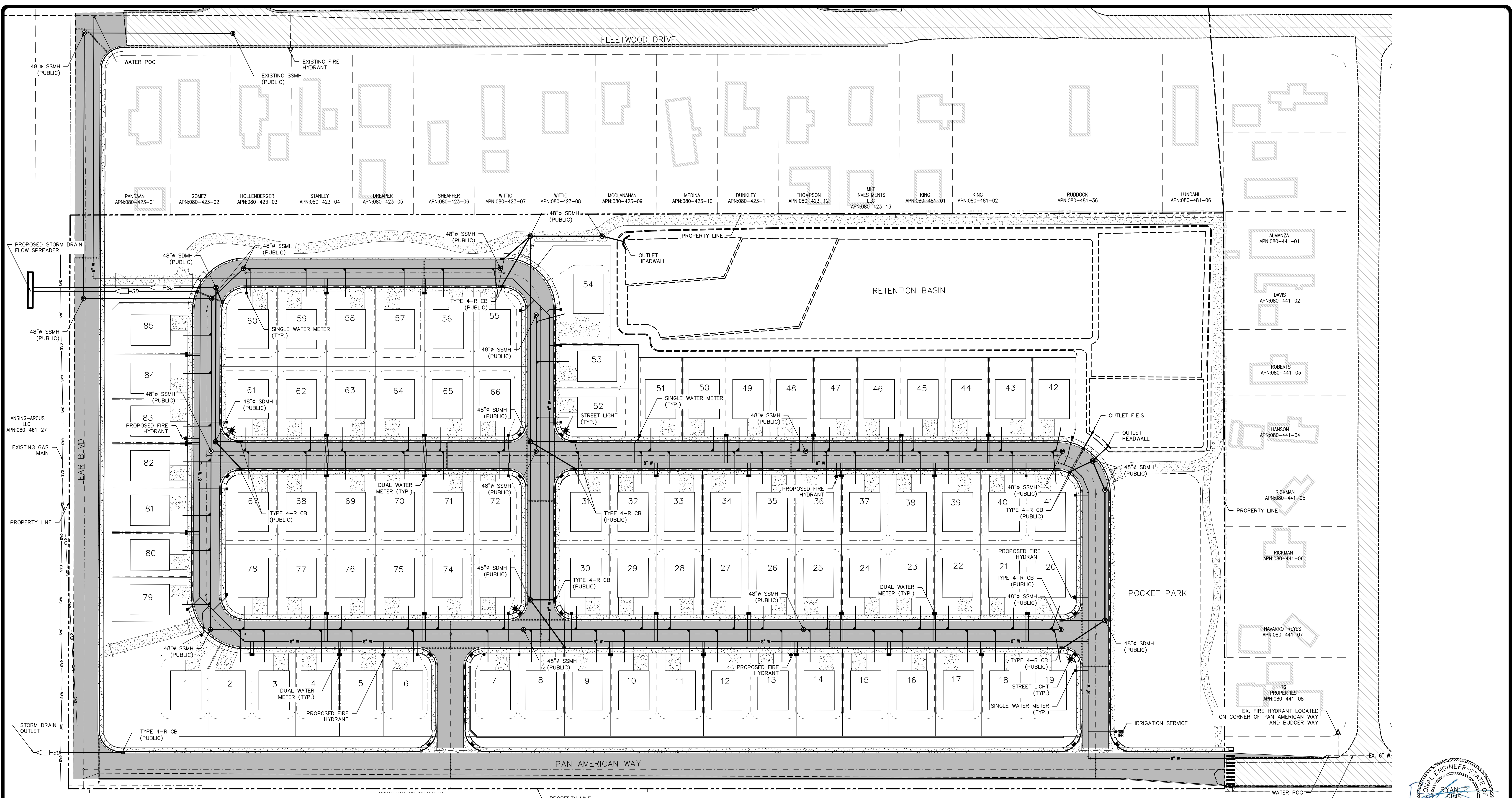


**Axion ENGINEERING**  
 Civil Engineering • Land Development  
 683 EDISON WAY - RENO, NEVADA 89502  
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**LEARNER LEMMON PROPERTY**

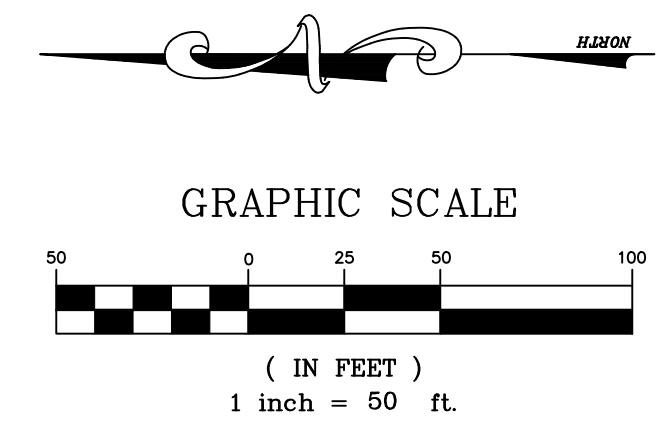
**GRADING PLAN C-3**





**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

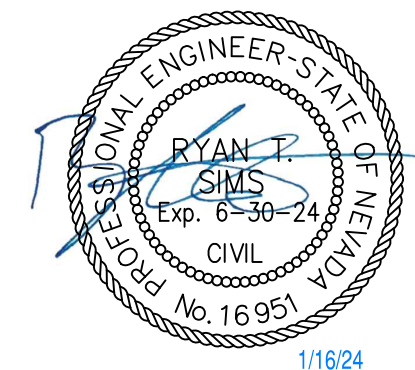


**PUBLIC SEWER SYSTEM:**

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:**

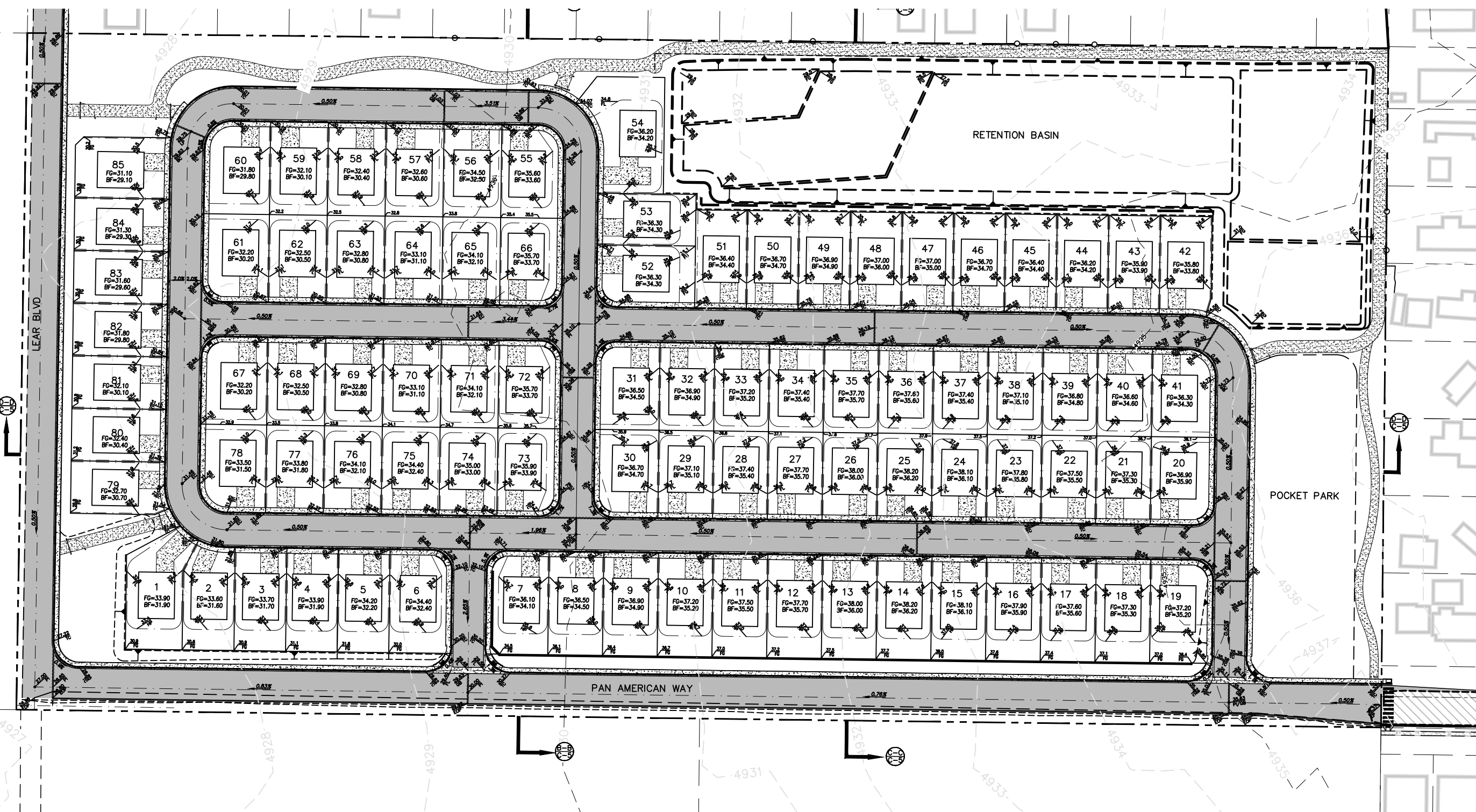
STORM DRAIN: WASHOE COUNTY  
 SANITARY SEWER: COUNTY AND CITY OWNED AND MAINTAINED  
 WATER: TMWA  
 GAS: NV ENERGY  
 ELECTRIC: NV ENERGY MAINS IN EASEMENT  
 COMMUNICATIONS: AT&T/CHARTER FACILITIES IN EASEMENT



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 PH 775-771-7983 / ryan@axionengineering.net

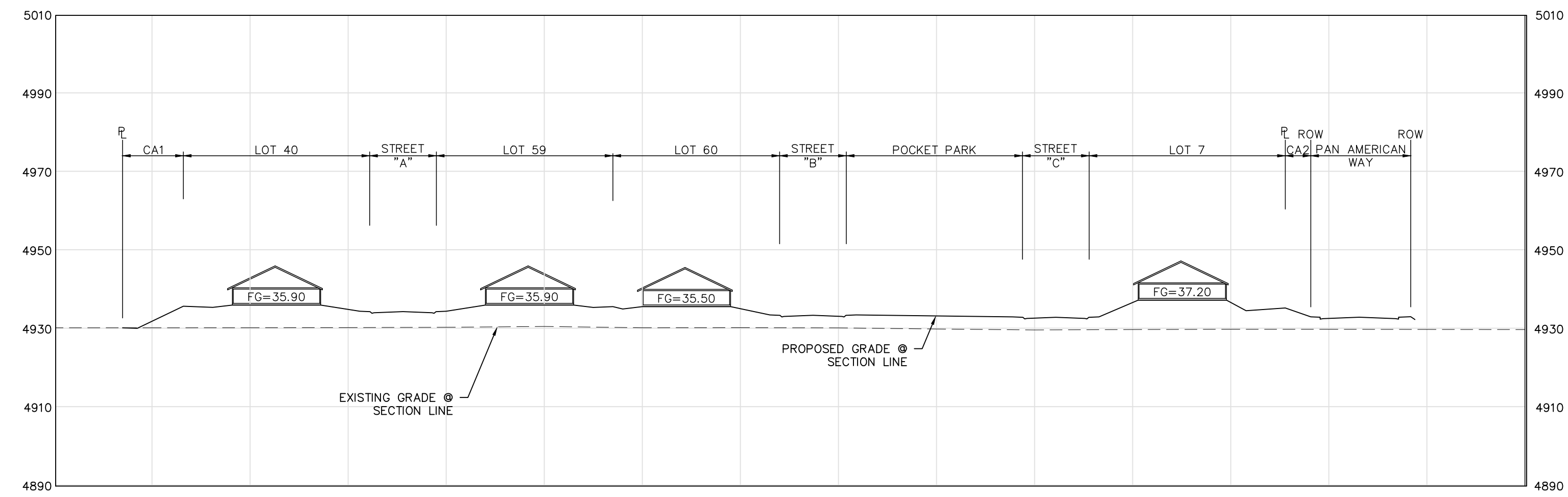
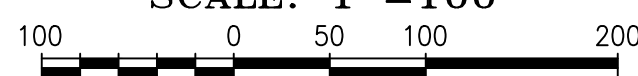
**LEARNER LEMMON PROPERTY**

**UTILITY PLAN C-4**



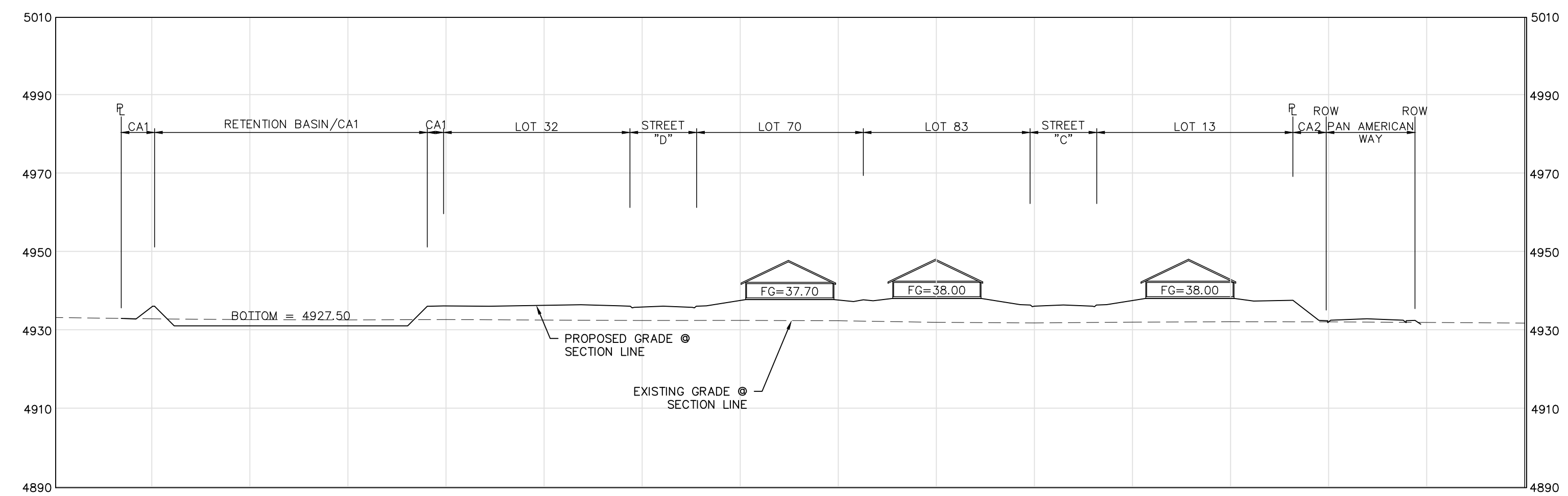
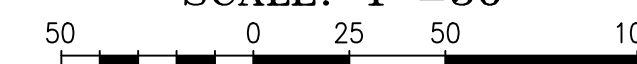
**SITEPLAN**

SCALE: 1"=100'



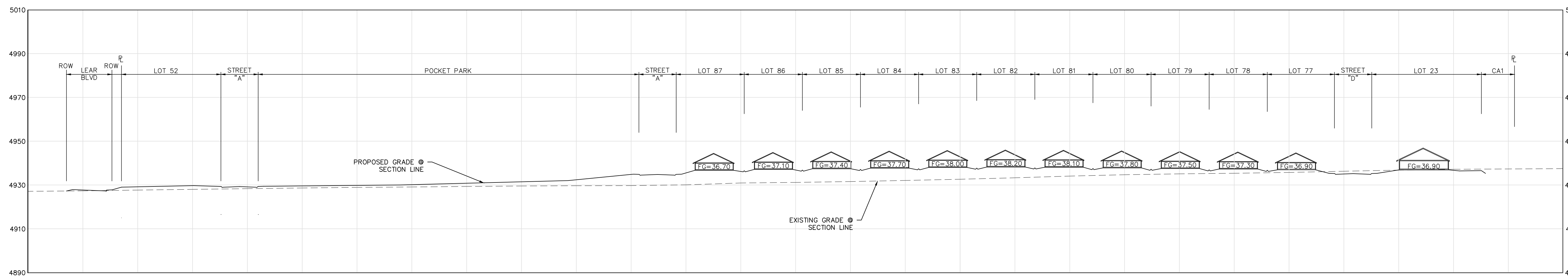
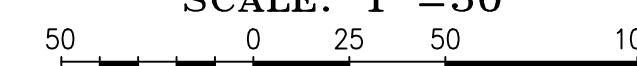
**SECTION B-B**

SCALE: 1"=50'



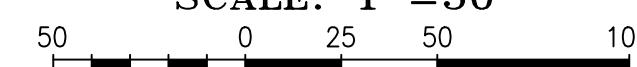
**SECTION C-C**

SCALE: 1"=50'

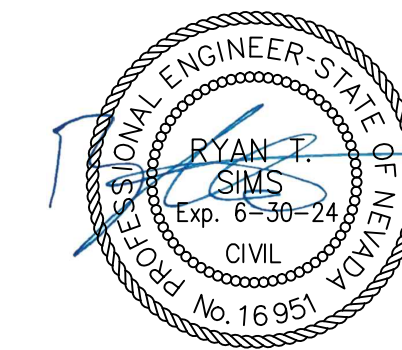


**SECTION D-D**

SCALE: 1"=50'



**LEARNER LEMMON PROPERTY**



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PH 775-771-7983 / ryan@axionengineering.net

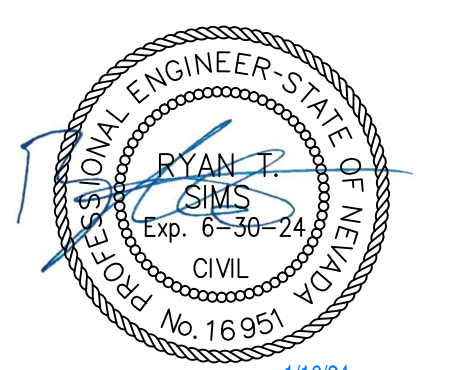
**X-SECTIONS C-5**



100 0 50 100 200  
 SCALE: 1" = 100'

| Preliminary Sanitary Sewer Pipe Calculations |           |                 |            |                         |                          |
|----------------------------------------------|-----------|-----------------|------------|-------------------------|--------------------------|
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| MH #7 - EX. MH                               | 0.21      | 68,040          | 0.18       | 1.27                    | 2                        |

**Axion ENGINEERING**  
 Civil Engineering • Land Development  
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# LEARNER LEMMON PROPERTY

# SEWER DISPLAY C-6

# **LEARNER-LEMMON SINGLE-FAMILY**

**RENO, NV**

**APN: 080-461-08**

*Prepared for:*  
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March 2023 (Revised February 2024)  
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TRAFFIC IMPACT STUDY

FOR

**LEARNER-LEMMON SINGLE-FAMILY**

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## 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 Drive 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 Drive.

The Washoe County scope of study dated January 27, 2023, identified seven (7) intersections for full analysis:

- Limber Pine Drive and Lemmon Drive (#1)
- Pan American Drive and Budger Way (#2)
- Fleetwood Drive and Lemmon Drive (#3)
- Fleetwood Drive and Budger Way (#4)
- Fleetwood Drive and Lear Boulevard (#5)
- Pan American Drive and Project Access Drive (A)
- Pan American Drive and Project Access Driver (B)

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.



### Study Area Intersections

- 1. Limber Pine Drive and Lemmon Drive
- 2. Budger Way and Pan American Drive
- 3. Fleetwood Drive and Lemmon Drive
- 4. Fleetwood Drive and Budger Way
- 5. Fleetwood Drive and Lear Boulevard
- A. Pan American Drive and Project Access Drive A
- B. Pan American Drive and Project Access Drive B

Lemmon Learner Single Family  
Study Area Intersections

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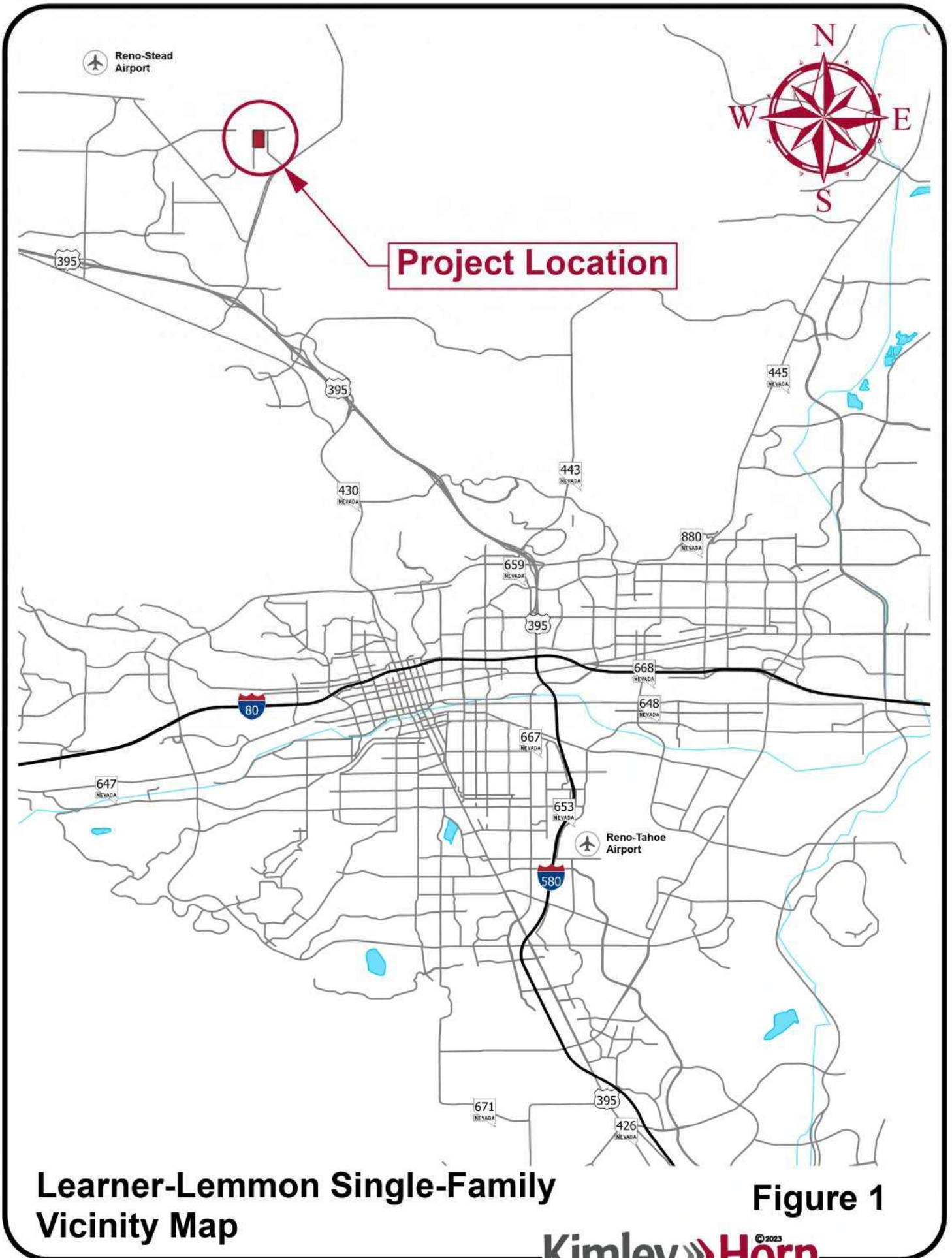
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|------------|-------------------------------------------------|
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## 1. INTRODUCTION

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 Drive 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 Drive.



**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 of study dated January 27, 2023, identified seven (7) intersections for full analysis:

- Limber Pine Drive and Lemmon Drive (#1)
- Pan American Drive and Budger Way (#2)
- Fleetwood Drive and Lemmon Drive (#3)
- Fleetwood Drive and Budger Way (#4)
- Fleetwood Drive and Lear Boulevard (#5)
- Pan American Drive and Project Access Drive (A)
- Pan American Drive and Project Access Driver (B)

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 2**.

### 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 Drive. 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 and January 31, 2024, 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**

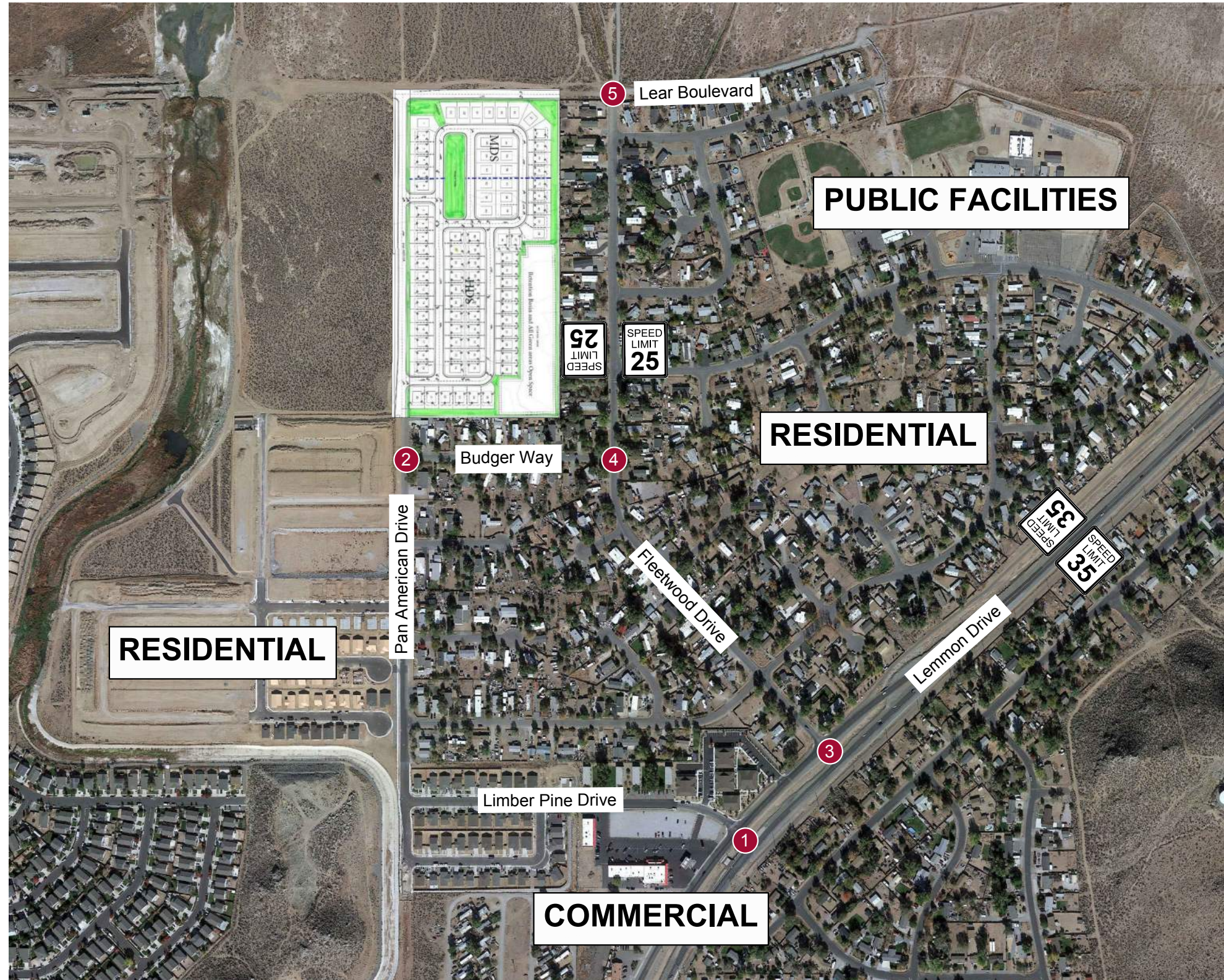
| Intersection                            | Count Date                  |
|-----------------------------------------|-----------------------------|
| Limber Pine Drive and Lemmon Drive (#1) | Wednesday, January 31, 2024 |
| Fleetwood Drive and Budger Way (#2)     | Thursday, February 2, 2023  |
| Fleetwood Drive and Lemmon Drive (#3)   | Thursday, February 2, 2023  |
| Budger Way and Pan American Drive (#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.

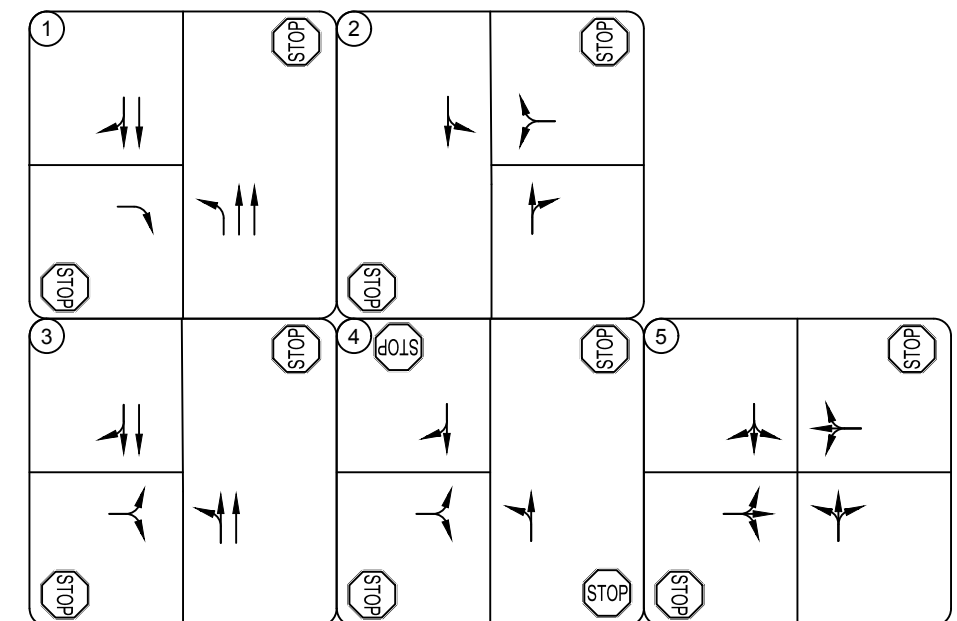


### Study Area Intersections

1. Limber Pine Drive and Lemmon Drive
2. Budger Way and Pan American Drive
3. Fleetwood Drive and Lemmon Drive
4. Fleetwood Drive and Budger Way
5. Fleetwood Drive and Lear Boulevard



2023 Existing Lane Configuration and Control

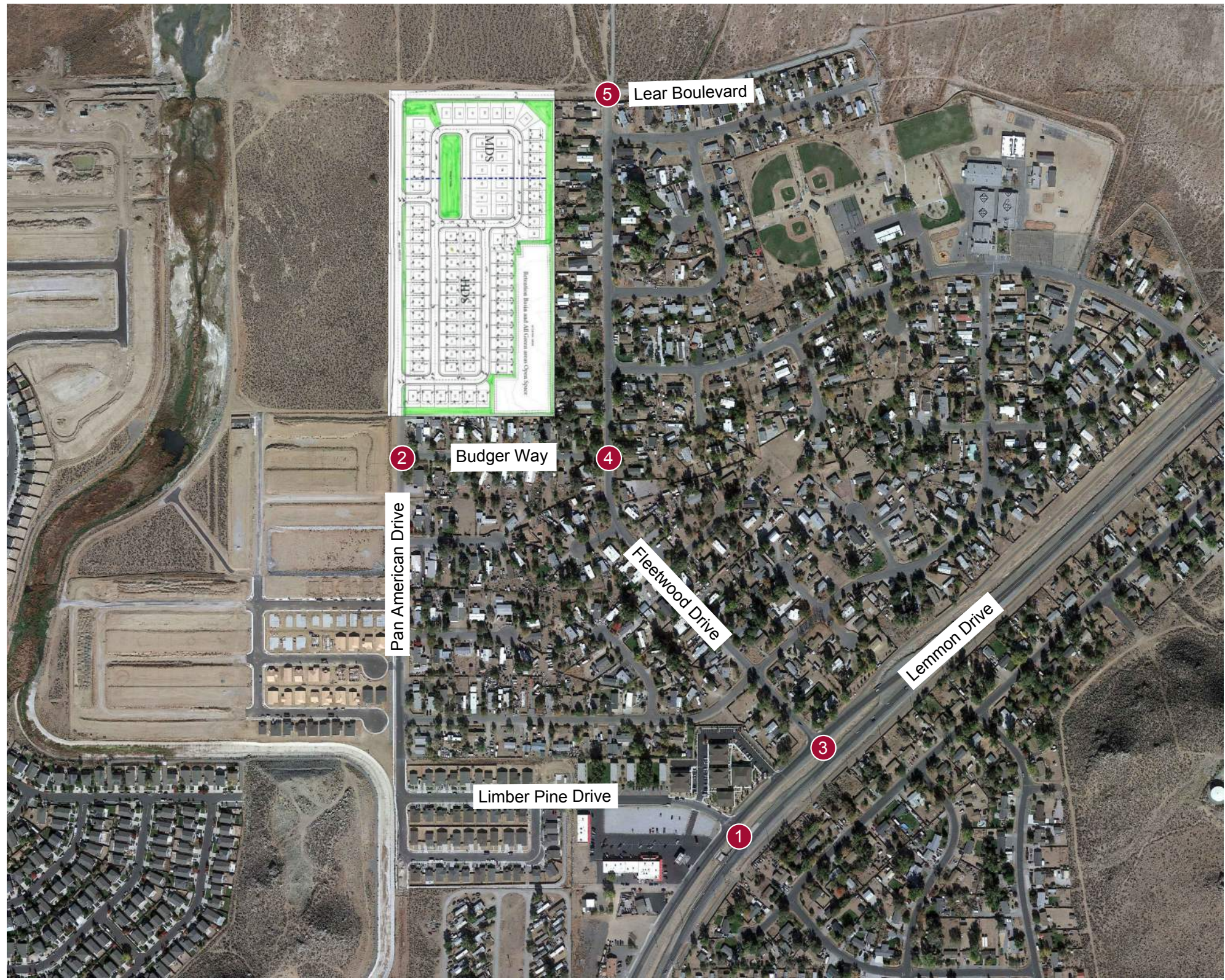


**Legend**

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

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

**Figure 2**



2023 Existing Peak Hour Traffic Volumes

|                    |                        |                    |                    |
|--------------------|------------------------|--------------------|--------------------|
| ①                  | ↙ 8(7)<br>↘ 429(343)   | ↙ 1(1)<br>↘ 0(3)   | ↙ 0(3)<br>↘ 5(8)   |
| 47(36) ↘           | ↗ 55(75)<br>↖ 296(429) | ↗ 10(9)            |                    |
| ③                  | ↙ 1(0)<br>↘ 357(219)   | ↙ 4(8)<br>↘ 37(27) | ↙ 1(1)             |
| ↗ 2(0)<br>↖ 69(50) | ↗ 33(89)<br>↖ 109(445) | ↗ 7(7)<br>↖ 3(4)   | ↗ 0(6)<br>↖ 20(37) |
|                    |                        | ↗ 1(0)             | ↖ 0(2)             |

**Legend**

① Study Area Key Intersection

←XX(X) AM(PM) Peak Hour Traffic Volumes

Lemmon Learner Single Family  
2023 Existing Peak Hour Traffic Volumes

Figure 3

### 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. Background Lane Configuration and Control

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**. Listed in the Regional Transportation Plan for RTC Washoe is a roadway project on Lemmon Drive between Fleetwood Drive and Ramsay Way that will involve traffic improvements and reconstruction.

#### 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 4**.

#### 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 5**.

**Table 2 – 2050 Growth Rate Summary**

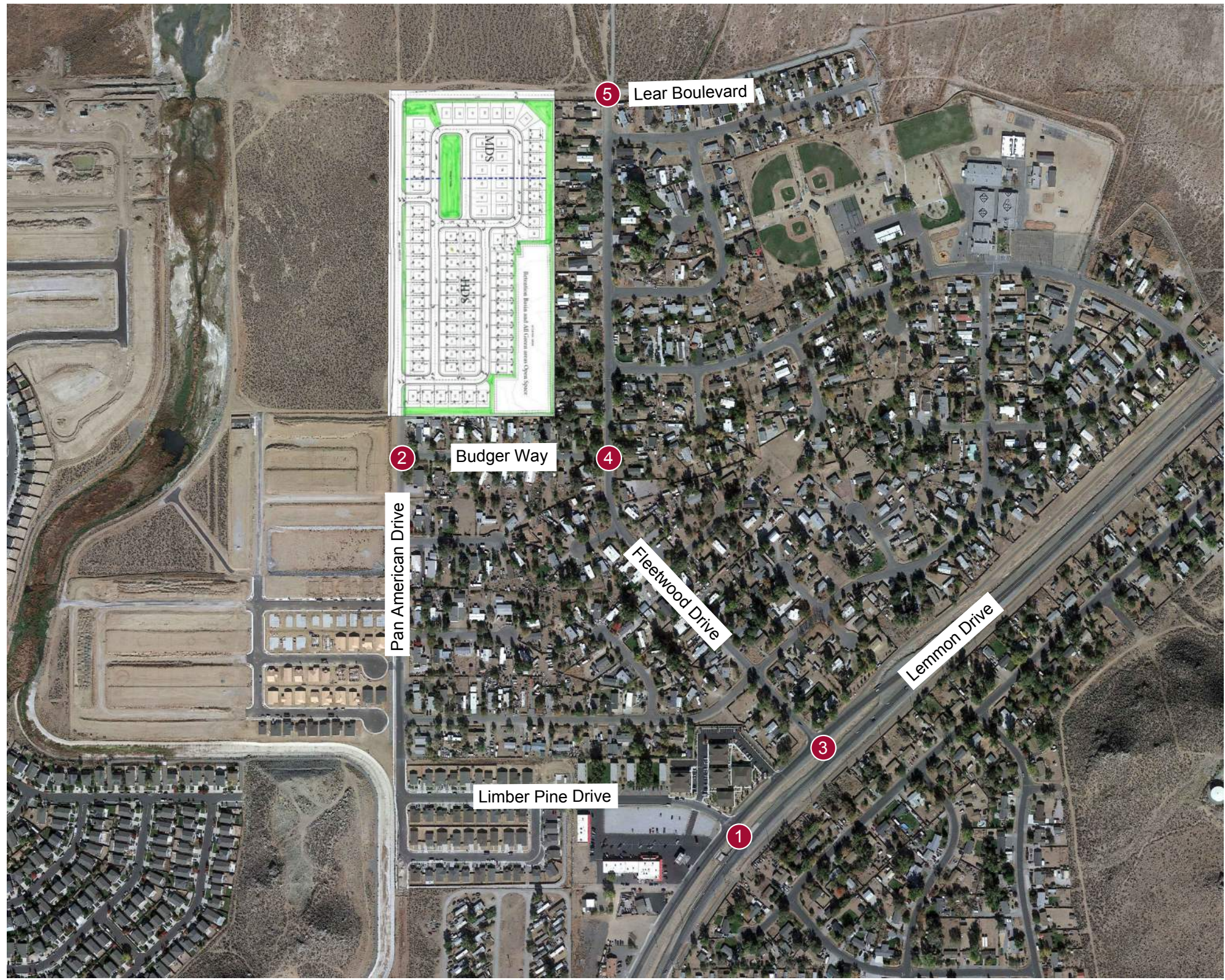
| Intersection Location                     | Approach   | 2025 Volumes (Vehicles) | 2050 Volumes (Vehicles) | Annual Growth Rate |
|-------------------------------------------|------------|-------------------------|-------------------------|--------------------|
| Fleetwood Drive and Lemmon Drive (#1,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

Source: RTC Washoe Travel Demand Model

#### 3.1. Background Plus Project 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 Drive. Expected speed limits, lane configuration, and traffic control at time of buildout 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 6**.





2026 Background Peak Hour Traffic Volumes

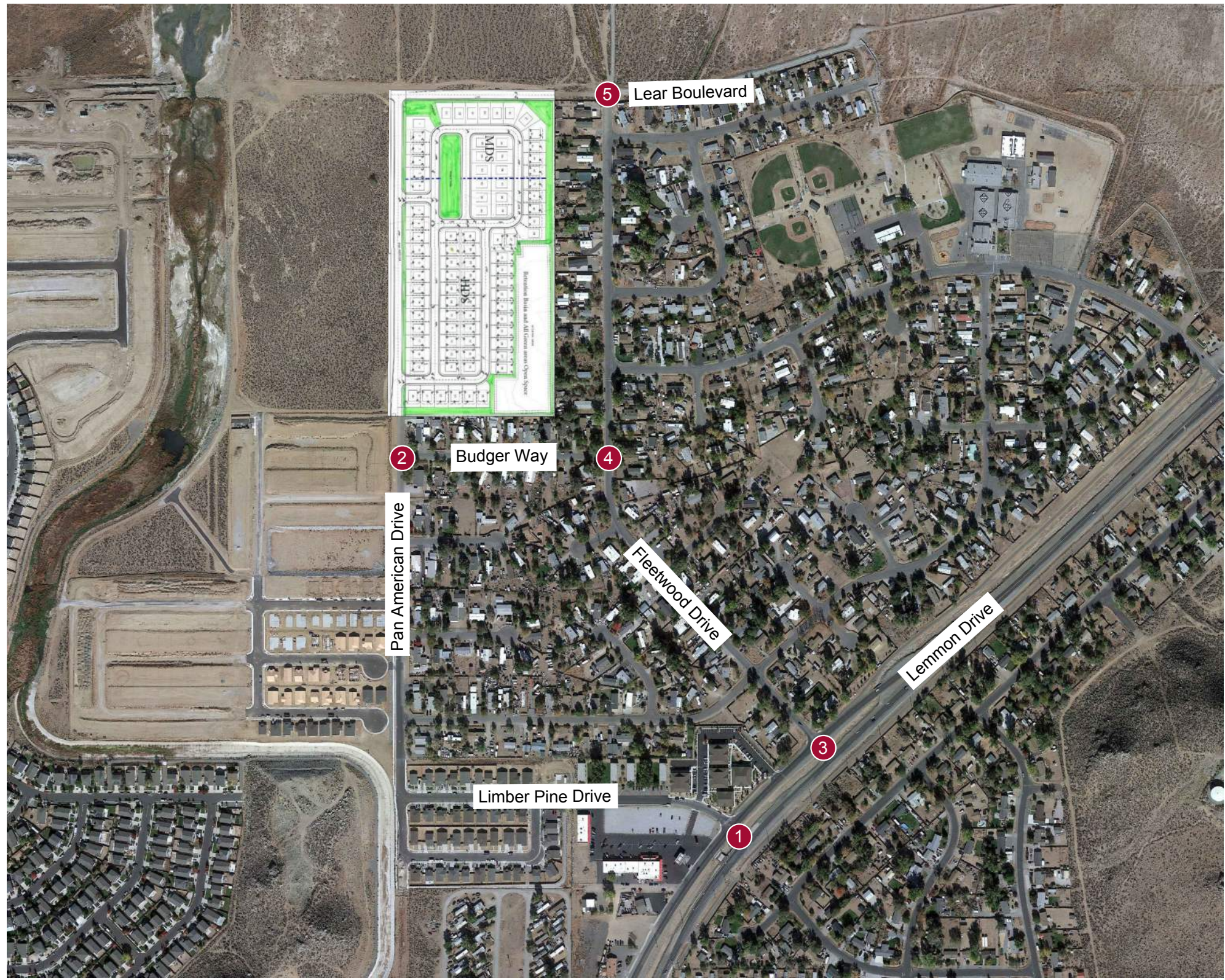
|                                                                                                     |                                                                                             |                                                      |
|-----------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|------------------------------------------------------|
| <p>①</p> <p>← 8(7) ←<br/>← 455(364) ←</p> <p>50(38) →</p> <p>59(80) →<br/>314(455) →</p>            | <p>②</p> <p>← 1(1) ←<br/>← 0(3) ←</p> <p>0(3) ←<br/>5(8) ←</p> <p>11(10) →</p>              |                                                      |
| <p>③</p> <p>← 1(0) ←<br/>← 379(232) ←</p> <p>2(0) →<br/>73(53) →</p> <p>35(94) →<br/>116(472) →</p> | <p>④</p> <p>← 4(8) ←<br/>← 39(29) ←</p> <p>7(7) →<br/>3(4) →</p> <p>0(6) →<br/>21(39) →</p> | <p>⑤</p> <p>← 1(1) ←</p> <p>0(2) →</p> <p>1(0) →</p> |

**Legend**

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

Learner Lemmon Single Family  
2026 Background Peak Hours Traffic Volumes

Figure 4



2050 Background Peak Hour Volumes

|   |                        |                         |   |                     |                    |                    |
|---|------------------------|-------------------------|---|---------------------|--------------------|--------------------|
| ① | ↙ 12(10)<br>↘ 623(498) | ↗ 80(109)<br>↘ 430(623) | ② | ↙ 1(1)<br>↘ 0(4)    | ↗ 0(4)<br>↘ 7(12)  | ↗ 15(13)           |
| ③ | ↙ 1(0)<br>↘ 518(318)   | ↗ 3(0)<br>↘ 100(73)     | ④ | ↙ 6(12)<br>↘ 54(39) | ↗ 10(10)<br>↘ 4(6) | ↗ 0(9)<br>↘ 29(54) |
|   |                        | ⑤                       |   | ↙ 1(1)              |                    | ↗ 1(0)             |

**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

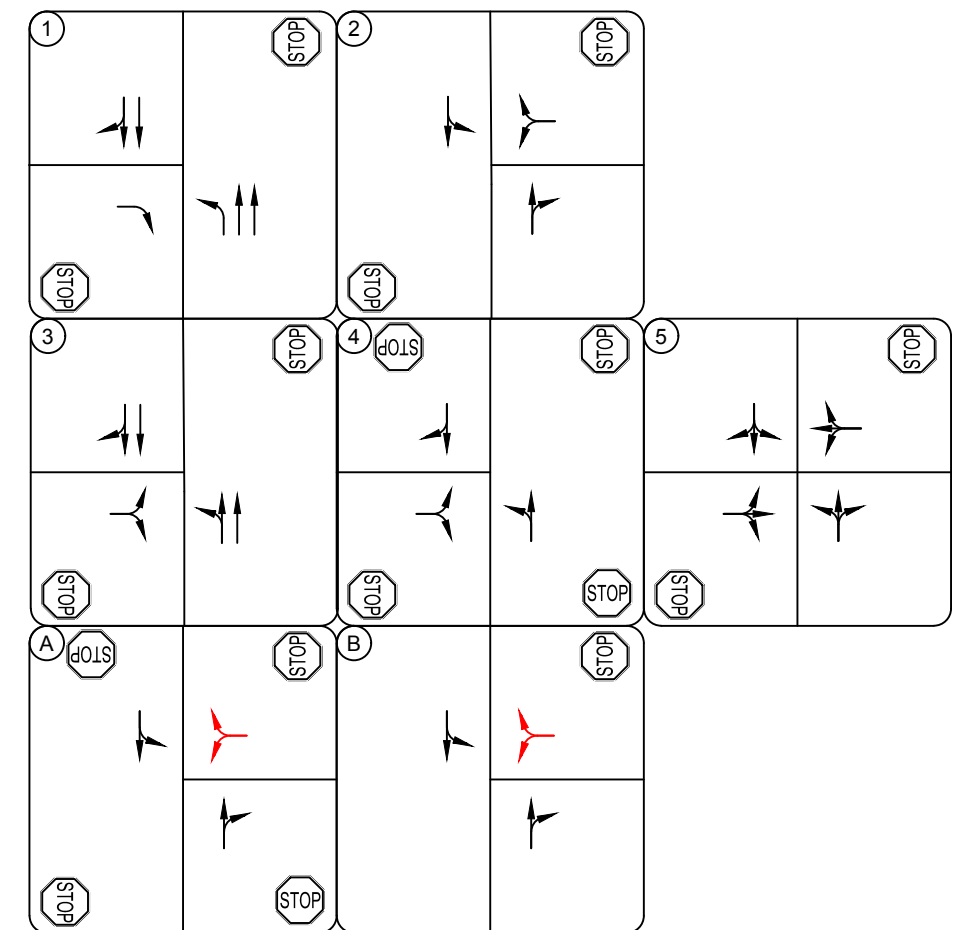
Figure 5



### Study Area Intersections

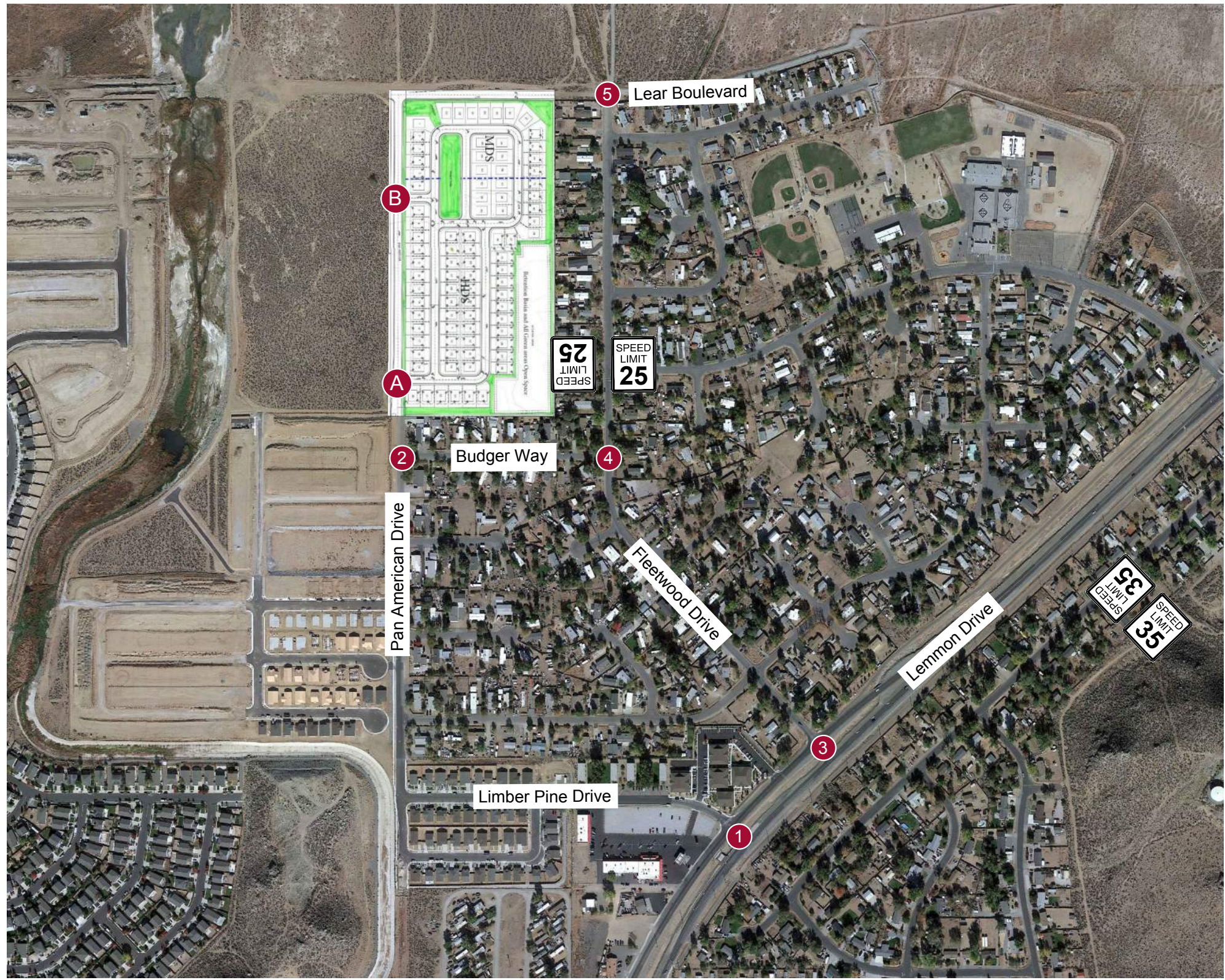
1. Limber Pine Drive and Lemmon Drive
2. Budger Way and Pan American Drive
3. Fleetwood Drive and Lemmon Drive
4. Fleetwood Drive and Budger Way
5. Fleetwood Drive and Lear Boulevard
- A. Pan American Drive and Project Access Drive A
- B. Pan American Drive and Project Access Drive B

### 2026 Background Lane Configuration and Control



### Legend

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



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

**Figure 6**

### 3.2. 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, 11<sup>th</sup> 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 61 AM and 82 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               |
| <b>Total</b> |                                |                | <b>15</b>    | <b>46</b> | <b>61</b> | <b>52</b>    | <b>30</b> | <b>82</b> | <b>820</b>        |

Source: ITE Trip Generation Manual, 11<sup>th</sup> Edition

### 3.3. 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.

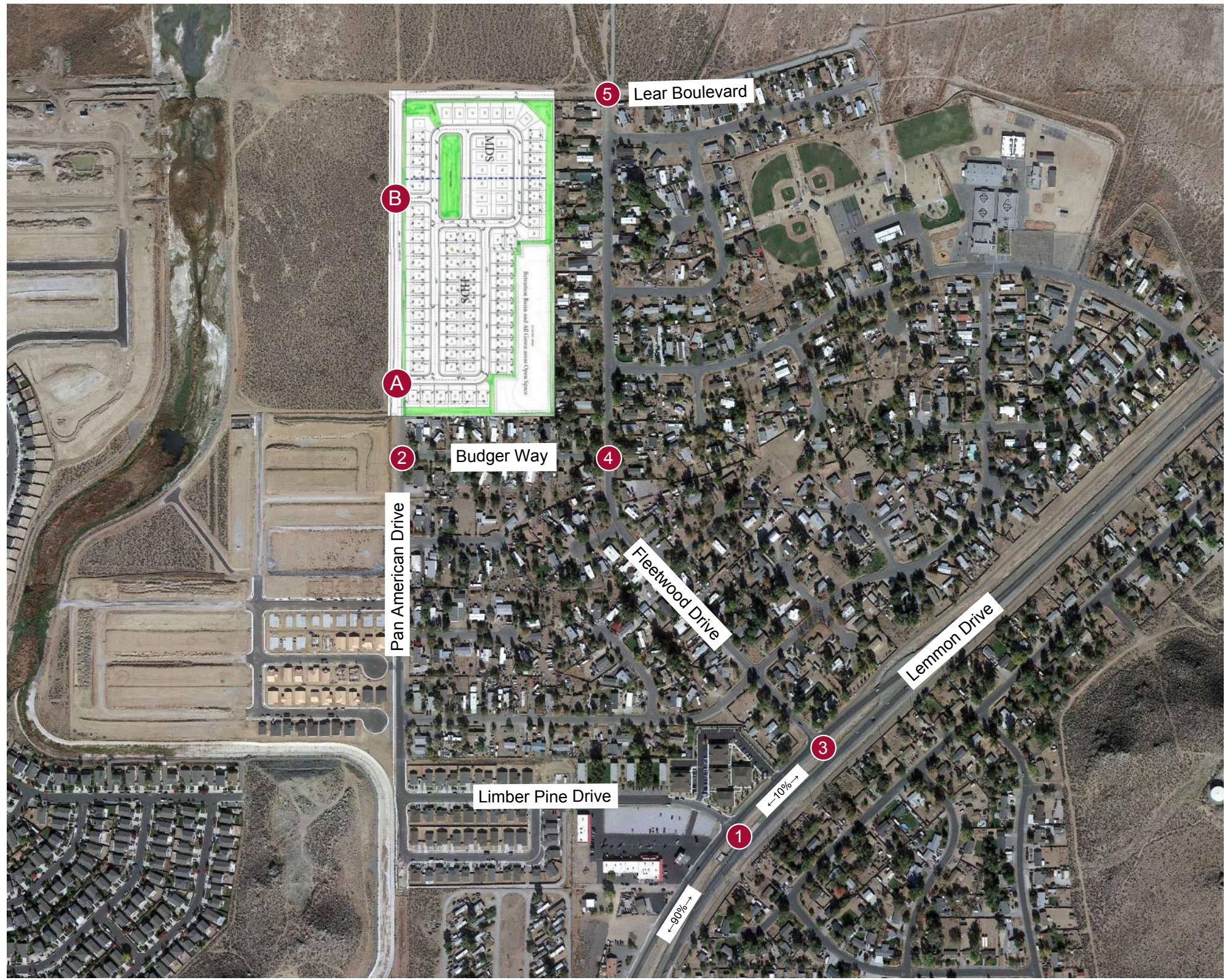
### 3.4. Traffic Assignment

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.

### 3.5. Background Plus Project Traffic Volumes

The project generated traffic volumes in **Figure 8** were added to the 2026 background traffic volumes in **Figure 4** and 2050 background traffic volumes in **Figure 5** 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.



**Project Trip Distribution**

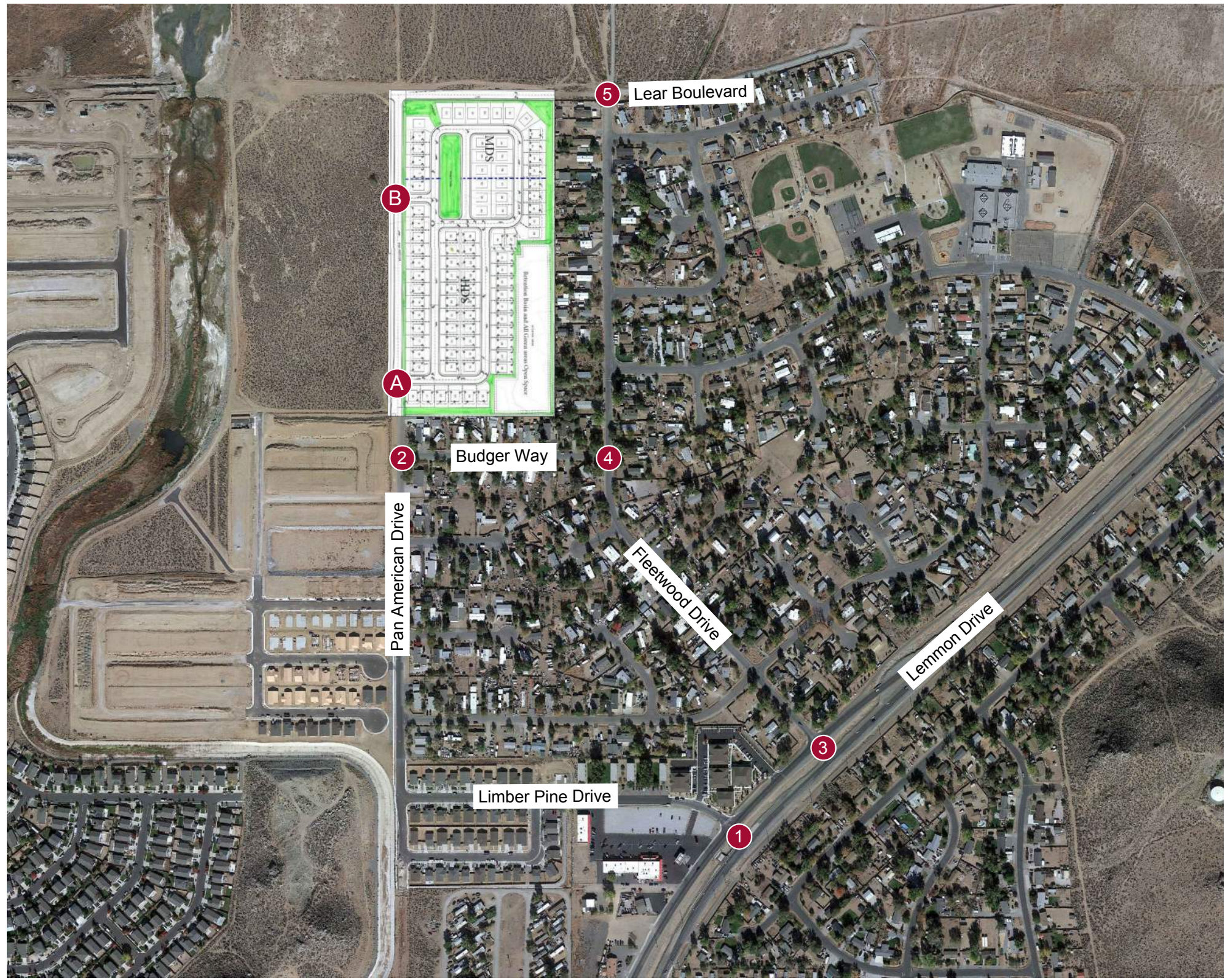
|   |            |   |                                        |
|---|------------|---|----------------------------------------|
| 1 |            | 2 | ← 0% (90%)<br>↓ 0% (10%)<br>↖ 55% (0%) |
|   | 0% (90%) → |   | ↗ 45% (0%)                             |
| 3 |            | 4 |                                        |
|   | 10% (0%) ↓ |   | ↖ 0% (10%)                             |
|   | 0% (10%) → |   | ↗ 55% (0%)                             |
| A |            | B |                                        |
|   | ← 0% (50%) |   | ↖ 0% (50%)                             |
|   |            |   | ↗ 50% (0%)                             |
|   |            |   | ↘ 50% (0%)                             |

**Legend**

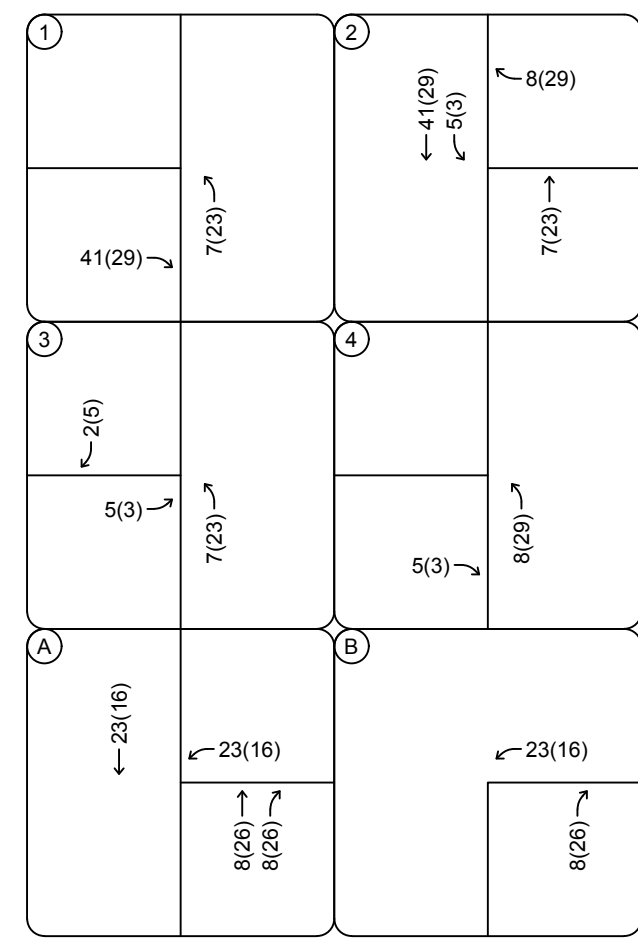
- 1 Study Area Key Intersection
- ← XX% (XX%) In (Out) Peak Hour Trip Distribution
- ← XX% → Global Peak Hour Trip Distribution

**Learner Lemmon Single Family Project Trip Distribution**

**Figure 7**



Project Traffic Assignment

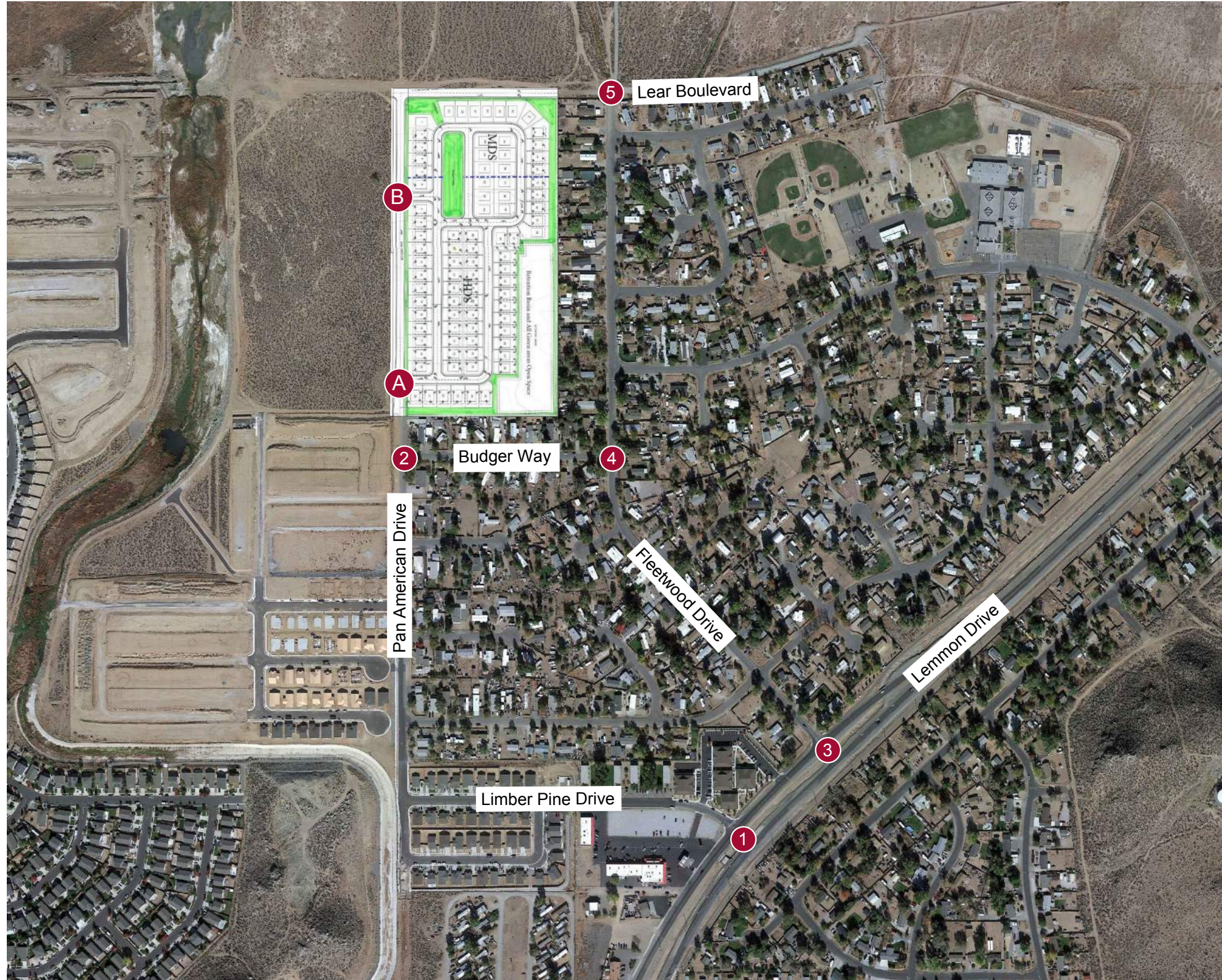


**Legend**

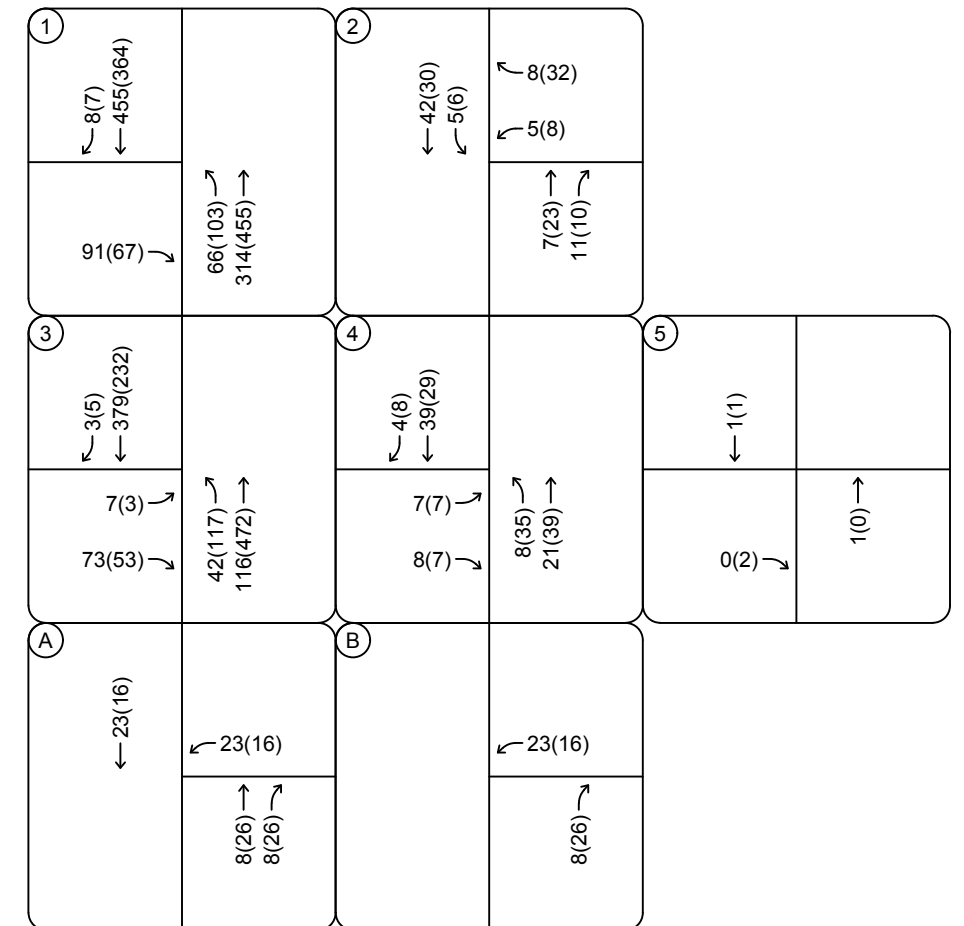
- 1 Study Area Key Intersection
- A Project Access Drive
- ←XX(XX) AM(PM) Peak Hour Traffic Volumes

**Learner Lemmon Single Family Project Traffic Assignment**

**Figure 8**



2026 Background Plus Project Peak Hour Volumes



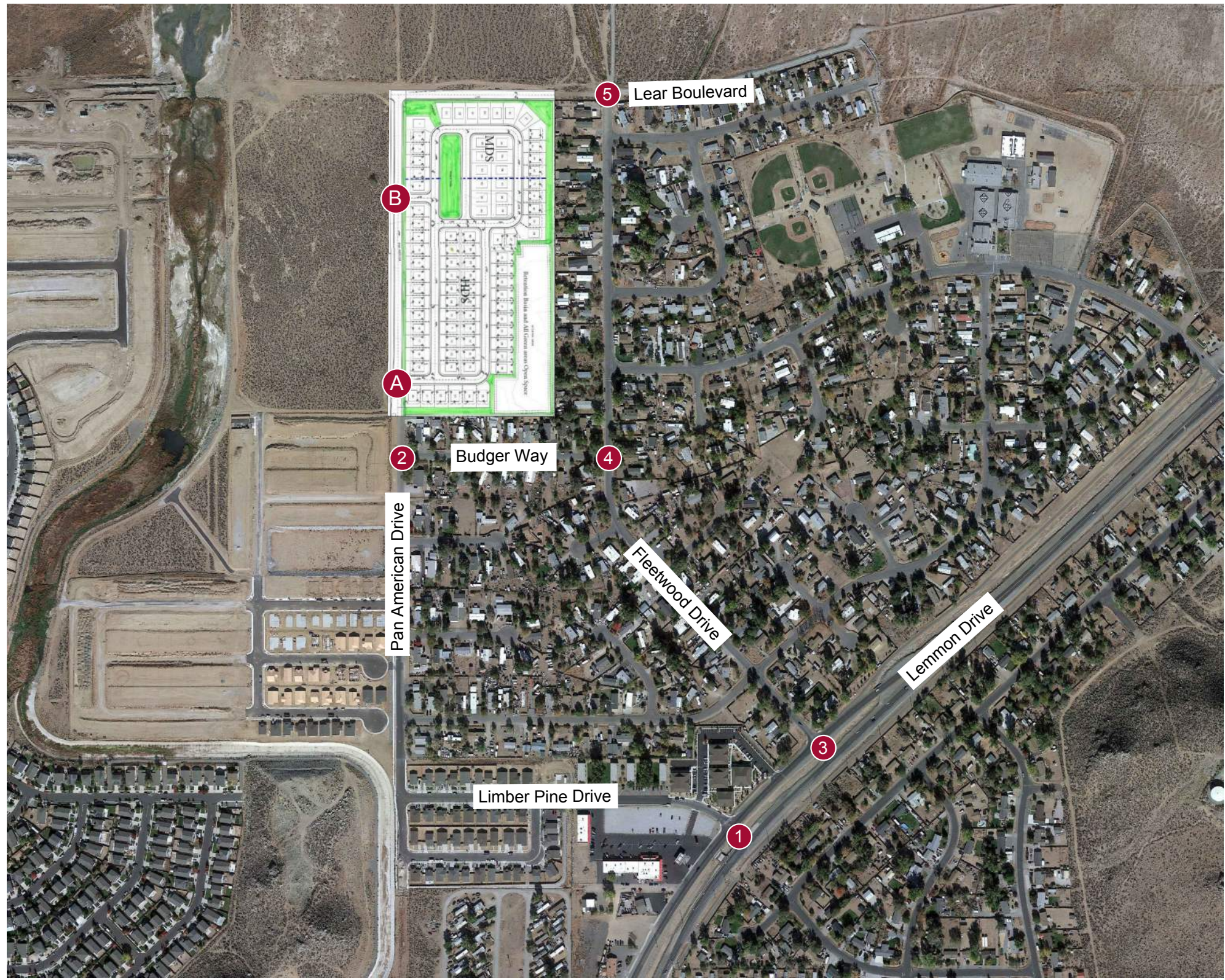
**Legend**

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

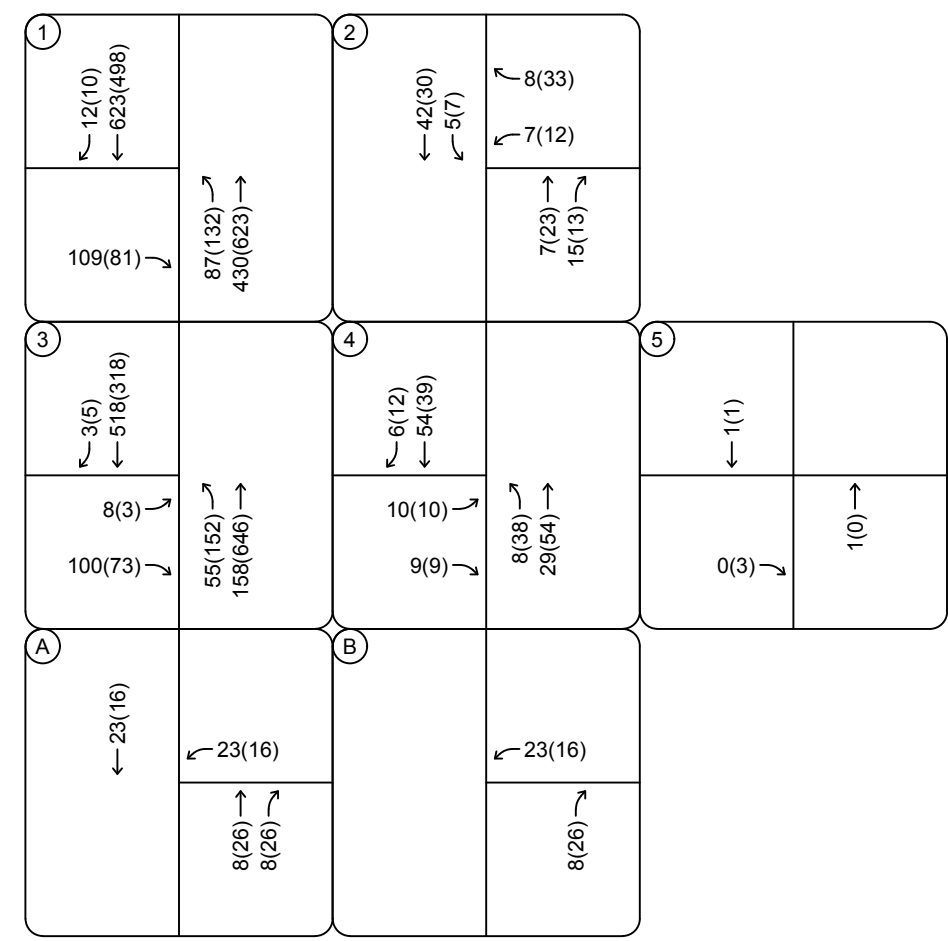
**Learner Lemmon Single Family  
2026 Background Plus Project Peak Hour Volumes**

**Figure 9**





2050 Background Plus Project Peak Hour Volumes



**Legend**

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

Learner Lemmon Single Family  
2050 Background Plus Project Peak Hour Volumes

Figure 10

## 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” 6<sup>th</sup> 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<br>Average Total Delay (sec/veh) | Unsignalized Intersection<br>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, 6<sup>th</sup> 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 2026 background, 2026 background plus project, 2050 background, and 2050 background plus project analyses are based on the lane geometry and intersection control shown in **Figure 6**. 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)          |
| <b>Limber Pine Drive and Lemmon Drive (#1)</b><br>Two-Way Stop Control<br>Northbound Left<br>Eastbound Left | 10.4 (B)<br>10.8 (B) | 9.0 (A)<br>9.7 (A) | 10.8 (B)<br>11.6 (B) | 9.2 (A)<br>10.1 (A) | 10.8 (B)<br>11.6 (B)         | 9.2 (A)<br>10.1 (B) | 13.7 (B)<br>12.7 (B) | 10.6 (B)<br>10.6 (B) | 14.2 (B)<br>13.7 (C)         | 10.5 (B)<br>10.9 (B) |
| <b>Budger Way and Pan American Drive (#2)</b><br>Two-Way Stop Control<br>Southbound Left<br>Westbound       | 0 (A)<br>8.6 (A)     | 5.4 (A)<br>8.6 (A) | 0 (A)<br>9.0 (A)     | 7.5 (A)<br>9.1 (A)  | 7.3 (A)<br>8.8 (A)           | 7.3 (A)<br>8.8 (A)  | 0 (A)<br>8.6 (A)     | 7.3 (A)<br>8.7 (A)   | 7.3 (A)<br>8.9 (A)           | 7.3 (A)<br>8.9 (A)   |
| <b>Fleetwood Drive and Lemmon Drive (#3)</b><br>Two-Way Stop Control<br>Northbound Left<br>Eastbound        | 8.2 (A)<br>10.0 (B)  | 8.0 (A)<br>9.3 (A) | 8.3 (A)<br>10.5 (B)  | 8.1 (A)<br>9.3 (A)  | 8.3 (A)<br>10.6 (A)          | 8.1 (A)<br>9.9 (A)  | 8.8 (A)<br>11.3 (B)  | 8.5 (A)<br>9.8 (A)   | 8.9 (A)<br>11.9 (B)          | 8.6 (A)<br>10.7 (A)  |
| <b>Fleetwood Drive and Budget Way (#4)</b><br>Two-Way Stop Control<br>Northbound Left<br>Eastbound          | 0 (A)<br>8.9 (A)     | 7.3 (A)<br>8.8 (A) | 0 (A)<br>8.9 (A)     | 7.3 (A)<br>8.8 (A)  | 7.4 (A)<br>8.9 (A)           | 7.3 (A)<br>9.0 (A)  | 0 (A)<br>9.1 (A)     | 7.3 (A)<br>9.0 (A)   | 7.4 (A)<br>9.2 (A)           | 7.4 (A)<br>9.2 (A)   |
| <b>Fleetwood Drive and Lear Boulevard (#5)</b><br>Two-Way Stop Control<br>Eastbound<br>Westbound            | 0 (A)<br>0 (A)       | 0 (A)<br>0 (A)     | 0 (A)<br>0 (A)       | 0 (A)<br>0 (A)      | 0 (A)<br>0 (A)               | 0 (A)<br>0 (A)      | 0 (A)<br>0 (A)       | 0 (A)<br>0 (A)       | 0 (A)<br>0 (A)               | 0 (A)<br>0 (A)       |

The key intersections are expected to operate at acceptable LOS (as defined by Washoe County) under 2023 existing, 2026 and 2050 background, and 2026 and 2050 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. Limber Pine Drive between Pan American Drive and Lemmon Drive
2. Pan American Drive between Limber Pine Drive and Lear Boulevard
3. Fleetwood Drive between Lemmon Drive and Lear Boulevard
4. Budger Way between Pan American Drive and Fleetwood Drive

### 4.3. Project Access Operational Analysis

The 2026 and 2050 background plus project analyses are based on the lane configuration and intersection control shown in **Figure 6** and traffic volumes in **Figure 9** and **Figure 10**. Calculations are located in **Appendix E**. The results of the LOS analysis for the project access drive onto Pan American Drive are presented in **Table 6**. The proposed project access drives are expected to operate at acceptable LOS in the 2026 and 2050 background plus project AM and PM peak hours.

**Table 6 – Project Access Drive Peak Hour LOS Analysis**

| Intersection                                                                                | 2026 Background Plus Project |             | 2050 Background Plus Project |             |
|---------------------------------------------------------------------------------------------|------------------------------|-------------|------------------------------|-------------|
|                                                                                             | AM                           | PM          | AM                           | PM          |
|                                                                                             | Delay (LOS)                  | Delay (LOS) | Delay (LOS)                  | Delay (LOS) |
| <b>Pan American Drive and Project Access Drive (A)</b><br>Two-Way Stop Control<br>Westbound | 8.8 (A)                      | 8.9 (A)     | 8.8 (A)                      | 8.9 (A)     |
| <b>Pan American Drive and Project Access Drive (B)</b><br>Two-Way Stop Control<br>Westbound | 8.6 (A)                      | 8.6 (A)     | 8.6 (A)                      | 8.6 (A)     |

#### 4.4. Left Turn Storage Bay Analysis

Left turn storage bay analysis was conducted for Limber Pine Drive and Lemmon Drive (#1). The analysis was conducted using the Synchro 11 to obtain 95th percentile queues and are summarized in **Table 7** and provided with the LOS calculations in **Appendix D**. The existing configurations for left turn storage bay was found to have adequate storage length to serve 2026 and 2050 Background plus Project conditions during both the AM and PM peak hours. As such there are no modifications necessary to the existing storage provided.

**Table 7 – Left Turn Storage Bay Analysis**

| Intersection                                                      | Storage Provided (ft) | 2026 Background Plus Project Queue (ft) |      | 2050 Background Plus Project Queue (ft) |      |
|-------------------------------------------------------------------|-----------------------|-----------------------------------------|------|-----------------------------------------|------|
|                                                                   |                       | AM                                      | PM   | AM                                      | PM   |
| <b>Limber Pine Drive and Lemmon Drive (#1)</b><br>Northbound Left | 325'                  | ≤25'                                    | ≤25' | ≤25'                                    | ≤25' |
| <b>Fleetwood Drive and Lemmon Drive (#2)</b><br>Northbound Left   | 50'                   | ≤25'                                    | ≤25' | ≤25'                                    | ≤25' |

## 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 8**. The intersection crashes include those crashes on both the major and minor streets of the key intersections during the three-year analysis period.

**Table 8 – Crash Data Summary**

| Int. Num.    | Intersection Name                  | Total Crashes | Property Damage Only | Injury         | Fatal         |
|--------------|------------------------------------|---------------|----------------------|----------------|---------------|
| 1            | Limber Pine Drive and Lemmon Drive | 2             | 0 (0%)               | 2 (100%)       | 0 (0%)        |
| 2            | Budger Way and Pan American Drive  | 0             | 0 (0%)               | 0 (0%)         | 0 (0%)        |
| 3            | Fleetwood Drive and Lemmon Drive   | 2             | 2 (100%)             | 0 (0%)         | 0 (0%)        |
| 4            | Fleetwood Drive and Budger Way     | 0             | 0 (0%)               | 0 (0%)         | 0 (0%)        |
| 5            | Fleetwood Drive and Lear Boulevard | 0             | 0 (0%)               | 0 (0%)         | 0 (0%)        |
| <b>Total</b> |                                    | <b>4</b>      | <b>2(50%)</b>        | <b>2 (50%)</b> | <b>0 (0%)</b> |

A total of four (4) crashes were recorded at the six (6) intersections in the most recent four-year period. Those four crashes resulted in two (2) property damage only crashes (50%), two (2) injury crashes (50%), 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**



Tang, Alex

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From: Giacomini, 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 Giacomini, P.E., PTOE, RSP<sub>1</sub>**  
**Kimley-Horn** | 7900 Rancharra Parkway, Suite 100, Reno, NV 89511  
Direct: 775 200 1981 | Mobile: 651 497 8220

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From: Fink, Mitchell <MFink@washoecounty.gov>  
Sent: Friday, January 27, 2023 2:56 PM  
To: Giacomini, David <david.giacomini@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](mailto:mfink@washoecounty.gov) | Office: 775.328.2050  
1001 E. 9<sup>th</sup> Street, Reno, NV 89512  
For additional information, email [engineering@washoecounty.gov](mailto: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](mailto:allstars@washoecounty.gov)*

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From: Giacomini, David <[david.giacomin@kimley-horn.com](mailto:david.giacomin@kimley-horn.com)>  
Sent: Thursday, January 26, 2023 2:41 PM  
To: Fink, Mitchell <[MFink@washoecounty.gov](mailto: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, 11<sup>th</sup> 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 Giacomini, P.E., PTOE, RSP<sub>1</sub>**  
**Kimley-Horn** | 7900 Rancharra Parkway, Suite 100, Reno, NV 89511  
Direct: 775 200 1981 | Mobile: 651 497 8220  
Connect with us: [Twitter](#) | [LinkedIn](#) | [Facebook](#) | [YouTube](#)

**APPENDIX B**  
**COUNT DATA**

Lemmon Drive and Limber Pine Drive - TMC

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

Wed Jan 31, 2024

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

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

All Movements

ID: 1152429, Location: 39.63862, -119.842062

| Leg Direction                         | Lemmon Drive Southbound |       |    |       | Lemmon Drive Northbound |       |       |       | West Eastbound |      |    |       | Int   |
|---------------------------------------|-------------------------|-------|----|-------|-------------------------|-------|-------|-------|----------------|------|----|-------|-------|
|                                       | R                       | T     | U  | App   | T                       | L     | U     | App   | R              | L    | U  | App   |       |
| 2024-01-31 12:00AM                    | 1                       | 10    | 0  | 11    | 44                      | 5     | 2     | 51    | 2              | 2    | 0  | 4     | 66    |
| 1:00AM                                | 1                       | 3     | 0  | 4     | 15                      | 8     | 1     | 24    | 5              | 0    | 0  | 5     | 33    |
| 2:00AM                                | 0                       | 14    | 0  | 14    | 8                       | 3     | 1     | 12    | 2              | 0    | 0  | 2     | 28    |
| 3:00AM                                | 0                       | 28    | 0  | 28    | 4                       | 4     | 1     | 9     | 5              | 0    | 0  | 5     | 42    |
| 4:00AM                                | 0                       | 80    | 0  | 80    | 14                      | 7     | 20    | 41    | 14             | 0    | 0  | 14    | 135   |
| 5:00AM                                | 0                       | 260   | 0  | 260   | 26                      | 7     | 15    | 48    | 50             | 0    | 0  | 50    | 358   |
| 6:00AM                                | 1                       | 447   | 0  | 448   | 101                     | 17    | 15    | 133   | 84             | 0    | 0  | 84    | 665   |
| 7:00AM                                | 2                       | 406   | 0  | 408   | 134                     | 17    | 15    | 166   | 75             | 0    | 0  | 75    | 649   |
| 8:00AM                                | 5                       | 327   | 0  | 332   | 205                     | 30    | 35    | 270   | 41             | 1    | 0  | 42    | 644   |
| 9:00AM                                | 6                       | 388   | 0  | 394   | 247                     | 27    | 32    | 306   | 40             | 0    | 0  | 40    | 740   |
| 10:00AM                               | 2                       | 269   | 0  | 271   | 172                     | 29    | 26    | 227   | 26             | 0    | 0  | 26    | 524   |
| 11:00AM                               | 2                       | 223   | 0  | 225   | 191                     | 42    | 35    | 268   | 43             | 0    | 0  | 43    | 536   |
| 12:00PM                               | 2                       | 236   | 0  | 238   | 242                     | 28    | 43    | 313   | 27             | 1    | 0  | 28    | 579   |
| 1:00PM                                | 3                       | 248   | 0  | 251   | 258                     | 35    | 23    | 316   | 34             | 0    | 0  | 34    | 601   |
| 2:00PM                                | 7                       | 343   | 0  | 350   | 429                     | 50    | 25    | 504   | 36             | 0    | 0  | 36    | 890   |
| 3:00PM                                | 3                       | 265   | 0  | 268   | 392                     | 69    | 26    | 487   | 32             | 1    | 0  | 33    | 788   |
| 4:00PM                                | 6                       | 237   | 0  | 243   | 430                     | 81    | 50    | 561   | 35             | 0    | 0  | 35    | 839   |
| 5:00PM                                | 2                       | 257   | 0  | 259   | 328                     | 77    | 52    | 457   | 35             | 0    | 0  | 35    | 751   |
| 6:00PM                                | 2                       | 226   | 0  | 228   | 352                     | 60    | 47    | 459   | 27             | 0    | 0  | 27    | 714   |
| 7:00PM                                | 1                       | 117   | 0  | 118   | 261                     | 73    | 36    | 370   | 26             | 0    | 0  | 26    | 514   |
| 8:00PM                                | 1                       | 83    | 0  | 84    | 199                     | 34    | 24    | 257   | 14             | 0    | 0  | 14    | 355   |
| 9:00PM                                | 1                       | 62    | 0  | 63    | 131                     | 31    | 16    | 178   | 11             | 1    | 0  | 12    | 253   |
| 10:00PM                               | 1                       | 24    | 0  | 25    | 69                      | 18    | 7     | 94    | 12             | 1    | 0  | 13    | 132   |
| 11:00PM                               | 1                       | 17    | 0  | 18    | 32                      | 11    | 2     | 45    | 5              | 0    | 0  | 5     | 68    |
| <b>Total</b>                          | 50                      | 4570  | 0  | 4620  | 4284                    | 763   | 549   | 5596  | 681            | 7    | 0  | 688   | 10904 |
| <b>% Approach</b>                     | 1.1%                    | 98.9% | 0% | -     | 76.6%                   | 13.6% | 9.8%  | -     | 99.0%          | 1.0% | 0% | -     | -     |
| <b>% Total</b>                        | 0.5%                    | 41.9% | 0% | 42.4% | 39.3%                   | 7.0%  | 5.0%  | 51.3% | 6.2%           | 0.1% | 0% | 6.3%  | -     |
| <b>Lights</b>                         | 49                      | 4429  | 0  | 4478  | 4156                    | 742   | 536   | 5434  | 679            | 7    | 0  | 686   | 10598 |
| <b>% Lights</b>                       | 98.0%                   | 96.9% | 0% | 96.9% | 97.0%                   | 97.2% | 97.6% | 97.1% | 99.7%          | 100% | 0% | 99.7% | 97.2% |
| <b>Articulated Trucks</b>             | 0                       | 12    | 0  | 12    | 11                      | 2     | 1     | 14    | 0              | 0    | 0  | 0     | 26    |
| <b>% Articulated Trucks</b>           | 0%                      | 0.3%  | 0% | 0.3%  | 0.3%                    | 0.3%  | 0.2%  | 0.3%  | 0%             | 0%   | 0% | 0%    | 0.2%  |
| <b>Buses and Single-Unit Trucks</b>   | 1                       | 129   | 0  | 130   | 117                     | 19    | 12    | 148   | 2              | 0    | 0  | 2     | 280   |
| <b>% Buses and Single-Unit Trucks</b> | 2.0%                    | 2.8%  | 0% | 2.8%  | 2.7%                    | 2.5%  | 2.2%  | 2.6%  | 0.3%           | 0%   | 0% | 0.3%  | 2.6%  |

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

Lemmon Drive and Limber Pine Drive - TMC

Wed Jan 31, 2024

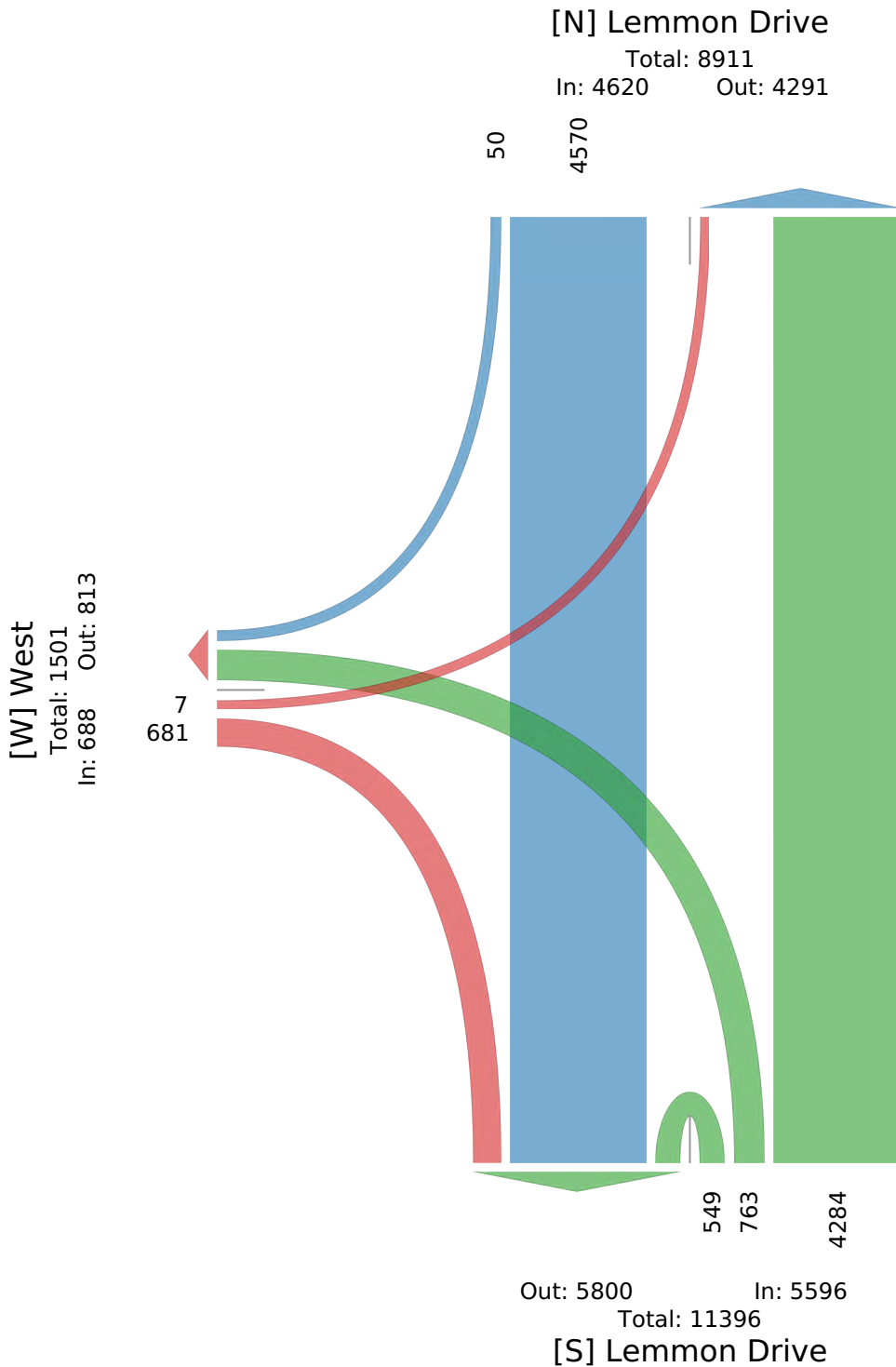
Full Length (12 AM-12 AM (+1))

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

All Movements

ID: 1152429, Location: 39.63862, -119.842062

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



Lemmon Drive and Limber Pine Drive - TMC

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

Wed Jan 31, 2024

AM Peak (8:30 AM - 9:30 AM)

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

All Movements

ID: 1152429, Location: 39.63862, -119.842062

| Leg<br>Direction                      | Lemmon Drive<br>Southbound |            |          |              | Lemmon Drive<br>Northbound |           |           |              | West<br>Eastbound |          |          |              | Int        |
|---------------------------------------|----------------------------|------------|----------|--------------|----------------------------|-----------|-----------|--------------|-------------------|----------|----------|--------------|------------|
|                                       | R                          | T          | U        | App          | T                          | L         | U         | App          | R                 | L        | U        | App          |            |
| Time                                  |                            |            |          |              |                            |           |           |              |                   |          |          |              |            |
| 2024-01-31 8:30AM                     | 2                          | 90         | 0        | <b>92</b>    | 55                         | 7         | 5         | <b>67</b>    | 14                | 0        | 0        | <b>14</b>    | <b>173</b> |
| 8:45AM                                | 2                          | 95         | 0        | <b>97</b>    | 80                         | 8         | 7         | <b>95</b>    | 14                | 0        | 0        | <b>14</b>    | <b>206</b> |
| 9:00AM                                | 3                          | 155        | 0        | <b>158</b>   | 103                        | 8         | 9         | <b>120</b>   | 9                 | 0        | 0        | <b>9</b>     | <b>287</b> |
| 9:15AM                                | 1                          | 89         | 0        | <b>90</b>    | 58                         | 6         | 5         | <b>69</b>    | 10                | 0        | 0        | <b>10</b>    | <b>169</b> |
| <b>Total</b>                          | <b>8</b>                   | <b>429</b> | <b>0</b> | <b>437</b>   | <b>296</b>                 | <b>29</b> | <b>26</b> | <b>351</b>   | <b>47</b>         | <b>0</b> | <b>0</b> | <b>47</b>    | <b>835</b> |
| <b>% Approach</b>                     | 1.8%                       | 98.2%      | 0%       | -            | 84.3%                      | 8.3%      | 7.4%      | -            | 100%              | 0%       | 0%       | -            | -          |
| <b>% Total</b>                        | 1.0%                       | 51.4%      | 0%       | <b>52.3%</b> | 35.4%                      | 3.5%      | 3.1%      | <b>42.0%</b> | 5.6%              | 0%       | 0%       | <b>5.6%</b>  | -          |
| <b>PHF</b>                            | 0.667                      | 0.692      | -        | <b>0.691</b> | 0.718                      | 0.906     | 0.722     | <b>0.731</b> | 0.839             | -        | -        | <b>0.839</b> | 0.727      |
| <b>Lights</b>                         | 8                          | 407        | 0        | <b>415</b>   | 279                        | 27        | 25        | <b>331</b>   | 47                | 0        | 0        | <b>47</b>    | 793        |
| <b>% Lights</b>                       | 100%                       | 94.9%      | 0%       | <b>95.0%</b> | 94.3%                      | 93.1%     | 96.2%     | <b>94.3%</b> | 100%              | 0%       | 0%       | <b>100%</b>  | 95.0%      |
| <b>Articulated Trucks</b>             | 0                          | 1          | 0        | <b>1</b>     | 3                          | 0         | 0         | <b>3</b>     | 0                 | 0        | 0        | <b>0</b>     | 4          |
| <b>% Articulated Trucks</b>           | 0%                         | 0.2%       | 0%       | <b>0.2%</b>  | 1.0%                       | 0%        | 0%        | <b>0.9%</b>  | 0%                | 0%       | 0%       | <b>0%</b>    | 0.5%       |
| <b>Buses and Single-Unit Trucks</b>   | 0                          | 21         | 0        | <b>21</b>    | 14                         | 2         | 1         | <b>17</b>    | 0                 | 0        | 0        | <b>0</b>     | 38         |
| <b>% Buses and Single-Unit Trucks</b> | 0%                         | 4.9%       | 0%       | <b>4.8%</b>  | 4.7%                       | 6.9%      | 3.8%      | <b>4.8%</b>  | 0%                | 0%       | 0%       | <b>0%</b>    | 4.6%       |

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

**Lemmon Drive and Limber Pine Drive - TMC**

Wed Jan 31, 2024

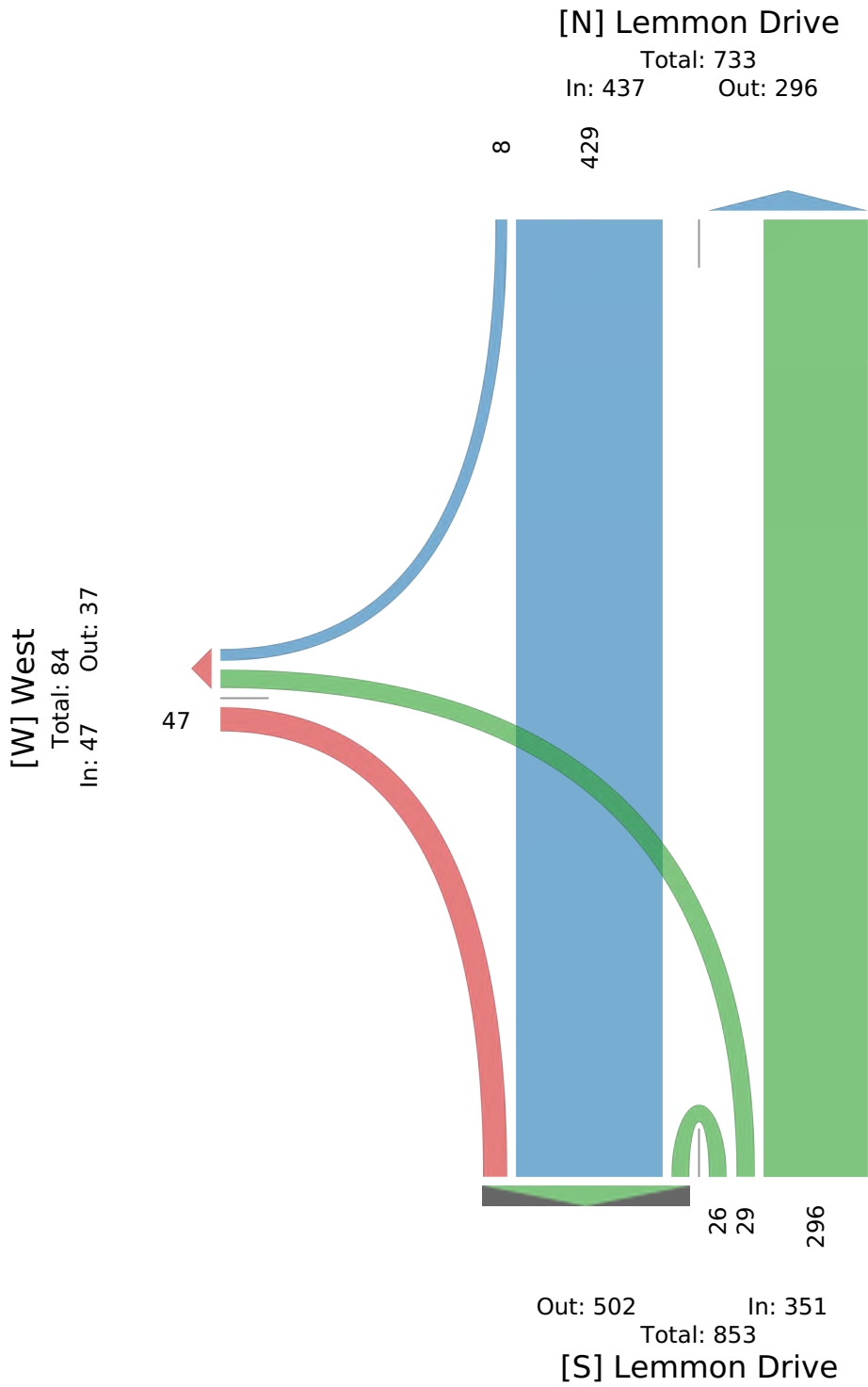
AM Peak (8:30 AM - 9:30 AM)

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

All Movements

ID: 1152429, Location: 39.63862, -119.842062

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



**Lemmon Drive and Limber Pine Drive - TMC**

Wed Jan 31, 2024

Midday Peak (1 PM - 2 PM)

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

All Movements

ID: 1152429, Location: 39.63862, -119.842062

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

| Leg Direction                         | Lemmon Drive Southbound |       |    |       | Lemmon Drive Northbound |       |       |       | West Eastbound |    |    |       | Int   |
|---------------------------------------|-------------------------|-------|----|-------|-------------------------|-------|-------|-------|----------------|----|----|-------|-------|
|                                       | R                       | T     | U  | App   | T                       | L     | U     | App   | R              | L  | U  | App   |       |
| 2024-01-31 1:00PM                     | 1                       | 56    | 0  | 57    | 55                      | 6     | 3     | 64    | 9              | 0  | 0  | 9     | 130   |
| 1:15PM                                | 0                       | 63    | 0  | 63    | 63                      | 10    | 7     | 80    | 10             | 0  | 0  | 10    | 153   |
| 1:30PM                                | 0                       | 64    | 0  | 64    | 63                      | 6     | 7     | 76    | 7              | 0  | 0  | 7     | 147   |
| 1:45PM                                | 2                       | 65    | 0  | 67    | 77                      | 13    | 6     | 96    | 8              | 0  | 0  | 8     | 171   |
| <b>Total</b>                          | 3                       | 248   | 0  | 251   | 258                     | 35    | 23    | 316   | 34             | 0  | 0  | 34    | 601   |
| <b>% Approach</b>                     | 1.2%                    | 98.8% | 0% | -     | 81.6%                   | 11.1% | 7.3%  | -     | 100%           | 0% | 0% | -     | -     |
| <b>% Total</b>                        | 0.5%                    | 41.3% | 0% | 41.8% | 42.9%                   | 5.8%  | 3.8%  | 52.6% | 5.7%           | 0% | 0% | 5.7%  | -     |
| <b>PHF</b>                            | 0.375                   | 0.954 | -  | 0.937 | 0.838                   | 0.673 | 0.821 | 0.823 | 0.850          | -  | -  | 0.850 | 0.879 |
| <b>Lights</b>                         | 3                       | 238   | 0  | 241   | 252                     | 34    | 22    | 308   | 34             | 0  | 0  | 34    | 583   |
| <b>% Lights</b>                       | 100%                    | 96.0% | 0% | 96.0% | 97.7%                   | 97.1% | 95.7% | 97.5% | 100%           | 0% | 0% | 100%  | 97.0% |
| <b>Articulated Trucks</b>             | 0                       | 1     | 0  | 1     | 0                       | 0     | 0     | 0     | 0              | 0  | 0  | 0     | 1     |
| <b>% Articulated Trucks</b>           | 0%                      | 0.4%  | 0% | 0.4%  | 0%                      | 0%    | 0%    | 0%    | 0%             | 0% | 0% | 0%    | 0.2%  |
| <b>Buses and Single-Unit Trucks</b>   | 0                       | 9     | 0  | 9     | 6                       | 1     | 1     | 8     | 0              | 0  | 0  | 0     | 17    |
| <b>% Buses and Single-Unit Trucks</b> | 0%                      | 3.6%  | 0% | 3.6%  | 2.3%                    | 2.9%  | 4.3%  | 2.5%  | 0%             | 0% | 0% | 0%    | 2.8%  |

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



Lemmon Drive and Limber Pine Drive - TMC

Wed Jan 31, 2024

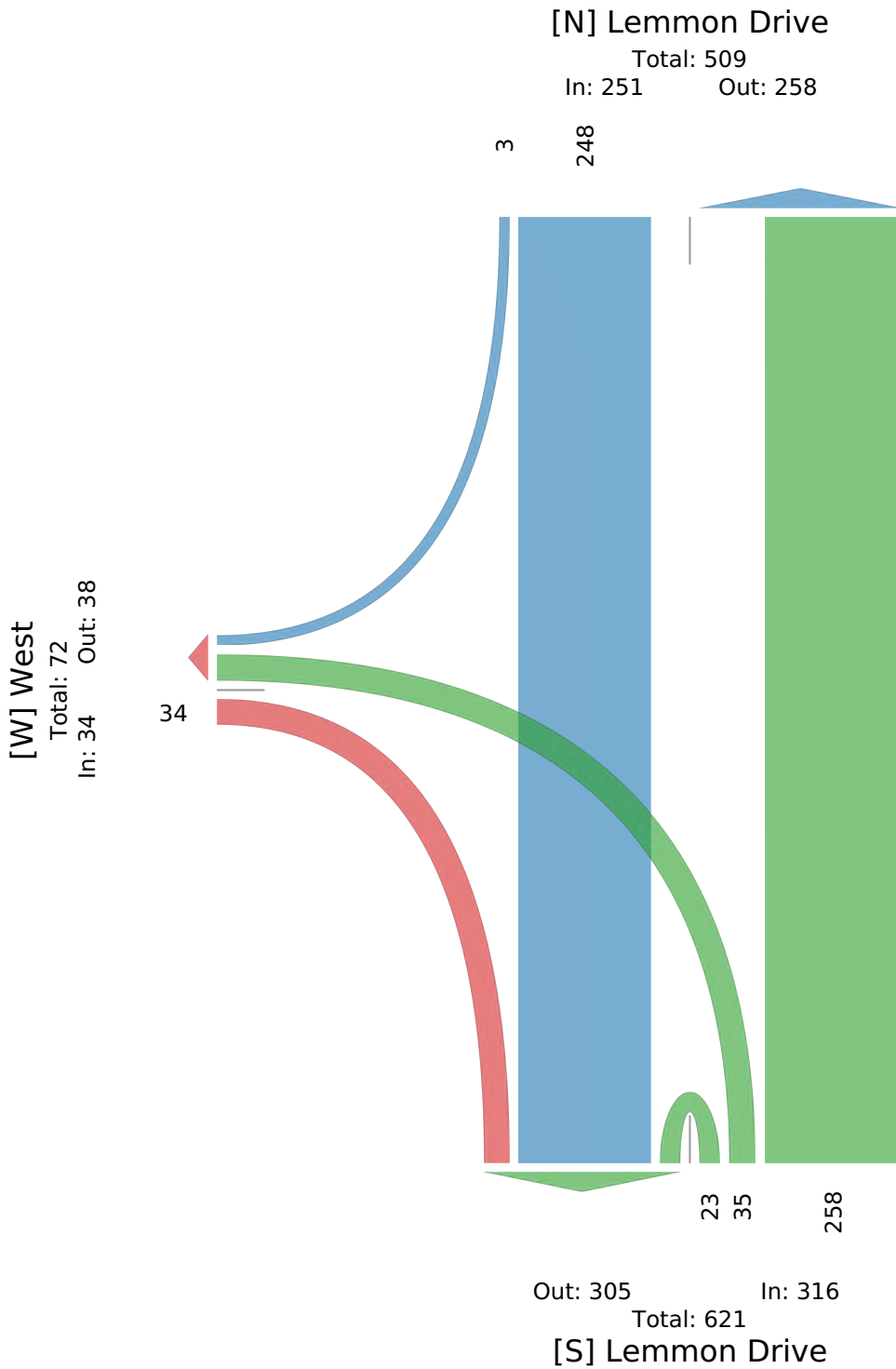
Midday Peak (1 PM - 2 PM)

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

All Movements

ID: 1152429, Location: 39.63862, -119.842062

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



**Lemmon Drive and Limber Pine Drive - TMC**

Wed Jan 31, 2024

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

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

All Movements

ID: 1152429, Location: 39.63862, -119.842062

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

| Leg Direction                         | Lemmon Drive Southbound |       |    |       | Lemmon Drive Northbound |       |       |       | West Eastbound |    |    |       | Int   |
|---------------------------------------|-------------------------|-------|----|-------|-------------------------|-------|-------|-------|----------------|----|----|-------|-------|
|                                       | R                       | T     | U  | App   | T                       | L     | U     | App   | R              | L  | U  | App   |       |
| 2024-01-31 2:00PM                     | 0                       | 72    | 0  | 72    | 111                     | 10    | 9     | 130   | 11             | 0  | 0  | 11    | 213   |
| 2:15PM                                | 3                       | 58    | 0  | 61    | 141                     | 14    | 9     | 164   | 16             | 0  | 0  | 16    | 241   |
| 2:30PM                                | 2                       | 146   | 0  | 148   | 91                      | 10    | 3     | 104   | 3              | 0  | 0  | 3     | 255   |
| 2:45PM                                | 2                       | 67    | 0  | 69    | 86                      | 16    | 4     | 106   | 6              | 0  | 0  | 6     | 181   |
| <b>Total</b>                          | 7                       | 343   | 0  | 350   | 429                     | 50    | 25    | 504   | 36             | 0  | 0  | 36    | 890   |
| <b>% Approach</b>                     | 2.0%                    | 98.0% | 0% | -     | 85.1%                   | 9.9%  | 5.0%  | -     | 100%           | 0% | 0% | -     | -     |
| <b>% Total</b>                        | 0.8%                    | 38.5% | 0% | 39.3% | 48.2%                   | 5.6%  | 2.8%  | 56.6% | 4.0%           | 0% | 0% | 4.0%  | -     |
| <b>PHF</b>                            | 0.583                   | 0.587 | -  | 0.591 | 0.761                   | 0.781 | 0.694 | 0.768 | 0.563          | -  | -  | 0.563 | 0.873 |
| <b>Lights</b>                         | 6                       | 325   | 0  | 331   | 416                     | 49    | 24    | 489   | 36             | 0  | 0  | 36    | 856   |
| <b>% Lights</b>                       | 85.7%                   | 94.8% | 0% | 94.6% | 97.0%                   | 98.0% | 96.0% | 97.0% | 100%           | 0% | 0% | 100%  | 96.2% |
| <b>Articulated Trucks</b>             | 0                       | 0     | 0  | 0     | 0                       | 0     | 0     | 0     | 0              | 0  | 0  | 0     | 0     |
| <b>% Articulated Trucks</b>           | 0%                      | 0%    | 0% | 0%    | 0%                      | 0%    | 0%    | 0%    | 0%             | 0% | 0% | 0%    | 0%    |
| <b>Buses and Single-Unit Trucks</b>   | 1                       | 18    | 0  | 19    | 13                      | 1     | 1     | 15    | 0              | 0  | 0  | 0     | 34    |
| <b>% Buses and Single-Unit Trucks</b> | 14.3%                   | 5.2%  | 0% | 5.4%  | 3.0%                    | 2.0%  | 4.0%  | 3.0%  | 0%             | 0% | 0% | 0%    | 3.8%  |

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

Lemmon Drive and Limber Pine Drive - TMC

Wed Jan 31, 2024

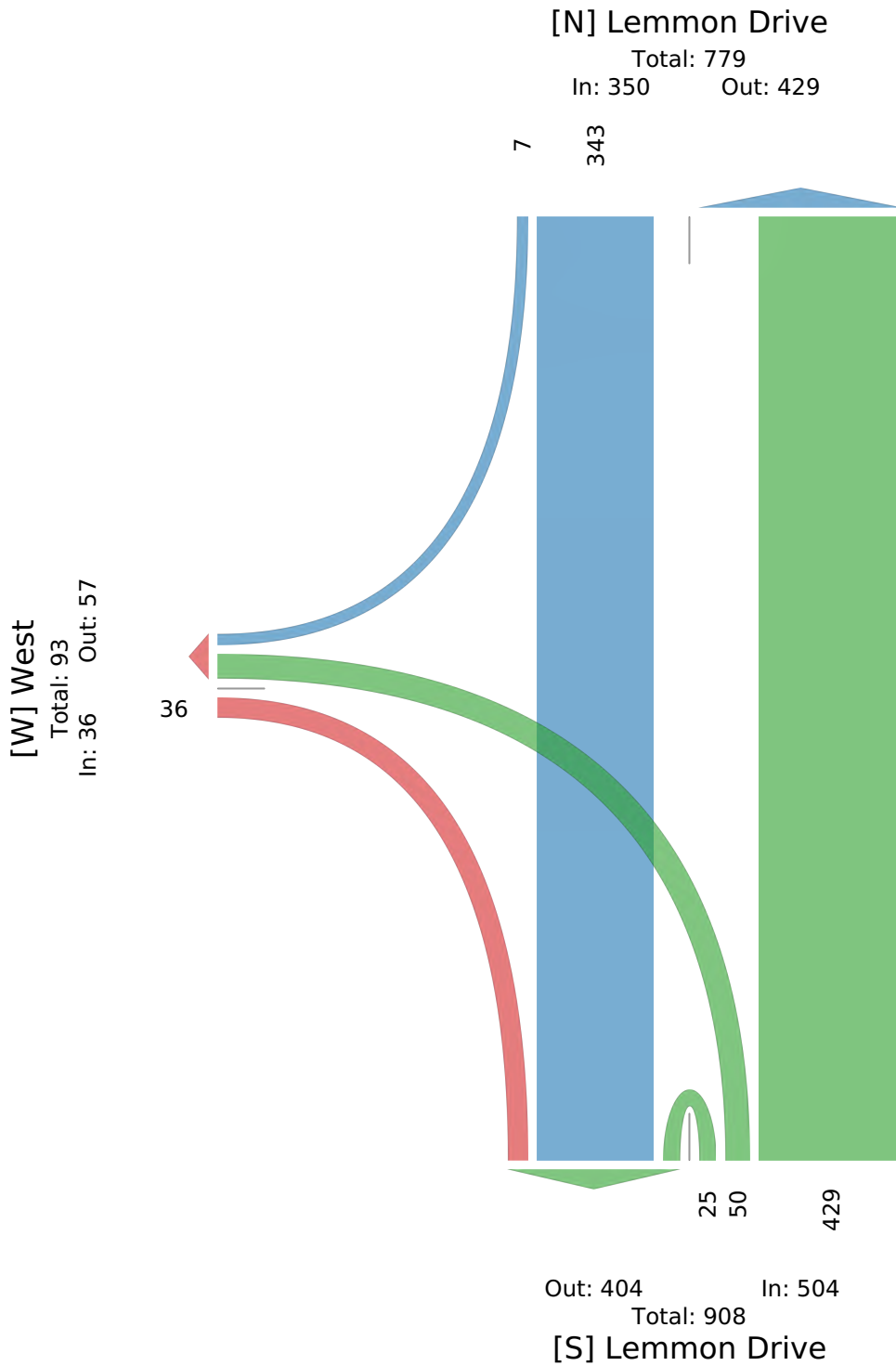
PM Peak (2 PM - 3 PM) - Overall Peak Hour

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

All Movements

ID: 1152429, Location: 39.63862, -119.842062

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

**[N] Pan American Drive**

Total: 14  
In: 7      Out: 7

3      22



3  
21  
Out: 38    In: 24  
Total: 62  
[E] Budger Way

Out: 24      In: 38  
Total: 62

**[S] Pan American Drive**

**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.  
767 Eustis Street, Suite 100, Saint Paul, MN, 55114, US

| Leg<br>Direction                      | Pan American Drive<br>Northbound |    |    |       | Pan American Drive<br>Southbound |    |    |       | Budger Way<br>Westbound |       |    |       | Int   |
|---------------------------------------|----------------------------------|----|----|-------|----------------------------------|----|----|-------|-------------------------|-------|----|-------|-------|
|                                       | R                                | T  | U  | App   | T                                | L  | U  | App   | R                       | L     | U  | App   |       |
| 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     |
| <b>Total</b>                          | 10                               | 0  | 0  | 10    | 1                                | 0  | 0  | 1     | 0                       | 5     | 0  | 5     | 16    |
| <b>% Approach</b>                     | 100%                             | 0% | 0% | -     | 100%                             | 0% | 0% | -     | 0%                      | 100%  | 0% | -     | -     |
| <b>% Total</b>                        | 62.5%                            | 0% | 0% | 62.5% | 6.3%                             | 0% | 0% | 6.3%  | 0%                      | 31.3% | 0% | 31.3% | -     |
| <b>PHF</b>                            | 0.625                            | -  | -  | 0.625 | 0.250                            | -  | -  | 0.250 | -                       | 0.417 | -  | 0.417 | 0.571 |
| <b>Lights</b>                         | 10                               | 0  | 0  | 10    | 1                                | 0  | 0  | 1     | 0                       | 5     | 0  | 5     | 16    |
| <b>% Lights</b>                       | 100%                             | 0% | 0% | 100%  | 100%                             | 0% | 0% | 100%  | 0%                      | 100%  | 0% | 100%  | 100%  |
| <b>Articulated Trucks</b>             | 0                                | 0  | 0  | 0     | 0                                | 0  | 0  | 0     | 0                       | 0     | 0  | 0     | 0     |
| <b>% Articulated Trucks</b>           | 0%                               | 0% | 0% | 0%    | 0%                               | 0% | 0% | 0%    | 0%                      | 0%    | 0% | 0%    | 0%    |
| <b>Buses and Single-Unit Trucks</b>   | 0                                | 0  | 0  | 0     | 0                                | 0  | 0  | 0     | 0                       | 0     | 0  | 0     | 0     |
| <b>% Buses and Single-Unit Trucks</b> | 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.  
767 Eustis Street, Suite 100, Saint Paul, MN, 55114, US

**[N] Pan American Drive**

Total: 1  
In: 1 Out: 0

1



5

Out: 10 In: 5  
Total: 15  
[E] Budger Way

10

Out: 6 In: 10  
Total: 16

**[S] Pan American Drive**

**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 Direction                         | Pan American Drive Northbound |    |    |       | Pan American Drive Southbound |       |       |       | Budger Way Westbound |       |    |       | Int   |
|---------------------------------------|-------------------------------|----|----|-------|-------------------------------|-------|-------|-------|----------------------|-------|----|-------|-------|
|                                       | R                             | T  | U  | App   | T                             | L     | U     | App   | R                    | L     | U  | App   |       |
| 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     |
| <b>Total</b>                          | 9                             | 0  | 0  | 9     | 1                             | 1     | 2     | 4     | 3                    | 8     | 0  | 11    | 24    |
| <b>% Approach</b>                     | 100%                          | 0% | 0% | -     | 25.0%                         | 25.0% | 50.0% | -     | 27.3%                | 72.7% | 0% | -     | -     |
| <b>% Total</b>                        | 37.5%                         | 0% | 0% | 37.5% | 4.2%                          | 4.2%  | 8.3%  | 16.7% | 12.5%                | 33.3% | 0% | 45.8% | -     |
| <b>PHF</b>                            | 0.750                         | -  | -  | 0.750 | 0.250                         | 0.250 | 0.250 | 0.333 | 0.750                | 0.333 | -  | 0.393 | 0.667 |
| <b>Lights</b>                         | 9                             | 0  | 0  | 9     | 1                             | 1     | 2     | 4     | 3                    | 8     | 0  | 11    | 24    |
| <b>% Lights</b>                       | 100%                          | 0% | 0% | 100%  | 100%                          | 100%  | 100%  | 100%  | 100%                 | 100%  | 0% | 100%  | 100%  |
| <b>Articulated Trucks</b>             | 0                             | 0  | 0  | 0     | 0                             | 0     | 0     | 0     | 0                    | 0     | 0  | 0     | 0     |
| <b>% Articulated Trucks</b>           | 0%                            | 0% | 0% | 0%    | 0%                            | 0%    | 0%    | 0%    | 0%                   | 0%    | 0% | 0%    | 0%    |
| <b>Buses and Single-Unit Trucks</b>   | 0                             | 0  | 0  | 0     | 0                             | 0     | 0     | 0     | 0                    | 0     | 0  | 0     | 0     |
| <b>% Buses and Single-Unit Trucks</b> | 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.  
767 Eustis Street, Suite 100, Saint Paul, MN, 55114, US

**[N] Pan American Drive**

Total: 9  
In: 4    Out: 5

1    1 2



3  
8  
Out: 10    In: 11  
Total: 21  
**[E] Budger Way**

Out: 9    In: 9  
Total: 18  
**[S] Pan American Drive**

**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 Direction                         | Lemmon Drive Northbound |       |      |       | Lemmon Drive Southbound |       |    |       | Fleetwood Drive Eastbound |      |    |       | Int   |
|---------------------------------------|-------------------------|-------|------|-------|-------------------------|-------|----|-------|---------------------------|------|----|-------|-------|
|                                       | T                       | L     | U    | App   | R                       | T     | U  | App   | R                         | L    | U  | App   |       |
| 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     |
| <b>Total</b>                          | 1124                    | 245   | 5    | 1374  | 6                       | 1025  | 0  | 1031  | 238                       | 7    | 0  | 245   | 2650  |
| <b>% Approach</b>                     | 81.8%                   | 17.8% | 0.4% | -     | 0.6%                    | 99.4% | 0% | -     | 97.1%                     | 2.9% | 0% | -     | -     |
| <b>% Total</b>                        | 42.4%                   | 9.2%  | 0.2% | 51.8% | 0.2%                    | 38.7% | 0% | 38.9% | 9.0%                      | 0.3% | 0% | 9.2%  | -     |
| <b>Lights</b>                         | 1107                    | 241   | 5    | 1353  | 5                       | 1006  | 0  | 1011  | 234                       | 7    | 0  | 241   | 2605  |
| <b>% Lights</b>                       | 98.5%                   | 98.4% | 100% | 98.5% | 83.3%                   | 98.1% | 0% | 98.1% | 98.3%                     | 100% | 0% | 98.4% | 98.3% |
| <b>Articulated Trucks</b>             | 2                       | 0     | 0    | 2     | 0                       | 1     | 0  | 1     | 0                         | 0    | 0  | 0     | 3     |
| <b>% Articulated Trucks</b>           | 0.2%                    | 0%    | 0%   | 0.1%  | 0%                      | 0.1%  | 0% | 0.1%  | 0%                        | 0%   | 0% | 0%    | 0.1%  |
| <b>Buses and Single-Unit Trucks</b>   | 15                      | 4     | 0    | 19    | 1                       | 18    | 0  | 19    | 4                         | 0    | 0  | 4     | 42    |
| <b>% Buses and Single-Unit Trucks</b> | 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

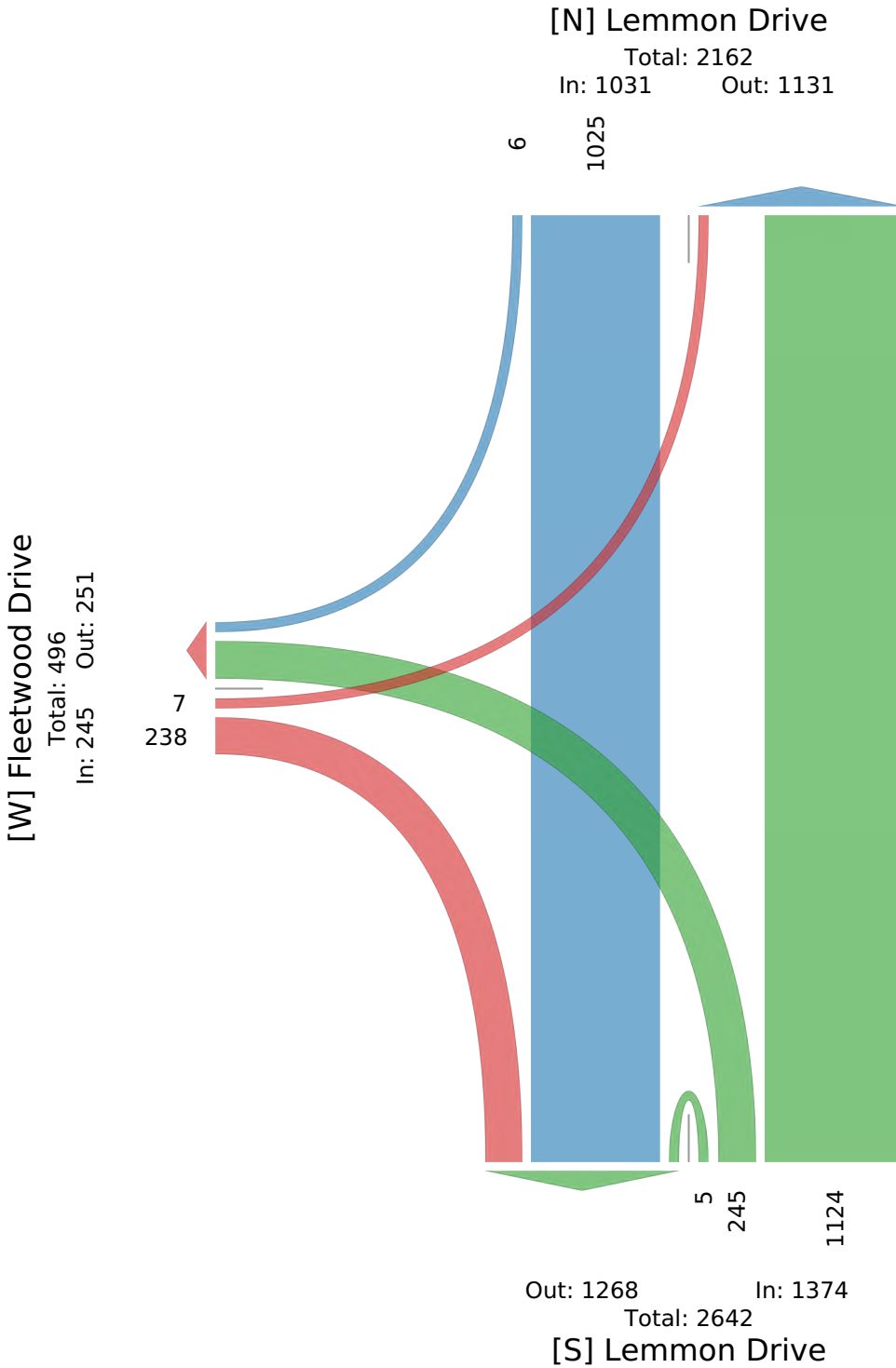
Full Length (7 AM-9 AM, 4 PM-6 PM)

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**

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

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

| Leg<br>Direction                      | Lemmon Drive<br>Northbound |       |    |       | Lemmon Drive<br>Southbound |       |    |       | Fleetwood Drive<br>Eastbound |       |    |       | Int   |
|---------------------------------------|----------------------------|-------|----|-------|----------------------------|-------|----|-------|------------------------------|-------|----|-------|-------|
|                                       | T                          | L     | U  | App   | R                          | T     | U  | App   | R                            | L     | U  | App   |       |
| 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   |
| <b>Total</b>                          | 109                        | 33    | 0  | 142   | 1                          | 357   | 0  | 358   | 69                           | 2     | 0  | 71    | 571   |
| <b>% Approach</b>                     | 76.8%                      | 23.2% | 0% | -     | 0.3%                       | 99.7% | 0% | -     | 97.2%                        | 2.8%  | 0% | -     | -     |
| <b>% Total</b>                        | 19.1%                      | 5.8%  | 0% | 24.9% | 0.2%                       | 62.5% | 0% | 62.7% | 12.1%                        | 0.4%  | 0% | 12.4% | -     |
| <b>PHF</b>                            | 0.779                      | 0.750 | -  | 0.772 | 0.250                      | 0.920 | -  | 0.913 | 0.690                        | 0.500 | -  | 0.710 | 0.903 |
| <b>Lights</b>                         | 101                        | 31    | 0  | 132   | 1                          | 354   | 0  | 355   | 67                           | 2     | 0  | 69    | 556   |
| <b>% Lights</b>                       | 92.7%                      | 93.9% | 0% | 93.0% | 100%                       | 99.2% | 0% | 99.2% | 97.1%                        | 100%  | 0% | 97.2% | 97.4% |
| <b>Articulated Trucks</b>             | 2                          | 0     | 0  | 2     | 0                          | 0     | 0  | 0     | 0                            | 0     | 0  | 0     | 2     |
| <b>% Articulated Trucks</b>           | 1.8%                       | 0%    | 0% | 1.4%  | 0%                         | 0%    | 0% | 0%    | 0%                           | 0%    | 0% | 0%    | 0.4%  |
| <b>Buses and Single-Unit Trucks</b>   | 6                          | 2     | 0  | 8     | 0                          | 3     | 0  | 3     | 2                            | 0     | 0  | 2     | 13    |
| <b>% Buses and Single-Unit Trucks</b> | 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

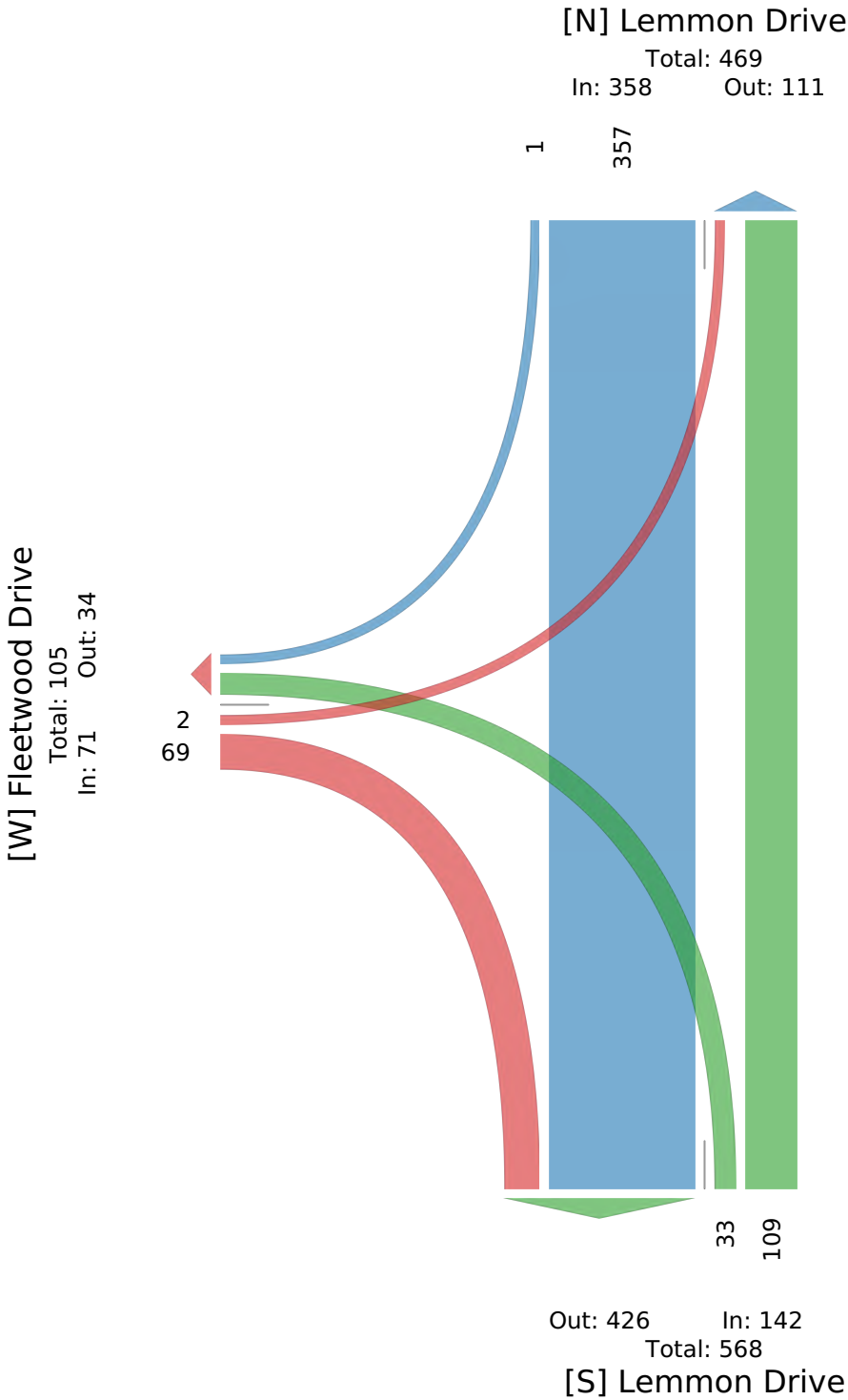
AM Peak (7 AM - 8 AM)

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<br>Direction                      | Lemmon Drive<br>Northbound |       |       |       | Lemmon Drive<br>Southbound |       |    |       | Fleetwood Drive<br>Eastbound |    |    |       | Int   |
|---------------------------------------|----------------------------|-------|-------|-------|----------------------------|-------|----|-------|------------------------------|----|----|-------|-------|
|                                       | T                          | L     | U     | App   | R                          | T     | U  | App   | R                            | L  | U  | App   |       |
| 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   |
| <b>Total</b>                          | 445                        | 89    | 1     | 535   | 0                          | 219   | 0  | 219   | 50                           | 0  | 0  | 50    | 804   |
| <b>% Approach</b>                     | 83.2%                      | 16.6% | 0.2%  | -     | 0%                         | 100%  | 0% | -     | 100%                         | 0% | 0% | -     | -     |
| <b>% Total</b>                        | 55.3%                      | 11.1% | 0.1%  | 66.5% | 0%                         | 27.2% | 0% | 27.2% | 6.2%                         | 0% | 0% | 6.2%  | -     |
| <b>PHF</b>                            | 0.818                      | 0.601 | 0.250 | 0.773 | -                          | 0.793 | -  | 0.793 | 0.694                        | -  | -  | 0.694 | 0.866 |
| <b>Lights</b>                         | 442                        | 87    | 1     | 530   | 0                          | 215   | 0  | 215   | 49                           | 0  | 0  | 49    | 794   |
| <b>% Lights</b>                       | 99.3%                      | 97.8% | 100%  | 99.1% | 0%                         | 98.2% | 0% | 98.2% | 98.0%                        | 0% | 0% | 98.0% | 98.8% |
| <b>Articulated Trucks</b>             | 0                          | 0     | 0     | 0     | 0                          | 0     | 0  | 0     | 0                            | 0  | 0  | 0     | 0     |
| <b>% Articulated Trucks</b>           | 0%                         | 0%    | 0%    | 0%    | 0%                         | 0%    | 0% | 0%    | 0%                           | 0% | 0% | 0%    | 0%    |
| <b>Buses and Single-Unit Trucks</b>   | 3                          | 2     | 0     | 5     | 0                          | 4     | 0  | 4     | 1                            | 0  | 0  | 1     | 10    |
| <b>% Buses and Single-Unit Trucks</b> | 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

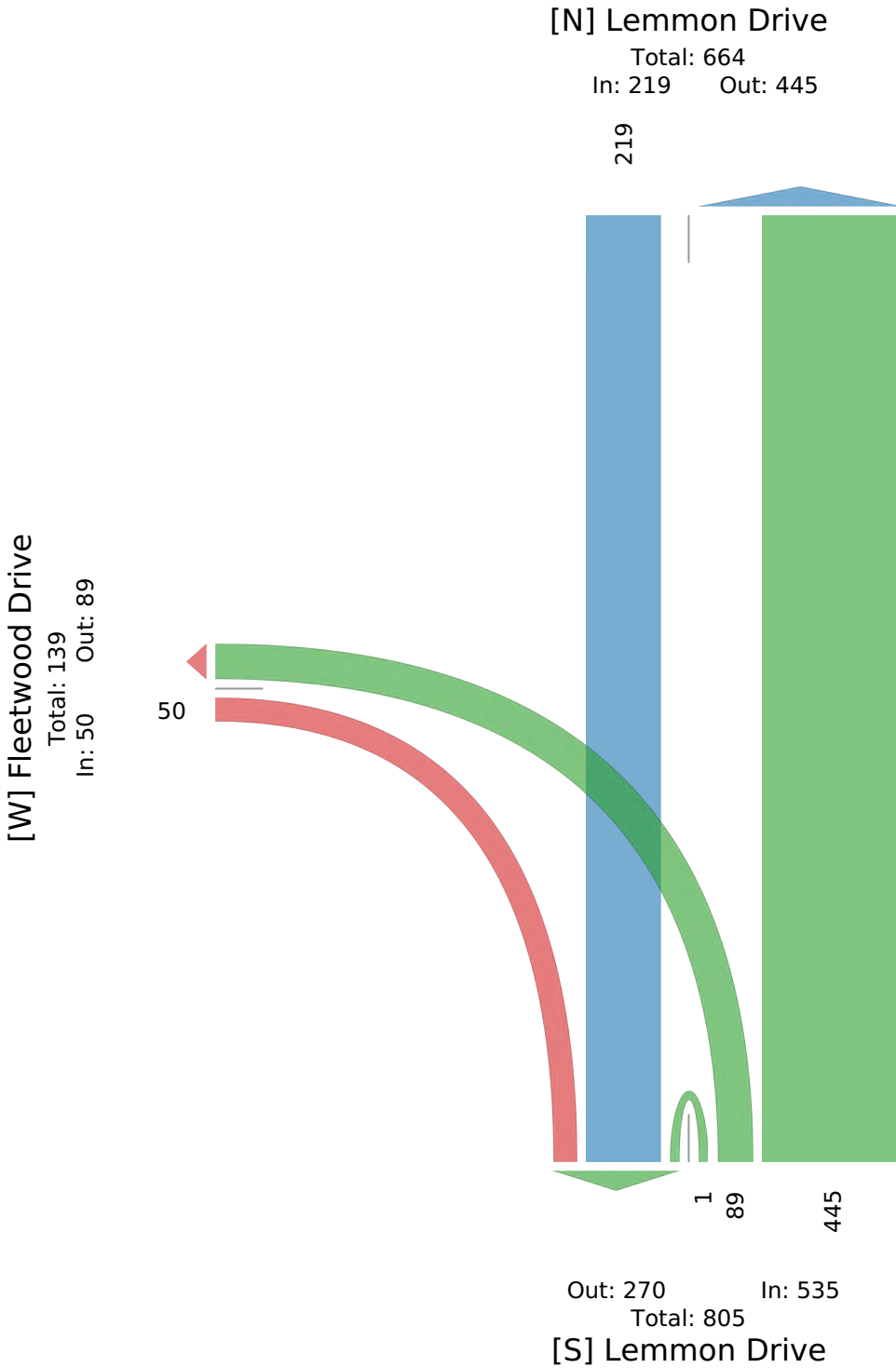
PM Peak (4 PM - 5 PM) - Overall Peak Hour

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 Direction                         | Fleetwood Drive Northbound |       |    |       | Fleetwood Drive Southbound |       |    |       | Budger Way Eastbound |       |    |       | Int   |
|---------------------------------------|----------------------------|-------|----|-------|----------------------------|-------|----|-------|----------------------|-------|----|-------|-------|
|                                       | T                          | L     | U  | App   | R                          | T     | U  | App   | R                    | L     | U  | App   |       |
| 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     |
| <b>Total</b>                          | 120                        | 12    | 0  | 132   | 17                         | 109   | 0  | 126   | 17                   | 28    | 0  | 45    | 303   |
| <b>% Approach</b>                     | 90.9%                      | 9.1%  | 0% | -     | 13.5%                      | 86.5% | 0% | -     | 37.8%                | 62.2% | 0% | -     | -     |
| <b>% Total</b>                        | 39.6%                      | 4.0%  | 0% | 43.6% | 5.6%                       | 36.0% | 0% | 41.6% | 5.6%                 | 9.2%  | 0% | 14.9% | -     |
| <b>Lights</b>                         | 120                        | 11    | 0  | 131   | 17                         | 106   | 0  | 123   | 17                   | 27    | 0  | 44    | 298   |
| <b>% Lights</b>                       | 100%                       | 91.7% | 0% | 99.2% | 100%                       | 97.2% | 0% | 97.6% | 100%                 | 96.4% | 0% | 97.8% | 98.3% |
| <b>Articulated Trucks</b>             | 0                          | 0     | 0  | 0     | 0                          | 0     | 0  | 0     | 0                    | 0     | 0  | 0     | 0     |
| <b>% Articulated Trucks</b>           | 0%                         | 0%    | 0% | 0%    | 0%                         | 0%    | 0% | 0%    | 0%                   | 0%    | 0% | 0%    | 0%    |
| <b>Buses and Single-Unit Trucks</b>   | 0                          | 1     | 0  | 1     | 0                          | 3     | 0  | 3     | 0                    | 1     | 0  | 1     | 5     |
| <b>% Buses and Single-Unit Trucks</b> | 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

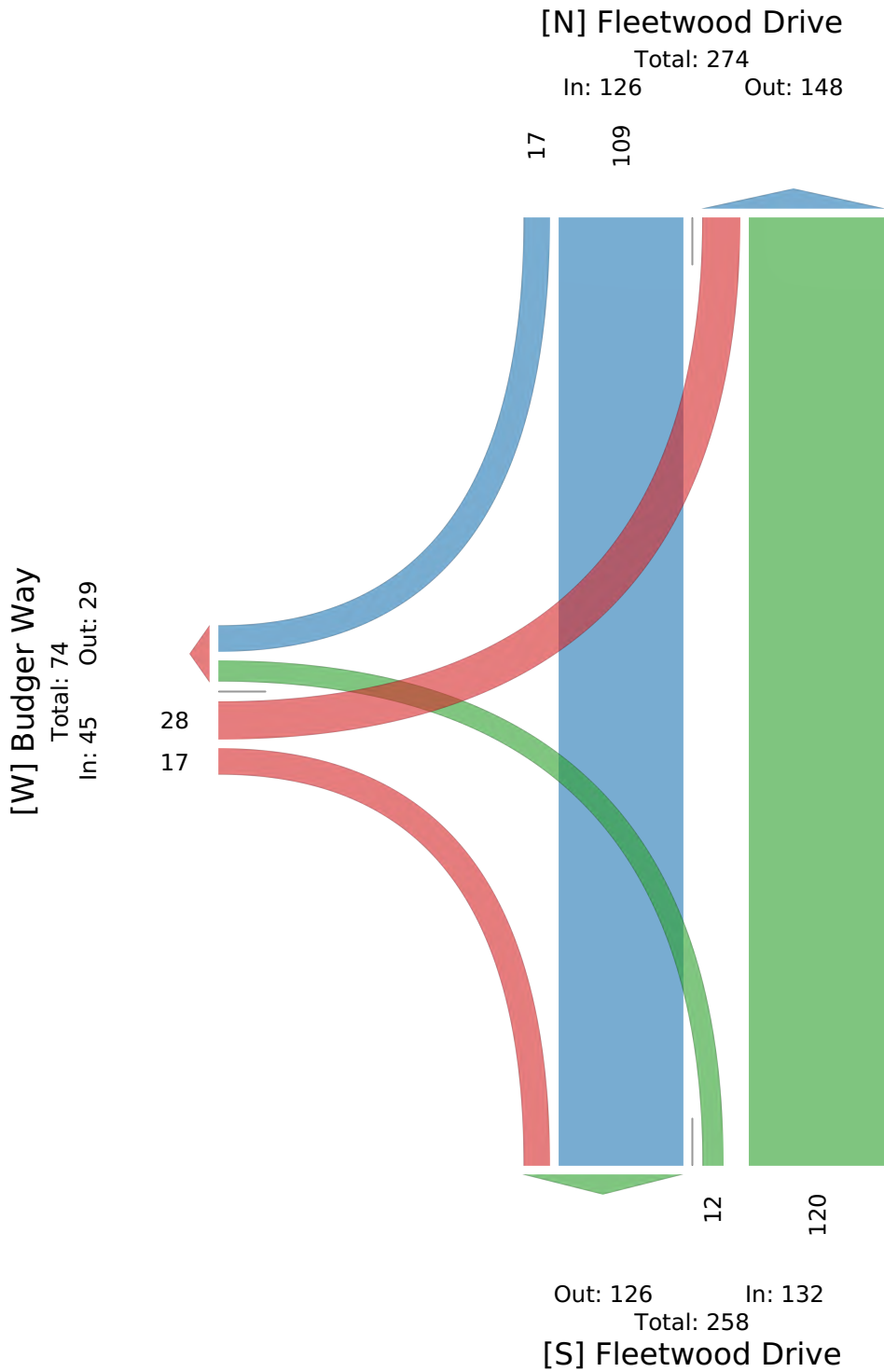
Full Length (7 AM-9 AM, 4 PM-6 PM)

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    |
| <b>Total</b>                          | 20                         | 0  | 0  | 20    | 4                          | 37    | 0  | 41    | 3                    | 7     | 0  | 10    | 71    |
| <b>% Approach</b>                     | 100%                       | 0% | 0% | -     | 9.8%                       | 90.2% | 0% | -     | 30.0%                | 70.0% | 0% | -     | -     |
| <b>% Total</b>                        | 28.2%                      | 0% | 0% | 28.2% | 5.6%                       | 52.1% | 0% | 57.7% | 4.2%                 | 9.9%  | 0% | 14.1% | -     |
| <b>PHF</b>                            | 0.833                      | -  | -  | 0.833 | 0.333                      | 0.712 | -  | 0.641 | 0.375                | 0.583 | -  | 0.500 | 0.683 |
| <b>Lights</b>                         | 20                         | 0  | 0  | 20    | 4                          | 36    | 0  | 40    | 3                    | 7     | 0  | 10    | 70    |
| <b>% Lights</b>                       | 100%                       | 0% | 0% | 100%  | 100%                       | 97.3% | 0% | 97.6% | 100%                 | 100%  | 0% | 100%  | 98.6% |
| <b>Articulated Trucks</b>             | 0                          | 0  | 0  | 0     | 0                          | 0     | 0  | 0     | 0                    | 0     | 0  | 0     | 0     |
| <b>% Articulated Trucks</b>           | 0%                         | 0% | 0% | 0%    | 0%                         | 0%    | 0% | 0%    | 0%                   | 0%    | 0% | 0%    | 0%    |
| <b>Buses and Single-Unit Trucks</b>   | 0                          | 0  | 0  | 0     | 0                          | 1     | 0  | 1     | 0                    | 0     | 0  | 0     | 1     |
| <b>% Buses and Single-Unit Trucks</b> | 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

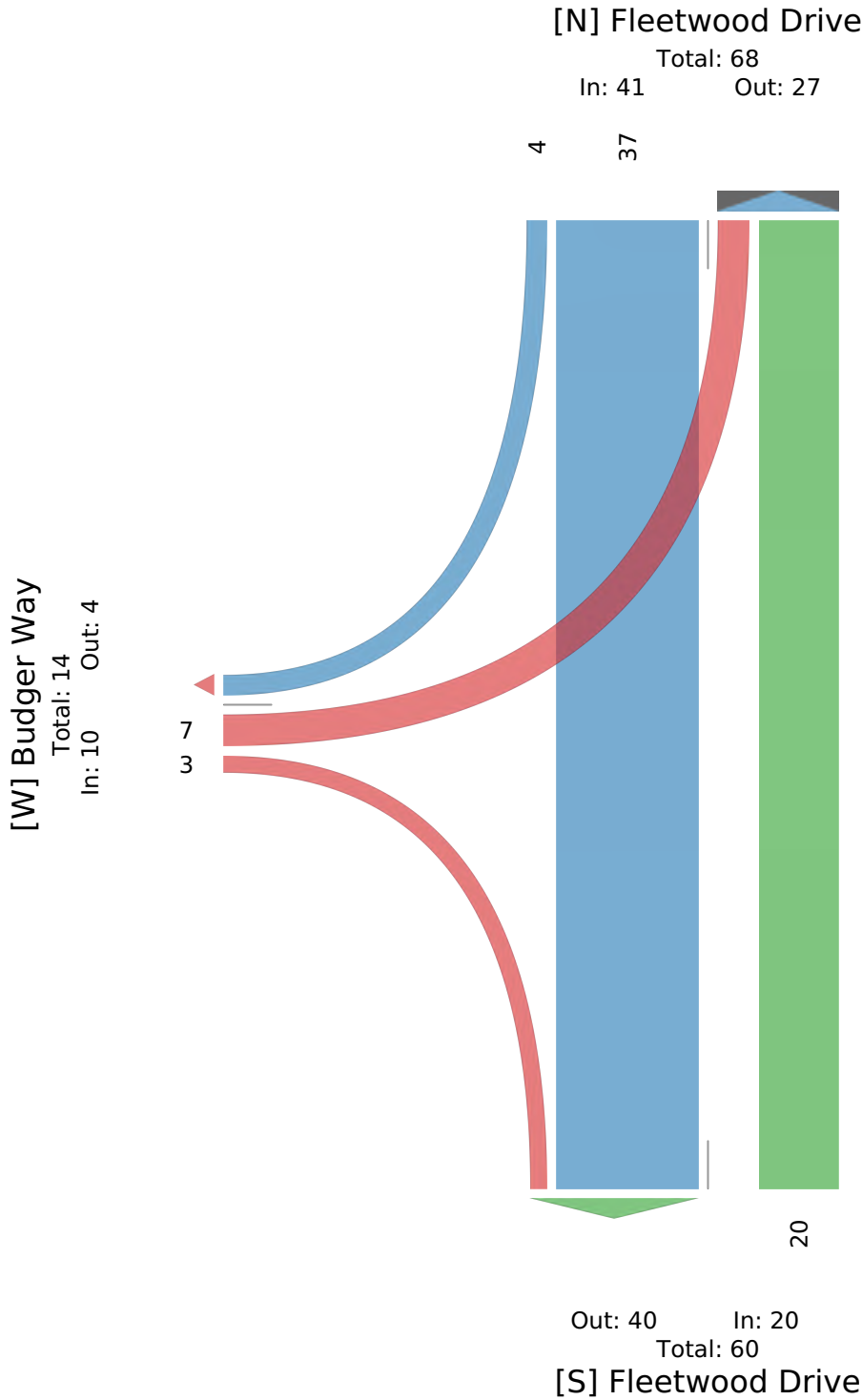
AM Peak (7 AM - 8 AM)

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**

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

| Leg<br>Direction                      | Fleetwood Drive<br>Northbound |       |    |       | Fleetwood Drive<br>Southbound |       |    |       | Budger Way<br>Eastbound |       |    |       | Int   |
|---------------------------------------|-------------------------------|-------|----|-------|-------------------------------|-------|----|-------|-------------------------|-------|----|-------|-------|
|                                       | T                             | L     | U  | App   | R                             | T     | U  | App   | R                       | L     | U  | App   |       |
| 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    |
| <b>Total</b>                          | 37                            | 6     | 0  | 43    | 8                             | 27    | 0  | 35    | 4                       | 7     | 0  | 11    | 89    |
| <b>% Approach</b>                     | 86.0%                         | 14.0% | 0% | -     | 22.9%                         | 77.1% | 0% | -     | 36.4%                   | 63.6% | 0% | -     | -     |
| <b>% Total</b>                        | 41.6%                         | 6.7%  | 0% | 48.3% | 9.0%                          | 30.3% | 0% | 39.3% | 4.5%                    | 7.9%  | 0% | 12.4% | -     |
| <b>PHF</b>                            | 0.712                         | 0.750 | -  | 0.717 | 0.400                         | 0.675 | -  | 0.795 | 0.500                   | 0.438 | -  | 0.550 | 0.927 |
| <b>Lights</b>                         | 37                            | 6     | 0  | 43    | 8                             | 27    | 0  | 35    | 4                       | 7     | 0  | 11    | 89    |
| <b>% Lights</b>                       | 100%                          | 100%  | 0% | 100%  | 100%                          | 100%  | 0% | 100%  | 100%                    | 100%  | 0% | 100%  | 100%  |
| <b>Articulated Trucks</b>             | 0                             | 0     | 0  | 0     | 0                             | 0     | 0  | 0     | 0                       | 0     | 0  | 0     | 0     |
| <b>% Articulated Trucks</b>           | 0%                            | 0%    | 0% | 0%    | 0%                            | 0%    | 0% | 0%    | 0%                      | 0%    | 0% | 0%    | 0%    |
| <b>Buses and Single-Unit Trucks</b>   | 0                             | 0     | 0  | 0     | 0                             | 0     | 0  | 0     | 0                       | 0     | 0  | 0     | 0     |
| <b>% Buses and Single-Unit Trucks</b> | 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

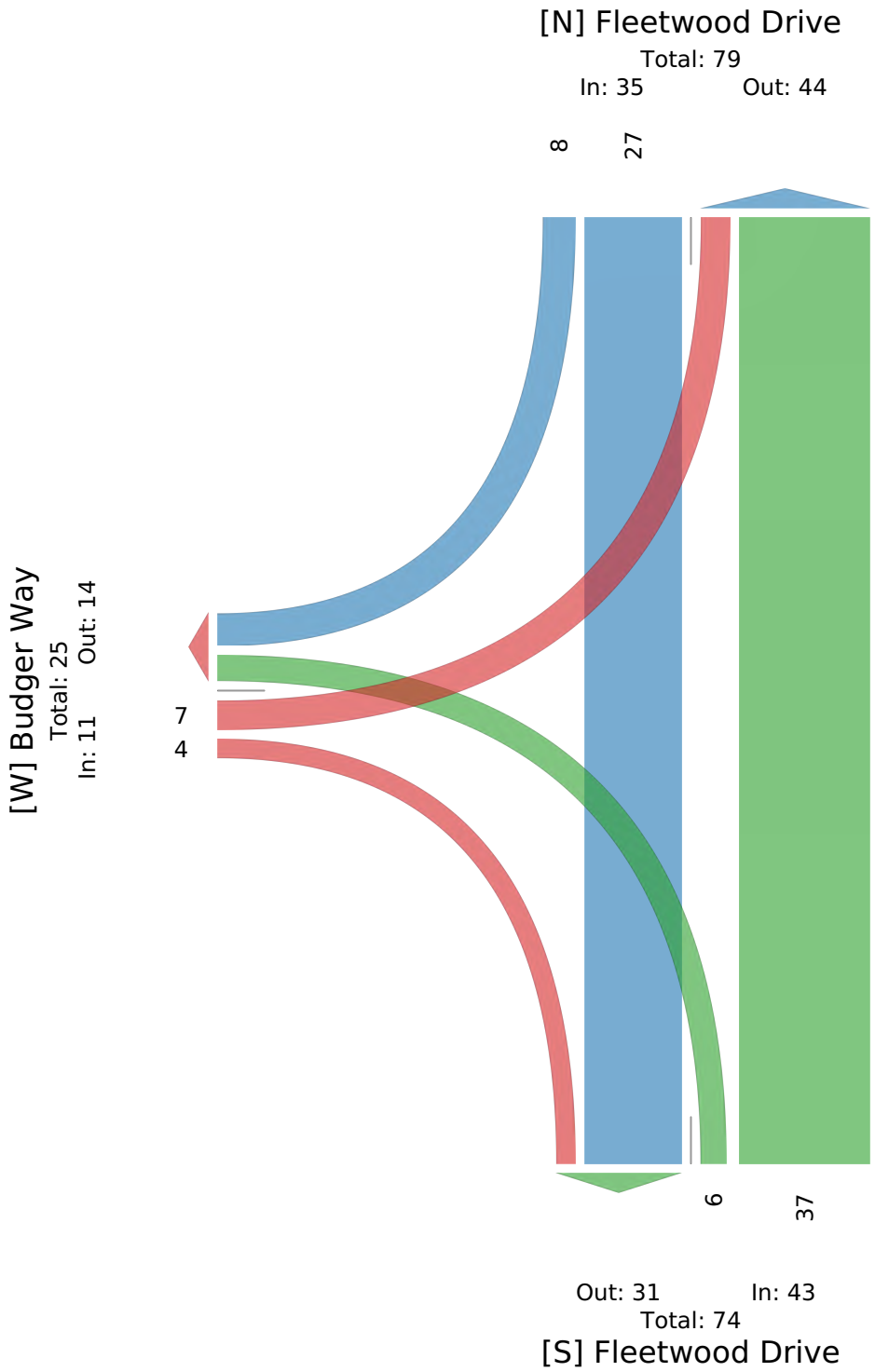
PM Peak (4:45 PM - 5:45 PM) - Overall Peak Hour

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



**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 Direction                         | Fleetwood Drive Northbound |       |    |    |       | Fleetwood Drive Southbound |       |    |    |       | Lear Boulevard Eastbound |    |    |    |       | Lear Boulevard Westbound |    |    |    |     | Int |    |    |    |    |      |
|---------------------------------------|----------------------------|-------|----|----|-------|----------------------------|-------|----|----|-------|--------------------------|----|----|----|-------|--------------------------|----|----|----|-----|-----|----|----|----|----|------|
|                                       | R                          | T     | L  | U  | App   | R                          | T     | L  | U  | App   | R                        | T  | L  | U  | App   | R                        | T  | L  | U  | App |     |    |    |    |    |      |
| 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   | 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   | 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   | 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   | 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   | 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   | 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   | 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   | 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   | 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   | 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   | 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   | 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   | 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   | 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   | 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   | 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   | 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   | 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   | 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   | 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   | 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   | 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   | 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   | 0  | 0  | 0  | 0  | 0    |
| <b>Total</b>                          | 0                          | 1     | 0  | 0  | 1     | 0                          | 2     | 0  | 0  | 2     | 2                        | 0  | 0  | 0  | 2     | 0                        | 0  | 0  | 0  | 0   | 0   | 0  | 0  | 0  | 0  | 5    |
| <b>% Approach</b>                     | 0%                         | 100%  | 0% | 0% | -     | 0%                         | 100%  | 0% | 0% | -     | 100%                     | 0% | 0% | 0% | -     | 0%                       | 0% | 0% | 0% | -   | -   | -  | -  | -  | -  | -    |
| <b>% Total</b>                        | 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%  | 0%  | 0% | 0% | 0% | 0% | -    |
| <b>Lights</b>                         | 0                          | 1     | 0  | 0  | 1     | 0                          | 2     | 0  | 0  | 2     | 2                        | 0  | 0  | 0  | 2     | 0                        | 0  | 0  | 0  | 0   | 0   | 0  | 0  | 0  | 0  | 5    |
| <b>% Lights</b>                       | 0%                         | 100%  | 0% | 0% | 100%  | 0%                         | 100%  | 0% | 0% | 100%  | 100%                     | 0% | 0% | 0% | 100%  | 0%                       | 0% | 0% | 0% | 0%  | -   | -  | -  | -  | -  | 100% |
| <b>Articulated Trucks</b>             | 0                          | 0     | 0  | 0  | 0     | 0                          | 0     | 0  | 0  | 0     | 0                        | 0  | 0  | 0  | 0     | 0                        | 0  | 0  | 0  | 0   | 0   | 0  | 0  | 0  | 0  | 0    |
| <b>% Articulated Trucks</b>           | 0%                         | 0%    | 0% | 0% | 0%    | 0%                         | 0%    | 0% | 0% | 0%    | 0%                       | 0% | 0% | 0% | 0%    | 0%                       | 0% | 0% | 0% | 0%  | -   | -  | -  | -  | -  | 0%   |
| <b>Buses and Single-Unit Trucks</b>   | 0                          | 0     | 0  | 0  | 0     | 0                          | 0     | 0  | 0  | 0     | 0                        | 0  | 0  | 0  | 0     | 0                        | 0  | 0  | 0  | 0   | 0   | 0  | 0  | 0  | 0  | 0    |
| <b>% Buses and Single-Unit Trucks</b> | 0%                         | 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

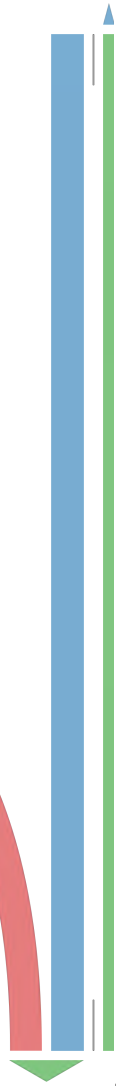
ID: 1035398, Location: 39.646782, -119.843895

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

**[N] Fleetwood Drive**

Total: 3  
In: 2      Out: 1

2



**[W] Lear Boulevard**

Total: 2  
In: 2      Out: 0

2

Out: 4      In: 1  
Total: 5

**[S] Fleetwood Drive**

**Fleetwood Drive and Lear Boulevard - TMC**

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

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

| Leg<br>Direction                      | Fleetwood Drive<br>Northbound |       |    |    |       | Fleetwood Drive<br>Southbound |       |    |    |       | Lear Boulevard<br>Eastbound |    |    |    |     | Lear Boulevard<br>Westbound |    |    |    |     | Int |       |
|---------------------------------------|-------------------------------|-------|----|----|-------|-------------------------------|-------|----|----|-------|-----------------------------|----|----|----|-----|-----------------------------|----|----|----|-----|-----|-------|
|                                       | R                             | T     | L  | U  | App   | R                             | T     | L  | U  | App   | R                           | T  | L  | U  | App | R                           | T  | L  | U  | App |     |       |
| 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   | 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   | 0     |
| 8:30AM                                | 0                             | 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   | 0     |
| <b>Total</b>                          | 0                             | 1     | 0  | 0  | 1     | 0                             | 1     | 0  | 0  | 1     | 0                           | 0  | 0  | 0  | 0   | 0                           | 0  | 0  | 0  | 0   | 0   | 2     |
| <b>% Approach</b>                     | 0%                            | 100%  | 0% | 0% | -     | 0%                            | 100%  | 0% | 0% | -     | 0%                          | 0% | 0% | 0% | -   | 0%                          | 0% | 0% | 0% | -   | -   | -     |
| <b>% Total</b>                        | 0%                            | 50.0% | 0% | 0% | 50.0% | 0%                            | 50.0% | 0% | 0% | 50.0% | 0%                          | 0% | 0% | 0% | 0%  | 0%                          | 0% | 0% | 0% | 0%  | 0%  | -     |
| <b>PHF</b>                            | -                             | 0.250 | -  | -  | 0.250 | -                             | 0.250 | -  | -  | 0.250 | -                           | -  | -  | -  | -   | -                           | -  | -  | -  | -   | -   | 0.250 |
| <b>Lights</b>                         | 0                             | 1     | 0  | 0  | 1     | 0                             | 1     | 0  | 0  | 1     | 0                           | 0  | 0  | 0  | 0   | 0                           | 0  | 0  | 0  | 0   | 0   | 2     |
| <b>% Lights</b>                       | 0%                            | 100%  | 0% | 0% | 100%  | 0%                            | 100%  | 0% | 0% | 100%  | 0%                          | 0% | 0% | 0% | -   | 0%                          | 0% | 0% | 0% | -   | -   | 100%  |
| <b>Articulated Trucks</b>             | 0                             | 0     | 0  | 0  | 0     | 0                             | 0     | 0  | 0  | 0     | 0                           | 0  | 0  | 0  | 0   | 0                           | 0  | 0  | 0  | 0   | 0   | 0     |
| <b>% Articulated Trucks</b>           | 0%                            | 0%    | 0% | 0% | 0%    | 0%                            | 0%    | 0% | 0% | 0%    | 0%                          | 0% | 0% | 0% | -   | 0%                          | 0% | 0% | 0% | -   | -   | 0%    |
| <b>Buses and Single-Unit Trucks</b>   | 0                             | 0     | 0  | 0  | 0     | 0                             | 0     | 0  | 0  | 0     | 0                           | 0  | 0  | 0  | 0   | 0                           | 0  | 0  | 0  | 0   | 0   | 0     |
| <b>% Buses and Single-Unit Trucks</b> | 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

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

**[N] Fleetwood Drive**

Total: 2

In: 1      Out: 1



Out: 1      In: 1

Total: 2

**[S] Fleetwood Drive**

**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 Direction                         | Fleetwood Drive Northbound |    |    |    |           | Fleetwood Drive Southbound |       |    |    |              | Lear Boulevard Eastbound |    |    |    |              | Lear Boulevard Westbound |    |    |    |           | Int   |
|---------------------------------------|----------------------------|----|----|----|-----------|----------------------------|-------|----|----|--------------|--------------------------|----|----|----|--------------|--------------------------|----|----|----|-----------|-------|
|                                       | R                          | T  | L  | U  | App       | R                          | T     | L  | U  | App          | R                        | T  | L  | U  | App          | R                        | T  | L  | U  | App       |       |
| 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     |
| <b>Total</b>                          | 0                          | 0  | 0  | 0  | 0         | 0                          | 1     | 0  | 0  | 1            | 2                        | 0  | 0  | 0  | 2            | 0                        | 0  | 0  | 0  | 0         | 3     |
| <b>% Approach</b>                     | 0%                         | 0% | 0% | 0% | -         | 0%                         | 100%  | 0% | 0% | -            | 100%                     | 0% | 0% | 0% | -            | 0%                       | 0% | 0% | 0% | -         | -     |
| <b>% Total</b>                        | 0%                         | 0% | 0% | 0% | <b>0%</b> | 0%                         | 33.3% | 0% | 0% | <b>33.3%</b> | 66.7%                    | 0% | 0% | 0% | <b>66.7%</b> | 0%                       | 0% | 0% | 0% | <b>0%</b> | -     |
| <b>PHF</b>                            | -                          | -  | -  | -  | -         | -                          | 0.250 | -  | -  | <b>0.250</b> | 0.250                    | -  | -  | -  | <b>0.250</b> | -                        | -  | -  | -  | -         | 0.375 |
| <b>Lights</b>                         | 0                          | 0  | 0  | 0  | 0         | 0                          | 1     | 0  | 0  | 1            | 2                        | 0  | 0  | 0  | 2            | 0                        | 0  | 0  | 0  | 0         | 3     |
| <b>% Lights</b>                       | 0%                         | 0% | 0% | 0% | -         | 0%                         | 100%  | 0% | 0% | <b>100%</b>  | 100%                     | 0% | 0% | 0% | <b>100%</b>  | 0%                       | 0% | 0% | 0% | -         | 100%  |
| <b>Articulated Trucks</b>             | 0                          | 0  | 0  | 0  | 0         | 0                          | 0     | 0  | 0  | 0            | 0                        | 0  | 0  | 0  | 0            | 0                        | 0  | 0  | 0  | 0         | 0     |
| <b>% Articulated Trucks</b>           | 0%                         | 0% | 0% | 0% | -         | 0%                         | 0%    | 0% | 0% | <b>0%</b>    | 0%                       | 0% | 0% | 0% | <b>0%</b>    | 0%                       | 0% | 0% | 0% | -         | 0%    |
| <b>Buses and Single-Unit Trucks</b>   | 0                          | 0  | 0  | 0  | 0         | 0                          | 0     | 0  | 0  | 0            | 0                        | 0  | 0  | 0  | 0            | 0                        | 0  | 0  | 0  | 0         | 0     |
| <b>% Buses and Single-Unit Trucks</b> | 0%                         | 0% | 0% | 0% | -         | 0%                         | 0%    | 0% | 0% | <b>0%</b>    | 0%                       | 0% | 0% | 0% | <b>0%</b>    | 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

**[N] Fleetwood Drive**

Total: 1  
In: 1 Out: 0

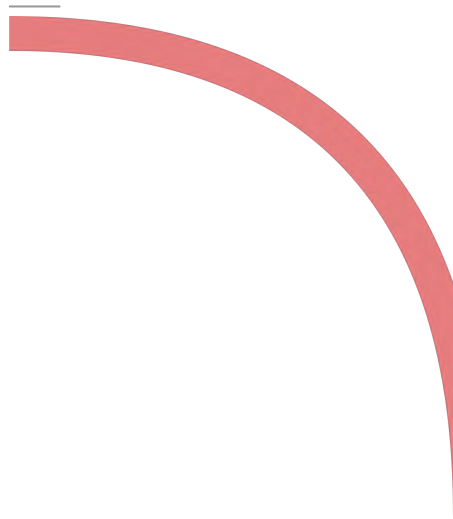
1



**[W] Lear Boulevard**

Total: 2  
In: 2 Out: 0

2



Out: 3 In: 0  
Total: 3

**[S] Fleetwood Drive**



**APPENDIX C**  
**TRIP GENERATION CALCULATIONS**

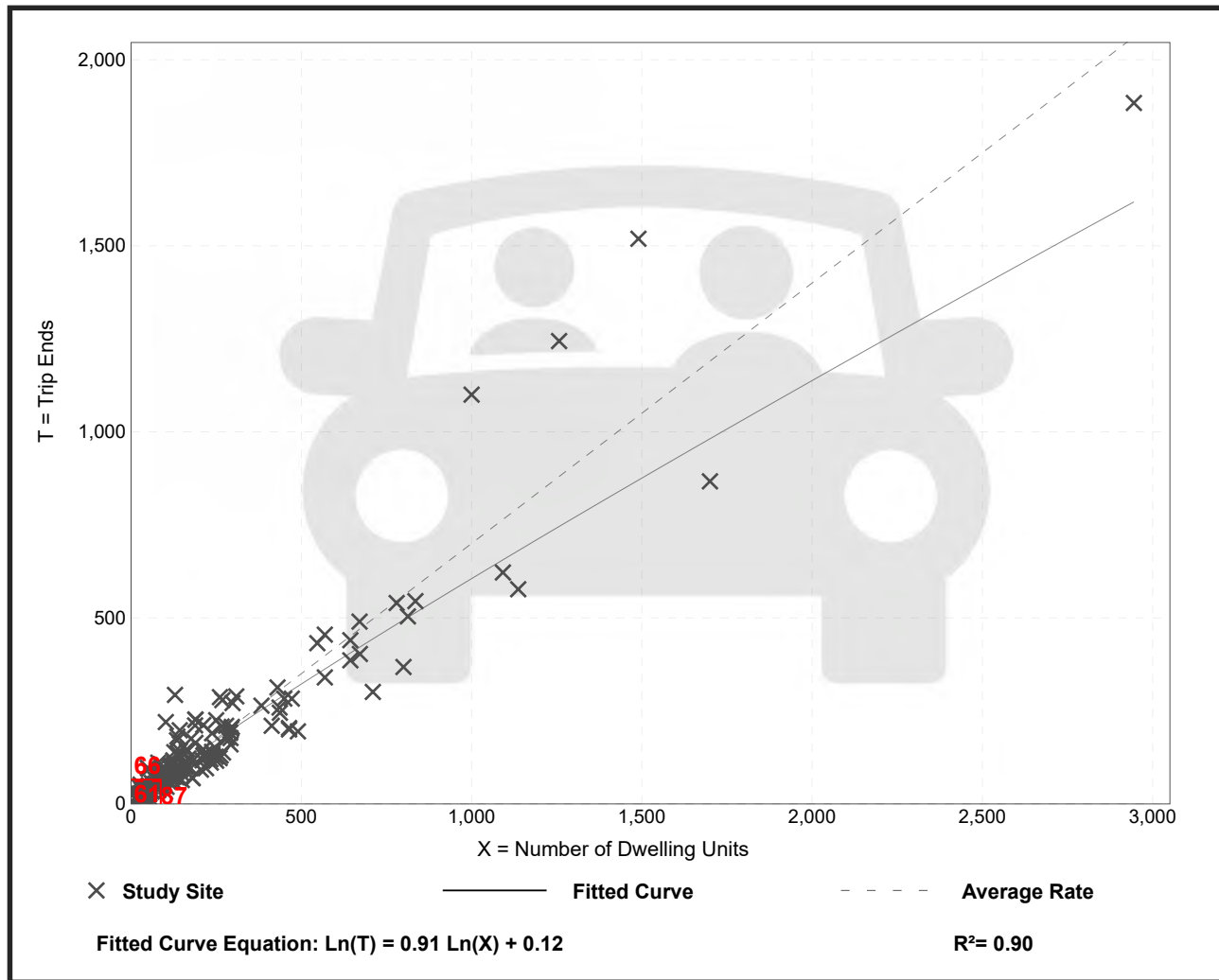
# Single-Family Detached Housing (210)

**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



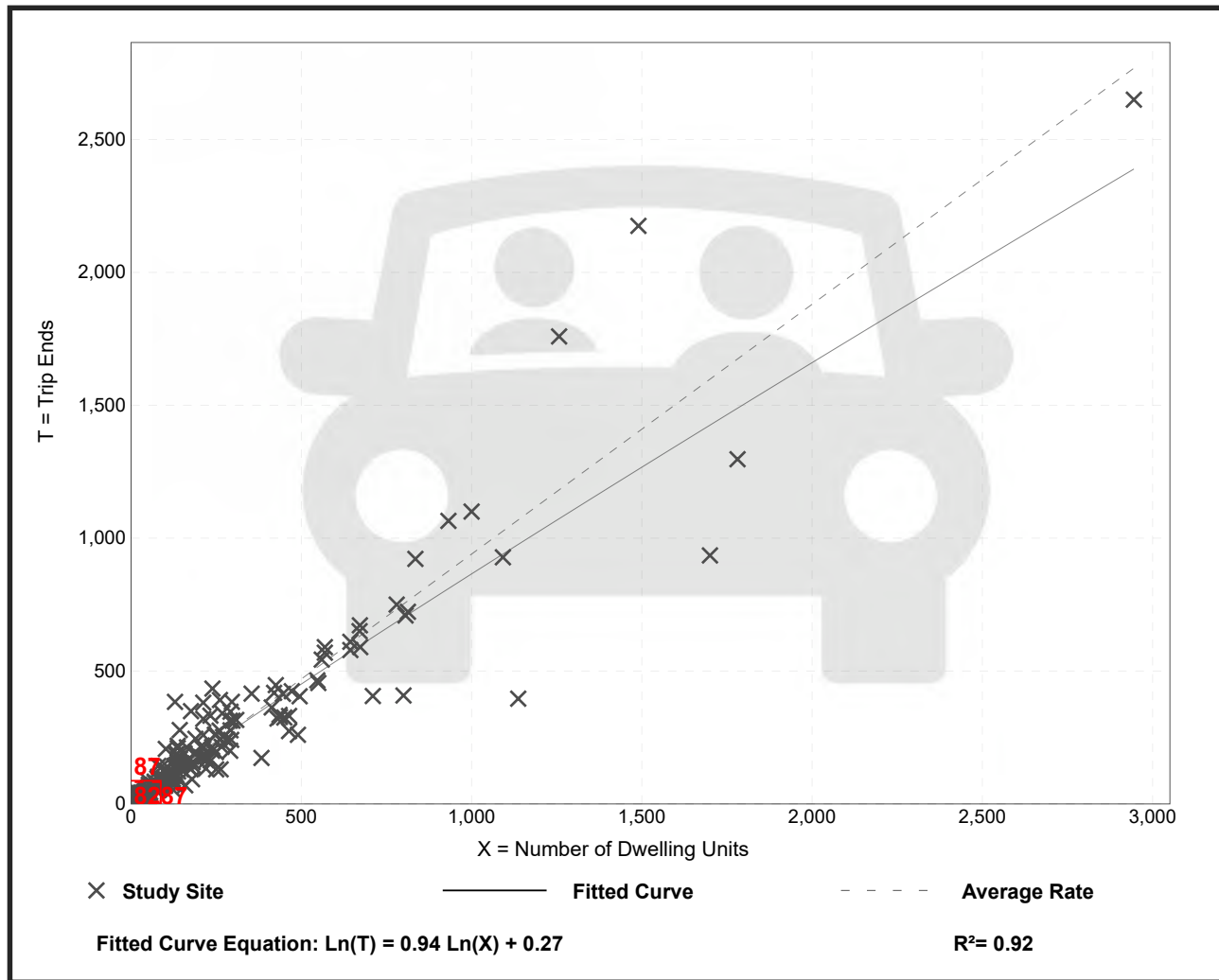
# Single-Family Detached Housing (210)

**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



# Single-Family Detached Housing (210)

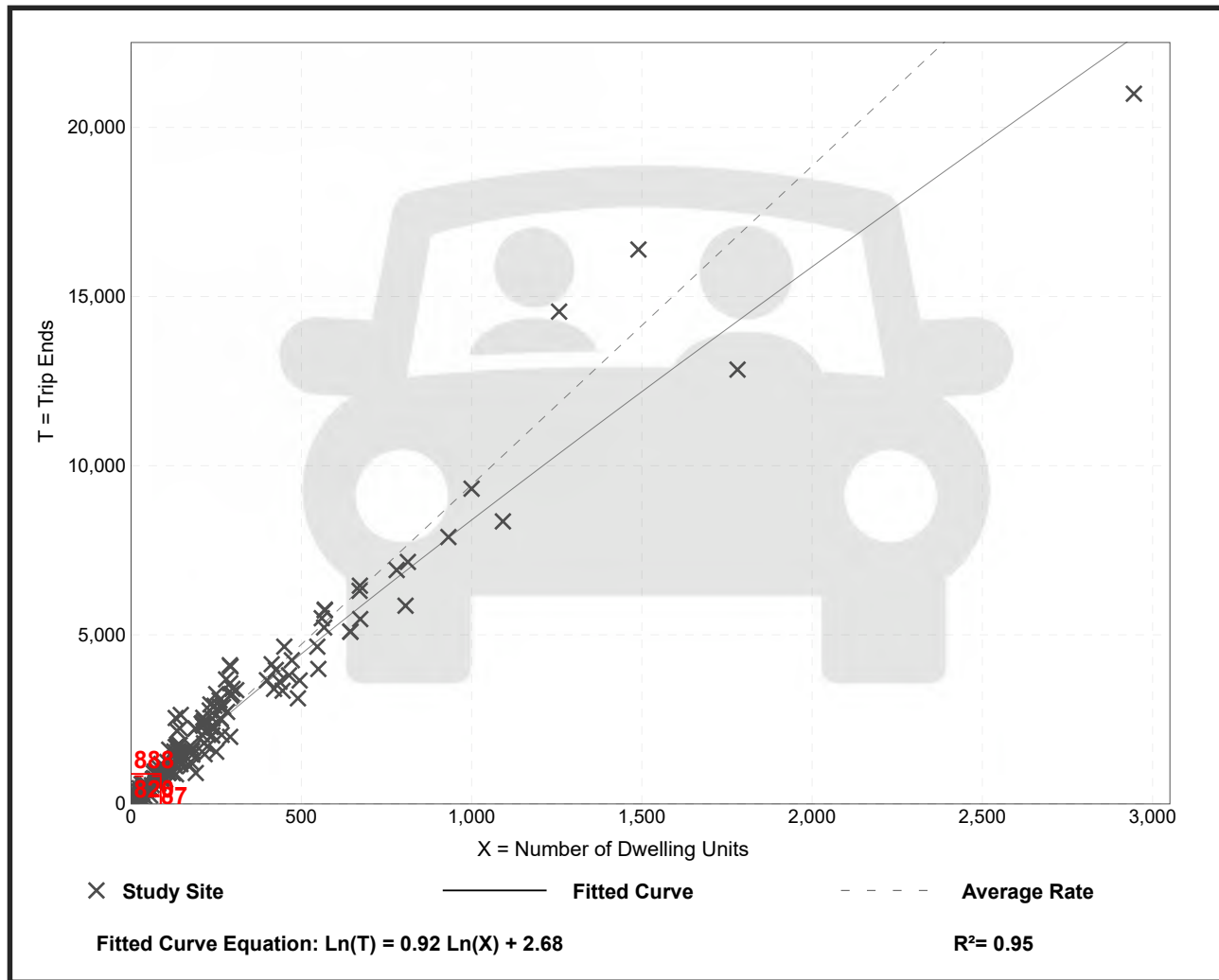
Vehicle Trip Ends vs: Dwelling Units  
On a: Weekday

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



**APPENDIX D**  
**KEY INTERSECTION PEAK HOUR LOS CALCULATIONS**



HCM 6th TWSC  
 1: Lemmon Drive & Limber Pine Drive

02/06/2024

| Intersection             |      |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|------|
| Int Delay, s/veh         | 1.2  |      |      |      |      |      |      |
| Movement                 | EBL  | EBR  | NBU  | NBL  | NBT  | SBT  | SBR  |
| Lane Configurations      | Y    |      |      | X    | ↑↑   | ↑↑   |      |
| Traffic Vol, veh/h       | 0    | 47   | 26   | 29   | 296  | 429  | 8    |
| Future Vol, veh/h        | 0    | 47   | 26   | 29   | 296  | 429  | 8    |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Stop | Stop | Free | Free | Free | Free | Free |
| RT Channelized           | -    | None | -    | -    | None | -    | None |
| Storage Length           | 0    | -    | -    | 325  | -    | -    | -    |
| Veh in Median Storage, # | 0    | -    | -    | -    | 0    | 0    | -    |
| Grade, %                 | 0    | -    | -    | -    | 0    | 0    | -    |
| Peak Hour Factor         | 73   | 73   | 92   | 73   | 73   | 73   | 73   |
| Heavy Vehicles, %        | 5    | 5    | 2    | 5    | 5    | 5    | 5    |
| Mvmt Flow                | 0    | 64   | 28   | 40   | 405  | 588  | 11   |

| Major/Minor          | Minor2 | Major1 |      | Major2 |   |   |
|----------------------|--------|--------|------|--------|---|---|
| Conflicting Flow All | 933    | 300    | 599  | 599    | 0 | 0 |
| Stage 1              | 594    | -      | -    | -      | - | - |
| Stage 2              | 339    | -      | -    | -      | - | - |
| Critical Hdwy        | 6.9    | 7      | 6.44 | 4.2    | - | - |
| Critical Hdwy Stg 1  | 5.9    | -      | -    | -      | - | - |
| Critical Hdwy Stg 2  | 5.9    | -      | -    | -      | - | - |
| Follow-up Hdwy       | 3.55   | 3.35   | 2.52 | 2.25   | - | - |
| Pot Cap-1 Maneuver   | 259    | 687    | 599  | 954    | - | - |
| Stage 1              | 506    | -      | -    | -      | - | - |
| Stage 2              | 684    | -      | -    | -      | - | - |
| Platoon blocked, %   |        |        |      |        | - | - |
| Mov Cap-1 Maneuver   | 235    | 687    | 737  | 737    | - | - |
| Mov Cap-2 Maneuver   | 235    | -      | -    | -      | - | - |
| Stage 1              | 459    | -      | -    | -      | - | - |
| Stage 2              | 684    | -      | -    | -      | - | - |

| Approach             | EB   | NB  | SB |
|----------------------|------|-----|----|
| HCM Control Delay, s | 10.8 | 1.5 | 0  |
| HCM LOS              | B    |     |    |

| Minor Lane/Major Mvmt | NBL   | NBT | EBLn1 | SBT | SBR |
|-----------------------|-------|-----|-------|-----|-----|
| Capacity (veh/h)      | 737   | -   | 687   | -   | -   |
| HCM Lane V/C Ratio    | 0.092 | -   | 0.094 | -   | -   |
| HCM Control Delay (s) | 10.4  | -   | 10.8  | -   | -   |
| HCM Lane LOS          | B     | -   | B     | -   | -   |
| HCM 95th %tile Q(veh) | 0.3   | -   | 0.3   | -   | -   |

HCM 6th TWSC  
2: Pan American Drive & Budger Way

02/06/2024

| Intersection             |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh         | 2.7  |      |      |      |      |      |
| Movement                 | WBL  | WBR  | NBT  | NBR  | SBL  | SBT  |
| Lane Configurations      | W    |      | T    |      |      | T    |
| 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    |
| 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 | NBRWBLn1 | 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    |

HCM 6th TWSC  
3: Lemmon Drive & Fleetwood Drive

02/06/2024

| Intersection             |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh         | 1.7  |      |      |      |      |      |
| Movement                 | EBL  | EBR  | NBL  | NBT  | SBT  | SBR  |
| Lane Configurations      | ↘↗   |      | ↘    | ↑↑   | ↑↑   |      |
| Traffic Vol, veh/h       | 2    | 69   | 33   | 109  | 357  | 1    |
| Future Vol, veh/h        | 2    | 69   | 33   | 109  | 357  | 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    | -    | 50   | -    | -    | -    |
| 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    | 77   | 37   | 121  | 397  | 1    |

| Major/Minor          | Minor2 | Major1 | Major2 |   |   |   |
|----------------------|--------|--------|--------|---|---|---|
| Conflicting Flow All | 533    | 199    | 398    | 0 | - | 0 |
| Stage 1              | 398    | -      | -      | - | - | - |
| Stage 2              | 135    | -      | -      | - | - | - |
| Critical Hdwy        | 6.84   | 6.94   | 4.14   | - | - | - |
| Critical Hdwy Stg 1  | 5.84   | -      | -      | - | - | - |
| Critical Hdwy Stg 2  | 5.84   | -      | -      | - | - | - |
| Follow-up Hdwy       | 3.52   | 3.32   | 2.22   | - | - | - |
| Pot Cap-1 Maneuver   | 477    | 809    | 1157   | - | - | - |
| Stage 1              | 647    | -      | -      | - | - | - |
| Stage 2              | 877    | -      | -      | - | - | - |
| Platoon blocked, %   |        |        |        | - | - | - |
| Mov Cap-1 Maneuver   | 462    | 809    | 1157   | - | - | - |
| Mov Cap-2 Maneuver   | 462    | -      | -      | - | - | - |
| Stage 1              | 626    | -      | -      | - | - | - |
| Stage 2              | 877    | -      | -      | - | - | - |

| Approach             | EB | NB  | SB |
|----------------------|----|-----|----|
| HCM Control Delay, s | 10 | 1.9 | 0  |
| HCM LOS              | B  |     |    |

| Minor Lane/Major Mvmt | NBL   | NBT | EBLn1 | SBT | SBR |
|-----------------------|-------|-----|-------|-----|-----|
| Capacity (veh/h)      | 1157  | -   | 792   | -   | -   |
| HCM Lane V/C Ratio    | 0.032 | -   | 0.1   | -   | -   |
| HCM Control Delay (s) | 8.2   | -   | 10    | -   | -   |
| HCM Lane LOS          | A     | -   | B     | -   | -   |
| HCM 95th %tile Q(veh) | 0.1   | -   | 0.3   | -   | -   |

HCM 6th TWSC  
4: Fleetwood Drive & Budger Way

02/06/2024

| Intersection             |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh         | 1.3  |      |      |      |      |      |
| Movement                 | EBL  | EBR  | NBL  | NBT  | SBT  | SBR  |
| Lane Configurations      | T    |      |      | T    |      | T    |
| 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     | -   | -   |

HCM 6th TWSC  
5: Fleetwood Drive & Lear Boulevard

02/06/2024

| Intersection             |      |      |      |      |      |      |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh         | 0    |      |      |      |      |      |      |      |      |      |      |      |
| 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    |
| 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         | 25   | 25   | 25   | 25   | 25   | 25   | 25   | 25   | 25   | 25   | 25   | 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    |

| Major/Minor          | Minor2 |       | Minor1 |       | Major1 |       |       | Major2 |   |       |   |   |
|----------------------|--------|-------|--------|-------|--------|-------|-------|--------|---|-------|---|---|
| Conflicting Flow All | 8      | 8     | 4      | 8     | 8      | 4     | 4     | 0      | 0 | 4     | 0 | 0 |
| Stage 1              | 4      | 4     | -      | 4     | 4      | -     | -     | -      | - | -     | - | - |
| Stage 2              | 4      | 4     | -      | 4     | 4      | -     | -     | -      | - | -     | - | - |
| Critical Hdwy        | 7.12   | 6.52  | 6.22   | 7.12  | 6.52   | 6.22  | 4.12  | -      | - | 4.12  | - | - |
| Critical Hdwy Stg 1  | 6.12   | 5.52  | -      | 6.12  | 5.52   | -     | -     | -      | - | -     | - | - |
| Critical Hdwy Stg 2  | 6.12   | 5.52  | -      | 6.12  | 5.52   | -     | -     | -      | - | -     | - | - |
| Follow-up Hdwy       | 3.518  | 4.018 | 3.318  | 3.518 | 4.018  | 3.318 | 2.218 | -      | - | 2.218 | - | - |
| Pot Cap-1 Maneuver   | 1011   | 887   | 1080   | 1011  | 887    | 1080  | 1618  | -      | - | 1618  | - | - |
| Stage 1              | 1018   | 892   | -      | 1018  | 892    | -     | -     | -      | - | -     | - | - |
| Stage 2              | 1018   | 892   | -      | 1018  | 892    | -     | -     | -      | - | -     | - | - |
| Platoon blocked, %   |        |       |        |       |        |       |       | -      | - | -     | - | - |
| Mov Cap-1 Maneuver   | 1011   | 887   | 1080   | 1011  | 887    | 1080  | 1618  | -      | - | 1618  | - | - |
| Mov Cap-2 Maneuver   | 1011   | 887   | -      | 1011  | 887    | -     | -     | -      | - | -     | - | - |
| Stage 1              | 1018   | 892   | -      | 1018  | 892    | -     | -     | -      | - | -     | - | - |
| Stage 2              | 1018   | 892   | -      | 1018  | 892    | -     | -     | -      | - | -     | - | - |

| Approach             | EB | WB | NB | SB |
|----------------------|----|----|----|----|
| HCM Control Delay, s | 0  | 0  | 0  | 0  |
| HCM LOS              | A  | A  |    |    |

| Minor Lane/Major Mvmt | NBL  | NBT | NBR | EBLn1WBLn1 | SBL  | SBT | SBR |
|-----------------------|------|-----|-----|------------|------|-----|-----|
| Capacity (veh/h)      | 1618 | -   | -   | -          | 1618 | -   | -   |
| HCM Lane V/C Ratio    | -    | -   | -   | -          | -    | -   | -   |
| HCM Control Delay (s) | 0    | -   | -   | 0          | 0    | 0   | -   |
| HCM Lane LOS          | A    | -   | -   | A          | A    | A   | -   |
| HCM 95th %tile Q(veh) | 0    | -   | -   | -          | 0    | -   | -   |

HCM 6th TWSC  
1: Lemmon Drive & Limber Pine Drive

02/06/2024

| Intersection             |      |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|------|
| Int Delay, s/veh         | 1.1  |      |      |      |      |      |      |
| Movement                 | EBL  | EBR  | NBU  | NBL  | NBT  | SBT  | SBR  |
| Lane Configurations      | Y    |      |      | X    | ↑↑   | ↑↑   |      |
| Traffic Vol, veh/h       | 0    | 36   | 25   | 50   | 429  | 343  | 7    |
| Future Vol, veh/h        | 0    | 36   | 25   | 50   | 429  | 343  | 7    |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Stop | Stop | Free | Free | Free | Free | Free |
| RT Channelized           | -    | None | -    | -    | None | -    | None |
| Storage Length           | 0    | -    | -    | 325  | -    | -    | -    |
| Veh in Median Storage, # | 0    | -    | -    | -    | 0    | 0    | -    |
| Grade, %                 | 0    | -    | -    | -    | 0    | 0    | -    |
| Peak Hour Factor         | 87   | 87   | 92   | 87   | 87   | 87   | 87   |
| Heavy Vehicles, %        | 4    | 4    | 2    | 4    | 4    | 4    | 4    |
| Mvmt Flow                | 0    | 41   | 27   | 57   | 493  | 394  | 8    |

| Major/Minor          | Minor2 | Major1 |      | Major2 |   |   |   |
|----------------------|--------|--------|------|--------|---|---|---|
| Conflicting Flow All | 813    | 201    | 402  | 402    | 0 | - | 0 |
| Stage 1              | 398    | -      | -    | -      | - | - | - |
| Stage 2              | 415    | -      | -    | -      | - | - | - |
| Critical Hdwy        | 6.88   | 6.98   | 6.44 | 4.18   | - | - | - |
| Critical Hdwy Stg 1  | 5.88   | -      | -    | -      | - | - | - |
| Critical Hdwy Stg 2  | 5.88   | -      | -    | -      | - | - | - |
| Follow-up Hdwy       | 3.54   | 3.34   | 2.52 | 2.24   | - | - | - |
| Pot Cap-1 Maneuver   | 312    | 800    | 798  | 1139   | - | - | - |
| Stage 1              | 641    | -      | -    | -      | - | - | - |
| Stage 2              | 629    | -      | -    | -      | - | - | - |
| Platoon blocked, %   |        |        |      |        | - | - | - |
| Mov Cap-1 Maneuver   | 285    | 800    | 983  | 983    | - | - | - |
| Mov Cap-2 Maneuver   | 285    | -      | -    | -      | - | - | - |
| Stage 1              | 586    | -      | -    | -      | - | - | - |
| Stage 2              | 629    | -      | -    | -      | - | - | - |

| Approach             | EB  | NB  | SB |
|----------------------|-----|-----|----|
| HCM Control Delay, s | 9.7 | 1.3 | 0  |
| HCM LOS              | A   |     |    |

| Minor Lane/Major Mvmt | NBL   | NBT | EBLn1 | SBT | SBR |
|-----------------------|-------|-----|-------|-----|-----|
| Capacity (veh/h)      | 983   | -   | 800   | -   | -   |
| HCM Lane V/C Ratio    | 0.086 | -   | 0.052 | -   | -   |
| HCM Control Delay (s) | 9     | -   | 9.7   | -   | -   |
| HCM Lane LOS          | A     | -   | A     | -   | -   |
| HCM 95th %tile Q(veh) | 0.3   | -   | 0.2   | -   | -   |

| 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      |
| Stage 1              | 7      | -      | -      |
| Stage 2              | 9      | -      | -      |
| Critical Hdwy        | 6.42   | 6.22   | -      |
| Critical Hdwy Stg 1  | 5.42   | -      | -      |
| Critical Hdwy Stg 2  | 5.42   | -      | -      |
| Follow-up Hdwy       | 3.518  | 3.318  | -      |
| Pot Cap-1 Maneuver   | 1002   | 1075   | -      |
| Stage 1              | 1016   | -      | -      |
| Stage 2              | 1014   | -      | -      |
| Platoon blocked, %   |        | -      | -      |
| Mov Cap-1 Maneuver   | 1000   | 1075   | -      |
| 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 | NBRWBLn1 | SBL   | SBT   |
|-----------------------|-----|----------|-------|-------|
| Capacity (veh/h)      | -   | -        | 1019  | 1606  |
| HCM Lane V/C Ratio    | -   | -        | 0.016 | 0.003 |
| HCM Control Delay (s) | -   | -        | 8.6   | 7.2   |
| HCM Lane LOS          | -   | -        | A     | A     |
| HCM 95th %tile Q(veh) | -   | -        | 0     | 0     |

HCM 6th TWSC  
 3: Lemmon Drive & Fleetwood Drive

02/06/2024

| Intersection             |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh         | 1.4  |      |      |      |      |      |
| Movement                 | EBL  | EBR  | NBL  | NBT  | SBT  | SBR  |
| Lane Configurations      | Y    |      | Y    | ↑↑   | ↑↑   |      |
| Traffic Vol, veh/h       | 0    | 50   | 89   | 445  | 219  | 0    |
| Future Vol, veh/h        | 0    | 50   | 89   | 445  | 219  | 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    | -    | 50   | -    | -    | -    |
| 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    | 57   | 102  | 511  | 252  | 0    |

| Major/Minor          | Minor2 | Major1 |      | Major2 |   |
|----------------------|--------|--------|------|--------|---|
| Conflicting Flow All | 712    | 126    | 252  | 0      | 0 |
| Stage 1              | 252    | -      | -    | -      | - |
| Stage 2              | 460    | -      | -    | -      | - |
| Critical Hdwy        | 6.84   | 6.94   | 4.14 | -      | - |
| Critical Hdwy Stg 1  | 5.84   | -      | -    | -      | - |
| Critical Hdwy Stg 2  | 5.84   | -      | -    | -      | - |
| Follow-up Hdwy       | 3.52   | 3.32   | 2.22 | -      | - |
| Pot Cap-1 Maneuver   | 367    | 901    | 1310 | -      | - |
| Stage 1              | 767    | -      | -    | -      | - |
| Stage 2              | 602    | -      | -    | -      | - |
| Platoon blocked, %   |        |        |      | -      | - |
| Mov Cap-1 Maneuver   | 338    | 901    | 1310 | -      | - |
| Mov Cap-2 Maneuver   | 338    | -      | -    | -      | - |
| Stage 1              | 707    | -      | -    | -      | - |
| Stage 2              | 602    | -      | -    | -      | - |

| Approach             | EB  | NB  | SB |
|----------------------|-----|-----|----|
| HCM Control Delay, s | 9.3 | 1.3 | 0  |
| HCM LOS              | A   |     |    |

| Minor Lane/Major Mvmt | NBL   | NBT | EBLn1 | SBT | SBR |
|-----------------------|-------|-----|-------|-----|-----|
| Capacity (veh/h)      | 1310  | -   | 901   | -   | -   |
| HCM Lane V/C Ratio    | 0.078 | -   | 0.064 | -   | -   |
| HCM Control Delay (s) | 8     | -   | 9.3   | -   | -   |
| HCM Lane LOS          | A     | -   | A     | -   | -   |
| HCM 95th %tile Q(veh) | 0.3   | -   | 0.2   | -   | -   |



HCM 6th TWSC  
4: Fleetwood Drive & Budger Way

02/06/2024

| 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     | -   | -   |

HCM 6th TWSC  
5: Fleetwood Drive & Lear Boulevard

02/06/2024

| Intersection             |      |      |      |      |      |      |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh         | 0    |      |      |      |      |      |      |      |      |      |      |      |
| 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    | 0    | 1    | 0    |
| Future Vol, veh/h        | 0    | 0    | 2    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 1    | 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         | 38   | 38   | 38   | 38   | 38   | 38   | 38   | 38   | 38   | 38   | 38   | 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    | 0    | 3    | 0    |

| Major/Minor          | Minor2 |       | Minor1 |       | Major1 |       |       | Major2 |   |       |   |   |
|----------------------|--------|-------|--------|-------|--------|-------|-------|--------|---|-------|---|---|
| Conflicting Flow All | 3      | 3     | 3      | 6     | 3      | 0     | 3     | 0      | 0 | 0     | 0 | 0 |
| Stage 1              | 3      | 3     | -      | 0     | 0      | -     | -     | -      | - | -     | - | - |
| Stage 2              | 0      | 0     | -      | 6     | 3      | -     | -     | -      | - | -     | - | - |
| Critical Hdwy        | 7.12   | 6.52  | 6.22   | 7.12  | 6.52   | 6.22  | 4.12  | -      | - | 4.12  | - | - |
| Critical Hdwy Stg 1  | 6.12   | 5.52  | -      | 6.12  | 5.52   | -     | -     | -      | - | -     | - | - |
| Critical Hdwy Stg 2  | 6.12   | 5.52  | -      | 6.12  | 5.52   | -     | -     | -      | - | -     | - | - |
| Follow-up Hdwy       | 3.518  | 4.018 | 3.318  | 3.518 | 4.018  | 3.318 | 2.218 | -      | - | 2.218 | - | - |
| Pot Cap-1 Maneuver   | 1019   | 893   | 1081   | 1014  | 893    | -     | 1619  | -      | - | -     | - | - |
| Stage 1              | 1020   | 893   | -      | -     | -      | -     | -     | -      | - | -     | - | - |
| Stage 2              | -      | -     | -      | 1016  | 893    | -     | -     | -      | - | -     | - | - |
| Platoon blocked, %   | -      | -     | -      | -     | -      | -     | -     | -      | - | -     | - | - |
| Mov Cap-1 Maneuver   | -      | 893   | 1081   | 1009  | 893    | -     | 1619  | -      | - | -     | - | - |
| Mov Cap-2 Maneuver   | -      | 893   | -      | 1009  | 893    | -     | -     | -      | - | -     | - | - |
| Stage 1              | 1020   | 893   | -      | -     | -      | -     | -     | -      | - | -     | - | - |
| Stage 2              | -      | -     | -      | 1011  | 893    | -     | -     | -      | - | -     | - | - |

| Approach             | EB |  | WB |  | NB |  | SB |  |
|----------------------|----|--|----|--|----|--|----|--|
| HCM Control Delay, s |    |  | 0  |  | 0  |  | 0  |  |
| HCM LOS              | -  |  | A  |  |    |  |    |  |

| Minor Lane/Major Mvmt | NBL  | NBT | NBR | EBLn1WBLn1 | SBL | SBT | SBR |
|-----------------------|------|-----|-----|------------|-----|-----|-----|
| Capacity (veh/h)      | 1619 | -   | -   | -          | -   | -   | -   |
| HCM Lane V/C Ratio    | -    | -   | -   | -          | -   | -   | -   |
| HCM Control Delay (s) | 0    | -   | -   | -          | 0   | 0   | -   |
| HCM Lane LOS          | A    | -   | -   | -          | A   | A   | -   |
| HCM 95th %tile Q(veh) | 0    | -   | -   | -          | -   | -   | -   |

HCM 6th TWSC  
1: Lemmon Drive & Limber Pine Drive

02/06/2024

| Intersection             |      |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|------|
| Int Delay, s/veh         | 1.3  |      |      |      |      |      |      |
| Movement                 | EBL  | EBR  | NBU  | NBL  | NBT  | SBT  | SBR  |
| Lane Configurations      |      |      |      |      |      |      |      |
| Traffic Vol, veh/h       | 0    | 50   | 28   | 31   | 314  | 455  | 8    |
| Future Vol, veh/h        | 0    | 50   | 28   | 31   | 314  | 455  | 8    |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Stop | Stop | Free | Free | Free | Free | Free |
| RT Channelized           | -    | None | -    | -    | None | -    | None |
| Storage Length           | 0    | -    | -    | 325  | -    | -    | -    |
| Veh in Median Storage, # | 0    | -    | -    | -    | 0    | 0    | -    |
| Grade, %                 | 0    | -    | -    | -    | 0    | 0    | -    |
| Peak Hour Factor         | 73   | 73   | 92   | 73   | 73   | 73   | 73   |
| Heavy Vehicles, %        | 5    | 5    | 2    | 5    | 5    | 5    | 5    |
| Mvmt Flow                | 0    | 68   | 30   | 42   | 430  | 623  | 11   |

| Major/Minor          | Minor2 | Major1 |      | Major2 |   |   |
|----------------------|--------|--------|------|--------|---|---|
| Conflicting Flow All | 988    | 317    | 634  | 634    | 0 | 0 |
| Stage 1              | 629    | -      | -    | -      | - | - |
| Stage 2              | 359    | -      | -    | -      | - | - |
| Critical Hdwy        | 6.9    | 7      | 6.44 | 4.2    | - | - |
| Critical Hdwy Stg 1  | 5.9    | -      | -    | -      | - | - |
| Critical Hdwy Stg 2  | 5.9    | -      | -    | -      | - | - |
| Follow-up Hdwy       | 3.55   | 3.35   | 2.52 | 2.25   | - | - |
| Pot Cap-1 Maneuver   | 239    | 670    | 569  | 925    | - | - |
| Stage 1              | 485    | -      | -    | -      | - | - |
| Stage 2              | 669    | -      | -    | -      | - | - |
| Platoon blocked, %   |        |        |      |        | - | - |
| Mov Cap-1 Maneuver   | 214    | 670    | 703  | 703    | - | - |
| Mov Cap-2 Maneuver   | 214    | -      | -    | -      | - | - |
| Stage 1              | 435    | -      | -    | -      | - | - |
| Stage 2              | 669    | -      | -    | -      | - | - |

| Approach             | EB | NB  | SB |
|----------------------|----|-----|----|
| HCM Control Delay, s | 11 | 1.6 | 0  |
| HCM LOS              | B  |     |    |

| Minor Lane/Major Mvmt | NBL   | NBT | EBLn1 | SBT | SBR |
|-----------------------|-------|-----|-------|-----|-----|
| Capacity (veh/h)      | 703   | -   | 670   | -   | -   |
| HCM Lane V/C Ratio    | 0.104 | -   | 0.102 | -   | -   |
| HCM Control Delay (s) | 10.7  | -   | 11    | -   | -   |
| HCM Lane LOS          | B     | -   | B     | -   | -   |
| HCM 95th %tile Q(veh) | 0.3   | -   | 0.3   | -   | -   |

HCM 6th TWSC  
2: Pan American Drive & Budger Way

02/06/2024

| Intersection             |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh         | 2.5  |      |      |      |      |      |
| Movement                 | WBL  | WBR  | NBT  | NBR  | SBL  | SBT  |
| Lane Configurations      | W    |      | T    |      |      | T    |
| 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 | NBRWBLn1 | 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    |

HCM 6th TWSC  
3: Lemmon Drive & Fleetwood Drive

02/06/2024

| Intersection             |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh         | 1.7  |      |      |      |      |      |
| Movement                 | EBL  | EBR  | NBL  | NBT  | SBT  | SBR  |
| Lane Configurations      | Y    |      | Y    | ↑↑   | ↑↑   |      |
| Traffic Vol, veh/h       | 2    | 73   | 35   | 116  | 379  | 1    |
| Future Vol, veh/h        | 2    | 73   | 35   | 116  | 379  | 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    | -    | 50   | -    | -    | -    |
| 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    | 81   | 39   | 129  | 421  | 1    |

| Major/Minor          | Minor2 | Major1 | Major2 |   |   |   |
|----------------------|--------|--------|--------|---|---|---|
| Conflicting Flow All | 565    | 211    | 422    | 0 | - | 0 |
| Stage 1              | 422    | -      | -      | - | - | - |
| Stage 2              | 143    | -      | -      | - | - | - |
| Critical Hdwy        | 6.84   | 6.94   | 4.14   | - | - | - |
| Critical Hdwy Stg 1  | 5.84   | -      | -      | - | - | - |
| Critical Hdwy Stg 2  | 5.84   | -      | -      | - | - | - |
| Follow-up Hdwy       | 3.52   | 3.32   | 2.22   | - | - | - |
| Pot Cap-1 Maneuver   | 455    | 794    | 1134   | - | - | - |
| Stage 1              | 629    | -      | -      | - | - | - |
| Stage 2              | 869    | -      | -      | - | - | - |
| Platoon blocked, %   |        |        |        | - | - | - |
| Mov Cap-1 Maneuver   | 440    | 794    | 1134   | - | - | - |
| Mov Cap-2 Maneuver   | 440    | -      | -      | - | - | - |
| Stage 1              | 608    | -      | -      | - | - | - |
| Stage 2              | 869    | -      | -      | - | - | - |

| Approach             | EB   | NB  | SB |
|----------------------|------|-----|----|
| HCM Control Delay, s | 10.2 | 1.9 | 0  |
| HCM LOS              | B    |     |    |

| Minor Lane/Major Mvmt | NBL   | NBT | EBLn1 | SBT | SBR |
|-----------------------|-------|-----|-------|-----|-----|
| Capacity (veh/h)      | 1134  | -   | 777   | -   | -   |
| HCM Lane V/C Ratio    | 0.034 | -   | 0.107 | -   | -   |
| HCM Control Delay (s) | 8.3   | -   | 10.2  | -   | -   |
| HCM Lane LOS          | A     | -   | B     | -   | -   |
| HCM 95th %tile Q(veh) | 0.1   | -   | 0.4   | -   | -   |

HCM 6th TWSC  
4: Fleetwood Drive & Budger Way

02/06/2024

| 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     | -   | -   |

HCM 6th TWSC  
5: Fleetwood Drive & Lear Boulevard

02/06/2024

| Intersection             |      |      |      |      |      |      |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh         | 0    |      |      |      |      |      |      |      |      |      |      |      |
| 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    |
| 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         | 25   | 25   | 25   | 25   | 25   | 25   | 25   | 25   | 25   | 25   | 25   | 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    |

| Major/Minor          | Minor2 |       | Minor1 |       | Major1 |       | Major2 |   |   |       |   |   |
|----------------------|--------|-------|--------|-------|--------|-------|--------|---|---|-------|---|---|
| Conflicting Flow All | 8      | 8     | 4      | 8     | 8      | 4     | 4      | 0 | 0 | 4     | 0 | 0 |
| Stage 1              | 4      | 4     | -      | 4     | 4      | -     | -      | - | - | -     | - | - |
| Stage 2              | 4      | 4     | -      | 4     | 4      | -     | -      | - | - | -     | - | - |
| Critical Hdwy        | 7.12   | 6.52  | 6.22   | 7.12  | 6.52   | 6.22  | 4.12   | - | - | 4.12  | - | - |
| Critical Hdwy Stg 1  | 6.12   | 5.52  | -      | 6.12  | 5.52   | -     | -      | - | - | -     | - | - |
| Critical Hdwy Stg 2  | 6.12   | 5.52  | -      | 6.12  | 5.52   | -     | -      | - | - | -     | - | - |
| Follow-up Hdwy       | 3.518  | 4.018 | 3.318  | 3.518 | 4.018  | 3.318 | 2.218  | - | - | 2.218 | - | - |
| Pot Cap-1 Maneuver   | 1011   | 887   | 1080   | 1011  | 887    | 1080  | 1618   | - | - | 1618  | - | - |
| Stage 1              | 1018   | 892   | -      | 1018  | 892    | -     | -      | - | - | -     | - | - |
| Stage 2              | 1018   | 892   | -      | 1018  | 892    | -     | -      | - | - | -     | - | - |
| Platoon blocked, %   |        |       |        |       |        |       |        | - | - | -     | - | - |
| Mov Cap-1 Maneuver   | 1011   | 887   | 1080   | 1011  | 887    | 1080  | 1618   | - | - | 1618  | - | - |
| Mov Cap-2 Maneuver   | 1011   | 887   | -      | 1011  | 887    | -     | -      | - | - | -     | - | - |
| Stage 1              | 1018   | 892   | -      | 1018  | 892    | -     | -      | - | - | -     | - | - |
| Stage 2              | 1018   | 892   | -      | 1018  | 892    | -     | -      | - | - | -     | - | - |

| Approach             | EB |  | WB |  | NB |  | SB |  |
|----------------------|----|--|----|--|----|--|----|--|
| HCM Control Delay, s | 0  |  | 0  |  | 0  |  | 0  |  |
| HCM LOS              | A  |  | A  |  |    |  |    |  |

| Minor Lane/Major Mvmt | NBL  | NBT | NBR | EBLn1WBLn1 | SBL  | SBT | SBR |
|-----------------------|------|-----|-----|------------|------|-----|-----|
| Capacity (veh/h)      | 1618 | -   | -   | -          | 1618 | -   | -   |
| HCM Lane V/C Ratio    | -    | -   | -   | -          | -    | -   | -   |
| HCM Control Delay (s) | 0    | -   | -   | 0          | 0    | 0   | -   |
| HCM Lane LOS          | A    | -   | -   | A          | A    | A   | -   |
| HCM 95th %tile Q(veh) | 0    | -   | -   | -          | 0    | -   | -   |

HCM 6th TWSC  
1: Lemmon Drive & Limber Pine Drive

02/06/2024

| Intersection             |      |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|------|
| Int Delay, s/veh         | 1.1  |      |      |      |      |      |      |
| Movement                 | EBL  | EBR  | NBU  | NBL  | NBT  | SBT  | SBR  |
| Lane Configurations      |      |      |      |      |      |      |      |
| Traffic Vol, veh/h       | 0    | 38   | 27   | 53   | 455  | 364  | 7    |
| Future Vol, veh/h        | 0    | 38   | 27   | 53   | 455  | 364  | 7    |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Stop | Stop | Free | Free | Free | Free | Free |
| RT Channelized           | -    | None | -    | -    | None | -    | None |
| Storage Length           | 0    | -    | -    | 325  | -    | -    | -    |
| Veh in Median Storage, # | 0    | -    | -    | -    | 0    | 0    | -    |
| Grade, %                 | 0    | -    | -    | -    | 0    | 0    | -    |
| Peak Hour Factor         | 87   | 87   | 92   | 87   | 87   | 87   | 87   |
| Heavy Vehicles, %        | 4    | 4    | 2    | 4    | 4    | 4    | 4    |
| Mvmt Flow                | 0    | 44   | 29   | 61   | 523  | 418  | 8    |

| Major/Minor          | Minor2 | Major1 |      | Major2 |   |   |
|----------------------|--------|--------|------|--------|---|---|
| Conflicting Flow All | 864    | 213    | 426  | 426    | 0 | - |
| Stage 1              | 422    | -      | -    | -      | - | - |
| Stage 2              | 442    | -      | -    | -      | - | - |
| Critical Hdwy        | 6.88   | 6.98   | 6.44 | 4.18   | - | - |
| Critical Hdwy Stg 1  | 5.88   | -      | -    | -      | - | - |
| Critical Hdwy Stg 2  | 5.88   | -      | -    | -      | - | - |
| Follow-up Hdwy       | 3.54   | 3.34   | 2.52 | 2.24   | - | - |
| Pot Cap-1 Maneuver   | 290    | 786    | 771  | 1116   | - | - |
| Stage 1              | 624    | -      | -    | -      | - | - |
| Stage 2              | 609    | -      | -    | -      | - | - |
| Platoon blocked, %   |        |        |      |        | - | - |
| Mov Cap-1 Maneuver   | 263    | 786    | 954  | 954    | - | - |
| Mov Cap-2 Maneuver   | 263    | -      | -    | -      | - | - |
| Stage 1              | 565    | -      | -    | -      | - | - |
| Stage 2              | 609    | -      | -    | -      | - | - |

| Approach             | EB  | NB  | SB |
|----------------------|-----|-----|----|
| HCM Control Delay, s | 9.8 | 1.3 | 0  |
| HCM LOS              | A   |     |    |

| Minor Lane/Major Mvmt | NBL   | NBT | EBLn1 | SBT | SBR |
|-----------------------|-------|-----|-------|-----|-----|
| Capacity (veh/h)      | 954   | -   | 786   | -   | -   |
| HCM Lane V/C Ratio    | 0.095 | -   | 0.056 | -   | -   |
| HCM Control Delay (s) | 9.2   | -   | 9.8   | -   | -   |
| HCM Lane LOS          | A     | -   | A     | -   | -   |
| HCM 95th %tile Q(veh) | 0.3   | -   | 0.2   | -   | -   |



HCM 6th TWSC  
2: Pan American Drive & Budger Way

02/06/2024

| 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    |
| 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 | NBRWBLn1 | SBL   | SBT   |
|-----------------------|-----|----------|-------|-------|
| Capacity (veh/h)      | -   | -        | 1018  | 1603  |
| HCM Lane V/C Ratio    | -   | -        | 0.016 | 0.003 |
| HCM Control Delay (s) | -   | -        | 8.6   | 7.3   |
| HCM Lane LOS          | -   | -        | A     | A     |
| HCM 95th %tile Q(veh) | -   | -        | 0     | 0     |

HCM 6th TWSC  
3: Lemmon Drive & Fleetwood Drive

02/06/2024

| Intersection             |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh         | 1.4  |      |      |      |      |      |
| Movement                 | EBL  | EBR  | NBL  | NBT  | SBT  | SBR  |
| Lane Configurations      | ↘↗   |      | ↘    | ↑↑   | ↑↑   |      |
| Traffic Vol, veh/h       | 0    | 53   | 94   | 472  | 232  | 0    |
| Future Vol, veh/h        | 0    | 53   | 94   | 472  | 232  | 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    | -    | 50   | -    | -    | -    |
| 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    | 61   | 108  | 543  | 267  | 0    |

| Major/Minor          | Minor2 | Major1 | Major2 |   |   |   |
|----------------------|--------|--------|--------|---|---|---|
| Conflicting Flow All | 755    | 134    | 267    | 0 | - | 0 |
| Stage 1              | 267    | -      | -      | - | - | - |
| Stage 2              | 488    | -      | -      | - | - | - |
| Critical Hdwy        | 6.84   | 6.94   | 4.14   | - | - | - |
| Critical Hdwy Stg 1  | 5.84   | -      | -      | - | - | - |
| Critical Hdwy Stg 2  | 5.84   | -      | -      | - | - | - |
| Follow-up Hdwy       | 3.52   | 3.32   | 2.22   | - | - | - |
| Pot Cap-1 Maneuver   | 345    | 890    | 1294   | - | - | - |
| Stage 1              | 754    | -      | -      | - | - | - |
| Stage 2              | 583    | -      | -      | - | - | - |
| Platoon blocked, %   |        |        |        | - | - | - |
| Mov Cap-1 Maneuver   | 316    | 890    | 1294   | - | - | - |
| Mov Cap-2 Maneuver   | 316    | -      | -      | - | - | - |
| Stage 1              | 691    | -      | -      | - | - | - |
| Stage 2              | 583    | -      | -      | - | - | - |

| Approach             | EB  | NB  | SB |
|----------------------|-----|-----|----|
| HCM Control Delay, s | 9.3 | 1.3 | 0  |
| HCM LOS              | A   |     |    |

| Minor Lane/Major Mvmt | NBL   | NBT | EBLn1 | SBT | SBR |
|-----------------------|-------|-----|-------|-----|-----|
| Capacity (veh/h)      | 1294  | -   | 890   | -   | -   |
| HCM Lane V/C Ratio    | 0.083 | -   | 0.068 | -   | -   |
| HCM Control Delay (s) | 8     | -   | 9.3   | -   | -   |
| HCM Lane LOS          | A     | -   | A     | -   | -   |
| HCM 95th %tile Q(veh) | 0.3   | -   | 0.2   | -   | -   |

HCM 6th TWSC  
4: Fleetwood Drive & Budger Way

02/06/2024

| 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     | -   | -   |

HCM 6th TWSC  
5: Fleetwood Drive & Lear Boulevard

02/06/2024

| Intersection             |      |      |      |      |      |      |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh         | 0    |      |      |      |      |      |      |      |      |      |      |      |
| 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    | 0    | 1    | 0    |
| Future Vol, veh/h        | 0    | 0    | 2    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 1    | 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         | 38   | 38   | 38   | 38   | 38   | 38   | 38   | 38   | 38   | 38   | 38   | 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    | 0    | 3    | 0    |

| Major/Minor          | Minor2 |       | Minor1 |       | Major1 |       |       | Major2 |   |       |   |   |
|----------------------|--------|-------|--------|-------|--------|-------|-------|--------|---|-------|---|---|
| Conflicting Flow All | 3      | 3     | 3      | 6     | 3      | 0     | 3     | 0      | 0 | 0     | 0 | 0 |
| Stage 1              | 3      | 3     | -      | 0     | 0      | -     | -     | -      | - | -     | - | - |
| Stage 2              | 0      | 0     | -      | 6     | 3      | -     | -     | -      | - | -     | - | - |
| Critical Hdwy        | 7.12   | 6.52  | 6.22   | 7.12  | 6.52   | 6.22  | 4.12  | -      | - | 4.12  | - | - |
| Critical Hdwy Stg 1  | 6.12   | 5.52  | -      | 6.12  | 5.52   | -     | -     | -      | - | -     | - | - |
| Critical Hdwy Stg 2  | 6.12   | 5.52  | -      | 6.12  | 5.52   | -     | -     | -      | - | -     | - | - |
| Follow-up Hdwy       | 3.518  | 4.018 | 3.318  | 3.518 | 4.018  | 3.318 | 2.218 | -      | - | 2.218 | - | - |
| Pot Cap-1 Maneuver   | 1019   | 893   | 1081   | 1014  | 893    | -     | 1619  | -      | - | -     | - | - |
| Stage 1              | 1020   | 893   | -      | -     | -      | -     | -     | -      | - | -     | - | - |
| Stage 2              | -      | -     | -      | 1016  | 893    | -     | -     | -      | - | -     | - | - |
| Platoon blocked, %   | -      | -     | -      | -     | -      | -     | -     | -      | - | -     | - | - |
| Mov Cap-1 Maneuver   | -      | 893   | 1081   | 1009  | 893    | -     | 1619  | -      | - | -     | - | - |
| Mov Cap-2 Maneuver   | -      | 893   | -      | 1009  | 893    | -     | -     | -      | - | -     | - | - |
| Stage 1              | 1020   | 893   | -      | -     | -      | -     | -     | -      | - | -     | - | - |
| Stage 2              | -      | -     | -      | 1011  | 893    | -     | -     | -      | - | -     | - | - |

| Approach             | EB |  | WB |  | NB |  | SB |  |
|----------------------|----|--|----|--|----|--|----|--|
| HCM Control Delay, s |    |  | 0  |  | 0  |  | 0  |  |
| HCM LOS              |    |  | A  |  |    |  |    |  |

| Minor Lane/Major Mvmt | NBL  | NBT | NBR | EBLn1WBLn1 | SBL | SBT | SBR |
|-----------------------|------|-----|-----|------------|-----|-----|-----|
| Capacity (veh/h)      | 1619 | -   | -   | -          | -   | -   | -   |
| HCM Lane V/C Ratio    | -    | -   | -   | -          | -   | -   | -   |
| HCM Control Delay (s) | 0    | -   | -   | -          | 0   | 0   | -   |
| HCM Lane LOS          | A    | -   | -   | -          | A   | A   | -   |
| HCM 95th %tile Q(veh) | 0    | -   | -   | -          | -   | -   | -   |

HCM 6th TWSC  
1: Lemmon Drive & Limber Pine Drive

02/12/2024

| Intersection             |      |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|------|
| Int Delay, s/veh         | 1.8  |      |      |      |      |      |      |
| Movement                 | EBL  | EBR  | NBU  | NBL  | NBT  | SBT  | SBR  |
| Lane Configurations      | Y    |      |      | X    | ↑↑   | ↑↑   |      |
| Traffic Vol, veh/h       | 0    | 91   | 28   | 38   | 314  | 455  | 8    |
| Future Vol, veh/h        | 0    | 91   | 28   | 38   | 314  | 455  | 8    |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Stop | Stop | Free | Free | Free | Free | Free |
| RT Channelized           | -    | None | -    | -    | None | -    | None |
| Storage Length           | 0    | -    | -    | 325  | -    | -    | -    |
| Veh in Median Storage, # | 0    | -    | -    | -    | 0    | 0    | -    |
| Grade, %                 | 0    | -    | -    | -    | 0    | 0    | -    |
| Peak Hour Factor         | 73   | 73   | 92   | 73   | 73   | 73   | 73   |
| Heavy Vehicles, %        | 5    | 5    | 2    | 5    | 5    | 5    | 5    |
| Mvmt Flow                | 0    | 125  | 30   | 52   | 430  | 623  | 11   |

| Major/Minor          | Minor2 | Major1 |      | Major2 |   |   |
|----------------------|--------|--------|------|--------|---|---|
| Conflicting Flow All | 1008   | 317    | 634  | 634    | 0 | 0 |
| Stage 1              | 629    | -      | -    | -      | - | - |
| Stage 2              | 379    | -      | -    | -      | - | - |
| Critical Hdwy        | 6.9    | 7      | 6.44 | 4.2    | - | - |
| Critical Hdwy Stg 1  | 5.9    | -      | -    | -      | - | - |
| Critical Hdwy Stg 2  | 5.9    | -      | -    | -      | - | - |
| Follow-up Hdwy       | 3.55   | 3.35   | 2.52 | 2.25   | - | - |
| Pot Cap-1 Maneuver   | 232    | 670    | 569  | 925    | - | - |
| Stage 1              | 485    | -      | -    | -      | - | - |
| Stage 2              | 653    | -      | -    | -      | - | - |
| Platoon blocked, %   |        |        |      |        | - | - |
| Mov Cap-1 Maneuver   | 205    | 670    | 698  | 698    | - | - |
| Mov Cap-2 Maneuver   | 205    | -      | -    | -      | - | - |
| Stage 1              | 428    | -      | -    | -      | - | - |
| Stage 2              | 653    | -      | -    | -      | - | - |

| Approach             | EB   | NB  | SB |
|----------------------|------|-----|----|
| HCM Control Delay, s | 11.6 | 1.7 | 0  |
| HCM LOS              | B    |     |    |

| Minor Lane/Major Mvmt | NBL   | NBT | EBLn1 | SBT | SBR |
|-----------------------|-------|-----|-------|-----|-----|
| Capacity (veh/h)      | 698   | -   | 670   | -   | -   |
| HCM Lane V/C Ratio    | 0.118 | -   | 0.186 | -   | -   |
| HCM Control Delay (s) | 10.8  | -   | 11.6  | -   | -   |
| HCM Lane LOS          | B     | -   | B     | -   | -   |
| HCM 95th %tile Q(veh) | 0.4   | -   | 0.7   | -   | -   |

HCM 6th TWSC  
 2: Pan American Drive & Budger Way

02/12/2024

| Intersection             |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh         | 1.9  |      |      |      |      |      |
| Movement                 | WBL  | WBR  | NBT  | NBR  | SBL  | SBT  |
| Lane Configurations      | W    |      | T    |      |      | T    |
| Traffic Vol, veh/h       | 5    | 8    | 7    | 11   | 5    | 42   |
| Future Vol, veh/h        | 5    | 8    | 7    | 11   | 5    | 42   |
| 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    | 14   | 12   | 19   | 9    | 74   |

| Major/Minor          | Minor1 | Major1 | Major2 |   |       |   |
|----------------------|--------|--------|--------|---|-------|---|
| Conflicting Flow All | 114    | 22     | 0      | 0 | 31    | 0 |
| Stage 1              | 22     | -      | -      | - | -     | - |
| Stage 2              | 92     | -      | -      | - | -     | - |
| 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   | 882    | 1055   | -      | - | 1582  | - |
| Stage 1              | 1001   | -      | -      | - | -     | - |
| Stage 2              | 932    | -      | -      | - | -     | - |
| Platoon blocked, %   |        |        | -      | - |       |   |
| Mov Cap-1 Maneuver   | 877    | 1055   | -      | - | 1582  | - |
| Mov Cap-2 Maneuver   | 877    | -      | -      | - | -     | - |
| Stage 1              | 1001   | -      | -      | - | -     | - |
| Stage 2              | 926    | -      | -      | - | -     | - |

| Approach             | WB  | NB | SB  |
|----------------------|-----|----|-----|
| HCM Control Delay, s | 8.8 | 0  | 0.8 |
| HCM LOS              | A   |    |     |

| Minor Lane/Major Mvmt | NBT | NBRWBLn1 | SBL   | SBT   |
|-----------------------|-----|----------|-------|-------|
| Capacity (veh/h)      | -   | -        | 979   | 1582  |
| HCM Lane V/C Ratio    | -   | -        | 0.023 | 0.006 |
| HCM Control Delay (s) | -   | -        | 8.8   | 7.3   |
| HCM Lane LOS          | -   | -        | A     | A     |
| HCM 95th %tile Q(veh) | -   | -        | 0.1   | 0     |

HCM 6th TWSC  
3: Lemmon Drive & Fleetwood Drive

02/12/2024

| Intersection             |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh         | 1.9  |      |      |      |      |      |
| Movement                 | EBL  | EBR  | NBL  | NBT  | SBT  | SBR  |
| Lane Configurations      | Y    |      | Y    | ↑↑   | ↑↑   |      |
| Traffic Vol, veh/h       | 7    | 73   | 42   | 116  | 379  | 3    |
| Future Vol, veh/h        | 7    | 73   | 42   | 116  | 379  | 3    |
| 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    | -    | 50   | -    | -    | -    |
| 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    | 81   | 47   | 129  | 421  | 3    |

| Major/Minor          | Minor2 | Major1 | Major2 |   |   |   |
|----------------------|--------|--------|--------|---|---|---|
| Conflicting Flow All | 582    | 212    | 424    | 0 | - | 0 |
| Stage 1              | 423    | -      | -      | - | - | - |
| Stage 2              | 159    | -      | -      | - | - | - |
| Critical Hdwy        | 6.84   | 6.94   | 4.14   | - | - | - |
| Critical Hdwy Stg 1  | 5.84   | -      | -      | - | - | - |
| Critical Hdwy Stg 2  | 5.84   | -      | -      | - | - | - |
| Follow-up Hdwy       | 3.52   | 3.32   | 2.22   | - | - | - |
| Pot Cap-1 Maneuver   | 444    | 793    | 1132   | - | - | - |
| Stage 1              | 629    | -      | -      | - | - | - |
| Stage 2              | 853    | -      | -      | - | - | - |
| Platoon blocked, %   |        |        |        | - | - | - |
| Mov Cap-1 Maneuver   | 425    | 793    | 1132   | - | - | - |
| Mov Cap-2 Maneuver   | 425    | -      | -      | - | - | - |
| Stage 1              | 603    | -      | -      | - | - | - |
| Stage 2              | 853    | -      | -      | - | - | - |

| Approach             | EB   | NB  | SB |
|----------------------|------|-----|----|
| HCM Control Delay, s | 10.6 | 2.2 | 0  |
| HCM LOS              | B    |     |    |

| Minor Lane/Major Mvmt | NBL   | NBT | EBLn1 | SBT | SBR |
|-----------------------|-------|-----|-------|-----|-----|
| Capacity (veh/h)      | 1132  | -   | 737   | -   | -   |
| HCM Lane V/C Ratio    | 0.041 | -   | 0.121 | -   | -   |
| HCM Control Delay (s) | 8.3   | -   | 10.6  | -   | -   |
| HCM Lane LOS          | A     | -   | B     | -   | -   |
| HCM 95th %tile Q(veh) | 0.1   | -   | 0.4   | -   | -   |

HCM 6th TWSC  
4: Fleetwood Drive & Budger Way

02/12/2024

| Intersection             |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh         | 2.2  |      |      |      |      |      |
| Movement                 | EBL  | EBR  | NBL  | NBT  | SBT  | SBR  |
| Lane Configurations      |      |      |      |      |      |      |
| Traffic Vol, veh/h       | 7    | 8    | 8    | 21   | 39   | 4    |
| Future Vol, veh/h        | 7    | 8    | 8    | 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   | 12   | 12   | 31   | 57   | 6    |

| Major/Minor          | Minor2 | Major1 |       | Major2 |   |
|----------------------|--------|--------|-------|--------|---|
| Conflicting Flow All | 115    | 60     | 63    | 0      | 0 |
| Stage 1              | 60     | -      | -     | -      | - |
| Stage 2              | 55     | -      | -     | -      | - |
| 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   | 881    | 1005   | 1540  | -      | - |
| Stage 1              | 963    | -      | -     | -      | - |
| Stage 2              | 968    | -      | -     | -      | - |
| Platoon blocked, %   |        |        |       | -      | - |
| Mov Cap-1 Maneuver   | 874    | 1005   | 1540  | -      | - |
| Mov Cap-2 Maneuver   | 874    | -      | -     | -      | - |
| Stage 1              | 955    | -      | -     | -      | - |
| Stage 2              | 968    | -      | -     | -      | - |

| Approach             | EB  | NB | SB |
|----------------------|-----|----|----|
| HCM Control Delay, s | 8.9 | 2  | 0  |
| HCM LOS              | A   |    |    |

| Minor Lane/Major Mvmt | NBL   | NBT | EBLn1 | SBT | SBR |
|-----------------------|-------|-----|-------|-----|-----|
| Capacity (veh/h)      | 1540  | -   | 939   | -   | -   |
| HCM Lane V/C Ratio    | 0.008 | -   | 0.023 | -   | -   |
| HCM Control Delay (s) | 7.4   | 0   | 8.9   | -   | -   |
| HCM Lane LOS          | A     | A   | A     | -   | -   |
| HCM 95th %tile Q(veh) | 0     | -   | 0.1   | -   | -   |



HCM 6th TWSC  
5: Fleetwood Drive & Lear Boulevard

02/12/2024

| Intersection             |      |      |      |      |      |      |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh         | 0    |      |      |      |      |      |      |      |      |      |      |      |
| 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    |
| 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         | 25   | 25   | 25   | 25   | 25   | 25   | 25   | 25   | 25   | 25   | 25   | 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    |

| Major/Minor          | Minor2 |       | Minor1 |       | Major1 |       |       | Major2 |   |       |   |   |
|----------------------|--------|-------|--------|-------|--------|-------|-------|--------|---|-------|---|---|
| Conflicting Flow All | 8      | 8     | 4      | 8     | 8      | 4     | 4     | 0      | 0 | 4     | 0 | 0 |
| Stage 1              | 4      | 4     | -      | 4     | 4      | -     | -     | -      | - | -     | - | - |
| Stage 2              | 4      | 4     | -      | 4     | 4      | -     | -     | -      | - | -     | - | - |
| Critical Hdwy        | 7.12   | 6.52  | 6.22   | 7.12  | 6.52   | 6.22  | 4.12  | -      | - | 4.12  | - | - |
| Critical Hdwy Stg 1  | 6.12   | 5.52  | -      | 6.12  | 5.52   | -     | -     | -      | - | -     | - | - |
| Critical Hdwy Stg 2  | 6.12   | 5.52  | -      | 6.12  | 5.52   | -     | -     | -      | - | -     | - | - |
| Follow-up Hdwy       | 3.518  | 4.018 | 3.318  | 3.518 | 4.018  | 3.318 | 2.218 | -      | - | 2.218 | - | - |
| Pot Cap-1 Maneuver   | 1011   | 887   | 1080   | 1011  | 887    | 1080  | 1618  | -      | - | 1618  | - | - |
| Stage 1              | 1018   | 892   | -      | 1018  | 892    | -     | -     | -      | - | -     | - | - |
| Stage 2              | 1018   | 892   | -      | 1018  | 892    | -     | -     | -      | - | -     | - | - |
| Platoon blocked, %   |        |       |        |       |        |       |       | -      | - | -     | - | - |
| Mov Cap-1 Maneuver   | 1011   | 887   | 1080   | 1011  | 887    | 1080  | 1618  | -      | - | 1618  | - | - |
| Mov Cap-2 Maneuver   | 1011   | 887   | -      | 1011  | 887    | -     | -     | -      | - | -     | - | - |
| Stage 1              | 1018   | 892   | -      | 1018  | 892    | -     | -     | -      | - | -     | - | - |
| Stage 2              | 1018   | 892   | -      | 1018  | 892    | -     | -     | -      | - | -     | - | - |

| Approach             | EB |  | WB |  | NB |  | SB |  |
|----------------------|----|--|----|--|----|--|----|--|
| HCM Control Delay, s | 0  |  | 0  |  | 0  |  | 0  |  |
| HCM LOS              | A  |  | A  |  |    |  |    |  |

| Minor Lane/Major Mvmt | NBL  | NBT | NBR | EBLn1WBLn1 | SBL  | SBT | SBR |
|-----------------------|------|-----|-----|------------|------|-----|-----|
| Capacity (veh/h)      | 1618 | -   | -   | -          | 1618 | -   | -   |
| HCM Lane V/C Ratio    | -    | -   | -   | -          | -    | -   | -   |
| HCM Control Delay (s) | 0    | -   | -   | 0          | 0    | 0   | -   |
| HCM Lane LOS          | A    | -   | -   | A          | A    | A   | -   |
| HCM 95th %tile Q(veh) | 0    | -   | -   | -          | 0    | -   | -   |

HCM 6th TWSC  
1: Lemmon Drive & Limber Pine Drive

02/12/2024

| Intersection             |      |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|------|
| Int Delay, s/veh         | 1.6  |      |      |      |      |      |      |
| Movement                 | EBL  | EBR  | NBU  | NBL  | NBT  | SBT  | SBR  |
| Lane Configurations      | Y    |      |      | X    | ↑↑   | ↑↑   |      |
| Traffic Vol, veh/h       | 0    | 67   | 27   | 76   | 455  | 364  | 7    |
| Future Vol, veh/h        | 0    | 67   | 27   | 76   | 455  | 364  | 7    |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Stop | Stop | Free | Free | Free | Free | Free |
| RT Channelized           | -    | None | -    | -    | None | -    | None |
| Storage Length           | 0    | -    | -    | 325  | -    | -    | -    |
| Veh in Median Storage, # | 0    | -    | -    | -    | 0    | 0    | -    |
| Grade, %                 | 0    | -    | -    | -    | 0    | 0    | -    |
| Peak Hour Factor         | 87   | 87   | 92   | 87   | 87   | 87   | 87   |
| Heavy Vehicles, %        | 4    | 4    | 2    | 4    | 4    | 4    | 4    |
| Mvmt Flow                | 0    | 77   | 29   | 87   | 523  | 418  | 8    |

| Major/Minor          | Minor2 | Major1 |      | Major2 |   |   |
|----------------------|--------|--------|------|--------|---|---|
| Conflicting Flow All | 916    | 213    | 426  | 426    | 0 | 0 |
| Stage 1              | 422    | -      | -    | -      | - | - |
| Stage 2              | 494    | -      | -    | -      | - | - |
| Critical Hdwy        | 6.88   | 6.98   | 6.44 | 4.18   | - | - |
| Critical Hdwy Stg 1  | 5.88   | -      | -    | -      | - | - |
| Critical Hdwy Stg 2  | 5.88   | -      | -    | -      | - | - |
| Follow-up Hdwy       | 3.54   | 3.34   | 2.52 | 2.24   | - | - |
| Pot Cap-1 Maneuver   | 268    | 786    | 771  | 1116   | - | - |
| Stage 1              | 624    | -      | -    | -      | - | - |
| Stage 2              | 573    | -      | -    | -      | - | - |
| Platoon blocked, %   |        |        |      |        | - | - |
| Mov Cap-1 Maneuver   | 236    | 786    | 973  | 973    | - | - |
| Mov Cap-2 Maneuver   | 236    | -      | -    | -      | - | - |
| Stage 1              | 549    | -      | -    | -      | - | - |
| Stage 2              | 573    | -      | -    | -      | - | - |

| Approach             | EB   | NB  | SB |
|----------------------|------|-----|----|
| HCM Control Delay, s | 10.1 | 1.7 | 0  |
| HCM LOS              | B    |     |    |

| Minor Lane/Major Mvmt | NBL  | NBT | EBLn1 | SBT | SBR |
|-----------------------|------|-----|-------|-----|-----|
| Capacity (veh/h)      | 973  | -   | 786   | -   | -   |
| HCM Lane V/C Ratio    | 0.12 | -   | 0.098 | -   | -   |
| HCM Control Delay (s) | 9.2  | -   | 10.1  | -   | -   |
| HCM Lane LOS          | A    | -   | B     | -   | -   |
| HCM 95th %tile Q(veh) | 0.4  | -   | 0.3   | -   | -   |

HCM 6th TWSC  
2: Pan American Drive & Budger Way

02/12/2024

| Intersection             |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh         | 3.6  |      |      |      |      |      |
| Movement                 | WBL  | WBR  | NBT  | NBR  | SBL  | SBT  |
| Lane Configurations      | W    | W    | T    |      |      | T    |
| Traffic Vol, veh/h       | 8    | 32   | 23   | 10   | 6    | 30   |
| Future Vol, veh/h        | 8    | 32   | 23   | 10   | 6    | 30   |
| 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   | 48   | 34   | 15   | 9    | 45   |

| Major/Minor          | Minor1 | Major1 | Major2 |   |       |   |
|----------------------|--------|--------|--------|---|-------|---|
| Conflicting Flow All | 105    | 42     | 0      | 0 | 49    | 0 |
| Stage 1              | 42     | -      | -      | - | -     | - |
| Stage 2              | 63     | -      | -      | - | -     | - |
| 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   | 893    | 1029   | -      | - | 1558  | - |
| Stage 1              | 980    | -      | -      | - | -     | - |
| Stage 2              | 960    | -      | -      | - | -     | - |
| Platoon blocked, %   |        |        | -      | - |       |   |
| Mov Cap-1 Maneuver   | 888    | 1029   | -      | - | 1558  | - |
| Mov Cap-2 Maneuver   | 888    | -      | -      | - | -     | - |
| Stage 1              | 980    | -      | -      | - | -     | - |
| Stage 2              | 954    | -      | -      | - | -     | - |

| Approach             | WB  | NB | SB  |
|----------------------|-----|----|-----|
| HCM Control Delay, s | 8.8 | 0  | 1.2 |
| HCM LOS              | A   |    |     |

| Minor Lane/Major Mvmt | NBT | NBRWBLn1 | SBL  | SBT   |
|-----------------------|-----|----------|------|-------|
| Capacity (veh/h)      | -   | -        | 997  | 1558  |
| HCM Lane V/C Ratio    | -   | -        | 0.06 | 0.006 |
| HCM Control Delay (s) | -   | -        | 8.8  | 7.3   |
| HCM Lane LOS          | -   | -        | A    | A     |
| HCM 95th %tile Q(veh) | -   | -        | 0.2  | 0     |

HCM 6th TWSC  
3: Lemmon Drive & Fleetwood Drive

02/12/2024

| Intersection             |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh         | 1.7  |      |      |      |      |      |
| Movement                 | EBL  | EBR  | NBL  | NBT  | SBT  | SBR  |
| Lane Configurations      | Y    |      | Y    | ↑↑   | ↑↑   |      |
| Traffic Vol, veh/h       | 3    | 53   | 117  | 472  | 232  | 5    |
| Future Vol, veh/h        | 3    | 53   | 117  | 472  | 232  | 5    |
| 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    | -    | 50   | -    | -    | -    |
| 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    | 61   | 134  | 543  | 267  | 6    |

| Major/Minor          | Minor2 | Major1 | Major2 |   |   |   |
|----------------------|--------|--------|--------|---|---|---|
| Conflicting Flow All | 810    | 137    | 273    | 0 | - | 0 |
| Stage 1              | 270    | -      | -      | - | - | - |
| Stage 2              | 540    | -      | -      | - | - | - |
| Critical Hdwy        | 6.84   | 6.94   | 4.14   | - | - | - |
| Critical Hdwy Stg 1  | 5.84   | -      | -      | - | - | - |
| Critical Hdwy Stg 2  | 5.84   | -      | -      | - | - | - |
| Follow-up Hdwy       | 3.52   | 3.32   | 2.22   | - | - | - |
| Pot Cap-1 Maneuver   | 318    | 886    | 1287   | - | - | - |
| Stage 1              | 751    | -      | -      | - | - | - |
| Stage 2              | 548    | -      | -      | - | - | - |
| Platoon blocked, %   |        |        |        | - | - | - |
| Mov Cap-1 Maneuver   | 285    | 886    | 1287   | - | - | - |
| Mov Cap-2 Maneuver   | 285    | -      | -      | - | - | - |
| Stage 1              | 673    | -      | -      | - | - | - |
| Stage 2              | 548    | -      | -      | - | - | - |

| Approach             | EB  | NB  | SB |
|----------------------|-----|-----|----|
| HCM Control Delay, s | 9.9 | 1.6 | 0  |
| HCM LOS              | A   |     |    |

| Minor Lane/Major Mvmt | NBL   | NBT | EBLn1 | SBT | SBR |
|-----------------------|-------|-----|-------|-----|-----|
| Capacity (veh/h)      | 1287  | -   | 796   | -   | -   |
| HCM Lane V/C Ratio    | 0.104 | -   | 0.081 | -   | -   |
| HCM Control Delay (s) | 8.1   | -   | 9.9   | -   | -   |
| HCM Lane LOS          | A     | -   | A     | -   | -   |
| HCM 95th %tile Q(veh) | 0.3   | -   | 0.3   | -   | -   |

HCM 6th TWSC  
4: Fleetwood Drive & Budger Way

02/12/2024

| Intersection             |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh         | 3.1  |      |      |      |      |      |
| Movement                 | EBL  | EBR  | NBL  | NBT  | SBT  | SBR  |
| Lane Configurations      | T    |      |      | T    |      | T    |
| Traffic Vol, veh/h       | 7    | 7    | 35   | 39   | 29   | 8    |
| Future Vol, veh/h        | 7    | 7    | 35   | 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    | 8    | 38   | 42   | 31   | 9    |

| Major/Minor          | Minor2 | Major1 |       | Major2 |   |
|----------------------|--------|--------|-------|--------|---|
| Conflicting Flow All | 154    | 36     | 40    | 0      | 0 |
| Stage 1              | 36     | -      | -     | -      | - |
| Stage 2              | 118    | -      | -     | -      | - |
| 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   | 838    | 1037   | 1570  | -      | - |
| Stage 1              | 986    | -      | -     | -      | - |
| Stage 2              | 907    | -      | -     | -      | - |
| Platoon blocked, %   |        |        |       | -      | - |
| Mov Cap-1 Maneuver   | 817    | 1037   | 1570  | -      | - |
| Mov Cap-2 Maneuver   | 817    | -      | -     | -      | - |
| Stage 1              | 961    | -      | -     | -      | - |
| Stage 2              | 907    | -      | -     | -      | - |

| Approach             | EB | NB  | SB |
|----------------------|----|-----|----|
| HCM Control Delay, s | 9  | 3.5 | 0  |
| HCM LOS              | A  |     |    |

| Minor Lane/Major Mvmt | NBL   | NBT | EBLn1 | SBT | SBR |
|-----------------------|-------|-----|-------|-----|-----|
| Capacity (veh/h)      | 1570  | -   | 914   | -   | -   |
| HCM Lane V/C Ratio    | 0.024 | -   | 0.016 | -   | -   |
| HCM Control Delay (s) | 7.3   | 0   | 9     | -   | -   |
| HCM Lane LOS          | A     | A   | A     | -   | -   |
| HCM 95th %tile Q(veh) | 0.1   | -   | 0.1   | -   | -   |

HCM 6th TWSC  
5: Fleetwood Drive & Lear Boulevard

02/12/2024

| Intersection             |      |      |      |      |      |      |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh         | 0    |      |      |      |      |      |      |      |      |      |      |      |
| 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    | 0    | 1    | 0    |
| Future Vol, veh/h        | 0    | 0    | 2    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 1    | 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         | 38   | 38   | 38   | 38   | 38   | 38   | 38   | 38   | 38   | 38   | 38   | 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    | 0    | 3    | 0    |

| Major/Minor          | Minor2 |       | Minor1 |       | Major1 |       |       | Major2 |   |       |   |   |
|----------------------|--------|-------|--------|-------|--------|-------|-------|--------|---|-------|---|---|
| Conflicting Flow All | 3      | 3     | 3      | 6     | 3      | 0     | 3     | 0      | 0 | 0     | 0 | 0 |
| Stage 1              | 3      | 3     | -      | 0     | 0      | -     | -     | -      | - | -     | - | - |
| Stage 2              | 0      | 0     | -      | 6     | 3      | -     | -     | -      | - | -     | - | - |
| Critical Hdwy        | 7.12   | 6.52  | 6.22   | 7.12  | 6.52   | 6.22  | 4.12  | -      | - | 4.12  | - | - |
| Critical Hdwy Stg 1  | 6.12   | 5.52  | -      | 6.12  | 5.52   | -     | -     | -      | - | -     | - | - |
| Critical Hdwy Stg 2  | 6.12   | 5.52  | -      | 6.12  | 5.52   | -     | -     | -      | - | -     | - | - |
| Follow-up Hdwy       | 3.518  | 4.018 | 3.318  | 3.518 | 4.018  | 3.318 | 2.218 | -      | - | 2.218 | - | - |
| Pot Cap-1 Maneuver   | 1019   | 893   | 1081   | 1014  | 893    | -     | 1619  | -      | - | -     | - | - |
| Stage 1              | 1020   | 893   | -      | -     | -      | -     | -     | -      | - | -     | - | - |
| Stage 2              | -      | -     | -      | 1016  | 893    | -     | -     | -      | - | -     | - | - |
| Platoon blocked, %   | -      | -     | -      | -     | -      | -     | -     | -      | - | -     | - | - |
| Mov Cap-1 Maneuver   | -      | 893   | 1081   | 1009  | 893    | -     | 1619  | -      | - | -     | - | - |
| Mov Cap-2 Maneuver   | -      | 893   | -      | 1009  | 893    | -     | -     | -      | - | -     | - | - |
| Stage 1              | 1020   | 893   | -      | -     | -      | -     | -     | -      | - | -     | - | - |
| Stage 2              | -      | -     | -      | 1011  | 893    | -     | -     | -      | - | -     | - | - |

| Approach             | EB |  | WB |  | NB |  | SB |  |
|----------------------|----|--|----|--|----|--|----|--|
| HCM Control Delay, s |    |  | 0  |  | 0  |  | 0  |  |
| HCM LOS              |    |  | A  |  |    |  |    |  |

| Minor Lane/Major Mvmt | NBL  | NBT | NBR | EBLn1WBLn1 | SBL | SBT | SBR |
|-----------------------|------|-----|-----|------------|-----|-----|-----|
| Capacity (veh/h)      | 1619 | -   | -   | -          | -   | -   | -   |
| HCM Lane V/C Ratio    | -    | -   | -   | -          | -   | -   | -   |
| HCM Control Delay (s) | 0    | -   | -   | -          | 0   | 0   | -   |
| HCM Lane LOS          | A    | -   | -   | -          | A   | A   | -   |
| HCM 95th %tile Q(veh) | 0    | -   | -   | -          | -   | -   | -   |

HCM 6th TWSC  
1: Lemmon Drive & Limber Pine Drive

02/06/2024

| Intersection             |      |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|------|
| Int Delay, s/veh         | 1.5  |      |      |      |      |      |      |
| Movement                 | EBL  | EBR  | NBU  | NBL  | NBT  | SBT  | SBR  |
| Lane Configurations      | Y    |      |      | X    | ↑↑   | ↑↑   |      |
| Traffic Vol, veh/h       | 0    | 68   | 38   | 42   | 430  | 623  | 12   |
| Future Vol, veh/h        | 0    | 68   | 38   | 42   | 430  | 623  | 12   |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Stop | Stop | Free | Free | Free | Free | Free |
| RT Channelized           | -    | None | -    | -    | None | -    | None |
| Storage Length           | 0    | -    | -    | 325  | -    | -    | -    |
| Veh in Median Storage, # | 0    | -    | -    | -    | 0    | 0    | -    |
| Grade, %                 | 0    | -    | -    | -    | 0    | 0    | -    |
| Peak Hour Factor         | 73   | 73   | 92   | 73   | 73   | 73   | 73   |
| Heavy Vehicles, %        | 5    | 5    | 2    | 5    | 5    | 5    | 5    |
| Mvmt Flow                | 0    | 93   | 41   | 58   | 589  | 853  | 16   |

| Major/Minor          | Minor2 | Major1 |      | Major2 |   |   |
|----------------------|--------|--------|------|--------|---|---|
| Conflicting Flow All | 1354   | 435    | 870  | 869    | 0 | 0 |
| Stage 1              | 861    | -      | -    | -      | - | - |
| Stage 2              | 493    | -      | -    | -      | - | - |
| Critical Hdwy        | 6.9    | 7      | 6.44 | 4.2    | - | - |
| Critical Hdwy Stg 1  | 5.9    | -      | -    | -      | - | - |
| Critical Hdwy Stg 2  | 5.9    | -      | -    | -      | - | - |
| Follow-up Hdwy       | 3.55   | 3.35   | 2.52 | 2.25   | - | - |
| Pot Cap-1 Maneuver   | 137    | 561    | 402  | 752    | - | - |
| Stage 1              | 367    | -      | -    | -      | - | - |
| Stage 2              | 571    | -      | -    | -      | - | - |
| Platoon blocked, %   |        |        |      |        | - | - |
| Mov Cap-1 Maneuver   | 110    | 561    | 511  | 511    | - | - |
| Mov Cap-2 Maneuver   | 110    | -      | -    | -      | - | - |
| Stage 1              | 296    | -      | -    | -      | - | - |
| Stage 2              | 571    | -      | -    | -      | - | - |

| Approach             | EB   | NB | SB |
|----------------------|------|----|----|
| HCM Control Delay, s | 12.7 | 2  | 0  |
| HCM LOS              | B    |    |    |

| Minor Lane/Major Mvmt | NBL   | NBT | EBLn1 | SBT | SBR |
|-----------------------|-------|-----|-------|-----|-----|
| Capacity (veh/h)      | 511   | -   | 561   | -   | -   |
| HCM Lane V/C Ratio    | 0.193 | -   | 0.166 | -   | -   |
| HCM Control Delay (s) | 13.7  | -   | 12.7  | -   | -   |
| HCM Lane LOS          | B     | -   | B     | -   | -   |
| HCM 95th %tile Q(veh) | 0.7   | -   | 0.6   | -   | -   |

HCM 6th TWSC  
 2: Pan American Drive & Budger Way

02/06/2024

| Intersection             |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh         | 2.6  |      |      |      |      |      |
| Movement                 | WBL  | WBR  | NBT  | NBR  | SBL  | SBT  |
| Lane Configurations      | W    |      | T    |      |      | T    |
| 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    |
| 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 | NBRWBLn1 | 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    |



HCM 6th TWSC  
3: Lemmon Drive & Fleetwood Drive

02/06/2024

| Intersection             |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh         | 1.9  |      |      |      |      |      |
| Movement                 | EBL  | EBR  | NBL  | NBT  | SBT  | SBR  |
| Lane Configurations      | ↔    |      | ↔    | ↑↑   | ↑↑   |      |
| Traffic Vol, veh/h       | 3    | 100  | 48   | 158  | 518  | 1    |
| Future Vol, veh/h        | 3    | 100  | 48   | 158  | 518  | 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    | -    | 50   | -    | -    | -    |
| 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    | 111  | 53   | 176  | 576  | 1    |

| Major/Minor          | Minor2 | Major1 | Major2 |   |   |   |
|----------------------|--------|--------|--------|---|---|---|
| Conflicting Flow All | 771    | 289    | 577    | 0 | - | 0 |
| Stage 1              | 577    | -      | -      | - | - | - |
| Stage 2              | 194    | -      | -      | - | - | - |
| Critical Hdwy        | 6.84   | 6.94   | 4.14   | - | - | - |
| Critical Hdwy Stg 1  | 5.84   | -      | -      | - | - | - |
| Critical Hdwy Stg 2  | 5.84   | -      | -      | - | - | - |
| Follow-up Hdwy       | 3.52   | 3.32   | 2.22   | - | - | - |
| Pot Cap-1 Maneuver   | 337    | 708    | 993    | - | - | - |
| Stage 1              | 525    | -      | -      | - | - | - |
| Stage 2              | 820    | -      | -      | - | - | - |
| Platoon blocked, %   |        |        |        | - | - | - |
| Mov Cap-1 Maneuver   | 319    | 708    | 993    | - | - | - |
| Mov Cap-2 Maneuver   | 319    | -      | -      | - | - | - |
| Stage 1              | 497    | -      | -      | - | - | - |
| Stage 2              | 820    | -      | -      | - | - | - |

| Approach             | EB   | NB  | SB |
|----------------------|------|-----|----|
| HCM Control Delay, s | 11.3 | 2.1 | 0  |
| HCM LOS              | B    |     |    |

| Minor Lane/Major Mvmt | NBL   | NBT | EBLn1 | SBT | SBR |
|-----------------------|-------|-----|-------|-----|-----|
| Capacity (veh/h)      | 993   | -   | 684   | -   | -   |
| HCM Lane V/C Ratio    | 0.054 | -   | 0.167 | -   | -   |
| HCM Control Delay (s) | 8.8   | -   | 11.3  | -   | -   |
| HCM Lane LOS          | A     | -   | B     | -   | -   |
| HCM 95th %tile Q(veh) | 0.2   | -   | 0.6   | -   | -   |

HCM 6th TWSC  
4: Fleetwood Drive & Budger Way

02/06/2024

| Intersection             |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh         | 1.2  |      |      |      |      |      |
| Movement                 | EBL  | EBR  | NBL  | NBT  | SBT  | SBR  |
| Lane Configurations      | T    |      |      | T    |      | T    |
| 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   | -   | -   |

HCM 6th TWSC  
5: Fleetwood Drive & Lear Boulevard

02/06/2024

| Intersection             |      |      |      |      |      |      |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh         | 0    |      |      |      |      |      |      |      |      |      |      |      |
| 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    |
| 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         | 25   | 25   | 25   | 25   | 25   | 25   | 25   | 25   | 25   | 25   | 25   | 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    |

| Major/Minor          | Minor2 |       | Minor1 |       | Major1 |       | Major2 |   |   |       |   |   |
|----------------------|--------|-------|--------|-------|--------|-------|--------|---|---|-------|---|---|
| Conflicting Flow All | 8      | 8     | 4      | 8     | 8      | 4     | 4      | 0 | 0 | 4     | 0 | 0 |
| Stage 1              | 4      | 4     | -      | 4     | 4      | -     | -      | - | - | -     | - | - |
| Stage 2              | 4      | 4     | -      | 4     | 4      | -     | -      | - | - | -     | - | - |
| Critical Hdwy        | 7.12   | 6.52  | 6.22   | 7.12  | 6.52   | 6.22  | 4.12   | - | - | 4.12  | - | - |
| Critical Hdwy Stg 1  | 6.12   | 5.52  | -      | 6.12  | 5.52   | -     | -      | - | - | -     | - | - |
| Critical Hdwy Stg 2  | 6.12   | 5.52  | -      | 6.12  | 5.52   | -     | -      | - | - | -     | - | - |
| Follow-up Hdwy       | 3.518  | 4.018 | 3.318  | 3.518 | 4.018  | 3.318 | 2.218  | - | - | 2.218 | - | - |
| Pot Cap-1 Maneuver   | 1011   | 887   | 1080   | 1011  | 887    | 1080  | 1618   | - | - | 1618  | - | - |
| Stage 1              | 1018   | 892   | -      | 1018  | 892    | -     | -      | - | - | -     | - | - |
| Stage 2              | 1018   | 892   | -      | 1018  | 892    | -     | -      | - | - | -     | - | - |
| Platoon blocked, %   |        |       |        |       |        |       |        | - | - | -     | - | - |
| Mov Cap-1 Maneuver   | 1011   | 887   | 1080   | 1011  | 887    | 1080  | 1618   | - | - | 1618  | - | - |
| Mov Cap-2 Maneuver   | 1011   | 887   | -      | 1011  | 887    | -     | -      | - | - | -     | - | - |
| Stage 1              | 1018   | 892   | -      | 1018  | 892    | -     | -      | - | - | -     | - | - |
| Stage 2              | 1018   | 892   | -      | 1018  | 892    | -     | -      | - | - | -     | - | - |

| Approach             | EB |  | WB |  | NB |  | SB |  |
|----------------------|----|--|----|--|----|--|----|--|
| HCM Control Delay, s | 0  |  | 0  |  | 0  |  | 0  |  |
| HCM LOS              | A  |  | A  |  |    |  |    |  |

| Minor Lane/Major Mvmt | NBL  | NBT | NBR | EBLn1WBLn1 | SBL  | SBT | SBR |
|-----------------------|------|-----|-----|------------|------|-----|-----|
| Capacity (veh/h)      | 1618 | -   | -   | -          | 1618 | -   | -   |
| HCM Lane V/C Ratio    | -    | -   | -   | -          | -    | -   | -   |
| HCM Control Delay (s) | 0    | -   | -   | 0          | 0    | 0   | -   |
| HCM Lane LOS          | A    | -   | -   | A          | A    | A   | -   |
| HCM 95th %tile Q(veh) | 0    | -   | -   | -          | 0    | -   | -   |

HCM 6th TWSC  
1: Lemmon Drive & Limber Pine Drive

02/06/2024

| Intersection             |      |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|------|
| Int Delay, s/veh         | 1.3  |      |      |      |      |      |      |
| Movement                 | EBL  | EBR  | NBU  | NBL  | NBT  | SBT  | SBR  |
| Lane Configurations      | Y    |      |      | X    | ↑↑   | ↑↑   |      |
| Traffic Vol, veh/h       | 0    | 52   | 36   | 73   | 623  | 498  | 10   |
| Future Vol, veh/h        | 0    | 52   | 36   | 73   | 623  | 498  | 10   |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Stop | Stop | Free | Free | Free | Free | Free |
| RT Channelized           | -    | None | -    | -    | None | -    | None |
| Storage Length           | 0    | -    | -    | 325  | -    | -    | -    |
| Veh in Median Storage, # | 0    | -    | -    | -    | 0    | 0    | -    |
| Grade, %                 | 0    | -    | -    | -    | 0    | 0    | -    |
| Peak Hour Factor         | 87   | 87   | 92   | 87   | 87   | 87   | 87   |
| Heavy Vehicles, %        | 4    | 4    | 2    | 4    | 4    | 4    | 4    |
| Mvmt Flow                | 0    | 60   | 39   | 84   | 716  | 572  | 11   |

| Major/Minor          | Minor2 | Major1 |      | Major2 |   |   |
|----------------------|--------|--------|------|--------|---|---|
| Conflicting Flow All | 1182   | 292    | 584  | 583    | 0 | 0 |
| Stage 1              | 578    | -      | -    | -      | - | - |
| Stage 2              | 604    | -      | -    | -      | - | - |
| Critical Hdwy        | 6.88   | 6.98   | 6.44 | 4.18   | - | - |
| Critical Hdwy Stg 1  | 5.88   | -      | -    | -      | - | - |
| Critical Hdwy Stg 2  | 5.88   | -      | -    | -      | - | - |
| Follow-up Hdwy       | 3.54   | 3.34   | 2.52 | 2.24   | - | - |
| Pot Cap-1 Maneuver   | 180    | 699    | 612  | 974    | - | - |
| Stage 1              | 519    | -      | -    | -      | - | - |
| Stage 2              | 503    | -      | -    | -      | - | - |
| Platoon blocked, %   |        |        |      |        | - | - |
| Mov Cap-1 Maneuver   | 152    | 699    | 792  | 792    | - | - |
| Mov Cap-2 Maneuver   | 152    | -      | -    | -      | - | - |
| Stage 1              | 439    | -      | -    | -      | - | - |
| Stage 2              | 503    | -      | -    | -      | - | - |

| Approach             | EB   | NB  | SB |
|----------------------|------|-----|----|
| HCM Control Delay, s | 10.6 | 1.5 | 0  |
| HCM LOS              | B    |     |    |

| Minor Lane/Major Mvmt | NBL   | NBT | EBLn1 | SBT | SBR |
|-----------------------|-------|-----|-------|-----|-----|
| Capacity (veh/h)      | 792   | -   | 699   | -   | -   |
| HCM Lane V/C Ratio    | 0.155 | -   | 0.086 | -   | -   |
| HCM Control Delay (s) | 10.4  | -   | 10.6  | -   | -   |
| HCM Lane LOS          | B     | -   | B     | -   | -   |
| HCM 95th %tile Q(veh) | 0.5   | -   | 0.3   | -   | -   |

| Intersection             |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh         | 4.9  |      |      |      |      |      |
| Movement                 | WBL  | WBR  | NBT  | NBR  | SBL  | SBT  |
| Lane Configurations      | W    |      | T    |      |      | T    |
| 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    |
| 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 | NBRWBLn1 | SBL   | SBT   |
|-----------------------|-----|----------|-------|-------|
| Capacity (veh/h)      | -   | -        | 1008  | 1597  |
| HCM Lane V/C Ratio    | -   | -        | 0.024 | 0.004 |
| HCM Control Delay (s) | -   | -        | 8.7   | 7.3   |
| HCM Lane LOS          | -   | -        | A     | A     |
| HCM 95th %tile Q(veh) | -   | -        | 0.1   | 0     |

HCM 6th TWSC  
3: Lemmon Drive & Fleetwood Drive

02/06/2024

| Intersection             |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh         | 1.5  |      |      |      |      |      |
| Movement                 | EBL  | EBR  | NBL  | NBT  | SBT  | SBR  |
| Lane Configurations      | ↘↗   |      | ↘    | ↑↑   | ↑↑   |      |
| Traffic Vol, veh/h       | 0    | 73   | 129  | 646  | 318  | 0    |
| Future Vol, veh/h        | 0    | 73   | 129  | 646  | 318  | 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    | -    | 50   | -    | -    | -    |
| 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    | 84   | 148  | 743  | 366  | 0    |

| Major/Minor          | Minor2 | Major1 | Major2 |   |   |   |
|----------------------|--------|--------|--------|---|---|---|
| Conflicting Flow All | 1034   | 183    | 366    | 0 | - | 0 |
| Stage 1              | 366    | -      | -      | - | - | - |
| Stage 2              | 668    | -      | -      | - | - | - |
| Critical Hdwy        | 6.84   | 6.94   | 4.14   | - | - | - |
| Critical Hdwy Stg 1  | 5.84   | -      | -      | - | - | - |
| Critical Hdwy Stg 2  | 5.84   | -      | -      | - | - | - |
| Follow-up Hdwy       | 3.52   | 3.32   | 2.22   | - | - | - |
| Pot Cap-1 Maneuver   | 228    | 828    | 1189   | - | - | - |
| Stage 1              | 672    | -      | -      | - | - | - |
| Stage 2              | 471    | -      | -      | - | - | - |
| Platoon blocked, %   |        |        |        | - | - | - |
| Mov Cap-1 Maneuver   | 200    | 828    | 1189   | - | - | - |
| Mov Cap-2 Maneuver   | 200    | -      | -      | - | - | - |
| Stage 1              | 589    | -      | -      | - | - | - |
| Stage 2              | 471    | -      | -      | - | - | - |

| Approach             | EB  | NB  | SB |
|----------------------|-----|-----|----|
| HCM Control Delay, s | 9.8 | 1.4 | 0  |
| HCM LOS              | A   |     |    |

| Minor Lane/Major Mvmt | NBL   | NBT | EBLn1 | SBT | SBR |
|-----------------------|-------|-----|-------|-----|-----|
| Capacity (veh/h)      | 1189  | -   | 828   | -   | -   |
| HCM Lane V/C Ratio    | 0.125 | -   | 0.101 | -   | -   |
| HCM Control Delay (s) | 8.5   | -   | 9.8   | -   | -   |
| HCM Lane LOS          | A     | -   | A     | -   | -   |
| HCM 95th %tile Q(veh) | 0.4   | -   | 0.3   | -   | -   |

HCM 6th TWSC  
4: Fleetwood Drive & Budger Way

02/06/2024

| 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   | -   | -   |

HCM 6th TWSC  
5: Fleetwood Drive & Lear Boulevard

02/06/2024

| Intersection             |      |      |      |      |      |      |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh         | 0    |      |      |      |      |      |      |      |      |      |      |      |
| 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    | 0    | 1    | 0    |
| Future Vol, veh/h        | 0    | 0    | 3    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 1    | 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         | 38   | 38   | 38   | 38   | 38   | 38   | 38   | 38   | 38   | 38   | 38   | 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    | 0    | 3    | 0    |

| Major/Minor          | Minor2 |       | Minor1 |       | Major1 |       |       | Major2 |   |       |   |   |
|----------------------|--------|-------|--------|-------|--------|-------|-------|--------|---|-------|---|---|
| Conflicting Flow All | 3      | 3     | 3      | 7     | 3      | 0     | 3     | 0      | 0 | 0     | 0 | 0 |
| Stage 1              | 3      | 3     | -      | 0     | 0      | -     | -     | -      | - | -     | - | - |
| Stage 2              | 0      | 0     | -      | 7     | 3      | -     | -     | -      | - | -     | - | - |
| Critical Hdwy        | 7.12   | 6.52  | 6.22   | 7.12  | 6.52   | 6.22  | 4.12  | -      | - | 4.12  | - | - |
| Critical Hdwy Stg 1  | 6.12   | 5.52  | -      | 6.12  | 5.52   | -     | -     | -      | - | -     | - | - |
| Critical Hdwy Stg 2  | 6.12   | 5.52  | -      | 6.12  | 5.52   | -     | -     | -      | - | -     | - | - |
| Follow-up Hdwy       | 3.518  | 4.018 | 3.318  | 3.518 | 4.018  | 3.318 | 2.218 | -      | - | 2.218 | - | - |
| Pot Cap-1 Maneuver   | 1019   | 893   | 1081   | 1013  | 893    | -     | 1619  | -      | - | -     | - | - |
| Stage 1              | 1020   | 893   | -      | -     | -      | -     | -     | -      | - | -     | - | - |
| Stage 2              | -      | -     | -      | 1015  | 893    | -     | -     | -      | - | -     | - | - |
| Platoon blocked, %   | -      | -     | -      | -     | -      | -     | -     | -      | - | -     | - | - |
| Mov Cap-1 Maneuver   | -      | 893   | 1081   | 1006  | 893    | -     | 1619  | -      | - | -     | - | - |
| Mov Cap-2 Maneuver   | -      | 893   | -      | 1006  | 893    | -     | -     | -      | - | -     | - | - |
| Stage 1              | 1020   | 893   | -      | -     | -      | -     | -     | -      | - | -     | - | - |
| Stage 2              | -      | -     | -      | 1008  | 893    | -     | -     | -      | - | -     | - | - |

| Approach             | EB |  | WB |  | NB |  | SB |  |
|----------------------|----|--|----|--|----|--|----|--|
| HCM Control Delay, s | -  |  | 0  |  | 0  |  | 0  |  |
| HCM LOS              | -  |  | A  |  | -  |  | -  |  |

| Minor Lane/Major Mvmt | NBL  | NBT | NBR | EBLn1WBLn1 | SBL | SBT | SBR |
|-----------------------|------|-----|-----|------------|-----|-----|-----|
| Capacity (veh/h)      | 1619 | -   | -   | -          | -   | -   | -   |
| HCM Lane V/C Ratio    | -    | -   | -   | -          | -   | -   | -   |
| HCM Control Delay (s) | 0    | -   | -   | -          | 0   | 0   | -   |
| HCM Lane LOS          | A    | -   | -   | -          | A   | A   | -   |
| HCM 95th %tile Q(veh) | 0    | -   | -   | -          | -   | -   | -   |



HCM 6th TWSC  
1: Lemmon Drive & Limber Pine Drive

02/12/2024

| Intersection             |      |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|------|
| Int Delay, s/veh         | 2.1  |      |      |      |      |      |      |
| Movement                 | EBL  | EBR  | NBU  | NBL  | NBT  | SBT  | SBR  |
| Lane Configurations      | Y    |      |      | X    | ↑↑   | ↑↑   |      |
| Traffic Vol, veh/h       | 0    | 109  | 38   | 49   | 430  | 623  | 12   |
| Future Vol, veh/h        | 0    | 109  | 38   | 49   | 430  | 623  | 12   |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Stop | Stop | Free | Free | Free | Free | Free |
| RT Channelized           | -    | None | -    | -    | None | -    | None |
| Storage Length           | 0    | -    | -    | 325  | -    | -    | -    |
| Veh in Median Storage, # | 0    | -    | -    | -    | 0    | 0    | -    |
| Grade, %                 | 0    | -    | -    | -    | 0    | 0    | -    |
| Peak Hour Factor         | 73   | 73   | 92   | 73   | 73   | 73   | 73   |
| Heavy Vehicles, %        | 5    | 5    | 2    | 5    | 5    | 5    | 5    |
| Mvmt Flow                | 0    | 149  | 41   | 67   | 589  | 853  | 16   |

| Major/Minor          | Minor2 | Major1 |      | Major2 |   |   |
|----------------------|--------|--------|------|--------|---|---|
| Conflicting Flow All | 1372   | 435    | 870  | 869    | 0 | 0 |
| Stage 1              | 861    | -      | -    | -      | - | - |
| Stage 2              | 511    | -      | -    | -      | - | - |
| Critical Hdwy        | 6.9    | 7      | 6.44 | 4.2    | - | - |
| Critical Hdwy Stg 1  | 5.9    | -      | -    | -      | - | - |
| Critical Hdwy Stg 2  | 5.9    | -      | -    | -      | - | - |
| Follow-up Hdwy       | 3.55   | 3.35   | 2.52 | 2.25   | - | - |
| Pot Cap-1 Maneuver   | 133    | 561    | 402  | 752    | - | - |
| Stage 1              | 367    | -      | -    | -      | - | - |
| Stage 2              | 559    | -      | -    | -      | - | - |
| Platoon blocked, %   |        |        |      |        | - | - |
| Mov Cap-1 Maneuver   | 104    | 561    | 500  | 500    | - | - |
| Mov Cap-2 Maneuver   | 104    | -      | -    | -      | - | - |
| Stage 1              | 288    | -      | -    | -      | - | - |
| Stage 2              | 559    | -      | -    | -      | - | - |

| Approach             | EB   | NB  | SB |
|----------------------|------|-----|----|
| HCM Control Delay, s | 13.7 | 2.2 | 0  |
| HCM LOS              | B    |     |    |

| Minor Lane/Major Mvmt | NBL   | NBT | EBLn1 | SBT | SBR |
|-----------------------|-------|-----|-------|-----|-----|
| Capacity (veh/h)      | 500   | -   | 561   | -   | -   |
| HCM Lane V/C Ratio    | 0.217 | -   | 0.266 | -   | -   |
| HCM Control Delay (s) | 14.2  | -   | 13.7  | -   | -   |
| HCM Lane LOS          | B     | -   | B     | -   | -   |
| HCM 95th %tile Q(veh) | 0.8   | -   | 1.1   | -   | -   |

HCM 6th TWSC  
2: Pan American Drive & Budger Way

02/12/2024

| Intersection             |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh         | 2    |      |      |      |      |      |
| Movement                 | WBL  | WBR  | NBT  | NBR  | SBL  | SBT  |
| Lane Configurations      | W    |      | T    |      |      | T    |
| Traffic Vol, veh/h       | 7    | 8    | 7    | 15   | 5    | 42   |
| Future Vol, veh/h        | 7    | 8    | 7    | 15   | 5    | 42   |
| 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   | 14   | 12   | 26   | 9    | 74   |

| Major/Minor          | Minor1 | Major1 | Major2 |   |       |
|----------------------|--------|--------|--------|---|-------|
| Conflicting Flow All | 117    | 25     | 0      | 0 | 38    |
| Stage 1              | 25     | -      | -      | - | -     |
| Stage 2              | 92     | -      | -      | - | -     |
| 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   | 879    | 1051   | -      | - | 1572  |
| Stage 1              | 998    | -      | -      | - | -     |
| Stage 2              | 932    | -      | -      | - | -     |
| Platoon blocked, %   |        |        | -      | - | -     |
| Mov Cap-1 Maneuver   | 874    | 1051   | -      | - | 1572  |
| Mov Cap-2 Maneuver   | 874    | -      | -      | - | -     |
| Stage 1              | 998    | -      | -      | - | -     |
| Stage 2              | 926    | -      | -      | - | -     |

| Approach             | WB  | NB | SB  |
|----------------------|-----|----|-----|
| HCM Control Delay, s | 8.9 | 0  | 0.8 |
| HCM LOS              | A   |    |     |

| Minor Lane/Major Mvmt | NBT | NBRWBLn1 | SBL   | SBT   |
|-----------------------|-----|----------|-------|-------|
| Capacity (veh/h)      | -   | -        | 960   | 1572  |
| HCM Lane V/C Ratio    | -   | -        | 0.027 | 0.006 |
| HCM Control Delay (s) | -   | -        | 8.9   | 7.3   |
| HCM Lane LOS          | -   | -        | A     | A     |
| HCM 95th %tile Q(veh) | -   | -        | 0.1   | 0     |

HCM 6th TWSC  
3: Lemmon Drive & Fleetwood Drive

02/12/2024

| Intersection             |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh         | 2.1  |      |      |      |      |      |
| Movement                 | EBL  | EBR  | NBL  | NBT  | SBT  | SBR  |
| Lane Configurations      | ↘↙   |      | ↘    | ↑↑   | ↑↑   |      |
| Traffic Vol, veh/h       | 8    | 100  | 55   | 158  | 518  | 3    |
| Future Vol, veh/h        | 8    | 100  | 55   | 158  | 518  | 3    |
| 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    | -    | 50   | -    | -    | -    |
| 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    | 111  | 61   | 176  | 576  | 3    |

| Major/Minor          | Minor2 | Major1 | Major2 |   |   |   |
|----------------------|--------|--------|--------|---|---|---|
| Conflicting Flow All | 788    | 290    | 579    | 0 | - | 0 |
| Stage 1              | 578    | -      | -      | - | - | - |
| Stage 2              | 210    | -      | -      | - | - | - |
| Critical Hdwy        | 6.84   | 6.94   | 4.14   | - | - | - |
| Critical Hdwy Stg 1  | 5.84   | -      | -      | - | - | - |
| Critical Hdwy Stg 2  | 5.84   | -      | -      | - | - | - |
| Follow-up Hdwy       | 3.52   | 3.32   | 2.22   | - | - | - |
| Pot Cap-1 Maneuver   | 328    | 707    | 991    | - | - | - |
| Stage 1              | 524    | -      | -      | - | - | - |
| Stage 2              | 805    | -      | -      | - | - | - |
| Platoon blocked, %   |        |        |        | - | - | - |
| Mov Cap-1 Maneuver   | 308    | 707    | 991    | - | - | - |
| Mov Cap-2 Maneuver   | 308    | -      | -      | - | - | - |
| Stage 1              | 492    | -      | -      | - | - | - |
| Stage 2              | 805    | -      | -      | - | - | - |

| Approach             | EB   | NB  | SB |
|----------------------|------|-----|----|
| HCM Control Delay, s | 11.9 | 2.3 | 0  |
| HCM LOS              | B    |     |    |

| Minor Lane/Major Mvmt | NBL   | NBT | EBLn1 | SBT | SBR |
|-----------------------|-------|-----|-------|-----|-----|
| Capacity (veh/h)      | 991   | -   | 645   | -   | -   |
| HCM Lane V/C Ratio    | 0.062 | -   | 0.186 | -   | -   |
| HCM Control Delay (s) | 8.9   | -   | 11.9  | -   | -   |
| HCM Lane LOS          | A     | -   | B     | -   | -   |
| HCM 95th %tile Q(veh) | 0.2   | -   | 0.7   | -   | -   |

HCM 6th TWSC  
4: Fleetwood Drive & Budger Way

02/12/2024

| Intersection             |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh         | 2    |      |      |      |      |      |
| Movement                 | EBL  | EBR  | NBL  | NBT  | SBT  | SBR  |
| Lane Configurations      |      |      |      |      |      |      |
| Traffic Vol, veh/h       | 10   | 9    | 8    | 29   | 54   | 6    |
| Future Vol, veh/h        | 10   | 9    | 8    | 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   | 13   | 12   | 43   | 79   | 9    |

| Major/Minor          | Minor2 | Major1 | Major2 |   |   |   |
|----------------------|--------|--------|--------|---|---|---|
| Conflicting Flow All | 151    | 84     | 88     | 0 | - | 0 |
| Stage 1              | 84     | -      | -      | - | - | - |
| Stage 2              | 67     | -      | -      | - | - | - |
| 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    | 975    | 1508   | - | - | - |
| Stage 1              | 939    | -      | -      | - | - | - |
| Stage 2              | 956    | -      | -      | - | - | - |
| Platoon blocked, %   |        |        |        | - | - | - |
| Mov Cap-1 Maneuver   | 834    | 975    | 1508   | - | - | - |
| Mov Cap-2 Maneuver   | 834    | -      | -      | - | - | - |
| Stage 1              | 931    | -      | -      | - | - | - |
| Stage 2              | 956    | -      | -      | - | - | - |

| Approach             | EB  | NB  | SB |
|----------------------|-----|-----|----|
| HCM Control Delay, s | 9.2 | 1.6 | 0  |
| HCM LOS              | A   |     |    |

| Minor Lane/Major Mvmt | NBL   | NBT | EBLn1 | SBT | SBR |
|-----------------------|-------|-----|-------|-----|-----|
| Capacity (veh/h)      | 1508  | -   | 895   | -   | -   |
| HCM Lane V/C Ratio    | 0.008 | -   | 0.031 | -   | -   |
| HCM Control Delay (s) | 7.4   | 0   | 9.2   | -   | -   |
| HCM Lane LOS          | A     | A   | A     | -   | -   |
| HCM 95th %tile Q(veh) | 0     | -   | 0.1   | -   | -   |

HCM 6th TWSC  
5: Fleetwood Drive & Lear Boulevard

02/12/2024

| Intersection             |      |      |      |      |      |      |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh         | 0    |      |      |      |      |      |      |      |      |      |      |      |
| 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    |
| 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         | 25   | 25   | 25   | 25   | 25   | 25   | 25   | 25   | 25   | 25   | 25   | 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    |

| Major/Minor          | Minor2 |       | Minor1 |       | Major1 |       |       | Major2 |   |       |   |   |
|----------------------|--------|-------|--------|-------|--------|-------|-------|--------|---|-------|---|---|
| Conflicting Flow All | 8      | 8     | 4      | 8     | 8      | 4     | 4     | 0      | 0 | 4     | 0 | 0 |
| Stage 1              | 4      | 4     | -      | 4     | 4      | -     | -     | -      | - | -     | - | - |
| Stage 2              | 4      | 4     | -      | 4     | 4      | -     | -     | -      | - | -     | - | - |
| Critical Hdwy        | 7.12   | 6.52  | 6.22   | 7.12  | 6.52   | 6.22  | 4.12  | -      | - | 4.12  | - | - |
| Critical Hdwy Stg 1  | 6.12   | 5.52  | -      | 6.12  | 5.52   | -     | -     | -      | - | -     | - | - |
| Critical Hdwy Stg 2  | 6.12   | 5.52  | -      | 6.12  | 5.52   | -     | -     | -      | - | -     | - | - |
| Follow-up Hdwy       | 3.518  | 4.018 | 3.318  | 3.518 | 4.018  | 3.318 | 2.218 | -      | - | 2.218 | - | - |
| Pot Cap-1 Maneuver   | 1011   | 887   | 1080   | 1011  | 887    | 1080  | 1618  | -      | - | 1618  | - | - |
| Stage 1              | 1018   | 892   | -      | 1018  | 892    | -     | -     | -      | - | -     | - | - |
| Stage 2              | 1018   | 892   | -      | 1018  | 892    | -     | -     | -      | - | -     | - | - |
| Platoon blocked, %   |        |       |        |       |        |       |       | -      | - | -     | - | - |
| Mov Cap-1 Maneuver   | 1011   | 887   | 1080   | 1011  | 887    | 1080  | 1618  | -      | - | 1618  | - | - |
| Mov Cap-2 Maneuver   | 1011   | 887   | -      | 1011  | 887    | -     | -     | -      | - | -     | - | - |
| Stage 1              | 1018   | 892   | -      | 1018  | 892    | -     | -     | -      | - | -     | - | - |
| Stage 2              | 1018   | 892   | -      | 1018  | 892    | -     | -     | -      | - | -     | - | - |

| Approach             | EB | WB | NB | SB |
|----------------------|----|----|----|----|
| HCM Control Delay, s | 0  | 0  | 0  | 0  |
| HCM LOS              | A  | A  |    |    |

| Minor Lane/Major Mvmt | NBL  | NBT | NBR | EBLn1WBLn1 | SBL  | SBT | SBR |
|-----------------------|------|-----|-----|------------|------|-----|-----|
| Capacity (veh/h)      | 1618 | -   | -   | -          | 1618 | -   | -   |
| HCM Lane V/C Ratio    | -    | -   | -   | -          | -    | -   | -   |
| HCM Control Delay (s) | 0    | -   | -   | 0          | 0    | 0   | -   |
| HCM Lane LOS          | A    | -   | -   | A          | A    | A   | -   |
| HCM 95th %tile Q(veh) | 0    | -   | -   | -          | 0    | -   | -   |

HCM 6th TWSC  
1: Lemmon Drive & Limber Pine Drive

02/12/2024

| Intersection             |      |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|------|
| Int Delay, s/veh         | 1.7  |      |      |      |      |      |      |
| Movement                 | EBL  | EBR  | NBU  | NBL  | NBT  | SBT  | SBR  |
| Lane Configurations      |      |      |      |      |      |      |      |
| Traffic Vol, veh/h       | 0    | 81   | 36   | 96   | 623  | 498  | 10   |
| Future Vol, veh/h        | 0    | 81   | 36   | 96   | 623  | 498  | 10   |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Stop | Stop | Free | Free | Free | Free | Free |
| RT Channelized           | -    | None | -    | -    | None | -    | None |
| Storage Length           | 0    | -    | -    | 325  | -    | -    | -    |
| Veh in Median Storage, # | 0    | -    | -    | -    | 0    | 0    | -    |
| Grade, %                 | 0    | -    | -    | -    | 0    | 0    | -    |
| Peak Hour Factor         | 87   | 87   | 92   | 87   | 87   | 87   | 87   |
| Heavy Vehicles, %        | 4    | 4    | 2    | 4    | 4    | 4    | 4    |
| Mvmt Flow                | 0    | 93   | 39   | 110  | 716  | 572  | 11   |

| Major/Minor          | Minor2 | Major1 |      | Major2 |   |   |
|----------------------|--------|--------|------|--------|---|---|
| Conflicting Flow All | 1234   | 292    | 584  | 583    | 0 | 0 |
| Stage 1              | 578    | -      | -    | -      | - | - |
| Stage 2              | 656    | -      | -    | -      | - | - |
| Critical Hdwy        | 6.88   | 6.98   | 6.44 | 4.18   | - | - |
| Critical Hdwy Stg 1  | 5.88   | -      | -    | -      | - | - |
| Critical Hdwy Stg 2  | 5.88   | -      | -    | -      | - | - |
| Follow-up Hdwy       | 3.54   | 3.34   | 2.52 | 2.24   | - | - |
| Pot Cap-1 Maneuver   | 166    | 699    | 612  | 974    | - | - |
| Stage 1              | 519    | -      | -    | -      | - | - |
| Stage 2              | 473    | -      | -    | -      | - | - |
| Platoon blocked, %   |        |        |      |        | - | - |
| Mov Cap-1 Maneuver   | 135    | 699    | 805  | 805    | - | - |
| Mov Cap-2 Maneuver   | 135    | -      | -    | -      | - | - |
| Stage 1              | 423    | -      | -    | -      | - | - |
| Stage 2              | 473    | -      | -    | -      | - | - |

| Approach             | EB   | NB  | SB |
|----------------------|------|-----|----|
| HCM Control Delay, s | 10.9 | 1.8 | 0  |
| HCM LOS              | B    |     |    |

| Minor Lane/Major Mvmt | NBL   | NBT | EBLn1 | SBT | SBR |
|-----------------------|-------|-----|-------|-----|-----|
| Capacity (veh/h)      | 805   | -   | 699   | -   | -   |
| HCM Lane V/C Ratio    | 0.186 | -   | 0.133 | -   | -   |
| HCM Control Delay (s) | 10.5  | -   | 10.9  | -   | -   |
| HCM Lane LOS          | B     | -   | B     | -   | -   |
| HCM 95th %tile Q(veh) | 0.7   | -   | 0.5   | -   | -   |

HCM 6th TWSC  
2: Pan American Drive & Budger Way

02/12/2024

| Intersection             |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh         | 3.8  |      |      |      |      |      |
| Movement                 | WBL  | WBR  | NBT  | NBR  | SBL  | SBT  |
| Lane Configurations      | W    | W    | T    |      |      | T    |
| Traffic Vol, veh/h       | 12   | 33   | 23   | 13   | 7    | 30   |
| Future Vol, veh/h        | 12   | 33   | 23   | 13   | 7    | 30   |
| 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   | 49   | 34   | 19   | 10   | 45   |

| Major/Minor          | Minor1 | Major1 | Major2 |   |       |   |
|----------------------|--------|--------|--------|---|-------|---|
| Conflicting Flow All | 109    | 44     | 0      | 0 | 53    | 0 |
| Stage 1              | 44     | -      | -      | - | -     | - |
| Stage 2              | 65     | -      | -      | - | -     | - |
| 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   | 888    | 1026   | -      | - | 1553  | - |
| Stage 1              | 978    | -      | -      | - | -     | - |
| Stage 2              | 958    | -      | -      | - | -     | - |
| Platoon blocked, %   |        |        | -      | - | -     | - |
| Mov Cap-1 Maneuver   | 882    | 1026   | -      | - | 1553  | - |
| Mov Cap-2 Maneuver   | 882    | -      | -      | - | -     | - |
| Stage 1              | 978    | -      | -      | - | -     | - |
| Stage 2              | 951    | -      | -      | - | -     | - |

| Approach             | WB  | NB | SB  |
|----------------------|-----|----|-----|
| HCM Control Delay, s | 8.9 | 0  | 1.4 |
| HCM LOS              | A   |    |     |

| Minor Lane/Major Mvmt | NBT | NBRWBLn1 | SBL   | SBT   |
|-----------------------|-----|----------|-------|-------|
| Capacity (veh/h)      | -   | -        | 983   | 1553  |
| HCM Lane V/C Ratio    | -   | -        | 0.068 | 0.007 |
| HCM Control Delay (s) | -   | -        | 8.9   | 7.3   |
| HCM Lane LOS          | -   | -        | A     | A     |
| HCM 95th %tile Q(veh) | -   | -        | 0.2   | 0     |

HCM 6th TWSC  
 3: Lemmon Drive & Fleetwood Drive

02/12/2024

| Intersection             |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh         | 1.7  |      |      |      |      |      |
| Movement                 | EBL  | EBR  | NBL  | NBT  | SBT  | SBR  |
| Lane Configurations      | Y    |      | Y    | ↑↑   | ↑↑   |      |
| Traffic Vol, veh/h       | 3    | 73   | 152  | 646  | 318  | 5    |
| Future Vol, veh/h        | 3    | 73   | 152  | 646  | 318  | 5    |
| 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    | -    | 50   | -    | -    | -    |
| 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    | 84   | 175  | 743  | 366  | 6    |

| Major/Minor          | Minor2 | Major1 | Major2 |   |   |   |
|----------------------|--------|--------|--------|---|---|---|
| Conflicting Flow All | 1091   | 186    | 372    | 0 | - | 0 |
| Stage 1              | 369    | -      | -      | - | - | - |
| Stage 2              | 722    | -      | -      | - | - | - |
| Critical Hdwy        | 6.84   | 6.94   | 4.14   | - | - | - |
| Critical Hdwy Stg 1  | 5.84   | -      | -      | - | - | - |
| Critical Hdwy Stg 2  | 5.84   | -      | -      | - | - | - |
| Follow-up Hdwy       | 3.52   | 3.32   | 2.22   | - | - | - |
| Pot Cap-1 Maneuver   | 209    | 824    | 1183   | - | - | - |
| Stage 1              | 670    | -      | -      | - | - | - |
| Stage 2              | 442    | -      | -      | - | - | - |
| Platoon blocked, %   |        |        |        | - | - | - |
| Mov Cap-1 Maneuver   | 178    | 824    | 1183   | - | - | - |
| Mov Cap-2 Maneuver   | 178    | -      | -      | - | - | - |
| Stage 1              | 571    | -      | -      | - | - | - |
| Stage 2              | 442    | -      | -      | - | - | - |

| Approach             | EB   | NB  | SB |
|----------------------|------|-----|----|
| HCM Control Delay, s | 10.7 | 1.6 | 0  |
| HCM LOS              | B    |     |    |

| Minor Lane/Major Mvmt | NBL   | NBT | EBLn1 | SBT | SBR |
|-----------------------|-------|-----|-------|-----|-----|
| Capacity (veh/h)      | 1183  | -   | 721   | -   | -   |
| HCM Lane V/C Ratio    | 0.148 | -   | 0.121 | -   | -   |
| HCM Control Delay (s) | 8.6   | -   | 10.7  | -   | -   |
| HCM Lane LOS          | A     | -   | B     | -   | -   |
| HCM 95th %tile Q(veh) | 0.5   | -   | 0.4   | -   | -   |



HCM 6th TWSC  
4: Fleetwood Drive & Budger Way

02/12/2024

| Intersection             |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh         | 2.8  |      |      |      |      |      |
| Movement                 | EBL  | EBR  | NBL  | NBT  | SBT  | SBR  |
| Lane Configurations      |      |      |      |      |      |      |
| Traffic Vol, veh/h       | 10   | 9    | 38   | 54   | 39   | 12   |
| Future Vol, veh/h        | 10   | 9    | 38   | 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   | 10   | 41   | 58   | 42   | 13   |

| Major/Minor          | Minor2 | Major1 | Major2 |   |   |   |
|----------------------|--------|--------|--------|---|---|---|
| Conflicting Flow All | 189    | 49     | 55     | 0 | - | 0 |
| Stage 1              | 49     | -      | -      | - | - | - |
| Stage 2              | 140    | -      | -      | - | - | - |
| 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   | 800    | 1020   | 1550   | - | - | - |
| Stage 1              | 973    | -      | -      | - | - | - |
| Stage 2              | 887    | -      | -      | - | - | - |
| Platoon blocked, %   |        |        |        | - | - | - |
| Mov Cap-1 Maneuver   | 778    | 1020   | 1550   | - | - | - |
| Mov Cap-2 Maneuver   | 778    | -      | -      | - | - | - |
| Stage 1              | 947    | -      | -      | - | - | - |
| Stage 2              | 887    | -      | -      | - | - | - |

| Approach             | EB  | NB  | SB |
|----------------------|-----|-----|----|
| HCM Control Delay, s | 9.2 | 3.1 | 0  |
| HCM LOS              | A   |     |    |

| Minor Lane/Major Mvmt | NBL   | NBT | EBLn1 | SBT | SBR |
|-----------------------|-------|-----|-------|-----|-----|
| Capacity (veh/h)      | 1550  | -   | 877   | -   | -   |
| HCM Lane V/C Ratio    | 0.026 | -   | 0.023 | -   | -   |
| HCM Control Delay (s) | 7.4   | 0   | 9.2   | -   | -   |
| HCM Lane LOS          | A     | A   | A     | -   | -   |
| HCM 95th %tile Q(veh) | 0.1   | -   | 0.1   | -   | -   |

HCM 6th TWSC  
5: Fleetwood Drive & Lear Boulevard

02/12/2024

| Intersection             |      |      |      |      |      |      |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh         | 0    |      |      |      |      |      |      |      |      |      |      |      |
| 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    | 0    | 1    | 0    |
| Future Vol, veh/h        | 0    | 0    | 3    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 1    | 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         | 38   | 38   | 38   | 38   | 38   | 38   | 38   | 38   | 38   | 38   | 38   | 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    | 0    | 3    | 0    |

| Major/Minor          | Minor2 |       | Minor1 |       | Major1 |       |       | Major2 |   |       |   |   |
|----------------------|--------|-------|--------|-------|--------|-------|-------|--------|---|-------|---|---|
| Conflicting Flow All | 3      | 3     | 3      | 7     | 3      | 0     | 3     | 0      | 0 | 0     | 0 | 0 |
| Stage 1              | 3      | 3     | -      | 0     | 0      | -     | -     | -      | - | -     | - | - |
| Stage 2              | 0      | 0     | -      | 7     | 3      | -     | -     | -      | - | -     | - | - |
| Critical Hdwy        | 7.12   | 6.52  | 6.22   | 7.12  | 6.52   | 6.22  | 4.12  | -      | - | 4.12  | - | - |
| Critical Hdwy Stg 1  | 6.12   | 5.52  | -      | 6.12  | 5.52   | -     | -     | -      | - | -     | - | - |
| Critical Hdwy Stg 2  | 6.12   | 5.52  | -      | 6.12  | 5.52   | -     | -     | -      | - | -     | - | - |
| Follow-up Hdwy       | 3.518  | 4.018 | 3.318  | 3.518 | 4.018  | 3.318 | 2.218 | -      | - | 2.218 | - | - |
| Pot Cap-1 Maneuver   | 1019   | 893   | 1081   | 1013  | 893    | -     | 1619  | -      | - | -     | - | - |
| Stage 1              | 1020   | 893   | -      | -     | -      | -     | -     | -      | - | -     | - | - |
| Stage 2              | -      | -     | -      | 1015  | 893    | -     | -     | -      | - | -     | - | - |
| Platoon blocked, %   | -      | -     | -      | -     | -      | -     | -     | -      | - | -     | - | - |
| Mov Cap-1 Maneuver   | -      | 893   | 1081   | 1006  | 893    | -     | 1619  | -      | - | -     | - | - |
| Mov Cap-2 Maneuver   | -      | 893   | -      | 1006  | 893    | -     | -     | -      | - | -     | - | - |
| Stage 1              | 1020   | 893   | -      | -     | -      | -     | -     | -      | - | -     | - | - |
| Stage 2              | -      | -     | -      | 1008  | 893    | -     | -     | -      | - | -     | - | - |

| Approach             | EB |  | WB |  | NB |  | SB |  |
|----------------------|----|--|----|--|----|--|----|--|
| HCM Control Delay, s |    |  | 0  |  | 0  |  | 0  |  |
| HCM LOS              | -  |  | A  |  |    |  |    |  |

| Minor Lane/Major Mvmt | NBL  | NBT | NBR | EBLn1WBLn1 | SBL | SBT | SBR |
|-----------------------|------|-----|-----|------------|-----|-----|-----|
| Capacity (veh/h)      | 1619 | -   | -   | -          | -   | -   | -   |
| HCM Lane V/C Ratio    | -    | -   | -   | -          | -   | -   | -   |
| HCM Control Delay (s) | 0    | -   | -   | -          | 0   | 0   | -   |
| HCM Lane LOS          | A    | -   | -   | -          | A   | A   | -   |
| HCM 95th %tile Q(veh) | 0    | -   | -   | -          | -   | -   | -   |

**APPENDIX E**  
**PROJECT ACCESS DRIVE LOS CALCULATIONS**

HCM 6th TWSC  
6: Pan American Drive

02/12/2024

| Intersection             |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh         | 3.3  |      |      |      |      |      |
| Movement                 | WBL  | WBR  | NBT  | NBR  | SBL  | SBT  |
| Lane Configurations      | ↔    |      | ↑    |      |      | ↑    |
| Traffic Vol, veh/h       | 23   | 0    | 8    | 8    | 0    | 23   |
| Future Vol, veh/h        | 23   | 0    | 8    | 8    | 0    | 23   |
| 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         | 92   | 92   | 92   | 92   | 92   | 92   |
| Heavy Vehicles, %        | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                | 25   | 0    | 9    | 9    | 0    | 25   |

| Major/Minor          | Minor1 | Major1 | Major2 |   |   |   |
|----------------------|--------|--------|--------|---|---|---|
| Conflicting Flow All | 39     | 14     | 0      | 0 | - | - |
| Stage 1              | 14     | -      | -      | - | - | - |
| Stage 2              | 25     | -      | -      | - | - | - |
| Critical Hdwy        | 6.42   | 6.22   | -      | - | - | - |
| Critical Hdwy Stg 1  | 5.42   | -      | -      | - | - | - |
| Critical Hdwy Stg 2  | 5.42   | -      | -      | - | - | - |
| Follow-up Hdwy       | 3.518  | 3.318  | -      | - | - | - |
| Pot Cap-1 Maneuver   | 973    | 1066   | -      | - | 0 | - |
| Stage 1              | 1009   | -      | -      | - | 0 | - |
| Stage 2              | 998    | -      | -      | - | 0 | - |
| Platoon blocked, %   |        |        | -      | - | - | - |
| Mov Cap-1 Maneuver   | 973    | 1066   | -      | - | - | - |
| Mov Cap-2 Maneuver   | 973    | -      | -      | - | - | - |
| Stage 1              | 1009   | -      | -      | - | - | - |
| Stage 2              | 998    | -      | -      | - | - | - |

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

| Minor Lane/Major Mvmt | NBT | NBRWBLn1 | SBT   |
|-----------------------|-----|----------|-------|
| Capacity (veh/h)      | -   | -        | 973   |
| HCM Lane V/C Ratio    | -   | -        | 0.026 |
| HCM Control Delay (s) | -   | -        | 8.8   |
| HCM Lane LOS          | -   | -        | A     |
| HCM 95th %tile Q(veh) | -   | -        | 0.1   |

HCM 6th TWSC  
7: Pan American Drive

02/12/2024

| Intersection             |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh         | 6.2  |      |      |      |      |      |
| Movement                 | WBL  | WBR  | NBT  | NBR  | SBL  | SBT  |
| Lane Configurations      | W    |      | T    |      |      | T    |
| Traffic Vol, veh/h       | 23   | 0    | 0    | 8    | 0    | 0    |
| Future Vol, veh/h        | 23   | 0    | 0    | 8    | 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         | 92   | 92   | 92   | 92   | 92   | 92   |
| Heavy Vehicles, %        | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                | 25   | 0    | 0    | 9    | 0    | 0    |

| Major/Minor          | Minor1 | Major1 | Major2 |   |       |
|----------------------|--------|--------|--------|---|-------|
| Conflicting Flow All | 6      | 5      | 0      | 0 | 9     |
| Stage 1              | 5      | -      | -      | - | -     |
| Stage 2              | 1      | -      | -      | - | -     |
| 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   | 1015   | 1078   | -      | - | 1611  |
| Stage 1              | 1018   | -      | -      | - | -     |
| Stage 2              | 1022   | -      | -      | - | -     |
| Platoon blocked, %   |        |        | -      | - | -     |
| Mov Cap-1 Maneuver   | 1015   | 1078   | -      | - | 1611  |
| Mov Cap-2 Maneuver   | 1015   | -      | -      | - | -     |
| Stage 1              | 1018   | -      | -      | - | -     |
| Stage 2              | 1022   | -      | -      | - | -     |

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

| Minor Lane/Major Mvmt | NBT | NBRWBLn1 | SBL   | SBT  |
|-----------------------|-----|----------|-------|------|
| Capacity (veh/h)      | -   | -        | 1015  | 1611 |
| HCM Lane V/C Ratio    | -   | -        | 0.025 | -    |
| HCM Control Delay (s) | -   | -        | 8.6   | 0    |
| HCM Lane LOS          | -   | -        | A     | A    |
| HCM 95th %tile Q(veh) | -   | -        | 0.1   | 0    |

HCM 6th TWSC  
6: Pan American Drive

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| Intersection             |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh         | 1.7  |      |      |      |      |      |
| Movement                 | WBL  | WBR  | NBT  | NBR  | SBL  | SBT  |
| Lane Configurations      | ↔    |      | ↑    |      |      | ↑    |
| Traffic Vol, veh/h       | 16   | 0    | 26   | 26   | 0    | 16   |
| Future Vol, veh/h        | 16   | 0    | 26   | 26   | 0    | 16   |
| 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         | 92   | 92   | 92   | 92   | 92   | 92   |
| Heavy Vehicles, %        | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                | 17   | 0    | 28   | 28   | 0    | 17   |

| Major/Minor          | Minor1 | Major1 | Major2 |   |   |   |
|----------------------|--------|--------|--------|---|---|---|
| Conflicting Flow All | 59     | 42     | 0      | 0 | - | - |
| Stage 1              | 42     | -      | -      | - | - | - |
| Stage 2              | 17     | -      | -      | - | - | - |
| Critical Hdwy        | 6.42   | 6.22   | -      | - | - | - |
| Critical Hdwy Stg 1  | 5.42   | -      | -      | - | - | - |
| Critical Hdwy Stg 2  | 5.42   | -      | -      | - | - | - |
| Follow-up Hdwy       | 3.518  | 3.318  | -      | - | - | - |
| Pot Cap-1 Maneuver   | 948    | 1029   | -      | - | 0 | - |
| Stage 1              | 980    | -      | -      | - | 0 | - |
| Stage 2              | 1006   | -      | -      | - | 0 | - |
| Platoon blocked, %   |        |        | -      | - | - | - |
| Mov Cap-1 Maneuver   | 948    | 1029   | -      | - | - | - |
| Mov Cap-2 Maneuver   | 948    | -      | -      | - | - | - |
| Stage 1              | 980    | -      | -      | - | - | - |
| Stage 2              | 1006   | -      | -      | - | - | - |

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

| Minor Lane/Major Mvmt | NBT | NBRWBLn1 | SBT   |
|-----------------------|-----|----------|-------|
| Capacity (veh/h)      | -   | -        | 948   |
| HCM Lane V/C Ratio    | -   | -        | 0.018 |
| HCM Control Delay (s) | -   | -        | 8.9   |
| HCM Lane LOS          | -   | -        | A     |
| HCM 95th %tile Q(veh) | -   | -        | 0.1   |

HCM 6th TWSC  
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| Intersection             |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh         | 3.2  |      |      |      |      |      |
| Movement                 | WBL  | WBR  | NBT  | NBR  | SBL  | SBT  |
| Lane Configurations      | W    |      | T    |      |      | T    |
| Traffic Vol, veh/h       | 16   | 0    | 0    | 26   | 0    | 0    |
| Future Vol, veh/h        | 16   | 0    | 0    | 26   | 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         | 92   | 92   | 92   | 92   | 92   | 92   |
| Heavy Vehicles, %        | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                | 17   | 0    | 0    | 28   | 0    | 0    |

| Major/Minor          | Minor1 | Major1 | Major2 |
|----------------------|--------|--------|--------|
| Conflicting Flow All | 15     | 14     | 0      |
| Stage 1              | 14     | -      | -      |
| Stage 2              | 1      | -      | -      |
| Critical Hdwy        | 6.42   | 6.22   | -      |
| Critical Hdwy Stg 1  | 5.42   | -      | -      |
| Critical Hdwy Stg 2  | 5.42   | -      | -      |
| Follow-up Hdwy       | 3.518  | 3.318  | -      |
| Pot Cap-1 Maneuver   | 1004   | 1066   | -      |
| Stage 1              | 1009   | -      | -      |
| Stage 2              | 1022   | -      | -      |
| Platoon blocked, %   |        | -      | -      |
| Mov Cap-1 Maneuver   | 1004   | 1066   | -      |
| Mov Cap-2 Maneuver   | 1004   | -      | -      |
| Stage 1              | 1009   | -      | -      |
| Stage 2              | 1022   | -      | -      |

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

| Minor Lane/Major Mvmt | NBT | NBRWBLn1 | SBL   | SBT  |
|-----------------------|-----|----------|-------|------|
| Capacity (veh/h)      | -   | -        | 1004  | 1585 |
| HCM Lane V/C Ratio    | -   | -        | 0.017 | -    |
| HCM Control Delay (s) | -   | -        | 8.6   | 0    |
| HCM Lane LOS          | -   | -        | A     | A    |
| HCM 95th %tile Q(veh) | -   | -        | 0.1   | 0    |

HCM 6th TWSC  
6: Pan American Drive

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| Intersection             |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh         | 3.3  |      |      |      |      |      |
| Movement                 | WBL  | WBR  | NBT  | NBR  | SBL  | SBT  |
| Lane Configurations      | ↔    |      | ↑    |      |      | ↑    |
| Traffic Vol, veh/h       | 23   | 0    | 8    | 8    | 0    | 23   |
| Future Vol, veh/h        | 23   | 0    | 8    | 8    | 0    | 23   |
| 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         | 92   | 92   | 92   | 92   | 92   | 92   |
| Heavy Vehicles, %        | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                | 25   | 0    | 9    | 9    | 0    | 25   |

| Major/Minor          | Minor1 | Major1 | Major2 |   |   |   |
|----------------------|--------|--------|--------|---|---|---|
| Conflicting Flow All | 39     | 14     | 0      | 0 | - | - |
| Stage 1              | 14     | -      | -      | - | - | - |
| Stage 2              | 25     | -      | -      | - | - | - |
| Critical Hdwy        | 6.42   | 6.22   | -      | - | - | - |
| Critical Hdwy Stg 1  | 5.42   | -      | -      | - | - | - |
| Critical Hdwy Stg 2  | 5.42   | -      | -      | - | - | - |
| Follow-up Hdwy       | 3.518  | 3.318  | -      | - | - | - |
| Pot Cap-1 Maneuver   | 973    | 1066   | -      | - | 0 | - |
| Stage 1              | 1009   | -      | -      | - | 0 | - |
| Stage 2              | 998    | -      | -      | - | 0 | - |
| Platoon blocked, %   |        |        | -      | - | - | - |
| Mov Cap-1 Maneuver   | 973    | 1066   | -      | - | - | - |
| Mov Cap-2 Maneuver   | 973    | -      | -      | - | - | - |
| Stage 1              | 1009   | -      | -      | - | - | - |
| Stage 2              | 998    | -      | -      | - | - | - |

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

| Minor Lane/Major Mvmt | NBT | NBRWBLn1 | SBT   |
|-----------------------|-----|----------|-------|
| Capacity (veh/h)      | -   | -        | 973   |
| HCM Lane V/C Ratio    | -   | -        | 0.026 |
| HCM Control Delay (s) | -   | -        | 8.8   |
| HCM Lane LOS          | -   | -        | A     |
| HCM 95th %tile Q(veh) | -   | -        | 0.1   |



HCM 6th TWSC  
7: Pan American Drive

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| Intersection             |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh         | 6.2  |      |      |      |      |      |
| Movement                 | WBL  | WBR  | NBT  | NBR  | SBL  | SBT  |
| Lane Configurations      | W    |      | T    |      |      | T    |
| Traffic Vol, veh/h       | 23   | 0    | 0    | 8    | 0    | 0    |
| Future Vol, veh/h        | 23   | 0    | 0    | 8    | 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         | 92   | 92   | 92   | 92   | 92   | 92   |
| Heavy Vehicles, %        | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                | 25   | 0    | 0    | 9    | 0    | 0    |

| Major/Minor          | Minor1 | Major1 | Major2 |   |       |
|----------------------|--------|--------|--------|---|-------|
| Conflicting Flow All | 6      | 5      | 0      | 0 | 9     |
| Stage 1              | 5      | -      | -      | - | -     |
| Stage 2              | 1      | -      | -      | - | -     |
| 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   | 1015   | 1078   | -      | - | 1611  |
| Stage 1              | 1018   | -      | -      | - | -     |
| Stage 2              | 1022   | -      | -      | - | -     |
| Platoon blocked, %   |        |        |        |   |       |
| Mov Cap-1 Maneuver   | 1015   | 1078   | -      | - | 1611  |
| Mov Cap-2 Maneuver   | 1015   | -      | -      | - | -     |
| Stage 1              | 1018   | -      | -      | - | -     |
| Stage 2              | 1022   | -      | -      | - | -     |

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

| Minor Lane/Major Mvmt | NBT | NBRWBLn1 | SBL   | SBT  |
|-----------------------|-----|----------|-------|------|
| Capacity (veh/h)      | -   | -        | 1015  | 1611 |
| HCM Lane V/C Ratio    | -   | -        | 0.025 | -    |
| HCM Control Delay (s) | -   | -        | 8.6   | 0    |
| HCM Lane LOS          | -   | -        | A     | A    |
| HCM 95th %tile Q(veh) | -   | -        | 0.1   | 0    |

HCM 6th TWSC  
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| Intersection             |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh         | 1.7  |      |      |      |      |      |
| Movement                 | WBL  | WBR  | NBT  | NBR  | SBL  | SBT  |
| Lane Configurations      | ↔    |      | ↑    |      |      | ↑    |
| Traffic Vol, veh/h       | 16   | 0    | 26   | 26   | 0    | 16   |
| Future Vol, veh/h        | 16   | 0    | 26   | 26   | 0    | 16   |
| 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         | 92   | 92   | 92   | 92   | 92   | 92   |
| Heavy Vehicles, %        | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                | 17   | 0    | 28   | 28   | 0    | 17   |

| Major/Minor          | Minor1 | Major1 | Major2 |   |   |   |
|----------------------|--------|--------|--------|---|---|---|
| Conflicting Flow All | 59     | 42     | 0      | 0 | - | - |
| Stage 1              | 42     | -      | -      | - | - | - |
| Stage 2              | 17     | -      | -      | - | - | - |
| Critical Hdwy        | 6.42   | 6.22   | -      | - | - | - |
| Critical Hdwy Stg 1  | 5.42   | -      | -      | - | - | - |
| Critical Hdwy Stg 2  | 5.42   | -      | -      | - | - | - |
| Follow-up Hdwy       | 3.518  | 3.318  | -      | - | - | - |
| Pot Cap-1 Maneuver   | 948    | 1029   | -      | - | 0 | - |
| Stage 1              | 980    | -      | -      | - | 0 | - |
| Stage 2              | 1006   | -      | -      | - | 0 | - |
| Platoon blocked, %   |        |        | -      | - | - | - |
| Mov Cap-1 Maneuver   | 948    | 1029   | -      | - | - | - |
| Mov Cap-2 Maneuver   | 948    | -      | -      | - | - | - |
| Stage 1              | 980    | -      | -      | - | - | - |
| Stage 2              | 1006   | -      | -      | - | - | - |

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

| Minor Lane/Major Mvmt | NBT | NBRWBLn1 | SBT   |
|-----------------------|-----|----------|-------|
| Capacity (veh/h)      | -   | -        | 948   |
| HCM Lane V/C Ratio    | -   | -        | 0.018 |
| HCM Control Delay (s) | -   | -        | 8.9   |
| HCM Lane LOS          | -   | -        | A     |
| HCM 95th %tile Q(veh) | -   | -        | 0.1   |

HCM 6th TWSC  
7: Pan American Drive

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| Intersection             |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh         | 3.2  |      |      |      |      |      |
| Movement                 | WBL  | WBR  | NBT  | NBR  | SBL  | SBT  |
| Lane Configurations      | W    |      | T    |      |      | T    |
| Traffic Vol, veh/h       | 16   | 0    | 0    | 26   | 0    | 0    |
| Future Vol, veh/h        | 16   | 0    | 0    | 26   | 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         | 92   | 92   | 92   | 92   | 92   | 92   |
| Heavy Vehicles, %        | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                | 17   | 0    | 0    | 28   | 0    | 0    |

| Major/Minor          | Minor1 | Major1 | Major2 |   |       |
|----------------------|--------|--------|--------|---|-------|
| Conflicting Flow All | 15     | 14     | 0      | 0 | 28    |
| Stage 1              | 14     | -      | -      | - | -     |
| Stage 2              | 1      | -      | -      | - | -     |
| 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   | 1066   | -      | - | 1585  |
| Stage 1              | 1009   | -      | -      | - | -     |
| Stage 2              | 1022   | -      | -      | - | -     |
| Platoon blocked, %   |        |        | -      | - | -     |
| Mov Cap-1 Maneuver   | 1004   | 1066   | -      | - | 1585  |
| Mov Cap-2 Maneuver   | 1004   | -      | -      | - | -     |
| Stage 1              | 1009   | -      | -      | - | -     |
| Stage 2              | 1022   | -      | -      | - | -     |

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

| Minor Lane/Major Mvmt | NBT | NBRWBLn1 | SBL   | SBT  |
|-----------------------|-----|----------|-------|------|
| Capacity (veh/h)      | -   | -        | 1004  | 1585 |
| HCM Lane V/C Ratio    | -   | -        | 0.017 | -    |
| HCM Control Delay (s) | -   | -        | 8.6   | 0    |
| HCM Lane LOS          | -   | -        | A     | A    |
| HCM 95th %tile Q(veh) | -   | -        | 0.1   | 0    |

**APPENDIX F**  
**SITE PLAN**

Exhibit "A"

