



Planning Commission Staff Report

Meeting Date: October 4, 2016

Subject: Tentative Subdivision Map Case Number: TM15-001
Applicant: SP58, LLC
Agenda Item Number: 9B
Project Summary: 161-lot common open space subdivision
Recommendation: Approval with Conditions
Prepared by: Kelly Mullin, Planner
Planning and Development Division
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Description

Tentative Subdivision Map Case Number TM15-001 (Blackstone Estates) – Hearing, discussion, and possible action to approve a 161-lot, single family detached, common open space subdivision on a ±58.49-acre parcel. Lots will range in size from 8,595 square feet (±.19 acres) to 19,271 square feet (±.44 acres) with lot sizes averaging approximately 11,140 square feet (±.25 acres).

- Applicant: SP58, LLC
- Property Owner: Jacie, LLC
- Location: 350 Calle de la Plata, on the north side of the road and approximately 650 feet east of its intersection with Pyramid Hwy
- Assessor's Parcel Number: 534-571-01
- Parcel Size: ±58.49 acres
- Master Plan Category: Suburban Residential (SR)
- Regulatory Zone: Medium Density Suburban (MDS)
- Area Plan: Spanish Springs
- Citizen Advisory Board: Spanish Springs
- Development Code: Article 608, *Tentative Subdivision Maps* and Article 408, *Common Open Space Development*
- Commission District: 4 – Commissioner Hartung
- Section/Township/Range: Section 23, T21N, R20E, MDM, Washoe County, NV

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Tentative Subdivision Map

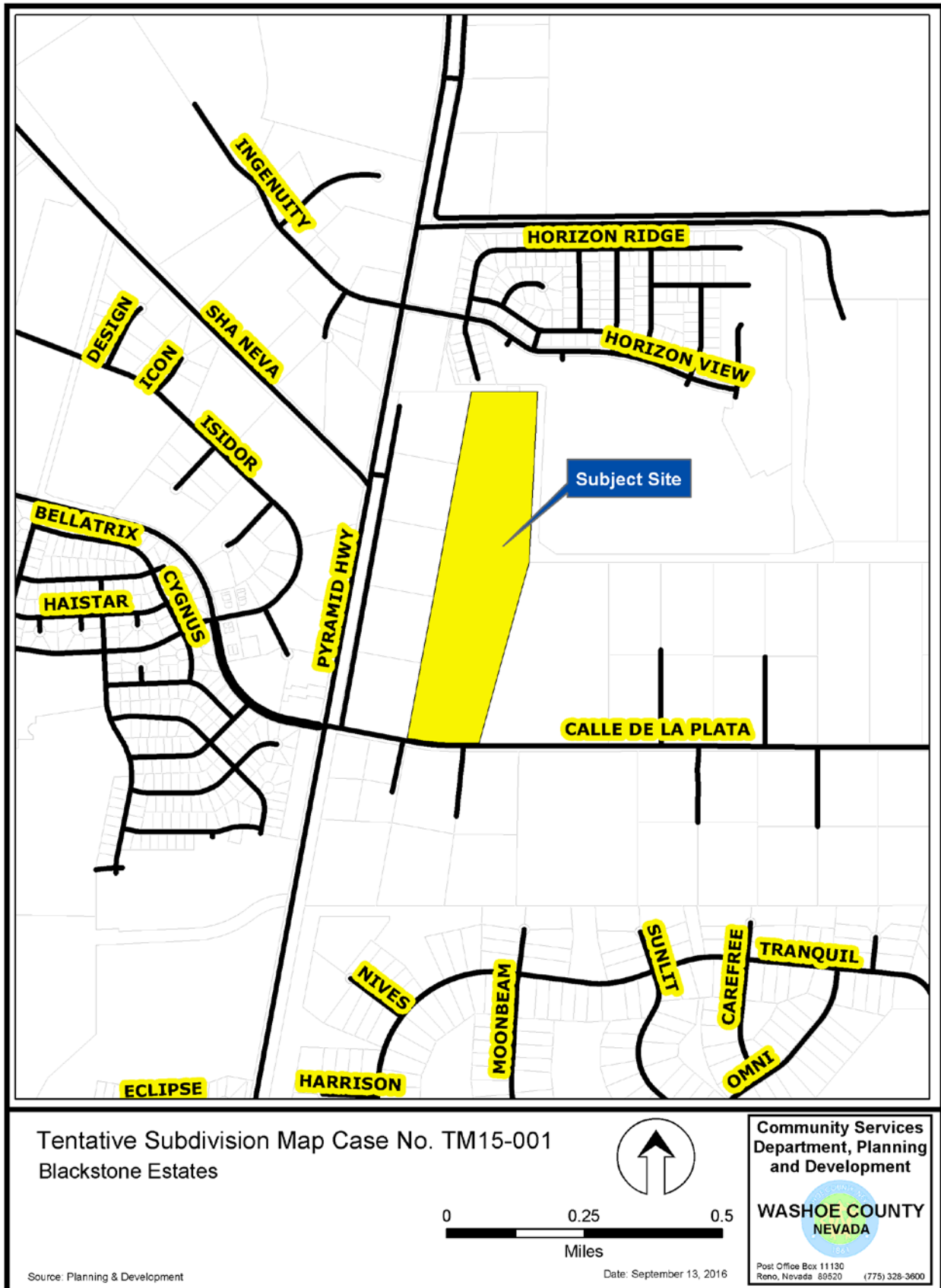
The purpose of a Tentative Subdivision Map is:

- 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 insure 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 TM15-001 are attached to this staff report and will be included with the Action Order if the application is approved by the Planning Commission.



Vicinity Map



Site Plan

Project Evaluation

The applicants are proposing to develop a 161-lot common open space subdivision on a ±58.49-acre parcel that has a regulatory zone of medium density suburban (MDS). The MDS regulatory zone was established on this property in July 2016 and has a residential density of three dwelling units per acre. The zoning would allow for up to 175 lots, so this development utilizes a reduced density of approximately 2.75 dwelling units per acre. The previous regulatory zones on the property were Industrial and Neighborhood Commercial.

As a common open-space subdivision, parcels would be smaller than otherwise allowed in the regulatory zone, but would also provide for ±9.27 acres of common open space. Lots will range in size from 8,595 square feet (±.19 acres) to 19,271 square feet (±.44 acres), with lot sizes averaging approximately 11,140 square feet (±.25 acres).

The Character Statement of the Spanish Springs Area Plan describes the existing and desired land use pattern in the Spanish Springs planning area as containing a distinct suburban core concentrated along Pyramid Highway. This core is described as having a broad mix of non-residential uses together with residential densities of up to three dwelling units per acre located predominately, but not exclusively, on the west side of Pyramid Highway. The subject parcel and the suburban core are both located within the Suburban Character Management Area, which is the designated growth area in the Spanish Springs Valley.

Compatibility

To the north and northeast of the subject parcel is the single-family residential subdivision Donovan Ranch. Currently under construction, Donovan Ranch is a common open space subdivision with reduced-size lots that are generally in the vicinity of one-third acre, which is compatible and consistent with Blackstone Estates' proposed development pattern. To the southeast is a ±39.8-acre property currently being reviewed for a proposed 119-lot subdivision (Sugarloaf Ranch Estates) that is substantially similar to this project. To the west of the subject property are five parcels of approximately ten acres each. Two of the five parcels are developed with single-family dwellings and the others are undeveloped. A 20-foot to 30-foot-wide common open space strip of land along the western property line, and a ±3.19-acre common open space area at the western property boundary will both act as a buffer area between the smaller proposed lots and the existing larger lots to the west. To the south is Calle de la Plata. Across Calle de la Plata are parcels with regulatory zones of Neighborhood Commercial, Open Space and Industrial, along with one ten-acre parcel with a regulatory zone of Medium Density Rural that has been developed with one single-family residence.

To minimize potential impacts to neighboring properties to the west, the applicant has proposed, and staff has conditioned, that lots located along the western perimeter not allow homes or structures of more than one story. Staff has proposed a condition of approval that a note to this effect shall be placed on applicable final maps, and that a disclosure be made by the developer to affected homebuyers on their closing documents. Also, in order to minimize impacts to neighboring properties, construction hours will be limited to 7 a.m. to 6 p.m., Monday through Saturday. These construction hours were agreed to by the applicant's representative at the Spanish Springs Citizen Advisory Board meeting on September 14, 2016.

Washoe County Schools

Washoe County schools in Spanish Springs are currently nearing or over capacity, and they will be further impacted by the proposed development. The subdivision is expected to generate 45

elementary school students, 10 middle school students and 22 high school students. The property is currently zoned for Alice Taylor Elementary School, Shaw Middle School and Spanish Springs High School. According to the Washoe County School District (WCSD), Alice Taylor Elementary School is operating at 111 percent of base capacity, Shaw Middle School is operating at 95 percent of base capacity and Spanish Springs High School is at 107 percent of base capacity. Per WCSD-adopted Policy 6111, most elementary schools will transition to a multi-track year round schedule when their enrollment reaches 120 percent of capacity and most middle and high schools will be converted to either multi-track or a double session calendar when enrollment exceeds 120 percent of capacity. Also, assignments to the closest schools with available capacity may be implemented for students in this development. The Washoe County School District has requested a condition requiring that a disclosure shall be made by the developer to each homebuyer/renter on their closing/rental documents that K-12 students in this subdivision may be assigned to the nearest WCSD schools with available capacity in the event that the currently zoned schools cannot accommodate additional students.

Recreational Amenities

The proposed subdivision includes ± 9.27 acres of open space. The application indicates that ± 3.19 -acres of this open space would be located along the western property boundary and would serve as a neighborhood park, providing passive and active recreational opportunities for residents. Although the application states this location would serve as a park, the submitted landscape plan shows it as a native landscape and revegetated area. Therefore, staff is proposing a condition of approval requiring a minimum of 1.5 acres of common open space to be developed into a park area providing landscaping, shade, picnic areas, seating and other amenities common to neighborhood parks. As with all of the common open space in the subdivision, the continuing maintenance of this area shall be addressed in the CC&Rs and funded in perpetuity through the homeowners' association. The applicant will have flexibility to adjust the location of this 1.5+ acre park to another location within the subdivision if necessary.

There are also 20-foot to 30-foot-wide open space buffers that run along the entire length of the western, eastern and northern property lines. The applicant has proposed a public multi-use trail easement to connect the subdivision to the proposed development to the east, as well as to the regional trail system that connects to Sugarloaf Peak. Washoe County Regional Parks and Open Space has included a condition of approval requiring that a 20-foot to 30-foot-wide non-motorized (equestrian and pedestrian) public access trail easement be established to provide access from Calle de la Plata to the Sugarloaf Peak & Trail, and that an acceptable trail be constructed within that easement.

The nearest existing Washoe County regional park site is located approximately 1.5 miles from this property at the Gator Swamp park adjacent to Alice Taylor Elementary School.

Traffic

The primary access to the project site is via Calle de la Plata, just off of Pyramid Highway. The initial traffic study provided with the application was deemed to be insufficient for complete review, and an updated traffic study was requested. The updated study (Exhibit F) was reviewed by the Nevada Department of Transportation (NDOT), the Regional Transportation Commission (RTC) and the Washoe County Engineering & Capital Projects Division.

Of primary concern to reviewers and surrounding property owners is anticipated traffic impact at the intersection of Calle De La Plata and Pyramid Highway. That intersection currently operates at a Level of Service (LOS) F during morning and afternoon peak hours, but otherwise operates

at LOS A. If approved, this development and other subdivisions proposed along Calle de la Plata and to the north would generate additional negative traffic impacts to this intersection.

The following is an excerpt from the NDOT review of this project:

“Existing traffic plus combined anticipated traffic volumes (Blackstone Estates, Sugarloaf Ranch Estates and Harris Ranch Subdivision) appear to have a significant impact to the intersection at Pyramid Highway and Calle De La Plata. If all three development projects are approved and constructed, it is likely the traffic generated will warrant the need for a traffic signal. There would be a benefit to the public if these projects installed the necessary signal infrastructure to mitigate the traffic impacts. The traffic signal mast arms, signal heads and signage would not be installed until such time as a traffic signal study is conducted and the signal activation approved by NDOT.”

The following proposed condition of approval has been provided by the Washoe County Engineering and Capital Projects Division:

“Before approval of the first final map, the planning, design, and construction of a fully signalized intersection at Pyramid Highway and Calle De La Plata meeting the requirements of the Washoe County Engineer, NDOT and RTC shall occur, or a financial assurance shall be posted for the construction of said improvements by the developer. In order for the signalization improvements located within NDOT right-of-way to be eligible for Regional Road Impact Fee waiver under the terms and provisions of the Regional Transportation Commission’s General Administrative Manual, 5th Addition including Amendment No. 1, the minor leg (Calle de la Plata) shall be constructed by the developer to regional roadway standards, meeting Washoe County, RTC and NDOT requirements. The County Engineer shall determine compliance with this condition.”

The County Engineer is also requiring improvements to Calle de la Plata, the installation of traffic calming measures within the subdivision, and secondary access. As an important safety measure, NDOT also recommends the creation of a deceleration lane from Pyramid Highway to Calle de la Plata.

Grading and Drainage

The subject site is vacant and without significant topographic features. The property is relatively level and slopes gently down from east to west. A small portion of the southeast corner of the parcel is designated as being in a FEMA flood zone AO, and the proposed tentative map identifies that area as being developed with a detention basin. The Development Suitability Map identifies the remainder of the property as being “unconstrained.”

Currently, the parcel is largely undisturbed and contains significant native vegetation. The anticipated grading necessary to support the project involves the disturbance of the entire 58.49-acre site, involving the cut and fill of approximately 130,000 cubic yards of material to be balanced on site. The maximum allowable steepness for cut and fill within the development are 3:1 slopes.

A conceptual level hydrology analysis was provided with the application and reviewed by the County Engineer. The final design of the drainage system will need to ensure that the development has mitigated any increase in runoff, and that runoff discharge onto offsite properties

is substantially in the same manner and location of existing runoff. The County Engineer has provided conditions of approval related to drainage for the subdivision.

Fire Protection

Fire protection services will be provided by the Truckee Meadows Fire Protection District (TMFPD). Their nearest station is located approximately 2.5 miles to the south on La Posada Drive. All developments on the property shall comply with Washoe County Code Chapter 60. Additionally, open space and drainage shall be maintained in accordance with the vegetation management plan of Washoe County Code Chapter 60.

Water and Sewer

The Truckee Meadows Water Authority (TMWA) shall be the water service provider and is agreeable to supplying water to this project subject to certain conditions being met including the annexation of this property into the TMWA retail service area. In 2015, TMWA prepared a discovery for the subject site; the findings were based on 186 units (not the 161 units as proposed). TMWA has estimated the maximum daily domestic demand to be approximately 149 gallons per minute.

The State of Nevada's Division of Water Resources also reviewed the project and indicated that municipal water service is subject to TMWA requirements and approval by the Office of the State Engineer regarding water quantity and availability. The State Engineer anticipates that the project would require 79.98 acre-feet annually.

Sewer service will be provided by Washoe County and treatment will be at the Truckee Meadows Water Reclamation Facility.

Citizen Advisory Board Meeting

The proposed project was presented by the applicant at the Spanish Springs Citizen Advisory Board (CAB) meeting on September 14, 2016. The CAB voted unanimously with three members present to recommend denial of the project. An excerpt from the minutes of the meeting is attached as Exhibit C and reflects discussion of the following topics:

- Construction hours
- Traffic
- Size of proposed homes
- Source of water to serve proposed subdivision
- Parks in the area
- Capacity of nearby schools
- Emergency services
- Process to review this request
- Applicant's proposed development schedule
- Nearby property values

No additional comments were received from the public regarding this request.

Reviewing Agencies

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

- Washoe County Community Services Department

- Engineering and Capital Projects
- Planning and Development
- Regional Parks and Open Space
- Traffic
- Utilities (Sewer)
- Nevada Division of Environmental Protection
- Nevada Division of Water Resources
- Nevada Department of Transportation
- Truckee Meadows Fire Protection District
- Truckee Meadows Regional Planning Agency
- Regional Transportation Commission
- Washoe County Health District
 - Air Quality Management Division
 - Environmental Health Division
 - Vector Control
 - Emergency Medical Services
- Washoe County School District
- Washoe-Storey Conservation District
- Truckee Meadows Water Authority
- United States Postal Service

Several of the above-listed agencies/departments submitted responses to the proposed tentative subdivision map. A summary of each agency's comments and/or recommended conditions of approval and their contact information are provided. The Conditions of Approval document is attached to this staff report and will be included with the Action Order should the Planning Commission approve the tentative subdivision map application.

- Washoe County Planning and Development addressed common area standards, lot sizes, structure heights, landscaping, grading of slopes, CC&Rs, timing of final map submittals, etc.
Contact: Kelly Mullin, 775.328.3608, kmullin@washoecounty.us
- Washoe County Engineering and Capital Projects addressed grading, drainage, stormwater management, maintenance of common area, easements, traffic, etc.
Contact: Walt West, 775.328.2310, wwest@washoecounty.us and Clara Lawson, 775.328.3603, clawson@washoecounty.us
- Washoe County Utility Services requires improvement plans for construction of sanitary sewer collection system(s), sanitary sewer report, fees, and easements.
Contact: Tim Simpson, 775.954.4648, tsimpson@washoecounty.us
- Washoe County Health District addressed water system requirements, catch basin and detention basin design, mass grading, roadside ditch design, etc.
**Contact: James English, 775.328.2434, jenglish@washoecounty.us
Jim Shaffer, 775.785.4599, jshaffer@washoecounty.us**
- Washoe County Regional Parks and Open Space requires a trail easement and a constructed trail providing access from Calle de la Plata to the Sugarloaf Peak & Trail.
Contact: Dennis Troy, 775.328.2059, dtroy@washoecounty.us

- Washoe County School District asks for a condition for a disclosure to all future homebuyers that students may be assigned to the nearest school(s).
Contact: Mike Boster 775.232.1571, mboster@washoeschools.net
- Truckee Meadows Fire Protection District addressed requirements of Washoe County Code Chapter 60, including the International Fire Code, vegetation management, and CC&R requirements.
Contact: Amy Ray, 775.326.6000, aray@fmfpd.us
- Nevada Division of Environmental Protection (NDEP) stated that the developer will need to obtain coverage under NDEP's Construction Stormwater Permit prior to any grading.
Contact: Patrick Mohn, 775.687.9419, pmohn@ndep.nv.gov
- Nevada Department of Transportation evaluated the applicant's traffic study and provided comments and recommendations, including a suggestion for a deceleration lane.
Contact: Jae Pullen, 775.834.8300
- Regional Transportation Commission (RTC) evaluated the applicant's traffic study and provided comments on the analysis. It was also requested that the developer contact the RTC to discuss options for future transit improvement.
Contact: Rebecca Kapuler, 775.332.0174, rkapuler@rtcwashoe.com
- Nevada Division of Water Resources stated that water rights are required. A will-serve letter from TMWA will be required.
Contact: Steve Shell, 775.684.2836, sshell@water.nv.gov

Staff Comments on Required Findings

Washoe County Code Section 110.608.25 requires that all of the following findings be made to the satisfaction of the Washoe County Planning Commission before granting approval of the 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.

- 1) Plan Consistency. That the proposed map is consistent with the Master Plan and any specific plan.
Staff Comment: The proposed tentative map, as conditioned, meets all of the applicable goals and policies of the Washoe County Master Plan and the Spanish Springs Area Plan.
- 2) 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 proposed tentative map meets all of the density, lot size and common open space criteria of the Washoe County Master Plan and the Spanish Springs Area Plan. The proposed development complies with the three dwelling units per acre overall density allowed in Medium Density Suburban (MDS) regulatory zone. Lot sizes smaller than MDS requirements are enabled through Article 408, Common Open Space Development.

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

Staff Comment: The site is a relatively level property adjacent to paved access, located within the designated growth area for Spanish Springs, and is suitable for a subdivision with 161 dwellings. Although the lots are smaller than the adjacent properties to the west, the proposed development is consistent with the lot sizes of the development to the north and northeast, and to the lot sizes proposed on the property to the east.

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

Staff Comment: There are adequate public services available to serve the proposed development, including community water and sewer service.

- 5) 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 proposed development is not located within an environmentally sensitive location. The proposed improvements will not cause substantial environmental damage or harm to endangered plants, wildlife or their habitat.

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

Staff Comment: The design of the subdivision has been reviewed by the Health District and will comply with all generally applicable public health standards.

- 7) 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 currently no public easements through this property. The design of the subdivision will include primary and secondary road access, pedestrian sidewalks, and multi-modal pedestrian and equestrian easements that may be used by future residents of the development as well as residents from neighboring developments. Conditions of approval requiring trails and trail easements to be established will allow for additional connections to the Sugarloaf Peak & Trail.

- 8) 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: The design of the subdivision provides any necessary access to surrounding adjacent lands and provides appropriate secondary access for emergency and other vehicles.

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

Staff Comment: Any improvements to be dedicated to the County are proposed to be consistent with the Master Plan.

- 10) 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 applicant has indicated that to the extent possible, homes will be located/oriented to take advantage of passive solar opportunities and will provide ample space on rooftops to accommodate solar panels.

Recommendation

Those agencies which reviewed the application recommended conditions in support of approval of the project. Therefore, after a thorough analysis and review, Tentative Subdivision Map Case Number TM15-001 is being recommended for approval with the Conditions of Approval included as Exhibit A to the staff report for this item. Staff offers the following motion for 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 TM15-001 for Blackstone Estates with the Conditions of Approval included as Exhibit A to the staff report, having made all ten of the following findings in accordance with Washoe County Development Code Section 110.608.25:

- 1) Plan Consistency. That the proposed map is consistent with the Master Plan and any specific plan;
- 2) Design or Improvement. That the design or improvement of the proposed subdivision is consistent with the Master Plan and any specific plan;
- 3) Type of Development. That the site is physically suited for the type of development proposed;
- 4) Availability of Services. That the subdivision will meet the requirements of Article 702, Adequate Public Facilities Management System;
- 5) 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;
- 6) Public Health. That the design of the subdivision or type of improvement is not likely to cause significant public health problems;
- 7) 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;
- 8) Access. That the design of the subdivision provides any necessary access to surrounding, adjacent lands and provides appropriate secondary access for emergency vehicles;
- 9) Dedications. That any land or improvements to be dedicated to the County is consistent with the Master Plan; and

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

xc: Applicant: SP58, LLC, Attn: Josh Myers, 439 W. Plumb Lane, Reno, NV 89509
Owner: Jacie, LLC c/o Douglas Properties, LLC, Attn: Samuel Douglas, 3820 Lone Tree Lane, Reno, NV 89511
Representative: Rubicon Design Group, LLC, Attn: Mike Railey, 100 California Ave. #202, Reno, NV 89509
Other: Blackstone Development Group, Inc., Attn: Scott Baumgardner, 439 Plumb Lane, Reno, NV 89509



Conditions of Approval

Tentative Subdivision Map Case Number TM15-001

The project approved under Tentative Subdivision Map Case Number TM15-001 shall be carried out in accordance with the Conditions of Approval granted by the Planning Commission on October 4, 2016. 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 or to abide by all other generally applicable Codes, and neither these conditions nor the approval by the County of this project/use override or negate any other applicable restrictions on uses or development on the property.

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 issuance of a grading or building permit. 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 Development 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 initiation 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 the Washoe County Health District, has jurisdiction over all public health matters in the Health District.**

Any conditions set by the Health District must be appealed to the District Board of Health.

- **The REGIONAL TRANSPORTATION COMMISSION (RTC) is directed and governed by its own Board. Conditions recommended by the RTC may be required, at the discretion of Washoe County.**
- **The NEVADA DEPARTMENT OF TRANSPORTATION (NDOT) is directed and governed by its own board. Therefore, any conditions set by the Nevada Department of Transportation must be appealed to that Board.**
- **The WASHOE COUNTY SCHOOL DISTRICT is directed and governed by its own board. Any conditions set by the Washoe County School District must be appealed to the Washoe County Board of Trustees.**

<p style="text-align: center;">STANDARD CONSIDERATIONS FOR SUBDIVISIONS Nevada Revised Statutes 278.349</p>

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 Development

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

Contact Name – Kelly Mullin, 775.328.3608, kmullin@washoecounty.us

- a. The applicant shall demonstrate substantial conformance to the plans approved as part of this tentative map.
- b. The tentative map shall be in substantial compliance with the approved Tentative Map and provisions of Washoe County Code Chapter 110, Article 408, *Common Open Space Development*, Article 604, *Design Requirements*, and Article 608, *Tentative Subdivision Maps*.

Regulatory Zone for Review Purposes	Medium Density Suburban (MDS) <i>Normal MDS lot sizes have been reduced</i>
Minimum Lot Area Proposed	8,595 square feet
Minimum Lot Width	80 feet
Minimum Front Yard	20 feet
Minimum Side Yard	8 feet
Minimum Rear Yard	20 feet
Maximum Building Height	35 feet

Notes: Variances to these standards may be processed per Washoe County Code.

- c. 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.
- d. The subdivider 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. On subsequent final maps, that date may be extended by two years if the extension request is received prior to the expiration date.
- e. 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.
- f. All final maps shall contain the applicable portions of the following Jurat:

Jurat for FIRST FINAL MAP

THE TENTATIVE MAP FOR TM15-001 (BLACKSTONE ESTATES) WAS APPROVED <denied> BY THE WASHOE COUNTY PLANNING COMMISSION ON OCTOBER 4, 2016. **[If the TM had been appealed to the BCC --- Add:]** THE WASHOE COUNTY COMMISSION APPROVED THE TENTATIVE MAP ON APPEAL ON <date>.

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 first and last (only) final map.]

THE NEXT FINAL MAP FOR TM15-001 (BLACKSTONE ESTATES) MUST BE APPROVED AND ACCEPTED FOR RECORDATION BY THE PLANNING AND DEVELOPMENT 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.

<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 DEVELOPMENT DIRECTOR. THE OFFER OF DEDICATION FOR <streets, sewers> IS REJECTED AT THIS TIME, BUT WILL REMAIN OPEN IN ACCORDANCE WITH NRS CHAPTER 278.

WILLIAM H. WHITNEY, DIRECTOR, DATE
PLANNING AND DEVELOPMENT DIVISION

Jurat for ALL SUBSEQUENT FINAL MAPS

THE TENTATIVE MAP for TM15-001 (BLACKSTONE ESTATES) was APPROVED <denied> BY THE WASHOE COUNTY PLANNING COMMISSION ON OCTOBER 4, 2016. **[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 Development 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 Development 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 TM15-001 (BLACKSTONE ESTATES) MUST BE APPROVED AND ACCEPTED FOR RECORDATION BY THE PLANNING AND DEVELOPMENT 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 DEVELOPMENT DIRECTOR. THE OFFER OF DEDICATION FOR *<streets, sewers>* IS REJECTED AT THIS TIME, BUT WILL REMAIN OPEN IN ACCORDANCE WITH NRS CHAPTER 278.

WILLIAM H. WHITNEY, DIRECTOR,
PLANNING AND DEVELOPMENT DIVISION

DATE

[Option for all merger and re-subdivision maps]

PUBLIC STREETS, UTILITY EASEMENTS, OR ANY OTHER EASEMENTS NO LONGER REQUIRED FOR THE FINAL MAP WERE ABANDONED PURSUANT TO ABANDONMENT CASE NO. _____ AND THE DOCUMENT HAS BEEN RECORDED PRIOR TO THE RECORDATION OF THIS MAP.

- g. Prior to acceptance of public improvements and release of any financial assurances, the developer shall furnish to the Engineering and Capital Projects Division a complete set of reproducible as-built construction drawings prepared by a civil engineer registered in the State of Nevada.
- h. The applicant shall record the Action Order with the County Recorder. A copy of the recorded Action Order stating conditional approval of this tentative map shall be attached to all applications for administrative permits issued by Washoe County.
- i. The developer shall be required to participate in any applicable General Improvement District or Special Assessment District formed by Washoe County.

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

NOTE

Should any prehistoric or historic remains/artifacts be discovered during site development, work shall temporarily be halted at the specific site and the State Historic Preservation Office of the Department of Museums, Library and Arts shall be notified to record and photograph the site. The period of temporary delay shall be limited to a maximum of two (2) working days from the date of notification.

- k. 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.

- l. The developer shall provide written approval from the U.S. Postal Service 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 on-site improvements.
- m. The developer and all successors shall direct any potential purchaser of the site to meet with the Planning and Development 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 Development Division of the name, address, telephone number and contact person of the new purchaser within thirty (30) days of the final sale.
- n. Failure to comply with the conditions of approval shall render this approval null and void.
- o. Conditions, covenants, and restrictions (CC&Rs), including any supplemental CC&Rs, shall be submitted to the Planning and Development staff for review and subsequent forwarding to the District Attorney for review and approval. The final CC&Rs shall be signed and notarized by the owner(s) and submitted to the Planning and Development Division 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:
 - i. 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:

- Vegetation management;
 - Watershed management;
 - Debris and litter removal;
 - Fire access and suppression; and
 - Maintenance of public access and/or maintenance of limitations to public access.
- ii. All drainage facilities and roadways not maintained by Washoe County shall be privately maintained and perpetually funded by the homeowners association.
- iii. All open space identified as common area on the final map shall be privately maintained and perpetually funded by the homeowners association. The deed to the open space and common area shall reflect perpetual dedication for that purpose. The maintenance of the common areas and related improvements shall be addressed in the CC&Rs to the satisfaction of the District Attorney's Office.
- iv. The project 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.
- v. Locating habitable structures on potentially active (Holocene) fault lines, whether noted on the recorded map or disclosed during site preparation, is prohibited.
- vi. All outdoor lighting on buildings and streets within the subdivision shall be down-shielded.
- vii. No motorized vehicles shall be allowed on the platted common area except emergency vehicles, utility service vehicles, or vehicles involved in homeowner association maintenance and repair of common area facilities.
- viii. Mandatory solid waste collection.
- ix. 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.
- x. Slopes shall be three (3) horizontal to one (1) vertical (3:1) or flatter.
- p. 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. The deed shall be presented with the CC&Rs for review by the Planning and Development staff and the District Attorney.

- q. The applicant shall prepare and submit a noxious weeds control plan that is developed through consultation with the Washoe County Health District, the University of Nevada Cooperative Extension, and/or the Washoe-Storey Conservation District.
- r. Disturbed areas left undeveloped for more than sixty (60) days must be revegetated by methods approved by Planning and Development.
- s. All land disturbing activities during construction phases including, but not limited to grading, excavation, cut and fill, etc., must be done with effective dust control measures consistent with Washoe County Health District Regulations governing Air Quality Management. Disturbances greater than one (1) acre in size must obtain an approved dust control plan prior to beginning work.
- t. Prior to any ground disturbing activity, the applicant shall submit a landscaping/architectural design plan to the Planning and Development Division for review and approval by the Design Review Committee. Said plan shall address, but not be limited to: signage; exterior lighting; fencing; landscaping design to include walking trails and park area; landscaping material that emphasizes the use of native and low water requirement vegetation (if plant material: type, size at time of planting, maturation size at full growth, period of time between planting and full growth); landscaping location; landscaping irrigation system; and financial assurances that landscaping will be planted and maintained.
- u. 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 the Planning and Development Division / Design Review Committee. The letter(s) shall certify that all applicable landscaping provisions of Articles 408, 410 and 412 of the Development Code have been met. Any landscaping plans and the letter(s) shall be wet-stamped. The letter(s) shall indicate any provisions of the code that the Director of the Planning and Development Division has waived.
- v. All landscaping shall be maintained in accordance with the provisions found in Washoe County Code Section 110.412.75, Maintenance. A three-year maintenance plan shall be submitted and wet-stamped by a licensed landscape architect registered in the State of Nevada to the Planning and Development Division prior to the issuance of a Certificate of Occupancy within the subdivision.
- w. The development must comply with all of TMWA water rights and infrastructure and connection fee requirements.
- x. As proposed by the applicant, lots located along the western perimeter shall not be developed with homes or structures that exceed a single story. A note to this effect shall be placed on applicable final maps, and a disclosure shall be made by the developer to affected homebuyers on their closing documents.

- y. As proposed by the applicant, the ±3.19-acre common open space area located along the western property boundary is intended serve as a neighborhood park. Prior to recordation of the 80th lot within this subdivision, at least 1.5-acres of this area or another common open space area within the subdivision site shall be developed as a neighborhood park, providing passive and active recreational opportunities for residents. Development shall include landscaping, shaded areas, seating and other amenities common to neighborhood parks. Maintenance of the area shall be perpetually funded by the homeowners association.
- z. Construction hours are limited to 7 a.m. to 6 p.m., Monday through Saturday.

Washoe County Engineering and Capital Projects

- 2. The following conditions are requirements of the Engineering and Capital Projects Division. Unless otherwise noted, the County Engineer shall be responsible for determining compliance with these conditions.

Contact Names – Walt West, 775.328.2310, wwest@washoecounty.us and Clara Lawson, 775.328.3603, clawson@washoecounty.us

General Conditions

- 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 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.
- b. Prior to acceptance of public improvements and release of any financial assurances, the developer shall furnish to the water and sewer provider(s) and Engineering and Capital Projects Division a complete set of reproducible as-built construction drawings prepared by a civil engineer registered in the State of Nevada.
- c. The developer shall be required to participate in any applicable General Improvement District or Special Assessment District formed by Washoe County. The applicable County Department shall be responsible for determining compliance with this condition.
- d. The developer shall provide written approval from the U.S. Postal Service 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.
- e. 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 (BMP's) 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.

- f. 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.
- g. Any existing easements or utilities that conflict with the development shall be relocated, quitclaimed, and/or abandoned, as appropriate.
- h. 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.
- i. All existing overhead utility lines shall be placed underground, except electric transmission lines greater than 100 kilovolts, which can remain above-ground.

Drainage and Storm Water Discharge Program Conditions (Washoe County Code Articles 110.420 & 110.421)

- j. 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 and will be based upon the final hydrology report.
- k. Prior to finalization of the first final map, a master hydrology/hydraulic report and a master storm drainage plan shall be submitted to the County Engineer for approval. The master hydrology report shall include among other things:
 - i. Determination of the portion of the 100 year peak flow rate and volume contributing to the project boundary from Griffith Canyon discharge (ie, that portion of 100 year flood plain which lies north of Calle de la Plata) and the routing of this flow, if any, through the development.
 - ii. Estimation of peak flows from other offsite contributing areas including verification that reported diversion of flows into the Donovan Pit is a permanent drainage condition. If the drainage diversion is not supported by appropriate drainage easements or a recorded agreement which allows the perpetual diversion, then the design shall account for and route the total basin flow through the project.
 - iii. Detention basin modeling shall use HEC-1/HMS and shall account for discharges from or into existing or proposed offsite detention basins. The analysis shall determine no or minimal adverse impacts to existing or proposed offsite detention basin.
 - iv. An analysis of the impacts of routing drainage from north side of Calle de la Plata into the North Spanish Springs Flood Detention Facility (NSSFDF) and if impacts are minimal, stormwater facilities shall be designed and constructed to route flows to NSSFDF.
- l. Prior to finalization of any portion of the tentative map, a final, detailed hydrology/hydraulic report for that unit shall be submitted to the County Engineer. All storm drainage improvements necessary to serve the project shall be

- designed and constructed to County standards and specifications and/or financial assurances in an appropriate form and amount shall be provided.
- m. Any increase in stormwater runoff resulting from the development and based on the 5 year and 100-year storm(s) shall be detained.
 - n. 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 or Conditional Letter of Map Revision, the date of that letter and a note to that effect shall appear on the final map.
 - o. Standard reinforced concrete headwalls or other approved alternatives shall be placed on the inlet and outlet of all drainage structures, and grouted rock riprap shall be used to prevent erosion at the inlets and outlets of all culverts to the satisfaction of the Engineering and Capital Projects Division.
 - p. The developer shall provide pretreatment for petrochemicals and silt for all storm drainage leaving the site to the satisfaction of the Engineering and Capital Projects Division.
 - q. The Truckee Meadows Regional Stormwater Quality Management Program Construction Permit Submittal Checklist and Inspection Fee shall be submitted with each final map.
 - r. 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.
 - s. A note on the final map shall indicate that all drainage facilities not maintained by Washoe County shall be privately maintained and perpetually funded by a homeowners association. As an alternative to a homeowners association, the developer may request the establishment of a County Utility Service Area under which fees would be paid for maintenance of the proposed storm drainage detention facility. The fee amount will be based on the additional service above that normally provided by the County to maintain new stormwater facilities dedicated by the developer (i.e., curb and gutter, drop inlets and piping). The maintenance and funding of these drainage facilities shall also be addressed in the CC&Rs to the satisfaction of the District Attorney's Office.
 - t. The maximum permissible flow velocity (that which does not cause scour) shall be determined for all proposed channels and open ditches. The determination shall be based on a geotechnical analysis of the channel soil, proposed channel lining and channel cross section, and it shall be in accordance with acceptable engineering publications/calculations. Appropriate linings shall be provided for all proposed channels and open ditches such that the 100-year flows do not exceed the maximum permissible flow velocity.
 - u. All slopes steeper than 3:1 shall be mechanically stabilized to control erosion. As an alternative to riprap, an engineered solution (geofabric, etc.) may be acceptable.

- v. Maintenance access and drainage easements shall be provided for all existing and proposed drainage facilities.
- w. Drainage easements shall be provided for all storm runoff that crosses more than one lot.

Traffic and Roadway (Washoe County Code Article 110.436)

- x. All roadway improvements necessary to serve the project shall be designed and constructed to County standards and specifications and/or financial assurances in an appropriate form and amount shall be provided.
- y. An Occupancy Permit shall be obtained from the Nevada Department of Transportation (NDOT), for access to, from or under roads and highways maintained by NDOT, and a copy of said permit shall be submitted to the County Engineer prior to finalization of the affected final map.
- z. Street names shall be reviewed and approved by the Regional Street Naming Coordinator.
- aa. 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.
- bb. A note on each affected final map shall state that no direct access from individual lots shall be allowed onto Calle de la Plata. This note shall also be included in the CC&Rs to the satisfaction of the District Attorney's Office.
- cc. For any utilities placed in existing County streets, the streets shall be repaired to the satisfaction of the County Engineer. At a minimum, this will require full depth removal and replacement of asphalt for half the street width, or replacement of non-woven pavement reinforcing fabric with a 2" asphalt overlay for half the street width. Type II slurry seal is required for the entire street width with either option. Full width street improvements may be required if the proposed utility location is too close to the centerline of the existing street or if multiple utilities on both sides of the street are required.
- dd. Streetlights shall be constructed to Washoe County standards at locations to be determined at the final design stage.
- ee. 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.
- ff. At a point where residential lotting is beyond 1,500 feet from the primary access, a secondary access shall be provided extending to an existing public roadway. The secondary access may be an emergency access roadway.
- gg. Traffic calming measures within the project boundary shall be constructed every 500 to 600 feet to the satisfaction of the County Engineer. Acceptable traffic

calming measures include speed tables, bulb outs, neck downs, chicanes and mini roundabouts.

- hh. Before approval of the first final map, the planning, design, and construction of a fully signalized intersection at Pyramid Highway and Calle De La Plata meeting the requirements of the Washoe County Engineer, NDOT and RTC shall occur, or a financial assurance shall be posted for the construction of said improvements by the developer. In order for the signalization improvements located within NDOT right-of-way to be eligible for Regional Road Impact Fee waiver under the terms and provisions of the Regional Transportation Commission's General Administrative Manual, 5th Addition including Amendment No. 1, the minor leg (Calle de la Plata) shall be constructed by the developer to regional roadway standards, meeting Washoe County, RTC and NDOT requirements. The County Engineer shall determine compliance with this condition.
- ii. The applicant shall have a traffic analysis performed for the 20 year build-out condition which includes recommendations for the necessary lane modifications and traffic signalization requirements.
- jj. With the approval of the first final map, the portion of Calle de la Plata adjoining the project boundary shall be widened to meet Washoe County requirements for roadways within suburban areas including curb, gutter, and sidewalk along the north side of the road. The total pavement width shall accommodate a left turn pocket for traffic entering Pyramid Highway.

Washoe County Utilities

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

Contact Name – Timothy Simpson, 775.954.4601, tsimpson@washoecounty.us

- a. All fees shall be paid or deferred in accordance with Washoe County Ordinance prior to the approval of each final map.
- b. Improvement plans shall be submitted and approved by the Community Services Department (CSD) prior to approval of the final map. They shall be in compliance with Washoe County Design Standards and be designed by a Professional Engineer licensed to practice in the State of Nevada.
- c. 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.
- d. The Developer shall construct and/or provide the 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.
- e. Approved improvement plans shall be used for the construction of on-site and off-site sanitary sewer collection systems. The CSD will be responsible to inspect the construction of the sanitary sewer collection systems.

- f. The sanitary sewer collection systems must be offered for dedication to Washoe County along with the recordation of each final map.
- g. 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.
- h. 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.
 - i. the estimated sewage flows generated by this project,
 - ii. projected sewage flows from potential or existing development within tributary areas,
 - iii. slope of pipe, invert elevation and rim elevation for all manholes,
 - iv. proposed collection line sizes, on-site and off-site alignment, and half-full velocities.
- i. No Certificate of Occupancy will be issued until all the sewer collection facilities necessary to serve each final map have been completed, accepted and completed as-built drawings delivered to the utility. As-built drawings must be in a format acceptable to Washoe County.
- j. No permanent structures (including rockery or retaining walls, buildings, etc.) shall be allowed within or upon any County maintained utility easement.
- k. 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.
- l. A minimum 12-foot wide all weather sanitary sewer access road shall be constructed to facilitate access to off-site sanitary sewer manholes.

Washoe County Health District

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

Contact Names – Environmental Health Services: James English, 775.328.2434, jenglish@washoecounty.us and Jim Shaffer, jshaffer@washoecounty.us; Emergency Medical Services: Christina Conti, 775.326.6042, cconti@washoecounty.us

The Environmental Health Services (EHS) Division requires the following conditions to be completed prior to review and approval of any Final Map:

- a. Prior to any final grading or other civil site improvements, a complete water system plan and Water Project submittal for the referenced proposal must be submitted to this Division. The plan must show that 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.

- i. The application for a Water Project shall conform to the requirements of NAC 445A.66695.
- ii. Two copies of complete construction plans are required for review. All plans must include an overall site plan, additional phases that will eventually be built to indicate that the water system will be looped, all proposed final grading, utilities, and improvements for the proposed application.
- b. Mass grading may proceed after approval of the Tentative Map and after a favorable review by this Division of a grading permit application.
 - i. The application shall include a Truckee Meadows Water Authority annexation and discovery with the mass grading permit.
- c. Improvement plans for the water system may be constructed prior to Final Map submittal only after Water Project approval by this Division.
 - i. For improvement plans approved prior to Final Map submittal, the Developer shall provide certification by the Professional Engineer of record that the improvement plans were not altered subsequent to Final Map submittal.
 - ii. Any changes to previously approved improvement plans made prior to Final Map submittal shall be resubmitted to this Division for approval per NAC 278.290 and NAC 445A.66715.

The EHS Division requires the following to be submitted with the Final Map application for review and approval:

- d. Construction plans for the development must be submitted to this Division 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 this Division.
- e. 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 this Division 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:
 - i. 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.
 - ii. The design engineer or third person shall, pursuant to the approved inspection plan, periodically certify in writing to this Division that the improvements are being installed in accordance with the approved plans and recognized practices of the trade.

- iii. The developer must bear the cost of the inspections.
- iv. The developer may select a third-person inspector but the selection must be approved by the Division or local agency. A third-person inspector must be a disinterested person who is not an employee of the developer.
- v. A copy of the inspection plan must be included with the Final Map submittal.
- f. Prior to final approval, a “Commitment for Service” letter from the sewage purveyor committing sewer service for the entire proposed development must be submitted to this Division. 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.
 - i. A copy of this letter must be included with the Final Map submittal.
- g. Prior to final approval, a “Commitment for Water Service” letter from the water purveyor committing adequate water service for the entire proposed development must be submitted to this Division.
 - i. A copy of this letter must be included with the Final Map submittal.
- h. The Final Map application packet must include a letter from Nevada Division of Environmental Protection to this Division certifying their approval of the Final Map.
- i. The Final Map application packet must include a letter from Division of Water Resources certifying their approval of the Final Map.
- j. 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.
 - i. Construction plans shall clearly show how the subdivision will comply with NAC 278.360.
- k. Prior to approval of the final map, the applicant must submit to this Division the Final Map fee.

Other EHS Division Conditions

- l. The Health District will require for the typical front lot a minimum 24 inch catchment area from the back face of impervious surfaces. The Low Impact Design (LID) will reduce nuisance water runoff into the infrastructure while minimizing downstream runoff (Health Regulations Governing the Prevention of Vector-Borne Diseases 040.038).
- m. The westside ditch will require 4- 6 inch cobble rock in the flow line of the ditch to reduce the downstream transport of sediment (Health Regulations Governing the Prevention of Vector-Borne Diseases 040.021).

- n. The detention basin will require the Health District's standard design of a cobble rock lined low flow channel, one foot deep and 2-3 feet wide connecting the inlet(s) to the outlet pipe. In addition, we will require over excavating below the low flow channel with a cobble lined infiltration trench design 2 feet wide and 3 feet deep the length of the basin to reduce downstream effects of storm water runoff (Health Regulations Governing the Prevention of Vector-Borne Diseases 040.023).
- o. The Health District will require percolation testing at or near grade of the proposed detention basin representative materials to determine the soils ability to receive and infiltrate storm water. The maximum drain time of 7 days is required after a storm event per Truckee Meadows Regional Drainage Manual (section 1302.1). The maximum drain time of 7 days is required as well for nuisance water runoff.
- p. Vegetation planted in the detention basin shall be one foot away from the low flow channel. The following maintenance shall be noted on the civil plans and in the HOA's CC&R's, "All vegetation debris and blockages shall require removal in the low flow channel including one foot way on either side of the channel on an annual basis. Maintenance of the detention basin will mitigate insect development by preventing standing water from ponding longer than 7 days." Health Regulations Governing the Prevention of Vector-Borne Diseases 040.022).
- q. In the construction of the storm drain system, sumpless catch basins with a vault unit is require to reduce the downstream effects of sediment and oil runoff (Health Regulations governing the Prevention of Vector-Borne Diseases 040.013)

Emergency Medical Services Program Conditions

- r. Estate numbers shall be clearly marked on the curb and residences and all common areas.

Washoe County Regional Parks and Open Space

- 5. The following conditions are requirements of Washoe County Regional Parks and Open Space, which shall be responsible for determining compliance with these conditions.

Contact Name – Dennis Troy, 775.328.2059, dtroy@washoecounty.us

- a. A trails plan shall be prepared as part of the project. Trail plan shall include:
 - i. TRAIL EASEMENTS: One 20'-30' non-motorized (equestrian and pedestrian) public access trail easements shall be provided as part of the project. Easements may be relocatable to ensure compatibility within the development. A north-south connector providing access from Calle de la Plata to the Sugarloaf Peak & Trail in a location acceptable to the developer and Washoe County shall be provided.
 - ii. The applicant shall construct trails within easement corridors described in item i. above to Washoe County Green Book Standards.

- iii. Trails shall be constructed and maintained in accordance with Washoe County "Green Book" standards. Designated trails shall be maintained and perpetually funded by the homeowners or maintenance association as designated by the applicant. The maintenance and funding of the trail corridor and related improvements shall be addressed in the CC&Rs to the satisfaction of the Washoe County District Attorney. Trail corridor maintenance shall, as a minimum address the following:
 - Debris and litter removal
 - Weed abatement
 - Drainage and watershed management
 - Erosion Control
 - Amenity maintenance and replacement (signage, dog waste disposal stations, benches etc.)

Washoe County School District

6. The following conditions are requirements of the Washoe County School District (WCSD), which shall be responsible for determining compliance with these conditions. The WCSD is directed and governed by its own board. Therefore, any conditions set by the WCSD must be appealed to that board.

Contact Name – Mike Boster, 775.789.3810, mboster@washoeschools.net

- a. A disclosure shall be made by the developer to each homebuyer/renter on their closing/rental documents that K-12 students in this subdivision may be assigned to the nearest WCSD school(s) with available capacity in the event that the currently zoned schools cannot accommodate additional students.

Truckee Meadows Fire Protection District

7. The following conditions are requirements of the Truckee Meadows Fire Protection District (TMFPD), which shall be responsible for determining compliance with these conditions.

Contact Name – Amy Ray, 775.326.6000, aray@tmfpd.us

- a. Any developments on the property shall meet the requirements of Washoe County Code (WCC) Chapter 60.
- b. Plans shall be submitted for review and approval to TMFPD.
- c. A Vegetation Management Plan is required for the project in accordance with the requirements of the *International Wildland Urban Interface Code, 2012 Ed.* shall be submitted for approval by TMFPD.
- d. HOA and CC&R requirements and conditions shall be submitted for review, comment and approval by TMFPD prior to recording, adoption and use.
- e. Open spaces and drainages shall be maintained in accordance with WC Code 60, the Vegetation Management Plan and conditions placed in the HOA and CC&R documents, ensuring vegetation management and maintenance in those areas.

Washoe County Conditions of Approval

- f. Two means of access and/or egress shall be provided.
- g. Hydrant placement shall be reviewed and approved by TMFPD. All hydrants shall be equipped with Storz attachments upon installation.
- h. Cul-de-sac dimensions shall be 100 foot diameter/50 foot radius to accommodate fire department use and parking in the cul-de-sac.
- i. Specifications for the turf shall be submitted to TMFPD for review and approval.

*** End of Conditions ***



Washoe County

COMMUNITY SERVICES DEPARTMENT

Engineering and Capital Projects Division

Date: September 7, 2016
Revised September 8, 2016

To: Kelly Mullin, Planner

From: Walter H. West, P.E., Licensed Engineer
Clara Lawson, P.E., Licensed Engineer

Re: BLACKSTONE ESTATES *TM15-001* (161 Lots)

GENERAL PROJECT DISCUSSION

The proposed project consists of 161 lots of common open space development located north of Calle de La Plata, Washoe County, Nevada. The applicant has provided additional traffic information as requested by our previous memo dated July 7, 2016. This memo supercedes the July 7, 2016 memo.

The Engineering and Capital Projects Division offers the following comments and recommendations which supplement applicable County Code and are based upon our review of the site and the tentative map application prepared by Rubicon Design Group, LLC.

Recommended Conditions of Approval

The following conditions of approval should be applied to this proposed project. Conditions in italics are standard Engineering Conditions.

GENERAL 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 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.*
- 2. Prior to acceptance of public improvements and release of any financial assurances, the developer shall furnish to the water and sewer provider(s) and Engineering and Capital Projects Division a complete set of reproducible as-built construction drawings prepared by a civil engineer registered in the State of Nevada.*
- 3. The developer shall be required to participate in any applicable General Improvement District or Special Assessment District formed by Washoe County. The applicable County Department shall be responsible for determining compliance with this condition.*
- 4. The developer shall provide written approval from the U.S. Postal Service 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. The County Engineer shall determine compliance with this condition.*

5. *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 (BMP's) 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. The County Engineer shall determine compliance with this condition.*
6. *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 County Engineer shall determine compliance with this condition. The maintenance of the common areas shall also be addressed in the CC&Rs to the satisfaction of the District Attorney's Office.*
7. *Any existing easements or utilities that conflict with the development shall be relocated, quitclaimed, and/or abandoned, as appropriate. The County Engineer shall determine compliance with this condition.*
8. *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. The County Engineer shall determine compliance with this condition.*
9. *All existing overhead utility lines shall be placed underground, except electric transmission lines greater than 100 kilovolts, which can remain above ground. The County Engineer shall determine compliance with this condition.*

DRAINAGE (COUNTY CODE 110.420)

Discussion

A conceptual level hydrology analysis was provided within the application. A detailed hydrology and hydraulic analysis shall be provided with the submittal of the final design. The project proposes to install both retention and detention basins and have sited them at various locations within the project. The applicant should be aware that retention basins (a basin fully retaining a design storm with no storm drain outfall) are not permitted. Detention basins shall be used to provide mitigation of increased stormwater runoff to pre development levels. The final design shall ensure that the post development discharge of stormwater runoff shall be substantially in the same manner and location as predevelopment 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 and will be based upon the final hydrology report.*
2. Prior to finalization of the first final map, a master hydrology/hydraulic report and a master storm drainage plan shall be submitted to the County Engineer for approval. The master hydrology report shall include among other things:
 - a. Determination of the portion of the 100 year peak flow rate and volume contributing to the project boundary from Griffith Canyon discharge (ie, that portion of 100 year flood plain

which lies north of Calle de la Plata) and the routing of this flow, if any, through the development.

- b. Estimation of peak flows from other offsite contributing areas including verification that reported diversion of flows into the Donovan Pit is a permanent drainage condition. If the drainage diversion is not supported by appropriate drainage easements or a recorded agreement which allows the perpetual diversion, then the design shall account for and route the total basin flow through the project.
- c. Detention basin modeling shall use HEC-1/HMS and shall account for discharges from or into existing or proposed offsite detention basins. The analysis shall determine no or minimal adverse impacts to existing or proposed offsite detention basin.
- d. An analysis of the impacts of routing drainage from north side of Calle de la Plata into the North Spanish Springs Flood Detention Facility (NSSFDF) and if impacts are minimal, stormwater facilities shall be designed and constructed to route flows to NSSFDF.

The County Engineer shall determine compliance with this condition.

3. *Prior to finalization of any portion of the tentative map, a final, detailed hydrology/hydraulic report for that unit shall be submitted to the County Engineer. All storm drainage improvements necessary to serve the project shall be designed and constructed to County standards and specifications and/or financial assurances in an appropriate form and amount shall be provided. The County Engineer shall determine compliance with this condition.*
4. *Any increase in stormwater runoff resulting from the development and based on the 5 year and 100 storm(s) shall be detained. The County Engineer shall determine compliance with this condition.*
5. *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 or Conditional Letter of Map Revision, the date of that letter and a note to that effect shall appear on the final map. The County Engineer shall determine compliance with this condition.*
6. *Standard reinforced concrete headwalls or other approved alternatives shall be placed on the inlet and outlet of all drainage structures, and grouted rock riprap shall be used to prevent erosion at the inlets and outlets of all culverts to the satisfaction of the Engineering and Capital Projects Division.*
7. *The developer shall provide pretreatment for petrochemicals and silt for all storm drainage leaving the site to the satisfaction of the Engineering and Capital Projects Division.*
8. *The Truckee Meadows Regional Stormwater Quality Management Program Construction Permit Submittal Checklist and Inspection Fee shall be submitted with each final map. The County Engineer shall determine compliance with this condition.*
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. The County Engineer shall determine compliance with this condition.*
10. *A note on the final map shall indicate that all drainage facilities not maintained by Washoe County shall be privately maintained and perpetually funded by a homeowners association. As an alternative to a homeowners association, the developer may request the establishment of a County Utility Service Area under which fees would be paid for maintenance of the proposed storm drainage detention facility. The fee amount will be based on the additional service above that normally provided by the*

County to maintain new stormwater facilities dedicated by the developer (i.e., curb and gutter, drop inlets and piping). The County Engineer shall determine compliance with this condition. The maintenance and funding of these drainage facilities shall also be addressed in the CC&Rs to the satisfaction of the District Attorney's Office.

- 11. The maximum permissible flow velocity (that which does not cause scour) shall be determined for all proposed channels and open ditches. The determination shall be based on a geotechnical analysis of the channel soil, proposed channel lining and channel cross section, and it shall be in accordance with acceptable engineering publications/calculations. Appropriate linings shall be provided for all proposed channels and open ditches such that the 100-year flows do not exceed the maximum permissible flow velocity. The County Engineer shall determine compliance with this condition.*
- 12. All slopes steeper than 3:1 shall be mechanically stabilized to control erosion. As an alternative to riprap, an engineered solution (geofabric, etc.) may be acceptable. The County Engineer shall determine compliance with this condition.*
- 13. Maintenance access and drainage easements shall be provided for all existing and proposed drainage facilities. The County Engineer shall determine compliance with this condition.*
- 14. Drainage easements shall be provided for all storm runoff that crosses more than one lot. The County Engineer shall determine compliance with this condition.*

TRAFFIC AND ROADWAY (COUNTY CODE 110.436)

- 1. All roadway improvements necessary to serve the project shall be designed and constructed to County standards and specifications and/or financial assurances in an appropriate form and amount shall be provided. The County Engineer shall determine compliance with this condition.*
- 2. An Occupancy Permit shall be obtained from the Nevada Department of Transportation (NDOT), for access to, from or under roads and highways maintained by NDOT, and a copy of said permit shall be submitted to the County Engineer prior to finalization of the affected final map.*
- 3. Street names shall be reviewed and approved by the Regional Street Naming Coordinator.*
- 4. 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. The County Engineer shall determine compliance with this condition.*
- 5. A note on each affected final map shall state that no direct access from individual lots shall be allowed onto Calle de la Plata. The County Engineer shall determine compliance with this condition. This note shall also be included in the CC&Rs to the satisfaction of the District Attorney's Office.*
- 6. For any utilities placed in existing County streets, the streets shall be repaired to the satisfaction of the County Engineer. At a minimum, this will require full depth removal and replacement of asphalt for half the street width, or replacement of non-woven pavement reinforcing fabric with a 2" asphalt overlay for half the street width. Type II slurry seal is required for the entire street width with either option. Full width street improvements may be required if the proposed utility location is too close to the centerline of the existing street or if multiple utilities on both sides of the street are required.*
- 7. Streetlights shall be constructed to Washoe County standards at locations to be determined at the final design stage. The County Engineer shall determine compliance with this condition.*

8. *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. The County Engineer shall determine compliance with this condition.*
9. At a point where residential lotting is beyond 1,500 feet from the primary access, a secondary access shall be provided extending to an existing public roadway. The secondary access may be an emergency access roadway. The County Engineer shall determine compliance with this condition.
10. Traffic calming measures within the project boundary shall be constructed ever 500 to 600 feet to the satisfaction of the County Engineer. Acceptable traffic calming measures include speed tables, bulb outs, neck downs, chicanes and mini roundabouts. The County Engineer shall determine compliance with this condition
11. With the approval of the 1st final map, the planning, design, and construction of a fully signalized intersection at Pyramid Highway and Calle De La Plata meeting the requirements of the Washoe County Engineer, NDOT and RTC shall occur. A financial assurance shall be posted for the construction of said improvements. In order for the signalization improvements located within NDOT right-of-way to be eligible for Regional Road Impact Fee waiver under the terms and provisions of the Regional Transportation Commission's General Administrative Manual, 5th Addition including Amendment No. 1, the minor leg (Calle de la Plata) shall be constructed to a regional roadway standards, meeting RTC requirements, to include, but not be limited to, a left turn lane onto southbound Pyramid Highway. The County Engineer shall determine compliance with this condition.
12. The applicant shall have a traffic analysis performed for the 20 year build-out condition which includes recommendations for the necessary lane modifications and traffic signalization requirements. The County Engineer shall determine compliance with this condition.
13. With the approval of the 1st final map, the portion of Calle De La Plata adjoining the project boundary shall be widened to meet Washoe County requirements for roadways within suburban areas including curb, gutter, and sidewalk along the north side of the road. The total pavement width shall accommodate a left turn pocket for traffic entering Pyramid Highway. The County Engineer shall determine compliance with this condition.



Washoe County
COMMUNITY SERVICES DEPARTMENT
Engineering and Capital Projects

July 5, 2016

To: Kelly Mullin, Planner
Roger Pelham, MPA, Senior Planner

From: Timothy Simpson, P.E., Licensed Engineer

Subject: TM15-001, Black Stone Estates, Parcel 534-571-01

The Community Services Department (CSD) has reviewed the subject application and has the following comments:

1. The applicant is proposing to develop a 161-lot common open space single-family residential subdivision. The project is located at 350 Calle De La Plata in the Spanish Springs Valley.
2. Sanitary sewer will be provided by Washoe County and treatment will be at the Truckee Meadows Water Reclamation Facility.

The Community Services Department (CSD) recommends approval provided the following conditions are met:

1. All fees shall be paid in accordance with Washoe County Ordinance prior to the approval of each final map.
2. Improvement plans shall be submitted and approved by CSD prior to approval of the final map. They shall be in compliance with Washoe County Design Standards and be designed by a Professional Engineer licensed to practice in the State of Nevada.
3. 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.
4. The Developer shall construct and/or provide the 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.
5. Approved improvement plans shall be used for the construction of on-site and off-site sanitary sewer collection systems. The CSD will be responsible to inspect the construction of the sanitary sewer collection systems.
6. The sanitary sewer collection systems must be offered for dedication to Washoe County along with the recordation of each final map.

7. 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.
8. 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
9. No Certificate of Occupancy will be issued until all the potable water and sewer collection facilities necessary to serve each final map have been completed, accepted and completed as-builts drawings delivered to the utility. As-built drawings must be in a format acceptable to Washoe County.
10. No permanent structures (including rockery or retaining walls, building's, etc.) shall be allowed within or upon any County maintained utility easement.
11. 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.
12. A minimum 12-foot wide all weather sanitary sewer access road shall be constructed to facilitate access to off-site sanitary sewer manholes.

WASHOE COUNTY HEALTH DISTRICT

ENHANCING QUALITY OF LIFE

July 14, 2016

Kelly Mullin, Planner
Roger Pelham, Senior Planner
Washoe County Community Services
Planning and Development Division
PO Box 11130
Reno, NV 89520-0027

RE: Blackstone Estates; APN 534-571-01
Tentative Map; TM15-001

Dear Mr. Pelham and Ms. Mullin:

Washoe County Health District, Environmental Health Services Division (Division) has reviewed the above referenced project with regard to sewage disposal, domestic water supply and water quality. The project is proposing a 161-lot, single-family residential subdivision with an average lot size lots range in size from 8,400 to 24,759 square feet on a portion of a parcel with an area of 58.5± acres. The development is proposed to be served by public water and sewer. The parcel proposed to be subdivided is APN 534-571-01.

Tentative Map Review and Final Map Conditions per NAC 278

This Division 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, a complete water system plan and Water Project submittal for the referenced proposal must be submitted to this Division. The plan must show that 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.
 - a. The application for a Water Project shall conform to the requirements of NAC 445A.66695.
 - b. Two copies of complete construction plans are required for review. All plans must include an overall site plan, additional phases that will eventually be built to indicate that the water system will be looped, all proposed final grading, utilities, and improvements for the proposed application.
2. Mass grading may proceed after approval of the Tentative Map and after a favorable review by this Division of a grading permit application.
 - a. The application shall include a Truckee Meadows Water Authority annexation and discovery with the mass grading permit.
3. Improvement plans for the water system may be constructed prior to Final Map submittal only after Water Project approval by this Division.

ENVIRONMENTAL HEALTH SERVICES

1001 East Ninth Street | P.O. Box 11130 | Reno, Nevada 89520

775-328-2434 | Fax: 775-328-6176 | washoecounty.us/health

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TM15-001
Public Health
EXHIBIT B

- a. For improvement plans approved prior to Final Map submittal, the Developer shall provide certification by the Professional Engineer of record that the improvement plans were not altered subsequent to Final Map submittal.
- b. Any changes to previously approved improvement plans made prior to Final Map submittal shall be resubmitted to this Division for approval per NAC 278.290 and NAC 445A.66715.

This Division 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 this Division 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 this Division.
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 this Division 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:
 - 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 this Division 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.
 - d. The developer may select a third-person inspector but the selection must be approved by the Division or local agency. A third-person inspector must be a disinterested person who is not an employee of the developer.
 - e. A copy of the inspection plan must be included with the Final Map submittal.
3. Prior to final approval, a "Commitment for Service" letter from the sewage purveyor committing sewer service for the entire proposed development must be submitted to this Division. 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 approval, a "Commitment for Water Service" letter from the water purveyor committing adequate water service for the entire proposed development must be submitted to this Division.
 - a. A copy of this letter must be included with the Final Map submittal.
5. The Final Map application packet must include a letter from Nevada Division of Environmental Protection to this Division 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 this Division the Final Map fee.

Other Division Conditions

1. The Health district will require for the typical front lot a minimum 24 inch catchment area from the back face of impervious surfaces. The Low Impact Design (LID) will reduce nuisance water runoff into the infrastructure while minimizing downstream runoff (Health Regulations Governing the Prevention of Vector-Borne Diseases 040.038).
2. The westside ditch will require 4- 6 inch cobble rock in the flow line of the ditch to reduce the downstream transport of sediment (Health Regulations Governing the Prevention of Vector-Borne Diseases 040.021).
3. The detention basin will require the Health District's standard design of a cobble rock lined low flow channel, one foot deep and 2-3 feet wide connecting the inlet(s) to the outlet pipe. In addition, we will require over excavating below the low flow channel with a cobble lined infiltration trench design 2 feet wide and 3 feet deep the length of the basin to reduce downstream effects of storm water runoff (Health Regulations Governing the Prevention of Vector-Borne Diseases 040.023).
4. District Health will require percolation testing at or near grade of the proposed detention basin representative materials to determine the soils ability to receive and infiltrate storm water. The maximum drain time of 7 days is required after a storm event per Truckee Meadows Regional Drainage Manual (section 1302.1). The maximum drain time of 7 days is required as well for nuisance water runoff.
5. Vegetation planted in the detention basin shall be one foot away from the low flow channel. The following maintenance shall be noted on the civil plans and in the HOA;s CC&R's, "All vegetation debris and blockages shall require removal in the low flow channel including one foot way on either side of the channel on an annual basis. Maintenance of the detention basin will mitigate insect development by preventing standing water from ponding longer than 7 days." Health Regulations Governing the Prevention of Vector-Borne Diseases 040.022).
6. In the construction of the storm drain system, sumpless catch basins with a vault unit is require to reduce the downstream effects of sediment and oil runoff (Health Regulations governing the Prevention of Vector-Borne Diseases 040.013)

If you have any questions regarding the foregoing, please call Jim English at 328-2610 or Jim Shaffer 785-4599 regarding engineering or vector comments, respectively.

Sincerely,

James English
Environmental Health Specialists Supervisor
Environmental Health Services

J.L. Shaffer
Program Coordinator/Planner
Vector-Borne Diseases Program
Environmental Health Services

JE/JS/:wr

Cc: File - Washoe County Health District
Rubicon Design Group – mrailey@rubicondesigngroup.com

**WASHOE COUNTY
HEALTH DISTRICT**
ENHANCING QUALITY OF LIFE

June 27, 2016

Katy Stark
Washoe County Community Services Department
1001 E. Ninth Street, Bldg. A
Reno, NV 89512

Dear Ms. Stark:

I received your email dated June 22, 2016, requesting a review of the June Agency Review Memo III regarding the tentative map case number TM15-001 for Blackstone Estates (Item 1).

Based on the submitted documentation, specifically the traffic section, it is anticipated that there will be minimal impacts concerning EMS responses to this new development. Additionally, it is not anticipated that there will be impacts concerning access to healthcare services and facilities with the proposed 2.75 dwelling units per acre, or 161 lots. Should you need a complete Environmental Impact Assessment, please contact the Washoe County Health District's Division of Environment Health Services at (775) 328-2434.

Advanced Life Support (ALS) fire and EMS services are provided by Truckee Meadows Fire Protection District and ALS ambulance services are provided by REMSA through a Franchise agreement with the Washoe County Health District. As of July 1, 2016, the proposed location for Blackstone Estates will have a REMSA's Franchise response requirement for life-threatening calls of 15 minutes and 59 seconds for 90 percent of calls.

The Northern Nevada Medical Center is approximately 10.6 miles away from the proposed residential site, should residents require such services. There are also several other acute care hospitals and healthcare resources available in Washoe County.

It is recommended that the address numbers be clearly marked on the curb and structures so the residents can be quickly located by public safety agencies. Additionally, please ensure that all dwellings will meet ADA requirements, as appropriate.

Please feel free to contact me if you have any questions.

Sincerely,



Christina Conti
EMS Program Manager
cconti@washoecounty.us
(775) 326-6042





MEMORANDUM

DEPARTMENT OF REGIONAL PARKS AND OPEN SPACE
PLANNING DIVISION



TO: Kelly Mullin, Planner
FROM: Dennis Troy, Park Planner
DATE: September 19, 2016
SUBJECT: **Blackstone Estates(TM15-001)**

Tentative Map Application TM15-001

The proposed development lies within Park District 2C and is adjacent to public open space and trails owned and managed by Washoe County, commonly known as Sugarloaf Peak (see map Exhibit A). ***The comments below were previously provided to the applicant when the Master Plan Amendment and Regulatory Zone Amendment applications (MPA15-003 and RZA15-005) were submitted. Comments have not been addressed within this application.***

The application does not identify pedestrian/equestrian connection points within the development to an existing public access corridor known as the Sugarloaf Peak and Trail system. This is a heavily used natural surface equestrian trail corridor that currently exists along the northern and north-eastern portion of the property. This trail corridor is identified in the Park District 2C Master Plan and the Spanish Springs Area Plan and should be incorporated in a future trails plan as part of the development. (Master Plan excerpts Exhibits B)

Due to the abundant parks and recreation services available in the vicinity for future Sugarloaf Estates residents, there is no need for additional neighborhood parks to be considered as part of the development.

In accordance with NRS 278.4983, Blackstone Estates may generate up to \$161,000 (maximum of \$1,000 per proposed dwelling unit) in Residential Construction Tax (RCT) for Park District 2C. This RCT will be utilized in compliance with NRS at park facilities in the vicinity of the project area.

FUTURE Recommended Conditions of Approval (at the time of design and construction)

1. A trails plan shall be prepared as part of the project. Trail plan shall include:
 - a. TRAIL EASEMENTS: One 20'-30' non-motorized (equestrian and pedestrian) public access trail easements shall be provided as part of the project. Easements may be relocatable to ensure compatibility within the development. A north-south connector



MEMORANDUM

DEPARTMENT OF REGIONAL PARKS AND OPEN SPACE

PLANNING DIVISION



providing access from Calle de la Plata to the Sugarloaf Peak & Trail in a location acceptable to the developer and Washoe County shall be provided.

- b. The applicant shall construct trails within easement corridors described in item a. above to Washoe County Green Book Standards.
- c. Trails shall be constructed and maintained in accordance with Washoe County "Green Book" standards. Designated trails shall be maintained and perpetually funded by the homeowners or maintenance association as designated by the applicant. The maintenance and funding of the trail corridor and related improvements shall be addressed in the CC&Rs to the satisfaction of the Washoe County District Attorney. Trail corridor maintenance shall, as a minimum address the following:
 - Debris and litter removal
 - Weed abatement
 - Drainage and watershed management
 - Erosion Control
 - Amenity maintenance and replacement (signage, dog waste disposal stations, benches etc.)



Washoe County School District

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Howard Rosenberg * Lisa Ruggerio * Ryan Gonda * Diane Nicolet * Traci Davis, Superintendent

01 July 2016

Kelly Mullin, Planner
Roger Pelham, Senior Planner
Washoe County Planning & Development
1001 E. Ninth Street
Reno NV USA 89512

RE: **TM15-001 (Blackstone Estates)**

Dear Ms Mullin and Mr Pelham,

161 new single-family residential units will impact Washoe County School District facilities. This project is currently zoned for the following schools:

Taylor Elementary School

- **Estimated project impact = 45** new ES students (**161** single-family units x **0.277** ES students per unit)
- **Base Capacity = 606**
- **2015-2016 Enrollment = 670**
- **% of Base Capacity = 111%**
- **Overcrowding Strategies:**
 - Taylor ES has 2 portable buildings (4 classrooms) in use that provide temporary space for an additional 100 students.
 - Per WCSD-adopted Policy 6111, most elementary schools will transition to a multi-track year-round schedule¹ when their enrollment reaches 120% of capacity.
 - Assignment to the closest elementary school with available capacity may be used for students in this development.



Shaw Middle School

- **Estimated project impact = 10** new MS students (**161** single-family units x **0.064** MS students per unit)
- **Base Capacity = 1072**
- **2015-2016 Enrollment = 1016**
- **% of Base Capacity = 95%**
- **Overcrowding Strategies:**
 - Shaw MS has 2 portable buildings (4 classrooms) in use that provide temporary space for an additional 100 students.
 - Per adopted District Policy 6111, most middle schools will be converted to a double session calendar² when enrollment exceeds 120% of capacity.
 - Assignment to the closest middle school with available capacity may be used for students in this development.

Spanish Springs High School

- **Estimated project impact = 22** new HS students (**161** single-family units x **0.136** HS students per unit)
- **Base Capacity = 2160**
- **2015-2016 Enrollment = 2319**
- **% of Base Capacity = 107%**
- **Overcrowding Strategies:**
 - Spanish Springs HS has 5 portable units (10 classrooms) in place that provide temporary space for an additional 250 students.
 - Per adopted District Policy 6111, high schools will convert to a double session calendar² when enrollment exceeds 120% of capacity.
 - Assignment to the closest high school with available capacity may be implemented for students in this development.

Recommended WCSD Condition for **TM15-001 (Blackstone Estates)**:

A disclosure shall be made by the developer to each homebuyer/renter on their closing/rental documents that K-12 students in this subdivision may be assigned to the nearest WCSD school(s) with available capacity in the event that the zoned schools cannot accommodate additional students.

Definitions:

- 1. Multi-Track Year-Round Calendar (MTYR):** The school is divided into four groups (“tracks”) which start and end the school year on different dates, with only three tracks attending school at any one time. This can decrease overcrowding by as much as 25%.
- 2. Double Sessions:** Two “schools” are operated out of one building; the school is divided into two separate groups which start and end the day at different times, with no overlap. Double Sessions have not been done in WCSD for over 30 years; all details are still in process in terms of exact start and end times, division of the school, and more. Other school districts in Nevada, which have more recent experience with Double Sessions, ran the first high school session from 5:55am to 11:55am and the second session ran from approximately 12:00 p.m. to 6:00 p.m. Double Sessions can relieve overcrowding by as much as 50%.

For more information, go to the Washoe County School District’s Data Gallery at: <http://datagallery.washoeschools.net/>

Thank you for the opportunity to comment.

Mike Boster

Mike Boster
School Planner
14101 Old Virginia Road
Reno NV USA 89521
Washoe County School District Capital Projects
775.789.3810
mboster@washoeschools.net



NEVADA DIVISION OF
**ENVIRONMENTAL
PROTECTION**

STATE OF NEVADA
Department of Conservation & Natural Resources
Brian Sandoval, Governor
Leo M. Drozdoff, P.E., Director
Colleen Cripps, Ph.D., Administrator

November 16, 2015

BOB SACK
DISTRICT HEALTH
P.O. BOX 11130
RENO NV 89520

**Re: Tentative Map-Blackstones Estates
161 lots in Washoe County**

Dear Mr. SACK:

The Nevada Division of Environmental Protection has reviewed the above referenced subdivision and recommends approval of said subdivision with respect to water pollution and sewage disposal, provided that the Washoe County commits to provide sewage service to said subdivision.

Please note that if the developer of this subdivision will disturb more than one acre, he/she is required to obtain coverage under NDEP's Construction Stormwater General Permit NVR100000. A Notice of Intent must be filed electronically and submitted with a \$200 fee prior to commencing any earth-disturbing activities at the site. Visit NDEP's Bureau of Water Pollution Control's website at: http://ndep.nv.gov/bwpc/storm_con03.htm for more information about this permit.

Sincerely,

Choul Kyu "Charlie" Lee, E.I.
Technical Services Branch
Bureau of Water Pollution Control

cc:

-- -- Washoe County Department of Water Resources, Utility Division, P.O. 11130 Reno 89520
-- - , Comprehensive Planning, P.O. 11130 Reno 89520
Engineer: STAR CONSULTING 439 W. Plumb Lane Reno, NV 89509
Developer Name: SP58 LLC 439 W Plumb Lane Reno, NV 89509

Control No. 10547



STATE OF NEVADA
DEPARTMENT OF TRANSPORTATION

District II
310 Galletti Way
Sparks, Nevada 89431
(775) 834-8300 FAX (775) 834-8319

September 4, 2016

BRIAN SANDOVAL
Governor

RUDY MALFABON, P.E., Director

Washoe County
Planning and Development Division
P.O. Box 11130
Reno, NV 89520-0027

TM15-001
Blackstone Estates
State Route 445, Pyramid Way

RE: TM15-001 (Revised Traffic Study)

Attention: Ms. Kelly Mullin, Planner

Dear Ms. Mullin:

I have reviewed the *Blackstone Estates Traffic Study* dated August 12, 2016. This study indicates the traffic impact for the request approval of 161 single-family residences located east of Pyramid Highway (State Route 445) and north of Calle De La Plata. This parcel will be accessed from Calle De La Plata which connects to Pyramid Highway (State Route 445). I have the following comments:

1. Nevada Department of Transportation (NDOT) is aware of two additional planned development projects that will likely impact this corridor and the intersection of Pyramid Highway and Calle De La Plata. The study does not consider the traffic impact from nearby developments. The following development projects should be considered:
 - Sugarloaf Ranch Estates development consisting of 119 single-family units generating 1,139 average daily trips with 89 AM peak hour/120 PM peak hour trips.
 - Harris Ranch Subdivision development consisting of 610 single-family units generating 5,544 daily trips with 437 AM peak hour/ 535 PM peak hour trips.

Any additional projects already approved or pending should also be included.

2. When comparing the *Blackstone Estates Traffic Study* traffic counts with the Sugarloaf Ranch Estates' traffic study (Traffic Works) for the intersection of Pyramid Highway/Calle De La Plata, there appears to be significant differences in the vehicle distribution volumes:
 - West approach- right turn to Pyramid Highway: Traffic Works' 441 AM peak trips compared to Solaegui Engineers' 215 AM peak trips. (51% lower)
 - North approach- southbound through: Traffic Works' 292 AM peak hour trips compared to Solaegui Engineers' 208 AM peak hour trips. (29% lower)

- North approach- right turn to W. Calle De La Plata: Traffic Works' 41 AM peak trips compared to Solaegui Engineers' 5 AM peak trips. (88% lower)

The reported existing traffic counts are also used in the Harris Ranch Subdivision traffic report. While NDOT is not disputing the field counts, clarification on the vehicle counts provided would be appreciated.

3. The traffic study recommends the installation of a right turn lane/deceleration lane as specified in the current *NDOT Access Management System and Standards, 1999*. This is an important safety enhancement to mitigate the traffic impact.
4. Improving sight distance for vehicles on the east approach at Pyramid Highway and Calle De La Plata needs to be considered. NDOT recommends relocating the existing mailboxes (southeast corner) and monument sign (northeast corner) to a location outside the functional area of the intersection. Moving the mailbox driveway further away from the intersection will likely improve traffic operations.
5. NDOT continues to monitor the intersection of Pyramid Highway and Calle De La Plata. The most recent traffic signal study was completed three months ago. At this time, the intersection does not meet the federal guidelines/standards for a traffic signal.
6. A roundabout design should be considered as it mitigates the traffic impact, reduces vehicle speeds, and eliminates angle crashes. A roundabout reduces vehicle conflict points from thirty-two to eight for a four-way intersection.
7. Existing traffic plus combined anticipated traffic volumes (Blackstone Estates, Sugarloaf Ranch Estates and Harris Ranch Subdivision) appear to have a significant impact to the intersection at Pyramid Highway and Calle De La Plata. If all three development projects are approved and constructed, it is likely the traffic generated will warrant the need for a traffic signal. There would be a benefit to the public if these projects installed the necessary signal infrastructure to mitigate the traffic impacts. The traffic signal mast arms, signal heads and signage would not be installed until such time as a traffic signal study is conducted and the signal activation approved by NDOT.
8. In the event of a signal system installation, NDOT will permit the traffic signal/lighting infrastructure to Washoe County. Final acceptance of a signal system maintenance agreement must be obtained and approved by NDOT prior to signal activation.
9. Signs for advertising will not be allowed within NDOT right-of-way. Please refer to NRS 405.110- Unlawful advertising on or near highway or on bridge. Please ensure sign base, post and sign edge is outside of State right-of-way.
10. The state defers to municipal government for land use development decisions. Public involvement for Development related improvements within the NDOT right-of-way should be considered during the municipal land use development public involvement process. Significant public improvements within the NDOT right-of-way developed after the municipal land use development public involvement process may require additional public involvement. It is the responsibility of the permit applicant to perform such additional public involvement. We would encourage such public involvement to be part of a municipal land use development process.

Thank you for the opportunity to review this development proposal. NDOT reserves the right to incorporate further changes and/or comments as the design review advances. I look forward to working with you and your team, and completing a successful project. Please feel free to contact me at (775)834-8300, if you have any further questions or comments.

Sincerely,

DocuSigned by:
Jae Pullen
DC6D2FB6D946439...

9/7/2016

Jae Pullen, PE, PTOE
District II Engineering Services

cc: Thor Dyson, District Engineer
Hoang Hong, Traffic Ops
Rebecca Kapuler, RTC
File

DS




REGIONAL TRANSPORTATION COMMISSION

Metropolitan Planning • Public Transportation & Operations • Engineering & Construction

Metropolitan Planning Organization of Washoe County, Nevada

August 31, 2016

FR: Chrono/PL 183-16

Mr. Roger Pehlam, Senior Planner
Community Services Department
Washoe County
P.O. Box 11130
Reno, NV 89520

RE: TM15-001 (Blackstone Estates)

Dear Roger,

The applicant is requesting approval the approval of a 161-lot single-family residential common open space subdivision on a 58.49 acre property located on the north side of Calle de la Plata Drive east of Pyramid Highway.

The RTC submitted comments on November 3, 2015 and July 8, 2016 (TM15-001 Blackstone Estates). Please see attached letter. In addition to the comments in the attached letters, the RTC has the following comments:

The updated Traffic Study prepared by Solaegui Engineers, dated August 12, 2016, identifies that improvements to the intersection of Pyramid Highway and Calle de la Plata should include the construction of a right turn deceleration lane on the south approach to accommodate the 325 PM Peak Hour northbound right turns. Traffic signal warrants should be periodically monitored to determine if and when a traffic signal should be considered.

Thank you for the opportunity to comment on this project. If you have any questions or comments please feel free to contact me at 332-0174 or rkapuler@rtcwashoe.com.

Sincerely,

A handwritten signature in blue ink that reads "Rebecca Kapuler". The signature is fluid and cursive.

Rebecca Kapuler
Planner

Attachment

RK/jm

Copies: Bill Whitney, Washoe County Community Services Department
Kelly Mullin, Washoe County Community Services
Tina Wu, Regional Transportation Commission

Daniel Doenges, Regional Transportation Commission
Julie Masterpool, Regional Transportation Commission
David Jickling Regional Transportation Commission
Doug Maloy, Regional Transportation Commission
Jae Pullen, Nevada Department of Transportation District II
Jeremy Smith, Truckee Meadows Regional Planning Agency

\641 Blackstone Estates V3



REGIONAL TRANSPORTATION COMMISSION

Metropolitan Planning • Public Transportation & Operations • Engineering & Construction

Metropolitan Planning Organization of Washoe County, Nevada

November 3, 2015

FR: Chrono/PL 183-15

Ms. Kelly Mullin, Planner
 Community Services Department
 Washoe County
 P.O. Box 11130
 Reno, NV 89520

RE: TM15-001 (Blackstone Estates)

Dear Kelly,

The applicant is requesting approval of a tentative subdivision map to develop a 161 lot single-family residential subdivision on approximately 58.49 acres located on the north side of Calle de la Plata Drive east of Pyramid Highway.

The Regional Transportation Plan (RTP) identifies Pyramid Highway from Queen Way to Calle de Plata Drive as an arterial with high access control (HAC). Calle de la Plata Drive, east of Pyramid Highway is not designated as a regional road. To maintain arterial capacity, the following RTP access management standards should be met.

Access Management Standards-Arterials ¹ and Collectors							
Access Management Class	Posted Speeds	Signals Per Mile and Spacing ²	Median Type	Left From Major Street? (Spacing from signal)	Left From Minor Street or Driveway?	Right Decel Lanes at Driveways?	Driveway Spacing ³
High Access Control	45-55 mph	2 or less Minimum spacing 2350 feet	Raised w/channelized turn pockets	Yes 750 ft. minimum	Only at signalized locations	Yes ⁴	250 ft./500 ft.

¹ On-street parking shall not be allowed on any new arterials. Examination of existing on-street parking shall be considered a priority for major and minor arterials operating at or below the policy level of service.
² Minimum signal spacing is for planning purposes only, additional analysis must be made of proposed new signals in the context of planned signalized intersections, and other relevant factors impacting corridor level of service.
³ Minimum spacing from signalized intersections/spacing other driveways.
⁴ If there are more than 30 inbound, right-turn movements during the peak-hour.

The policy Level of Service (LOS) standard for Pyramid Highway is E. New intersections or changes to existing intersections shall be designed to provide a level of service consistent with maintaining the policy level of service of the intersecting corridor. This project should be required to meet all the conditions necessary to complete road improvements to maintain policy LOS standards.

The 2035 RTP identifies the section of Pyramid Highway from Sparks Boulevard to Calle de la Plata Drive as a future six-lane freeway as part of the Pyramid Highway/Sun Valley/US 395 Connector. Design and right of way are anticipated in the 2023-2035 timeframe with the construction after 2035. The Federal Highway Administration, in cooperation with the Nevada Department of Transportation (NDOT) and the RTC, has issued a draft Environmental Impact Statement for the proposed US 395/Pyramid

RTC Board: Neoma Jardon (Chair) • Ron Smith (Vice Chair) • Bob Lucey • Paul McKenzie • Vaughn Hartung
 PO Box 30002, Reno, NV 89520 • 1105 Terminal Way, Reno, NV 89502 • 775-348-0400 • rtcwashoe.com

The land use data in the RTC's travel demand model does not include any residential growth in the traffic analysis zone (TAZ) that this property is located in. If this project is approved, we will adjust our travel demand model increasing the land use growth in the TAZ.

Thank you for the opportunity to comment on this project. If you have any questions, please feel free to contact me at 335-1918.

Sincerely,



Debra Goodwin
Planning Administrator

DG/jm

Copies: Bill Whitney, Washoe County Community Services Department
Marchon Miller, Regional Transportation Commission
Tina Wu, Regional Transportation Commission
David Jickling, Regional Transportation Commission
Julie Masterpool, Regional Transportation Commission
Doug Maloy, Regional Transportation Commission
Janelle Thomas, Nevada Department of Transportation District II
Jeremy Smith, Truckee Meadows Regional Planning Agency

641 Blackstone Estates



REGIONAL TRANSPORTATION COMMISSION

Metropolitan Planning • Public Transportation & Operations • Engineering & Construction

Metropolitan Planning Organization of Washoe County, Nevada

July 8, 2016

FR: Chrono/PL 183-16

Mr. Roger Pehlman, Senior Planner
Community Services Department
Washoe County
P.O. Box 11130
Reno, NV 89520

RE: TM15-001 (Blackstone Estates)

Dear Roger,

The applicant is requesting approval the approval of a 161-lot single-family residential common open space subdivision on a 58.49 acre property located on the north side of Calle de la Plata Drive east of Pyramid Highway.

The RTC submitted comments on November 3, 2015 (TM15-001 Blackstone Estates). Please see attached letter.

In addition to the comments in the attached letter, the RTC is requesting the developer contact Tina Wu, RTC Senior Planner, at 775-335-1908 or twu@rtcwashoe.com to review development layouts for possible future transit improvement.

Thank you for the opportunity to comment on this project. If you have any questions or comments please feel free to contact me at 332-0174 or rkapuler@rtcwashoe.com.

Sincerely,

Rebecca Kapuler
Planner

Attachment

RK/jm

- Copies:
- Bill Whitney, Washoe County Community Services Department
 - Kelly Mullin, Washoe County Community Services
 - Tina Wu, Regional Transportation Commission
 - Daniel Doenges, Regional Transportation Commission
 - Julie Masterpool, Regional Transportation Commission
 - David Jickling Regional Transportation Commission
 - Doug Maloy, Regional Transportation Commission
 - Jae Pullen, Nevada Department of Transportation District II
 - Jeremy Smith, Truckee Meadows Regional Planning Agency

1641 Blackstone Estates

RTC Board: Neoma Jardon (Chair) • Ron Smith (Vice Chair) • Bob Lucey • Paul McKenzie • Marsha Berkgigler
PO Box 30002, Reno, NV 89520 • 1105 Terminal Way, Reno, NV 89502 • 775-348-0400 • rtcwashoe.com



**DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES
DIVISION OF WATER RESOURCES**

901 South Stewart Street, Suite 2002
Carson City, Nevada 89701-5250
(775) 684-2800 • Fax (775) 684-2811
(800) 992-0900
(In Nevada Only)
www.water.nv.gov

June 22, 2016

RE: Tentative Map Review 20863-T1

To: Katy Stark
Washoe County Community Services Department
1001 East Ninth Street, Building A
Reno, NV 89512

Name: Blackstone Estates

County: Washoe County – Pyramid Highway and Calle De La Plaza

Location: A portion of the E½ of Section 23, Township 21 North, Range 20, East, MDB&M.

Plat: Tentative: One-hundred-eighty-six (186) lots totaling approximately 58.49 acres and being Washoe County Assessor's Parcel Number 534-571-01.

**Water Service
Commitment**

Allocation: No water is committed at this time. Truckee Meadows Water Authority anticipates a demand of 79.98 acre-feet annually.

**Owner-
Developer:** SP58, LLC
439 West Plumb Lane
Reno, NV 89509

Engineer: Rubicon Design Group, LLC
100 California Avenue, Suite 202
Reno, NV 89509

**Water
Supply:** Truckee Meadows Water Authority

General: There are no active water rights appurtenant to the described lands in this proposed project. The lands of the proposed project lie within the Truckee Meadows Water Authority service area. Any water used on the described lands should be provided by an established utility or under permit issued by the State Engineer's Office.

All waters of the State belong to the public and may be appropriated for beneficial use pursuant to the provisions of Chapters 533 and 534 of the Nevada Revised Statutes (NRS), and not otherwise.

Any water or monitor wells, or boreholes that may be located on either acquired or transferred lands are the ultimate responsibility of the owner of the property at the time of the transfer and must be plugged and abandoned as required in Chapter 534 of the Nevada Administrative Code. If artesian water is encountered in any well or borehole it shall be controlled as required in NRS § 534.060(3).

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 mylar map of the proposed project must be presented to the State Engineer for approval and signed through his office prior to development.

Action: Tentative approval of *Blackstone Estates* subdivision based on acceptance of Water Will Serve by Truckee Meadows Water Authority.

Best regards,

Steve Shell
Water Resource Specialist II



Spanish Springs Citizens Advisory Board

MEMORANDUM

September 14, 2016

To: Commissioner Vaughn Hartung
Re: **Tentative Map Case Number TM15-001 (Blackstone Estates)**
From: Misty Moga, Administrative Recorder

The following is a portion from the Spanish Springs CAB meeting held on September 14, 2016.

7. DEVELOPMENT PROJECTS – The project description is provided below with links to the application or you may visit the Planning and Development Division website and select the Application Submittals page: http://www.washoecounty.us/comdev/da/da_index.htm.

B. Tentative Map Case Number TM15-001 (Blackstone Estates) – Request community feedback, discussion, and possible action to approve a 161-lot single-family residential common open space subdivision on a 58.49-acre property.

Applicant: SP58, LLC, 439 W. Plumb Lane, Reno, NV 89509
Property Owner: Jacie, LLC c/o Douglas Properties, LLC, 3820 Lone Tree Lane, Reno, NV 89511
Location: 350 Calle de la Plata, on the north side of the road and approximately 650 feet east of its intersection with Pyramid Highway
Assessor’s Parcel Number: 534-571-01
Staff: Kelly Mullin, Planner and Roger Pelham, Senior Planner 775-328-3608 (KM) and 775-328-3622 (RP) kmullin@washoecounty.us and rpelham@washoecounty.us

Mike Railey, Rubicon Design Group for Blackstone development group
Began this process one year ago

- Zoning is Medium Density Suburban – up to 3 units per acre
- It’s permitted for 175 units; they are proposing 160 with common space.
- He said the plan has evolved
- Mr. Herman has an open space buffer
- Access on Calle De La Plata with secondary on Sugar Loaf
- The open space will have a split rail fence by Mr. Herman.
- Zero- scape in the front yards installed by developer – low water usage
- Mike said he has been living in Spanish Springs, so he understands the area.
- Conditions with agreement with Sugar Loaf Estates to install the traffic lights; long standing problem will be address.
- Truckee river water rights from TMWA

Richard Zinnick asked if MDS 3 units per acre; mike said they are currently below that.

Dan Herman asked Mike to commit to specific construction hours. Mike said yes, they can commit to that. Dan said we have been fighting against the apartments that are proposed to go in next to this project. He said there is a Hawco project going in the north of this project with common open space.

John Bradbury asked about the signal. He asked about the north bound right hand turn lane. Mike said yes, according to the traffic report, there will be a decel lane and a dedicated left turn lane. Mike said those will be conditions of approval. Mike said they will pay for it through impact fees.

Mike Hudson asked about the number of bedrooms. Mike said the floor plans are being worked out. 3-5 bedrooms with dens. Mike Hudson said there could be 300-500 kids in the schools. Mike Railey said every school is at capacity or over, and they have to let buyers know the schools have to be bused to other schools. That is an issue they are working with the school district.

Dawn asked where everyone can read about the conditions that have to be met. Kelly Mullen, County Planner, said conditions are made by a number of agencies, a lot are in draft form, and they can be available online, and they will be heard on October 4th at the Planning Commission meeting. Please submit your comments with a written letter for the planning commission.

Diane Dutcher said the Hawco project was rejected last week by the Planning Commission. Trevor Lloyd said Harris Ranch was appealed and will be heard by the County Commission on October 25.

Nadine Berrymon asked about the water from the Truckee River. She asked what happens if that runs dry. Mike said someone from TMWA will be at the hearing date.

George McKiernan asked about orientation of other neighborhoods. Mike showed him.

Terri Basso asked about parks planned. Mike said they will perpetuate the Sugar Loaf trail to get to the peak. She asked about widening the lanes on Pyramid.

Pat Abrahams said the project will bring about 300 kids, other projects bring more kids, which would be 500 kids. He asked who is responsible for the schools being built. He asked where will they go to school. Mike said Washoe County School District is responsible for building schools.

Kris Dondero said there will be a conversation corner community meeting with Tracy Davis on September 19 at Spanish Springs Library, 5:30 – 6:30 pm.

Terri Basso said if there are increases of school kids, where will the tax dollars go to build the school. Mike said he is very sympathetic to this. He said their projected school rate according to the school district was expecting: 45 elementary, 10 middle, 15 highschool generated by this project.

Roger McGibbon asked about an impact fee for new construction. Mike said that is not currently part of legislation.

Dawn said Hawco has set aside land for parks and schools. There are tentative space but based on the budget of the school district to build, and the same with parks.

Bob Sader from Hawco properties said they are north of Spanish springs. He said they set aside land sites for schools and parks. In the subdivisions, they plan for the future.

Bill Samson said Hawco got land back from the county that was supposed to be a school or park. If the county doesn't carry the ball, it won't happen. It won't materialize. We don't have the infrastructure to support more growth. There is a lack of county participation. They would love to see this go in because they will get \$50,000 a year from the houses on this project. Please don't approve development out here, we can't handle it. The zoning has already been approved.

John Gwaltney asked Kelly at what stage does the county reach a conclusion on this. What stage are you in this development project. Kelly said we are collecting input. She said she received already 17 pages of comments from other agencies. She said this is part of the project is receiving public input. She said they will forward a staff report to planning commission and they may vote. It may go to board of county commissioners as well. John asked her what the current feeling is. Kelly said they are still gathering info for their analysis. John asked about our process and the character statement. Kelly said all comments here and provided are part of the analysis.

Sarah Mahler asked about the emergency services impacts. This is 161 new homes. She asked about square footage and price ranges. Mike said 2200 up to 2850 sq ft, but that is an estimate. Price would be low to mid \$400K.

Mike said TMFPD is a reviewing agency. They can provide comments and conditions. This was down zoned to build houses. Commercial zoning is harder on fire departments.

John Bradbury said they only have 4 inch flow. He said the fire flow is a concern.

Mike Hudson asked where does this go from here if disapproved. Kelly Mullen said tonight, they are asked to make advisory vote to recommend/not or provide comments. It's ultimately up to the board for the planning commission. It's approved or deny by planning commission on Oct 4, 6:30pm at the County Commission chambers.

Public member said he hasn't heard any positive public comments. If you welcome our comments, why do you heed them.

Jim said when you get a development like this; you increase a tax base for Washoe County. It's a facade. They can redirect funds to whatever they want. He said he isn't sure what happens with the education portion. Mike said \$642,000 is paid in impact fees and they have to be use for this CIP.

Sarah Mahler asked for the proposed schedule of the project. Mike said 5 phases; approval in October, and possibly break ground in spring. Mike said it's a 2-3 year build out.

Joan Abrahams said if the developers pay toward a stop light and expenses, why we can't ask the developers to build the schools. Mike said he understands it's a small amount, but Blackstone Developer group made a \$5k donation. That's not a lot, but Hawco has donated and dedicated school and park sites. She said the developers must do something. It can't happen.

Pat Abrahams said the amount of land donated is worthless if its repurpose for residential use. The land has been reassessed for houses. If you allow this to go on, the sites assigned for schools cannot be changed. Adding 161 houses, what happens to the property values in the nearby houses. Mike said these are upper-end homes, similar to Shadow Ranch, had a positive impact on the property values.

Dawn said the zone change has been done. If the tentative map isn't approved, Mike said someone will come back with a new proposal. Mike said this was zoned for commercial and now it's residential.

Nadine asked why the zoning be 3 per acre. Cut the housing in half. Mike said there is market study for this demand.

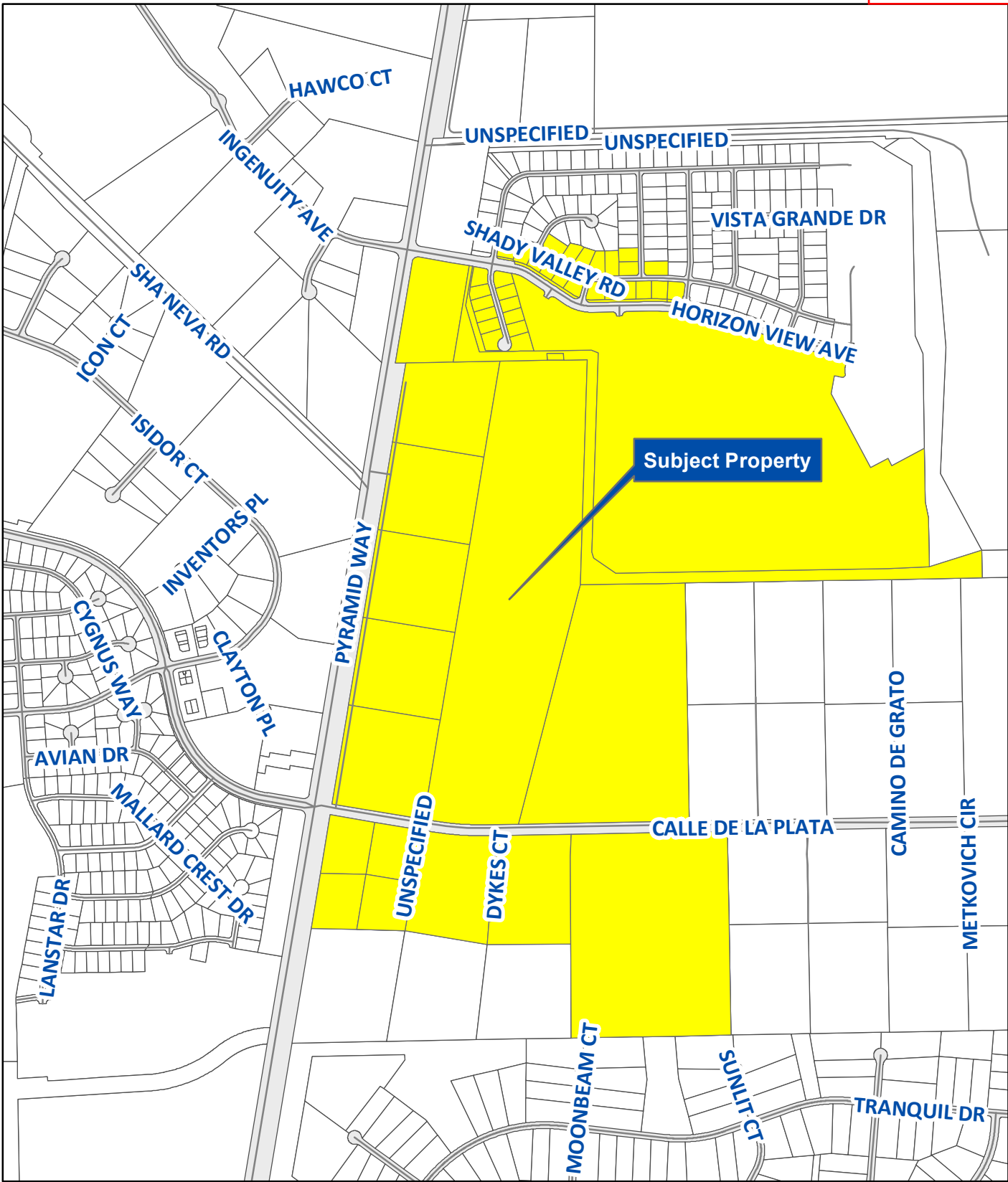
Stan, Public member asked about the floor plans. Mike said he believes the houses by Mr. Herman's homes are single story.

Brenda Healy asked what is next if its not approved. Mike said someone else can come back to ask for this project.

Mike said the map is less dense than what was already approved.

MOTION: Joe Healy made a motion to disapprove the plan. John Gwaltney seconded. The motion passed unanimously.

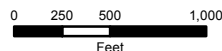
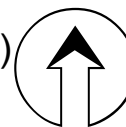
cc: Dawn Costa, Chair
Jennifer Oliver, County Liaison



Public Notice Map

Tentative Map Case No. TM15-001 (Blackstone Estates)

55 affected parcels selected within 750' of subject site
(40 property owners)



Source: Planning and Development Division

Updated: September 14, 2016

Community Services
Department



Post Office Box 11130
Reno, Nevada 89520 (775) 328-3600



BLACKSTONE ESTATES

TENTATIVE SUBDIVISION MAP APPLICATION



Photo Credit: SummitPost.org

Prepared by:



OCTOBER 15, 2015

Job # 237-01

BLACKSTONE ESTATES

TENTATIVE SUBDIVISION MAP APPLICATION

Prepared for:

SP58, LLC

439 W. Plumb Lane

Reno, Nevada 89509

Prepared by:

Rubicon Design Group, LLC

100 California Avenue, Suite 202

Reno, Nevada 89509

(775) 425-4800

October 15, 2015



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BLACKSTONE ESTATES

Appendices:

Washoe County Development Application
Owner Affidavits
Tentative Subdivision Map Application
Request to Reserve Street Names
Property Tax Verification
Washoe County Assessor's Office Map
Traffic Impact Study
Truckee Meadows Water Authority Discovery Report/Will-Serve
Preliminary Title Report (Original Only)

Supplemental Information Package (6 Copies Attached):

Preliminary Geotechnical Investigation
Survey Computations
Preliminary Hydrology Report
Preliminary Grading and Drainage Plans
Preliminary Landscape Plans

Map Pocket:

Preliminary Engineering Plans
Preliminary Landscape Plan



BLACKSTONE ESTATES

Introduction

This application includes the following request:

- A **Tentative Map with Common Open Space** to create 161 single family lots on 58.49± acres within the Spanish Springs Area Plan.

Project Location

The Blackstone Estates site (APN 534-571-01) consists of 58.49± acres and is located in northern Spanish Springs. Specifically, the property is located on the north side of Calle de la Plata, east of Pyramid Highway. Figure 1 (below) depicts the project location.

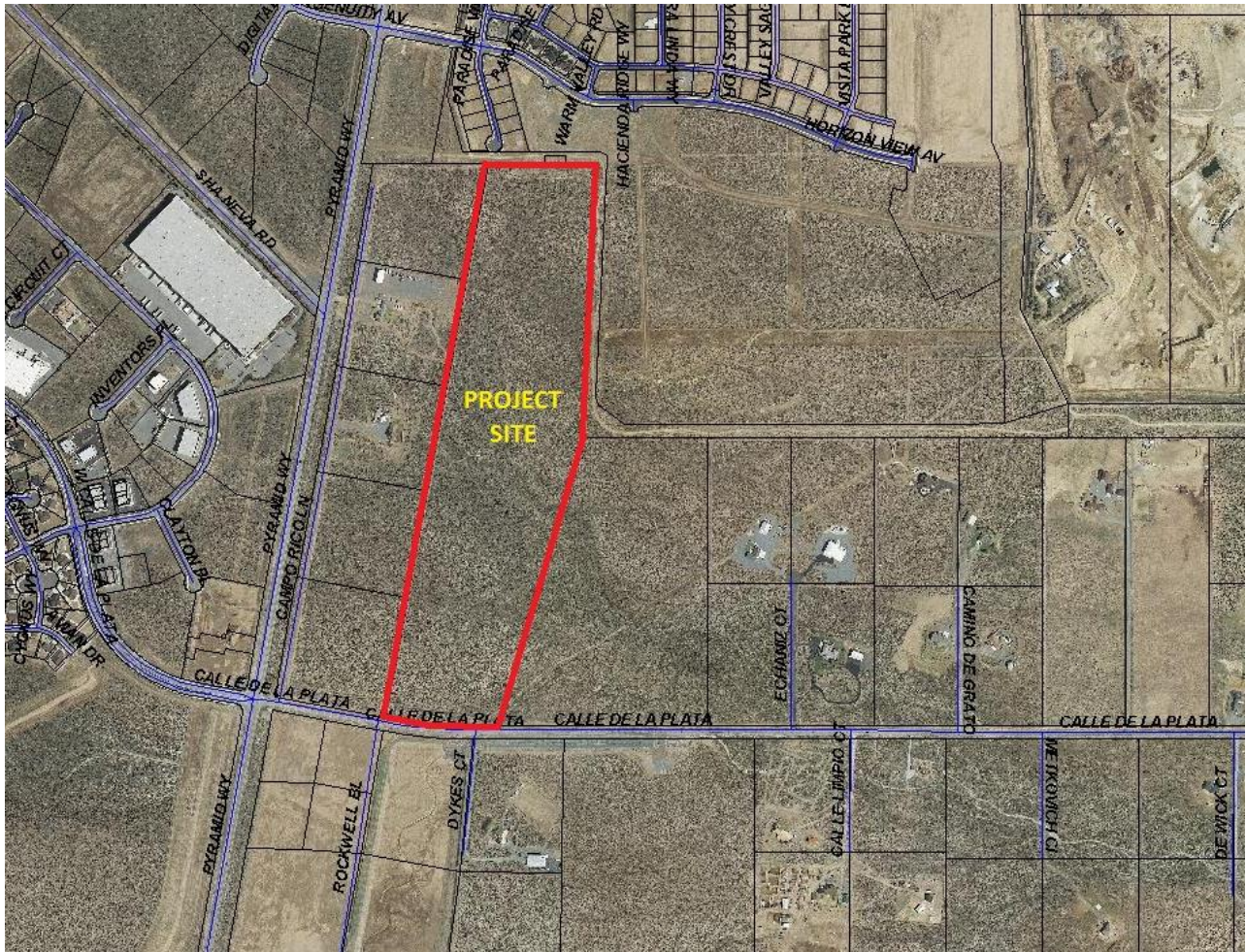


Figure 1 – Vicinity Map



BLACKSTONE ESTATES

Existing Conditions

Currently, the project site is vacant. Surrounding land use includes vacant land and single family residential uses to the west, the “Shadow Mountain” subdivision to the north, vacant land to the east, and a regional storm water detention facility and single family to the south.

The Blackstone Estates property contains generally flat terrain and is accessed from Calle de la Plata on the south side. Figures 2 (below) and 3 (following page) depict the existing onsite conditions.

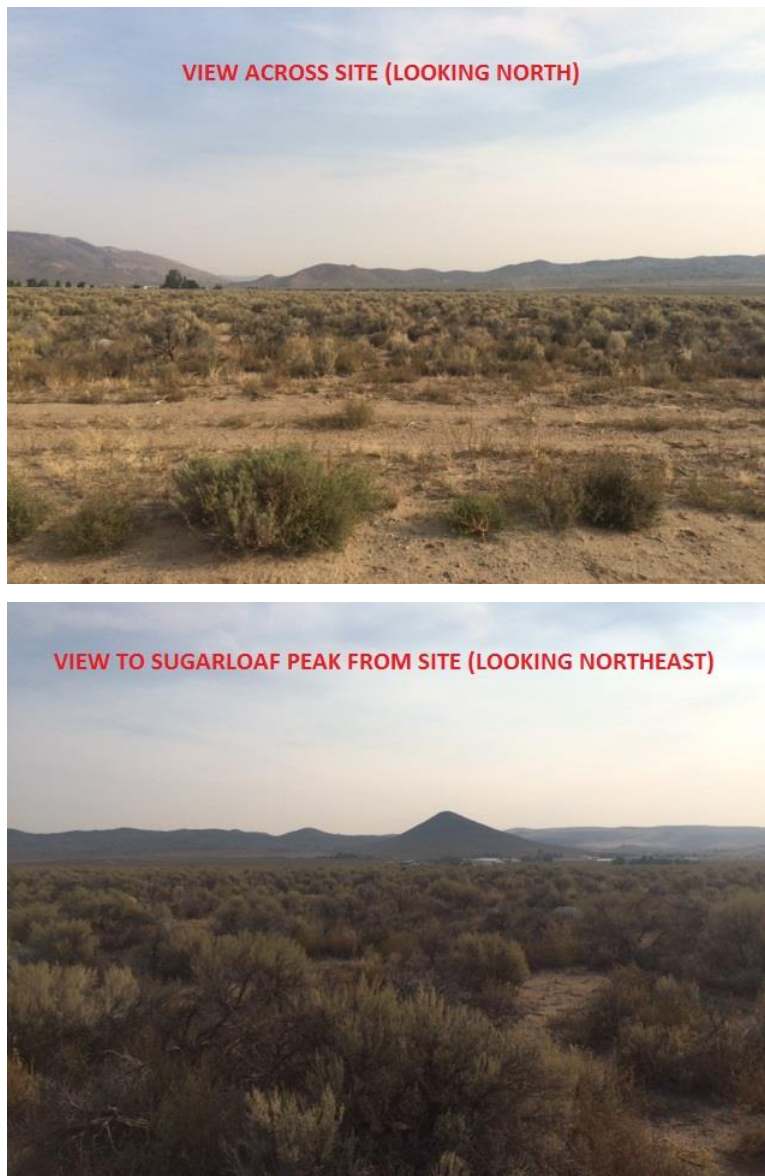


Figure 2 – Existing Conditions



BLACKSTONE ESTATES

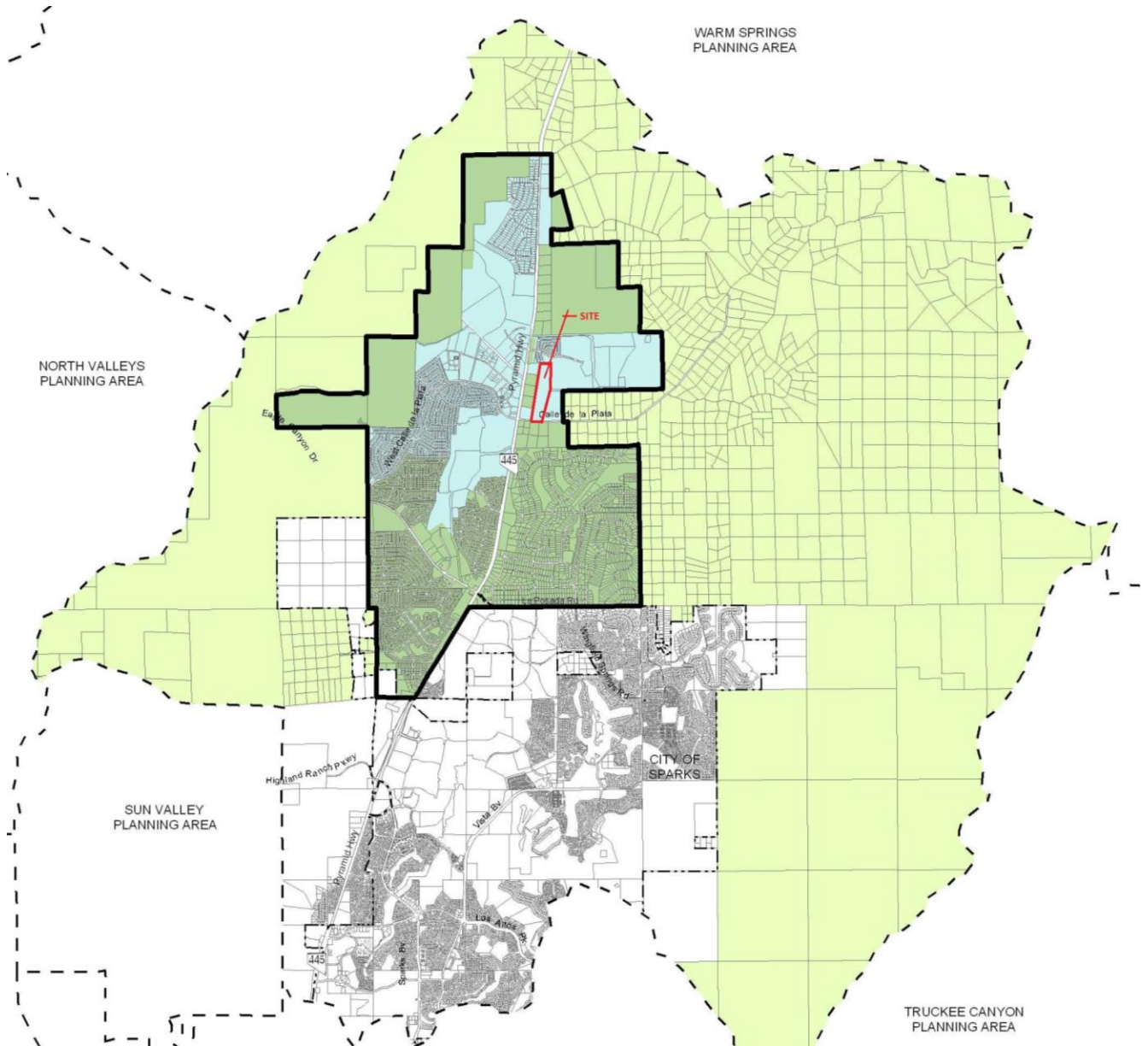


Figure 3 – Existing Conditions



BLACKSTONE ESTATES

Blackstone Estates is located within the Spanish Springs Area Plan and is identified within the Suburban Character Management Area as defined in the Spanish Springs Character Management Plan. The Spanish Springs Area Plan states that the Suburban Character Management Area (SCMA) “will be the designated growth area in the Spanish Springs Valley.” Figure 4 (below) depicts the project site in context with the SCMA.



NOTE: SCMA boundary is outlined in bold.

Figure 4 – Suburban Character Management Area



BLACKSTONE ESTATES

Previous Entitlement Requests

This tentative map application follows requests made for a Master Plan Amendment and Regulatory Zone Amendment for the Blackstone Estates site in September 2015. These applications have been approved by the Washoe County Board of Commissioners. Final conformance review approval by the Truckee Meadows Regional Planning Commission is anticipated on July 13, 2016.

The previous MPA and RZA requests set out to establish a Suburban Residential Master Plan designation and Medium Density Suburban (MDS) zoning for the entire 58.49± acres. The proposed Master Plan designations are depicted below in Figure 5, while Figure 6 (following page) depicts the proposed zoning for the project site.

It is important to note that the previous entitlement requests referred to the project as Sugarloaf Estates. The project name has officially been changed to Blackstone Estates in order to eliminate confusion between this project and the project proposed adjacent to this site (Sugarloaf Ranch Estates).



LEGEND

 SUBURBAN RESIDENTIAL

Figure 5 – Proposed Master Plan Designation



BLACKSTONE ESTATES

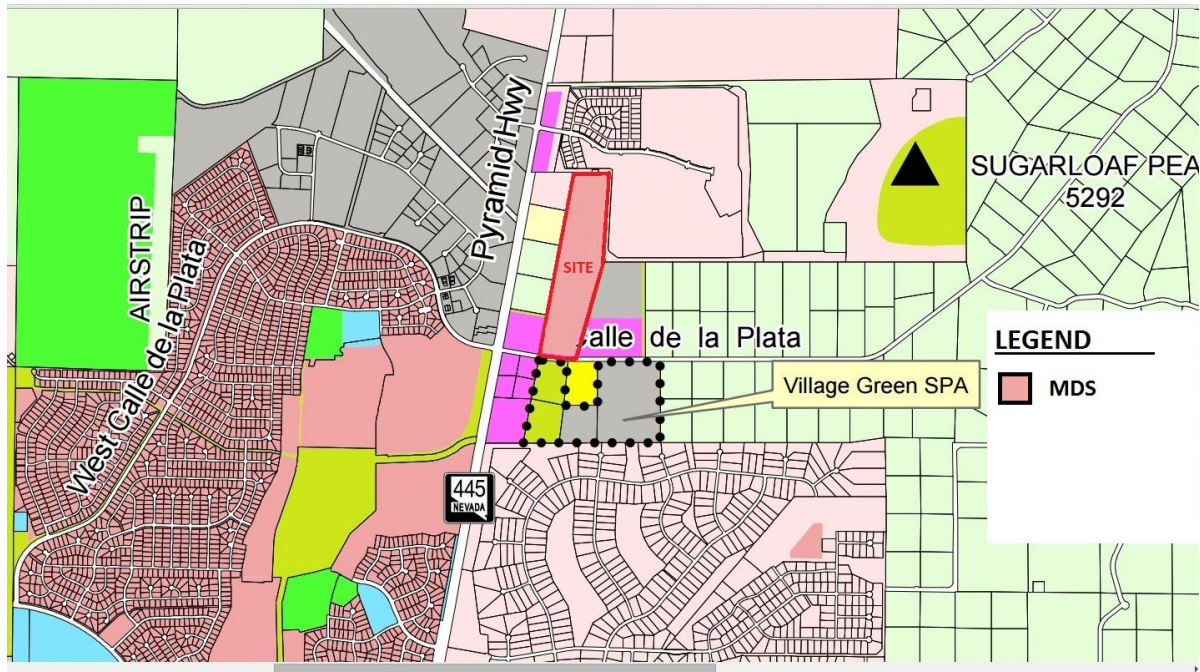


Figure 6 – Proposed Zoning

Request Summary

As noted previously, this application includes a tentative Subdivision Map request to create 161 single family lots at the project site. It is planned to develop Blackstone Estates utilizing a Common Open Space Development approach, per the standards contained in Article 408 of the Washoe County Development Code.

The plan developed for Blackstone Estates includes 161 lots for an overall density of 2.75 units per acre. Included within the project are 9.27± acres of open space. This includes a 3.19± acre open space area on the west side that will provide passive and active recreational opportunities for residents. It is envisioned that this area will serve much like a neighborhood park and can accommodate a wide range of recreational uses.

The park area on the west side of the project was located based on meetings with the adjoining property owner. At the owner's request, the open space was strategically located to ensure that a maximum buffer to the existing residence is achieved. It is also noteworthy that no motorized vehicles will be allowed in this area and the entire western row of lots will not include any two-story homes.

Lot sizes within Blackstone Estates are consistent with the proposed MDS zoning and are complementary to the existing Shadow Mountain subdivision to the north as well as lots planned within the proposed Sugarloaf Ranch Estates project to the east. Lots within Blackstone Estates range in size from 8,595± square feet to 19,271± square feet with an overall average lot size of 11,140± square feet.



BLACKSTONE ESTATES

Figure 7 (below) depicts the overall layout proposed for Blackstone Estates.



Figure 7 – Preliminary Site Plan



BLACKSTONE ESTATES

As depicted in Figure 7, trails will be provided with Blackstone Estates. These trails provide connections to existing trails within the adjoining developments as well as a connection to the existing regional trail that provides access to Sugarloaf Peak to the northeast. Although the trails and open space areas within Blackstone Estates will be private and maintained by a planned homeowners association, a public use easement will be dedicated in order to allow all area residents access to these amenities. Providing these trail linkages serves to complete a crucial link between Sugarloaf Peak and the southern Spanish Springs valley. The trails can be used for walking/hiking, bicycling, or equestrian use.

A homeowners association (HOA) will be created for Blackstone Estates with the approval of the first final map. The HOA will be responsible for maintaining the open space and common areas and for enforcement of planned covenants, conditions, and restrictions (CC&R's). CC&R's will be developed for the site to ensure that homeowners maintain their properties and that the community vision is carried forward. The HOA may choose to form its own architectural review committee in order to further regulate any proposed modifications to homes (i.e. additions, patio covers, detached garages, etc.). Of course, any modification to the approved home plans would require compliance with the MDS zoning standards (i.e. setbacks, etc.) and would be subject to review and approval by Washoe County. The CC&R's are not enforced by the County but will provide the HOA with a mechanism to enforce the community standards and vision. The CC&R's will be provided to new home buyers at the time of purchase and will be recorded against new lots within Blackstone Estates.

Primary access will be provided from Calle de la Plata with a secondary access through the adjoining project (proposed) to the east. This will ensure proper emergency access and meets all applicable Washoe County requirements. A comprehensive traffic impact analysis is included as an appendix to this report and details the projected traffic volumes generated by Blackstone Estates and the planned mitigation improvements. As part of this project, it is proposed to improve the Pyramid Highway/Calle de la Plata intersection with a new dedicated left turn lane for southbound traffic onto Pyramid Highway.

Roadways within Blackstone Estates will be constructed to Washoe County standards and will be dedicated as public rights-of-way. Roads will include 42-foot right of way with curb, gutter, and sidewalk. Right-of-way details are included in the attached map pocket.

Phasing for the project will largely be dependent on current market conditions. It is envisioned that there will be no more than 5 phases for the project. Final maps may be recorded separately or concurrently for each phase and bonding for improvements shall occur in accordance with Washoe County requirements and policies. It is intended that the first phase will be located at the southern end of the project with construction moving to the north until buildout is complete.

Home plans for Blackstone Estates are still being developed and are envisioned to complement surrounding development. Larger lots included within Blackstone Estates are conducive to larger single story floor plans although no limitation on two-story models is proposed (with the exception of the west side). Consistent with Washoe County policy, final home plans and elevations will be subject to the review and approval of the Washoe County Design Review Committee for compliance with development code and Area Plan standards.



BLACKSTONE ESTATES

Fencing for the project will include six-foot wood fences for side and rear yards. Lots adjoining open space areas will include a 4-foot open fence such as split rail or wrought iron. These fencing requirements will also be included in the CC&R's recorded for Blackstone Estates.

Site Analysis

Article 408 of the Washoe County Development Code establishes regulations related to Common Open Space Developments (COSD). Specifically, Section 110.408.30 requires a site analysis be conducted. This site analysis criteria is listed below and addressed in **bold face** type.

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.

Figure 1 (page 1) included in this report provides an overall location/vicinity map for Blackstone Estates. Additionally, a vicinity map is also included on the Tentative Map Title Sheet (Sheet 1 of 9) in the attached map pocket.

- (b) Land Use. Current and planned land use on the site and adjacent current, planned and approved, but unbuilt land uses.

As depicted in Figures 1 through 6 of this report, the project site is currently vacant. Requests for a Master Plan Amendment and Zone Change have been submitted that will redesignate the site as Suburban Residential and rezone the site to Medium Density Suburban (MDS). This is actually a down-zone to the current Neighborhood Commercial and Industrial designations that are currently associated with the property. Parcels to the north are under development as single family homes, utilizing a similar COSD approach as proposed with Blackstone Estates. Although the subdivision to the north is zoned Low Density Suburban, with the clustering, lot sizes are complementary to that proposed within Blackstone Estates. Parcels to the west are designated for a mix of commercial and residential uses (at varying densities). Two of the parcels to the west are developed with single family homes. The Blackstone Estates plan addresses these residences by providing an open space buffer adjacent to the parcels which will protect privacy and view sheds of the existing residences.



BLACKSTONE ESTATES

The property located to the east of Blackstone Estates is currently under review by Washoe County for single family residential use at the same density proposed with this project (Sugarloaf Peak Estates). Therefore, Blackstone Estates will directly complement uses to the east. If the Sugarloaf Peak Estates is not approved, Blackstone Estates will still retain the open space buffer and trail along the eastern property boundary, ensuring land use compatibility. Lastly, the property to the south consists of a large detention basin/regional flood control project that will remain undeveloped but is perfectly compatible with residential use types.

- (c) Existing Structures. A description of the location, physical characteristics, condition and proposed use of any existing structures.

Not applicable. There are no existing onsite structures.

- (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.

The Blackstone Estates site is characterized by natural vegetation consisting mostly of sagebrush, rabbit brush, and patches of cheat grass. There are no existing trees on the property no are there any known foreign species, etc.

- (e) Prevailing Winds. An analysis of prevailing winds.

Prevailing winds in the area are from west to east with occasional northerly winds during storm events. The proposed project layout should not be negatively impacted by the prevailing winds in the area.

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

The project site is generally flat and contains 10± feet of fall across the entire 58.49± acres. The project does not qualify as a hillside development and contains slopes less than 5%. The engineering plans included with this application provide for grading and drainage plans that clearly depict the site topography.

- (g) Soil. An analysis of the soil characteristics of the site using Soil Conservation Service (SCS) information.

A preliminary geotechnical report is included as an appendix to this report and identifies no soil or geologic conditions that would preclude residential development at the densities proposed.

- (h) Natural Drainageways. Identification of natural drainageways on and adjacent to the site.

Natural drainage that occurs along the eastern portion of the site will be retained and is incorporated into the provided open space. A detailed hydrology study is also included as an appendix to this report.



BLACKSTONE ESTATES

- (i) Wetlands and Water Bodies. Identification of existing or potential wetlands and water bodies on the site.

Not applicable. No wetlands or water bodies exist onsite.

- (j) Flood Hazards. Identification of existing and potential flood hazards using Federal Emergency Management Agency (FEMA) information.

There is a small portion of flood hazard area that “clips” the southeastern portion of the Blackstone Estates site. This area is incorporated in to the open space and does not occur within any of the proposed lot areas. This area is also depicted on the engineering plans and addressed in the included hydrology report.

- (k) Seismic Hazards. Identification of seismic hazards on or near the site, including location of Holocene faults.

A preliminary geotechnical report is included with this application and identifies no known seismic hazards.

- (l) Avalanche Hazards. An analysis of avalanche and other landslide hazards.

Not applicable.

- (m) Sensitive Habitat and Migration Routes. An analysis of sensitive habitat areas and migration routes.

Not applicable. There are no known or identified sensitive habitats or migration routes onsite.

- (n) Significant Views. A description and analysis of all on and off site significant views.

Views from the site generally focus to the northeast towards Sugarloaf Peak. Views across the property are previously depicted in Figures 2 and 3.

- (o) Easements. A description of the type and location of any easements on the site.

All existing and proposed easements are clearly depicted on the engineering plans included with this report. Additionally, a preliminary title report is being submitted with the original report that identifies and describes all existing easements.



BLACKSTONE ESTATES

- (p) Utilities. A description of existing or available utilities, and an analysis of appropriate locations for water, power, sanitary sewer and storm water sewer services.

The attached engineering plans and drawings depict all existing utilities/infrastructure and proposed extensions, etc. The project will connect to all municipal services including sewer, water, natural gas, cable television, etc.

- (q) Appropriate Access Points. An analysis of appropriate access points based upon existing and proposed streets and highways and site opportunities and constraints.

Access is provided from Calle de la Plata and primary access is situated and sized such that conflicts with existing driveways and circulation patterns will not result. A comprehensive traffic impact analysis is also included as an appendix to this report.

- (r) Other Information. All other information deemed appropriate and necessary by the Director of Community Development.

This report provides for all pertinent and required details. Additional information and analysis can be provided on an as-needed basis as it may arise during the public review process.

As part of the Site Analysis required under the COSD standards, the Development Suitability Map from the Spanish Springs Area Plan was referenced. The site is considered “most suitable for development” with the exception of a small portion subject to flooding (as discussed previously under item “j”). The actual area subject to flooding has been highly refined based on detailed engineering studies and mapping provided by FEMA and is clearly addressed on the engineering plans included with this report.

Figure 8 (following page) includes the Development Suitability Map taken from the Spanish Springs Area Plan.

Potential Impacts

This section aims to provide a cursory impact analysis based on the conceptual plan developed for the project, as presented in Figure 7.

- **Traffic**

Traffic is a measurable impact that will result no matter what is developed at the site. As part of this application and consistent with the Plan Maintenance section of the Spanish Springs Area Plan, a comprehensive traffic impact study, prepared by Star Consulting, is attached within the appendices of this report.



BLACKSTONE ESTATES

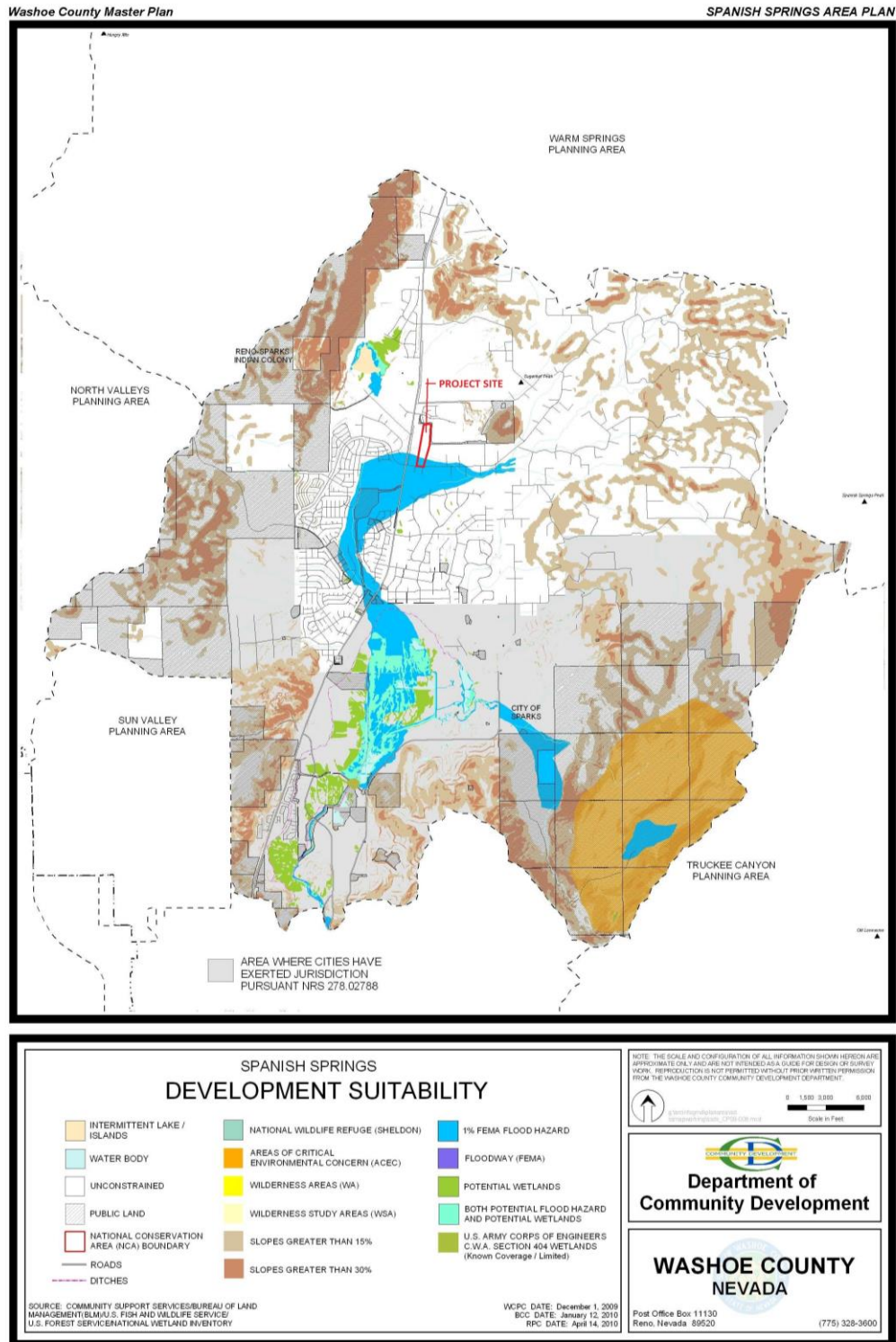


Figure 8 – Development Suitability Map



BLACKSTONE ESTATES

As noted in the attached traffic report, the intersection of Calle de la Plata and Pyramid Highway was highly analyzed. Currently, the intersection operates at level of service (LOS) F which does not meet service criteria established within the Area Plan or by the Regional Transportation Commission (RTC). However, with planned regional improvements, including the widening of Pyramid Highway from two to four lanes up to Calle de la Plata, LOS for the intersection rises to C, even with added traffic from Blackstone Estates.

With approval of Blackstone Estates, it is conceivable that roadway improvements listed on the RTP will be accelerated, especially considering that regional projects are re-evaluated and prioritized every 2 years. As part of the tentative map review process, Star Consulting will be meeting with NDOT and representatives of the adjoining project to the east to suggest planned intersection improvements at Calle de la Plata and Pyramid Highway. The traffic analysis also suggests the construction of a dedicated left turn lane at the intersection for southbound traffic.

Overall, Blackstone Estates is anticipated to generate 121 am peak hour trips, 163 pm peak hour trips, and 1,541 average daily trips. It is important to note that the number of trips generated by the proposed residential use is a decrease from the number of trips that would likely occur under the current zoning (by as much as 58%). The traffic analysis concludes that the proposed development will have no measurable impact on the LOS of the adjacent roadway segments or intersections, when regional improvements are completed and that the adjacent roadways are currently operating under capacity.

Blackstone Estates can help spearhead long anticipated improvements, including improvements at Calle de la Plata/Pyramid Highway that have been a desire of the community for over a decade. Additionally, the project developer will be required to make a significant contribution in terms of traffic impact fees paid to RTC with final map approval.

Additional details and analysis are attached in the full traffic impact study.

- **Schools**

As part of this Tentative Map process, the Washoe County School District was consulted as to the current capacities of schools that serve the project area. It was determined that the project site is zoned for the following schools:

- Spanish Springs Elementary School
- Yvonne Shaw Middle School
- Spanish Springs High School



BLACKSTONE ESTATES

Mike Boster, Washoe County School District Planner, provided the School District's accepted student generation formulas along with the 2014/2015 enrollments and capacities for each school (2015/2016 enrollments have not been finalized as of the filing date of this application). Mr. Boster also indicated that capacities can be misleading based on special programs that may be occurring within the school facility. For example, elementary schools often have special education classes, gifted and talented programs, autism specialty programs, etc. which are capped by law on maximum classroom size. This can therefore skew actual capacity levels. Regardless, Mr. Boster concurred that the School District could provide refined enrollment and capacity numbers as part of this and a future public review process.

Once again, for the sake of this analysis, a density yield of 161 units was assumed. The following table summarizes potential school impacts.

School	Current Enrollment ¹	Capacity ¹	Generation Rate ¹	Number of New Students
Spanish Springs ES	713 students	772 students	0.277/unit	45 students
Shaw MS	1,008 students	1,072 students	0.064/unit	10 students
Spanish Springs HS	2,315 students	2,160 students	0.136/unit	22 students

1 – provided by the Washoe County School District.

It is important to note that this analysis does not consider the potential for children to attend charter schools, private institutions, or home schooling and is therefore a worst-case scenario in terms of student generation projections.

- **Public Facilities/Infrastructure**

The project site is located in an area of existing infrastructure. All municipal services (i.e. water, sewer, storm drain, etc.) are either in place or can easily be extended (at the developer's expense) to serve Blackstone Estates. Consistent with the policies of the Spanish Springs Area Plan and requirements of the Washoe County Development Code, all new lots within Blackstone Estates will be served by municipal water and sewer. Power, natural gas, cable television, and high speed internet service all exist at or adjacent to the project site.

Another noteworthy point is that the proposed clustering of units (through a common open space subdivision) will result in resource conservation, reduction in water use, etc. All of the applicable infrastructure is analyzed with the preliminary engineering plans and reports included with this report and compliance is demonstrated.

Preliminary utility plans are included with the engineering plans located in the map pocket of this report.



BLACKSTONE ESTATES

- **Site Suitability**

As noted previously in this report, the site is well suited for the type of density potential associated with the requested designations. This is based on the fact that the site is flat and the availability of existing site services and infrastructure. In fact, the recently requested MDS zoning represents a down zoning in terms of intensity from which is permitted under the prior commercial and industrial designations. Furthermore, the site is not encumbered by geologic, cultural, historical, or flood concerns that would preclude development. For reference, a feasibility geotechnical investigation is included in the appendices of this report.

- **Public Services**

The property is within an acceptable response time of the Truckee Meadows Fire Protection District station located on La Posada Drive to the south. Also, the Washoe County Sherriff's Office has existing patrols within the project area.

Planning Policy Analysis

The proposed request must be reviewed for consistency with the goals and policies of the Washoe County Master Plan, Spanish Springs Area Plan, and Truckee Meadows Regional Plan. Each of these planning documents is addressed below:

- **Spanish Springs Area Plan**

The Spanish Springs Area Plan is an element of the Washoe County Master Plan that establishes the overall theme and vision that the community has in terms of how they wish to see Spanish Springs develop over the next 20 years. Last updated in 2010, there has been very little change within the plan area in the last 5 years. However, as the region's economy continues to recover, there is now opportunity to implement change within the plan area, consistent with the goals and policies of the Area Plan.

The Introduction section of the Area Plan states that the "*Spanish Springs community will maintain and apply objective standards and criteria that serve to manage growth and development in Spanish Springs in a manner that:*

- *Respects the rural heritage of the area by encouraging a rustic appearance and preserving scenic quality;*
- *Respects private property rights;*
- *Provides open space and recreational opportunities;*
- *Provides local services and employment opportunities;*
- *Ensures that growth is kept in balance with resources and infrastructure.*



BLACKSTONE ESTATES

This Tentative Map request is entirely consistent with this intent of the Area Plan. Blackstone Estates will provide residential uses that will complement existing development patterns in the area as well as provide significant open space and linkages to regional trails. This is consistent with the first and third bullet point outlined in the Introduction of the Area Plan.

In terms of resources and infrastructure, the pending amendments to the land use categories to residential is in actuality a down-zone in terms of intensity and will serve to better manage available resources and infrastructure. The residential use proposed is far less intense than what could be developed under the existing zoning and will better complement the area as a whole.

The Vision of the Spanish Springs Area Plan is to *“manage growth in Spanish Springs, focusing on a rustic appearance in keeping with the rural character of the area, while respecting private property rights.”* It can be logically argued that the current industrial and commercial designations conflict with the “rustic appearance” of the area, especially on the east side of Pyramid Highway. The residential use and density proposed with Blackstone Estates, along with the planned open space and trail facilities, are far more in line with the Area Plan vision.

The Area Plan also establishes an overall Character Statement. The first paragraph of the Character Statement states that *“over the next 20 years, the community will provide a range of employment opportunities and a more limited, but still mixed, range of residential opportunities. Over this period, the distribution of land uses and the provision of public facilities and infrastructure will preserve and facilitate a community character that merges Spanish Springs’ scenic, low-density, rural and western heritage with suburban residential, employment, and commercial opportunities.”* The Character Statement recognizes that a transition to more suburban densities will occur within Spanish Springs. The 2.75 du/ac density proposed with Blackstone Estates is complementary to suburban lot sizes to the north and matches that proposed to the east. There has been significant change in the area over the past 20 years and this application is reflective of proper planning and density given available infrastructure and developing land use patterns.

As noted previously, the project site is located within the Suburban Character Management Area defined in the Area Plan. This “suburban core” as discussed in the Character Statement includes *“residential densities of up to three dwelling units per acre.”* The Character Statement goes on to state that *“suburban land uses are located predominantly, **but not exclusively**, on the west side of Pyramid Highway.”* As part of this discussion, the Character Statement discusses transitions between the suburban core and more rural areas. The SR Master Plan designation and MDS zoning proposed with Blackstone Estates are consistent with the 3 du/ac suburban character (2.75 du/ac proposed) identified in the plan and most definitely provide for an appropriate transition to adjoining properties.

It is noteworthy that by Washoe County’s own definition of “suburban,” density is up to 7 units per acre (reflected in High Density Suburban zoning). The 2.75 du/ac density proposed with Blackstone Estates is less than half of this. Furthermore, Washoe County staff has agreed that the proposed density meets the suburban definition and character identified in the Area Plan and has determined that an amendment to the Character Statement is not needed as part of this request.



BLACKSTONE ESTATES

Another noteworthy excerpt from the Character Statement is that *“the Suburban Character Management Area will be the designated growth area in the Spanish Springs Valley.”* Given the fact that the Blackstone Estates site is flat, easily developed, and in an area where infrastructure exists or can easily be extended, not to mention located central to the Suburban Character Management Area, this request serves to implement the character and vision expressed in the Area Plan. The Character Statement goes on to note that *“an integrated trail system that provides access to regional and local open space”* is a community desire along with a *“desire for resource conservation in the community.”* The plan for Blackstone Estates is directly compatible with this and provides trail linkages and open space connections to the regional network. Also, the clustering of units promotes resource conservation and greatly reduces water usage, etc. than if developed with larger lots.

The Area Plan also contains goals and policies that are applicable to this particular request. These policies are listed below and are addressed in **bold face** type.

Goal One: The pattern of land use designations in the Spanish Springs Area Plan will implement and preserve the community character described in the Character Statement.

As described in the previous section, Blackstone Estates conforms to the Character Statement in terms of location within the Suburban Character Management Area, allowable suburban densities, preservation of open space, trail connections, and resource conservation.

SS1.2 The Policy Growth Level for the Spanish Springs Suburban Character Management Area is 1,500 new residential units of land use capacity. Land use intensifications will not add more than 1,500 new units of Land Use Capacity through 2025. The Washoe County Department of Community Development will be responsible for tracking increasing land use potential to ensure this growth level is not exceeded.

Blackstone Estates, at build out, represents 161 new residential units. Land use intensifications since the Plan adoption in 2010 have been limited based on economic conditions. Therefore, there is well over 1,000 residential units of capacity remaining of which 161 is only a small portion. The recent economic growth in the region has created a new demand for housing. It is clearly envisioned in the Spanish Springs Area Plan that new residential growth was anticipated in the area. Blackstone Estates is consistent with this anticipated growth as well as the Vision and Character Statement included in the Area Plan and is much better suited to meet community needs than the existing industrial and commercial designations.

SS.3.1 Washoe County’s policy level of service (LOS) for local transportation facilities in the Spanish Springs planning area is LOS “C.”

A detailed traffic impact analysis is included in the attached appendices. The report concludes that with planned improvements, all adjoining roadways/intersections will operate at appropriate levels of service. It is also important to note that overall traffic impacts are reduced with the proposed MDS zoning, as compared to the existing LDS/Industrial/NC mix.



BLACKSTONE ESTATES

SS.3.3 *Washoe County will strongly advocate the prioritization of improvements to Pyramid Highway and qualified regional roads and arterials within the boundaries of this area plan in the Regional Transportation Improvement Program in order to achieve and maintain established levels of service.*

Blackstone Estates can serve to expedite improvements to the Calle de la Plata/Pyramid Highway intersection, including widening of Pyramid Highway, lane improvements to Calle de la Plata and upgrades to the Calle de la Plata/Pyramid Highway intersection. These have been long standing community concerns that Blackstone Estates can help to solve and fund.

SS.3.5 *Washoe County will be an advocate for restricted access to Pyramid Highway pursuant to the provisions of the Pyramid Highway Corridor Management Plan.*

Consistent with this policy, no direct access to Pyramid Highway is proposed with Blackstone Estates. Instead, the project (and the adjoining development proposed) can serve to address long standing concerns with the Calle de la Plata/Pyramid Highway intersection to the benefit of the community as a whole.

Goal Four: Maintain open vistas of the surrounding ridges and more distant mountain ranges, and minimize the visual impact of hillside development.

The Blackstone Estates site is ideal for development at the densities proposed. The property is flat and development will have zero impact to hillsides, sensitive areas, etc. and will not obstruct views to Sugarloaf Peak or other surrounding ranges.

Goal Five: The built environment will implement and preserve the community character as described in the Spanish Springs Vision and Character Statement.

The project can serve to implement the Character Statement by providing an appropriate transition between suburban uses and rural areas further east. Additionally, Blackstone Estates will provide a vital link in the regional trail network, a key component of the Area Plan.

Goal Six: Public and private development will respect the value of cultural and historic resources in the community.

There are no believed or known cultural or historical resources located on the Blackstone Estates site, ensuring consistency with this goal.



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Goal Seven: The Spanish Springs planning area will contain an extensive system of parks and trails that provides the community and region with a broad range of recreational opportunities; provides connections between major developments, recreational facilities, the Regional Trail System, public lands and schools; and contributes to the preservation and implementation of the community character.

As depicted in Figure 7, Blackstone Estates will be developed in a clustered fashion that will provide for public trail connections from the site to the regional network. Additionally, land is preserved central to the project for active and passive recreation opportunities.

SS.7.2 New trails will be designed to accommodate equestrian, pedestrian and off-road bicycle traffic, unless technical or severe economic hardships warrant consideration of a more limited use.

All of the trails within Blackstone Estates will be public and will support the users listed within this policy.

SS.7.4 As new residential and commercial properties develop in the Spanish Springs Valley, the Washoe County Department of Parks and Recreation will review development proposals for potential trail connections.

The project applicant will work directly with the parks department to determine final design of trails and open space facilities along with determining connection points to the regional network, etc.

SS.7.6 Access to existing trails will be protected and improved wherever possible. During the process of development review, the Washoe County Departments of Community Development and Parks and Recreation will request dedication of property and/or easements when appropriate trail alignments have been identified that link significant nodes with the Spanish Springs planning area or connect existing trails.

Blackstone Estates will be in direct voluntary compliance with this policy and fully recognizes the importance of trail connectivity within the community.

SS.7.7 Development proposals and population trends will be evaluated on their impact to an established community standard of seven acres of community park per 1,000 residents. When warranted, the Washoe County Department of Parks and Recreation will request the dedication of an appropriate amount of community park acreage as property develops within the planning area.

There are currently no neighborhood parks on the east side of Pyramid Highway, north of Calle de la Plata. Blackstone Estates provides a 3.9± acre central open space that can essentially function as a neighborhood park providing passive and active recreation opportunities that will not only serve project residents, but those in the immediate area as well. This will provide significant public benefit and potentially provide significant savings to Washoe County.



BLACKSTONE ESTATES

Goal Nine: The built environment will minimize the destructive potential of any identified geological hazard.

As detailed in the attached feasibility geotechnical investigation (included in appendices), there are no geological conditions that would preclude development of the site.

SS.12.1 Residential and commercial development must utilize one or a combination of the following reliable water resources that are replenished in quantities to meet the needs of the area without reliance upon groundwater mining or recharge from agricultural uses:

- a. Decreed Truckee River water rights or other approved imported surface water rights when used with an appropriate drought yield discount as determined by the water purveyor and approved by the State Engineer.*
- b. Imported groundwater from a source that is replenished in sufficient quantity to meet the demands placed upon a source without groundwater mining.*
- c. Certificated groundwater rights or permitted quasi-municipal groundwater rights (that existed as of May 22, 1990) matched by imported, decreed surface water from a source such as the Truckee River.
 - i. For residential developments, the quantity of imported water or decreed surface water shall be equal to 50 percent of the groundwater demand.*
 - ii. For developments other than residential (commercial, industrial, recreational, etc.), the quantity of the matching imported or decreed surface water rights shall be equal to 100 percent of the calculated demand.*
 - iii. The Truckee River surface water dedicated must be capable of diversion to the Orr Ditch.**

Blackstone Estates has already gone through the Truckee Meadows Water Authority’s “Discovery” process. TMWA has confirmed that the site is within its service boundary and facilities to serve the proposed project are in place. Water rights are available for purchase through TMWA and will be dedicated to serve the project with final map(s).

SS.12.5 New residential subdivisions (e.g. tentative parcel map, tentative subdivision map) utilizing Medium Density Suburban land use densities (MDS: 1 du/ac to max. 3 du/1 ac) or greater densities approved after January 1, 1996 shall be required to use an imported water source, except subdivisions approved on land designated Medium Density Suburban prior to October 1, 1995.

Blackstone Estates will comply with the requirements of this policy. Water rights will be purchased from TMWA or an approved supplier and dedicated to serve the project with final map(s). Truckee River water rights will be dedicated for this project.



BLACKSTONE ESTATES

SS.12.7 The creation of parcels and lots in the Spanish Springs planning area shall require the dedication of water rights to Washoe County in quantities that are consistent with the water use standards set by the State Engineer and/or Washoe County.

Blackstone Estates will comply with the requirements of this policy and will provide water rights with final map recordation per TMWA requirements and guidelines.

Goal Fifteen: Water resources will be provided to residential and non-residential uses in a manner that implements and preserves the community character as described in the Spanish Springs Vision and Character Statement.

As previously detailed, the project is indirect compliance with the Vision and Character Statement included in the Area Plan. This will include the manner in which water service is provided to the site and will be coordinated through the Truckee Meadows Water Authority.

SS.15.1 Whenever applicable, all development within the Spanish Springs Suburban Character Management Area will connect to a community water service.

Blackstone Estates will be served by a community water system. Individual wells are not being proposed.

Goal Sixteen: Wastewater treatment and disposal will be provided to residential and nonresidential uses in a manner that implements and preserves the community character as described in the Spanish Springs Vision and Character Statement.

Blackstone Estates will be served by sanitary sewer and not septic systems, serving to implement not only this goal, but numerous policies as well. It is also important to note that in order to make community water and sewer service available on a large scale (as encouraged in the Area Plan), additional density is needed in order to make it financially viable. Thus, services within the project could benefit adjoining parcels through the ability to hook up with municipal services that would not otherwise be available.

SS.16.1 Whenever applicable, all development within the Spanish Springs Suburban Character Management Area will connect to a community sewer service.

Blackstone Estates will connect with a community sewer system, consistent with this policy and a suburban development form.

The previous Master Plan Amendment and Regulatory Zone Amendment application for Blackstone Estates (filed September 15, 2015) included a comprehensive analysis of applicable Master Plan policies relevant to the project. As explained in that report, the proposed project (at the density/intensity proposed) is supported by the Master Plan and does not conflict with any current goals or policies.



BLACKSTONE ESTATES

Tentative Map Findings

Section 110.608.20 of the Washoe County Development Code establishes legal findings that must be made by the Planning Commission or Board of County Commissioners in order to approve a Tentative Map request. These findings are listed below and are addressed in **bold face** type.

- (a) Environmental and Health Laws. 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;

Blackstone Estates will be served by municipal water and sewer service, ensuring full compliance with this finding. Additionally, solid waste disposal service will be provided through Waste Management which currently operates routes in Spanish Springs and the surrounding areas.

- (b) Availability of Water. The availability of water which meets applicable health standards as well as requirements for water rights, quality or will-serve commitments;

The project site is within the service boundary of the Truckee Meadows Water Authority and has completed a Discovery process through TMWA. Water rights will be dedicated to TMWA to serve the project, ensuring full compliance with this finding. Water rights can be purchased directly from TMWA or on the open market (with full TMWA acceptance).

- (c) Utilities. The availability and accessibility of utilities;

The project will be served by all municipal utilities, infrastructure, and services as detailed within this report and on the attached engineering plans.

- (d) Public Services. The availability and accessibility of public services such as schools, police and fire protection, transportation, recreation and parks;

The project is within an acceptable response time of the Truckee Meadows Fire Protection District's station on La Posada Drive and is in an area of existing Sherriff patrols. Schools that will serve the project along with their current enrollments are detailed within this report. It is further recognized that it will be disclosed to all new residents (at time of purchase) that school zoning is subject to change based on current enrollments, capacities, etc.

- (e) Plan Consistency. General conformance with the Development Code and Master Plan;

With the approval of the pending Master Plan Amendment and Regulatory Zone Amendment requests, Blackstone Estates will be in direct conformance with the Suburban Residential Master Plan designation and Medium Density Suburban zoning.



BLACKSTONE ESTATES

- (f) Impact on Existing Streets. The effect of the proposed subdivision on existing public streets and the need for new streets or highways to serve the subdivision;

A detailed traffic impact analysis is included with this application and identifies improvements needed to mitigate traffic impacts created by Blackstone Estates. These improvements can be conditioned with the Tentative Map and must be completed prior to the issuance of certificates of occupancy for new homes. This will ensure full compliance with this finding.

- (g) Physical Characteristics. Physical characteristics of the land such as flood plain, slope and soil;

The site is well suited for the type and intensity of development proposed. The site contains no slope or soil conditions that would preclude development nor does it contain any significant wildlife habitats, etc. The small area on the southeast corner of the site that is subject to flooding is incorporated into the provided open space and will not impact individual lots within the project.

- (h) Agency Review. The recommendations and comments of the entities reviewing the tentative map; and

Copies of this report and the included plans will be circulated to all applicable reviewing agencies for review and comment. Specific requirements and relevant comments can be included as conditions tied to this request and implemented with final map(s).

- (i) Impact on Existing Drainage System. The effect of the proposed subdivision on the existing natural and man-made drainage system.

The project will provide for onsite detention to ensure that no additional flows over what currently exist will occur from the site with development of Blackstone Estates. A highly detailed hydrology study is also included in the appendices of this report demonstrating compliance with all applicable Washoe County requirements related to drainage.

APPENDICES

Washoe County Development Application

Your entire application is a public record. If you have a concern about releasing personal information, please contact Planning and Development staff at 775.328.3600.

Project Information		Staff Assigned Case No.: _____	
Project Name: Blackstone Estates			
Project Description: A 161 unit tentative subdivision map with common open space.			
Project Address: 350 Calle de la Plata, Spanish Springs			
Project Area (acres or square feet): 58.5 acres			
Project Location (with point of reference to major cross streets AND area locator): North side of Calle de la Plata, just east of Pyramid Highway.			
Assessor's Parcel No.(s):	Parcel Acreage:	Assessor's Parcel No(s):	Parcel Acreage:
534-571-01	58.5 acres		
Section(s)/Township/Range: Section 23, T21N, R 20E			
Indicate any previous Washoe County approvals associated with this application: Case No.(s).			
Applicant Information (attach additional sheets if necessary)			
Property Owner:		Professional Consultant:	
Name: Jacie, LLC c/o Douglas Properties, LLC		Name: Rubicon Design Group, LLC	
Address: 3820 Lone Tree Ln.		Address: 100 California Ave. Suite 202	
Reno, NV	Zip: 89511	Reno, NV	Zip: 89509
Phone: 775-884-1896	Fax: 884-4896	Phone: 775-425-4800	Fax:
Email: samuel@jucommercial.com		Email: mrailey@rubicondesigngroup.com	
Cell: 775-442-7576	Other:	Cell: 775-250-3455	Other:
Contact Person: Samuel Douglas		Contact Person: Mike Railey	
Applicant/Developer:		Other Persons to be Contacted:	
Name: SP58, LLC		Name:	
Address: 439 W. Plumb Ln.		Address:	
Reno, NV	Zip: 89509		Zip:
Phone: 775-352-4200	Fax:	Phone:	Fax:
Email: jgm@blackstonedevelopmentgroup.com		Email:	
Cell: 520-400-4845	Other:	Cell:	Other:
Contact Person: Josh Myers		Contact Person:	
For Office Use Only			
Date Received:	Initial:	Planning Area:	
County Commission District:		Master Plan Designation(s):	
CAB(s):		Regulatory Zoning(s):	

Property Owner Affidavit

Applicant Name: SP58, LLC

The receipt of this application at the time of submittal does not guarantee the application complies with all requirements of the Washoe County Development Code, the Washoe County Master Plan or the applicable area plan, the applicable regulatory zoning, or that the application is deemed complete and will be processed.

STATE OF NEVADA)
)
COUNTY OF WASHOE)

I, William V. Nardiello
(please print name)

being duly sworn, depose and say that I am the owner* of the property or properties involved in this application as listed below and that the foregoing statements and answers herein contained and the information herewith submitted are in all respects complete, true and correct to the best of my knowledge and belief. I understand that no assurance or guarantee can be given by members of Planning and Development.

(A separate Affidavit must be provided by each property owner named in the title report.)

Assessor Parcel Number(s): 534-571-01

Printed Name William V. Nardiello

Signed William V. Nardiello

Address 4619 Byron Circle

Irving, TX 75038

Subscribed and sworn to before me this
28 day of July, 2015

Sheryl Pickle
Notary Public in and for said county and state

My commission expires: 10/10/16

(Notary Stamp)



*Owner refers to the following: (Please mark appropriate box.)

- Owner
- Corporate Officer/Partner (Provide copy of recorded document indicating authority to sign.)
- Power of Attorney (Provide copy of Power of Attorney.)
- Owner Agent (Provide notarized letter from property owner giving legal authority to agent.)
- Property Agent (Provide copy of record document indicating authority to sign.)
- Letter from Government Agency with Stewardship

Property Owner Affidavit

Applicant Name: SP58, LLC

The receipt of this application at the time of submittal does not guarantee the application complies with all requirements of the Washoe County Development Code, the Washoe County Master Plan or the applicable area plan, the applicable regulatory zoning, or that the application is deemed complete and will be processed.

STATE OF NEVADA)
COUNTY OF WASHOE)

I, Patrick Douglass (Douglass Properties LLC)
(please print name)

being duly sworn, depose and say that I am the owner* of the property or properties involved in this application as listed below and that the foregoing statements and answers herein contained and the information herewith submitted are in all respects complete, true and correct to the best of my knowledge and belief. I understand that no assurance or guarantee can be given by members of Planning and Development.

(A separate Affidavit must be provided by each property owner named in the title report.)

Assessor Parcel Number(s): 534-571-01

Printed Name Patrick Douglass

Signed [Signature]

Address 3820 Lone Tree Lane

Reno, NV 89511

Subscribed and sworn to before me this
5th day of August, 2015.

(Notary Stamp)

Karen E. Allen
Notary Public in and for said county and state

My commission expires: November 25, 2017



*Owner refers to the following: (Please mark appropriate box.)

- Owner
 Corporate Officer/Partner (Provide copy of recorded document indicating authority to sign.)
 Power of Attorney (Provide copy of Power of Attorney.)
 Owner Agent (Provide notarized letter from property owner giving legal authority to agent.)
 Property Agent (Provide copy of record document indicating authority to sign.)
 Letter from Government Agency with Stewardship

Property Owner Affidavit

Applicant Name: SP58 LLC

The receipt of this application at the time of submittal does not guarantee the application complies with all requirements of the Washoe County Development Code, the Washoe County Master Plan or the applicable area plan, the applicable regulatory zoning, or that the application is deemed complete and will be processed.

STATE OF NEVADA)
)
COUNTY OF WASHOE)

I, Jennifer C. Felton aka Jennifer Traniello
(please print name)

being duly sworn, depose and say that I am the owner* of the property or properties involved in this application as listed below and that the foregoing statements and answers herein contained and the information herewith submitted are in all respects complete, true and correct to the best of my knowledge and belief. I understand that no assurance or guarantee can be given by members of Planning and Development.

(A separate Affidavit must be provided by each property owner named in the title report.)

Assessor Parcel Number(s): 534-571-01

Printed Name Jennier C. Felton aka Jennifer Traniello

Signed [Signature]

Address 590 Hunter Creek St
Las Vegas, NV 89138

Subscribed and sworn to before me this
8th day of August 2015.

(Notary Stamp)

Karen E. Allen
Notary Public in and for said county and state

My commission expires: 11/25/2017



*Owner refers to the following: (Please mark appropriate box.)

- Owner
- Corporate Officer/Partner (Provide copy of recorded document indicating authority to sign.)
- Power of Attorney (Provide copy of Power of Attorney.)
- Owner Agent (Provide notarized letter from property owner giving legal authority to agent.)
- Property Agent (Provide copy of record document indicating authority to sign.)
- Letter from Government Agency with Stewardship

Property Owner Affidavit

Applicant Name: Sheila Caramella LLC / JACIE LLC

The receipt of this application at the time of submittal does not guarantee the application complies with all requirements of the Washoe County Development Code, the Washoe County Master Plan or the applicable area plan, the applicable regulatory zoning, or that the application is deemed complete and will be processed.

STATE OF NEVADA)
COUNTY OF WASHOE)

I, Sheila Caramella (Jacie LLC)
(please print name)

being duly sworn, depose and say that I am the owner* of the property or properties involved in this application as listed below and that the foregoing statements and answers herein contained and the information herewith submitted are in all respects complete, true and correct to the best of my knowledge and belief. I understand that no assurance or guarantee can be given by members of Planning and Development.

(A separate Affidavit must be provided by each property owner named in the title report.)

Assessor Parcel Number(s): 534-571-01

State of Nevada
County of Washoe

Printed Name Sheila Caramella (Jacie LLC)

Signed and sworn before me on 8-4-15
by Sheila Caramella

Signed [Signature]

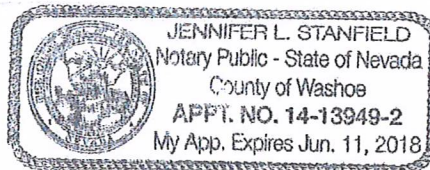
Jennifer L Stanfield Address 6201 Hollywood Blvd
Notary Public LA 90028

Subscribed and sworn to before me this
4 day of August, 2015.

(Notary Stamp)

Jennifer L Stanfield
Notary Public in and for said county and state

My commission expires: 1-11-2018



*Owner refers to the following: (Please mark appropriate box.)

- Owner
- Corporate Officer/Partner (Provide copy of recorded document indicating authority to sign.)
- Power of Attorney (Provide copy of Power of Attorney.)
- Owner Agent (Provide notarized letter from property owner giving legal authority to agent.)
- Property Agent (Provide copy of record document indicating authority to sign.)
- Letter from Government Agency with Stewardship

Property Owner Affidavit

Applicant Name: SP58, LLC

The receipt of this application at the time of submittal does not guarantee the application complies with all requirements of the Washoe County Development Code, the Washoe County Master Plan or the applicable area plan, the applicable regulatory zoning, or that the application is deemed complete and will be processed.

STATE OF NEVADA)
)
COUNTY OF WASHOE)

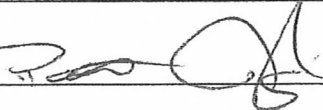
I, Patrick Douglass on behalf of Nancie Malmquist
(please print name)

being duly sworn, depose and say that I am the owner* of the property or properties involved in this application as listed below and that the foregoing statements and answers herein contained and the information herewith submitted are in all respects complete, true and correct to the best of my knowledge and belief. I understand that no assurance or guarantee can be given by members of Planning and Development.

(A separate Affidavit must be provided by each property owner named in the title report.)

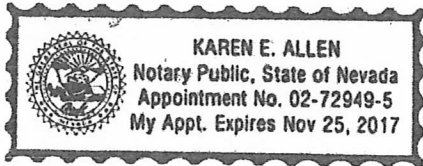
Assessor Parcel Number(s): 534-571-01

Printed Name Patrick Douglass on behalf of Nancie Malmquist

Signed 


Address 3820 Lone Tree Lane

Reno, NV 89511



Subscribed and sworn to before me this
5th day of August, 2015.

(Notary Stamp)


Notary Public in and for said county and state

My commission expires: November 25, 2017



*Owner refers to the following: (Please mark appropriate box.)

- Owner
- Corporate Officer/Partner (Provide copy of recorded document indicating authority to sign.)
- Power of Attorney (Provide copy of Power of Attorney.)
- Owner Agent (Provide notarized letter from property owner giving legal authority to agent.)
- Property Agent (Provide copy of record document indicating authority to sign.)
- Letter from Government Agency with Stewardship

STATUTORY FORM POWER OF ATTORNEY

THIS IS AN IMPORTANT LEGAL DOCUMENT. IT CREATES A DURABLE POWER OF ATTORNEY FOR FINANCIAL MATTERS. BEFORE EXECUTING THIS DOCUMENT, YOU SHOULD KNOW THESE IMPORTANT FACTS:

1. THIS DOCUMENT GIVES THE PERSON YOU DESIGNATE AS YOUR AGENT THE POWER TO MAKE DECISIONS CONCERNING YOUR PROPERTY FOR YOU. YOUR AGENT WILL BE ABLE TO MAKE DECISIONS AND ACT WITH RESPECT TO YOUR PROPERTY (INCLUDING YOUR MONEY) WHETHER OR NOT YOU ARE ABLE TO ACT FOR YOURSELF.

2. THIS POWER OF ATTORNEY BECOMES EFFECTIVE IMMEDIATELY UNLESS YOU STATE OTHERWISE IN THE SPECIAL INSTRUCTIONS.

3. THIS POWER OF ATTORNEY DOES NOT AUTHORIZE THE AGENT TO MAKE HEALTH CARE DECISIONS FOR YOU.

4. THE PERSON YOU DESIGNATE IN THIS DOCUMENT HAS A DUTY TO ACT CONSISTENT WITH YOUR DESIRES AS STATED IN THIS DOCUMENT OR OTHERWISE MADE KNOWN OR, IF YOUR DESIRES ARE UNKNOWN, TO ACT IN YOUR BEST INTERESTS.

5. YOU SHOULD SELECT SOMEONE YOU TRUST TO SERVE AS YOUR AGENT. UNLESS YOU SPECIFY OTHERWISE, GENERALLY THE AGENT'S AUTHORITY WILL CONTINUE UNTIL YOU DIE OR REVOKE THE POWER OF ATTORNEY OR THE AGENT RESIGNS OR IS UNABLE TO ACT FOR YOU.

6. YOUR AGENT IS ENTITLED TO REASONABLE COMPENSATION UNLESS YOU STATE OTHERWISE IN THE SPECIAL INSTRUCTIONS.

7. THIS FORM PROVIDES FOR DESIGNATION OF ONE AGENT. IF YOU WISH TO NAME MORE THAN ONE AGENT YOU MAY NAME A CO-AGENT IN THE SPECIAL INSTRUCTIONS. CO-AGENTS ARE NOT REQUIRED TO ACT TOGETHER UNLESS YOU INCLUDE THAT REQUIREMENT IN THE SPECIAL INSTRUCTIONS.

8. IF YOUR AGENT IS UNABLE OR UNWILLING TO ACT FOR YOU, YOUR POWER OF ATTORNEY WILL END UNLESS YOU HAVE NAMED A SUCCESSOR AGENT. YOU MAY ALSO NAME A SECOND SUCCESSOR AGENT.

9. YOU HAVE THE RIGHT TO REVOKE THE AUTHORITY GRANTED TO THE PERSON DESIGNATED IN THIS DOCUMENT.

10. THIS DOCUMENT REVOKES ANY PRIOR DURABLE POWER OF ATTORNEY.

11. IF THERE IS ANYTHING IN THIS DOCUMENT THAT YOU DO NOT UNDERSTAND, YOU SHOULD ASK A LAWYER TO EXPLAIN IT TO YOU.

1. DESIGNATION OF AGENT. I, NANCY MALMQUIST, do hereby designate and appoint PATRICK E. DOUGLASS, whose address is 3820 Lone Tree Lane, Reno, Nevada, 89511, and whose telephone number is (775) 771-2695, as my agent to make decisions for me and in my name, place and stead and for my use and benefit and to exercise the powers as authorized in this document.

2. DESIGNATION OF ALTERNATE AGENT. Not applicable.

3. OTHER POWERS OF ATTORNEY. Not applicable.

4. NOMINATION OF GUARDIAN. Not applicable.

5. GRANT OF GENERAL AUTHORITY. I grant my agent and any successor agent(s) general authority to act for me with respect to the following subjects:

(INITIAL each subject you want to include in the agents general authority. If you wish to grant general authority over all of the subjects you may initial "All Preceding Subjects" instead of initialing each subject.)

- Real Property**
- Tangible Personal Property
- Stocks and Bonds
- Commodities and Options
- Banks and Other Financial Institutions
- Safe Deposit Boxes
- Operation of Entity or Business
- Insurance and Annuities
- Estates, Trusts and Other Beneficial Interests
- Legal Affairs, Claims and Litigation

- Personal Maintenance
- Benefits from Governmental Programs or Civil or Military Service
- Retirement Plans
- Taxes
- All Preceding Subjects

6. GRANT OF SPECIFIC AUTHORITY. My agent MAY NOT do any of the following specific acts for me UNLESS I have INITIALED the specific authority listed below:

(CAUTION: Granting any of the following will give your agent the authority to take actions that could significantly reduce your property or change how your property is distributed at your death. INITIAL ONLY the specific authority you WANT to give your agent.)

- Create, amend, revoke or terminate an inter vivos, family, living, irrevocable or revocable trust
- Make a gift, subject to the limitations of NRS and any special instructions in this Power of Attorney
- Create or change rights of survivorship
- Create or change a beneficiary designation
- Waive the principals right to be a beneficiary of a joint and survivor annuity, including a survivor benefit under a retirement plan
- Exercise fiduciary powers that the principal has authority to delegate
- Disclaim or refuse an interest in property, including a power of appointment

7. LIMITATION ON AGENT'S AUTHORITY. An agent that is not my spouse MAY NOT use my property to benefit the agent or a person to whom the agent owes an obligation of support unless I have included that authority in the Special Instructions.

8. SPECIAL INSTRUCTIONS OR OTHER OR ADDITIONAL AUTHORITY GRANTED TO AGENT: This Power is limited to the consummation of the sale and close of escrow of the real property located at 350 Calle De La Plata, Sparks, Nevada, with the Buyer Blackstone Development Group, Inc., including all zoning and entitlement issues.

9. DURABILITY AND EFFECTIVE DATE. (INITIAL the clause(s) that applies.)

ENM] DURABLE. This Power of Attorney shall not be affected by my subsequent disability or incapacity.

SPRINGING POWER. Not applicable.

CERTIFICATE OF ACKNOWLEDGMENT OF NOTARY PUBLIC

STATE OF NEVADA)
) ss.
COUNTY OF WASHOE)

On this 22nd day of July, in the year 2015, before me, a Notary Public, personally appeared NANCY MALMQUIST personally known to me (or proved to me on the basis of satisfactory evidence) to be the person whose name is subscribed to this instrument, and acknowledged that she executed it. I declare under penalty of perjury that the person whose name is ascribed to this instrument appears to be of sound mind and under no duress, fraud or undue influence.



Rita Kolvet
NOTARY PUBLIC

AM I wish to have this Power of Attorney become effective immediately upon my signature.

AM I wish to have this Power of Attorney end on the close of escrow as referenced in paragraph 8, above.

10. THIRD PARTY PROTECTION. Third parties may rely upon the validity of this Power of Attorney or a copy and the representations of my agent as to all matters relating to any power granted to my agent, and no person or agency who relies upon the representation of my agent, or the authority granted by my agent, shall incur any liability to me or my estate as a result of permitting my agent to exercise any power unless a third party knows or has reason to know this Power of Attorney has terminated or is invalid.

11. RELEASE OF INFORMATION. I agree to, authorize and allow full release of information, by any government agency, business, creditor or third party who may have information pertaining to my assets or income, to my agent named herein.

12. SIGNATURE AND ACKNOWLEDGMENT. YOU MUST DATE AND SIGN THIS POWER OF ATTORNEY. THIS POWER OF ATTORNEY WILL NOT BE VALID UNLESS IT IS ACKNOWLEDGED BEFORE A NOTARY PUBLIC.

I sign my name to this Power of Attorney on
at RENO, NEVADA

22 July 2015

Nancy Malmquist
NANCY MALMQUIST

Tentative Subdivision Map Application Supplemental Information

(All required information may be separately attached)

Chapter 110 of the Washoe County Code is commonly known as the Development Code. Specific references to tentative subdivision maps may be found in Article 608, Tentative Subdivision Maps.

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

350 Calle de la Plata

Primary subdivision entrance is proposed approximately 1400 feet east of the Pyramid Highway/Calle de la Plata intersection.

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

Blackstone Estates

3. Density and lot design:

a. Acreage of project site	58.5 acres
b. Total number of lots	161
c. Dwelling units per acre	2.75
d. Minimum and maximum area of proposed lots	8,595 sq.ft./19,271sq.ft.
e. Minimum width of proposed lots	70'
f. Average lot size	11,140 sq.ft.

4. Utilities:

a. Sewer Service	Washoe County
b. Electrical Service	NV Energy
c. Telephone Service	ATT or Charter Communications
d. LPG or Natural Gas Service	NV Energy
e. Solid Waste Disposal Service	Waste Management
f. Cable Television Service	ATT or Charter Communications
g. Water Service	Truckee Meadows Water Authority

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

a. Acreage of common open space:

9.27 acres

b. Development constraints within common open space (slope, wetlands, faults, springs, ridgelines):

The elongated shape of the parcel provides a constraint and opportunity. The opportunity to provide a large park for the development requires lots to be slightly smaller. Refer to attached report for a detailed analysis.

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

8,595 sq.ft. - 19,271 sq.ft.

d. Average lot size:

11,140 sq.ft.

e. Proposed yard setbacks if different from standard:

Front = 20'
Side = 8'
Rear = 20'

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

N/A

g. Identify all proposed non-residential uses:

N/A

- h. Improvements proposed for the common open space:

The large central common open spaces (Common Area A) is proposed as a neighborhood park.

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

Public sidewalks are provided throughout the subdivision to connect pedestrians to the adjacent trail system and common areas. In addition, a trail is proposed through the central park area as well as northerly to the existing trail.

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

As shown on the tentative map, the proposed development is connecting with the existing trail system in two locations: to the north and to the east. Both connections are through public right-of-way or easement.

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

Ridgelines are not present on the property.

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

Fencing will be allowed on the lot lines.

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

The common open space will be privately maintained by the subdivisions home owner's association.

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

This project is not impacted by "Presumed Public Roads". The project is adjacent to a public trail system to the north and east with access to those features provided via public and private trail and sidewalk systems.

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

Yes No

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

Yes No If yes, within what city?

9. Will a special use permit be required for utility improvement? If so, what special use permits are required and are they submitted with the application package?

To our knowledge, a special use permit will not be required for utility improvements.

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

To our knowledge, an archaeological survey has not been completed or reviewed by SHPO.

11. 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	

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

Refer to attached TMWA Discovery Report

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

To the extent possible, solar orientation will be a consideration in the placement of building envelopes.

13. Is the subject property in an area identified by Planning and Development 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:

The subject property is not known to be in an area identified as potentially containing rare or endangered plants or animals, critical breeding habitat, migration routes or winter range.

There is an area of FEMA floodplain located at the far southeast corner of the subject property. This area is proposed to be left largely undisturbed with the exception of the culvert/road crossing.

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

The proposed roads are public.

15. Is the subject property located adjacent to an existing residential subdivision? If so, describe how the tentative map complies with each additional adopted policy and code requirement of Article 434, Regional Development Standards within Cooperative Planning Areas and all of Washoe County, in particular, grading within 50 and 200 feet of the adjacent developed properties under 5 acres and parcel matching criteria:

The subject property is not located adjacent to an existing residential subdivision.

16. 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?

N/A

17. 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?

N/A

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

The project is proposed to be completed as one phase.

19. 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.

20. 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:

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

26,600 cy

22. 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?

We are proposing to use the material cut from the common areas and drainage channels to fill the pads as necessary. Although a small import may be necessary to account for unexpected soil losses during construction, generally the earthwork on this site will balance.

23. 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?

The disturbed areas could be visible from all property lines. The most significant impacts will occur along Calle de la Plata at the entrance road.

24. 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?

The maximum proposed slope is 3:1. The area will be covered in straw and BMPs will be maintained until such time that the revegetation work is established.

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

Berms are not proposed.

26. 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?

Retaining walls are not proposed.

Request to Reserve New Street Name(s)

The Applicant is responsible for all sign costs.

Applicant Information

Name: Jacie, LLC - c/o Douglas Properties, LLC
Address: 3820 Lone Tree Lane
Reno, NV 89509
Phone: (775) 352-4200 Fax: _____
 Private Citizen Agency/Organization

Street Name Requests

(No more than 14 letters or 15 if there is an "i" in the name. Attach extra sheet if necessary.)

Lily Way	Lily Lane
Alexis Way	Alexis Lane
Joshua Tree Way	Joshua Tree Lane

If final recordation has not occurred within one (1) year, it is necessary to submit a written request for extension to the coordinator prior to the expiration date of the original

Location

Project Name: Blackstone Estates
 Reno Sparks Washoe County
Parcel Numbers: 534-571-01
 Subdivision Parcelization Private Street

Please attach maps, petitions and supplementary information.

Approved: _____ Date: _____
Regional Street Naming Coordinator
 Except where noted
Denied: _____ Date: _____
Regional Street Naming Coordinator

Washoe County Geographic Information Services

Post Office Box 11130 - 1001 E. Ninth Street
Reno, NV 89520-0027

Phone: (775) 328-2325 - Fax: (775) 328-6133

Account Detail

[Back to Search Results](#)

[Change of Address](#)

[Print this Page](#)

Washoe County Parcel Information

Parcel ID	Status	Last Update
53457101	Active	10/14/2015 2:12:25 AM
Current Owner: JACIE LLC C/O DOUGLASS PROPERTIES LLC 3820 LONE TREE LN RENO, NV 89511		SITUS: 350 CALLE DE LA PLATA WCTY NV
Taxing District 4000	Geo CD:	
Legal Description		
Section 23 Lot 23 1 0 1 SubdivisionName _UNSPECIFIED Township 21 Range 20		

Tax Bill (Click on desired tax year for due dates and further details)

Tax Year	Net Tax	Total Paid	Penalty/Fees	Interest	Balance Due
2015	\$680.44	\$680.44	\$0.00	\$0.00	\$0.00
2014	\$680.46	\$680.46	\$0.00	\$0.00	\$0.00
2013	\$680.44	\$680.44	\$0.00	\$0.00	\$0.00
2012	\$850.58	\$850.58	\$0.00	\$0.00	\$0.00
2011	\$899.14	\$899.14	\$0.00	\$0.00	\$0.00
Total					\$0.00

Important Payment Information

- ALERTS:** If your real property taxes are delinquent, the search results displayed may not reflect the correct amount owing. Please contact our office for the current amount due.
- For your convenience, online payment is available on this site. E-check payments are accepted without a fee. However, a service fee does apply for online credit card payments. See Payment Information for details.

Pay Online

No payment due for this account.

\$0.00

Pay By Check

AMOUNT ABOVE WILL POPULATE AFTER PAYMENT TYPE IS SELECTED

Please make checks payable to:
WASHOE COUNTY TREASURER

Mailing Address:
P.O. Box 30039
Reno, NV 89520-3039

Overnight Address:
1001 E. Ninth St., Ste D140
Reno, NV 89512-2845

Payment Information

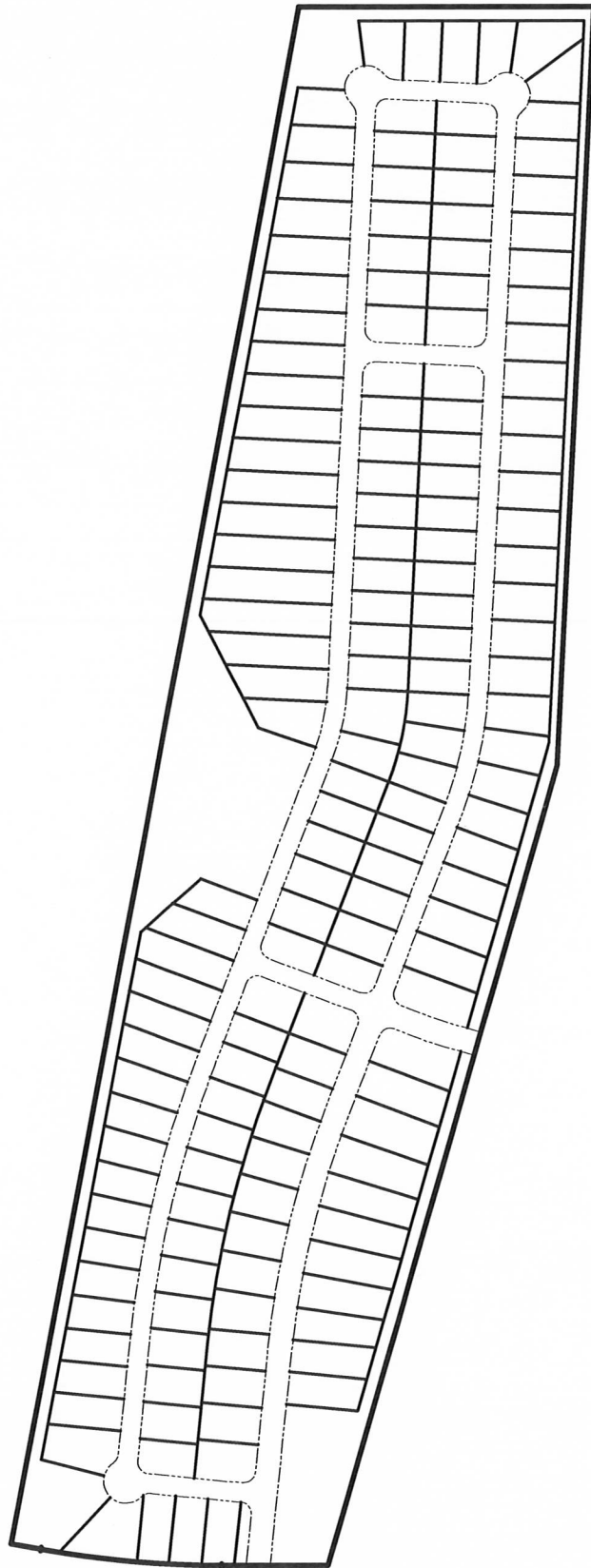
Special Assessment District

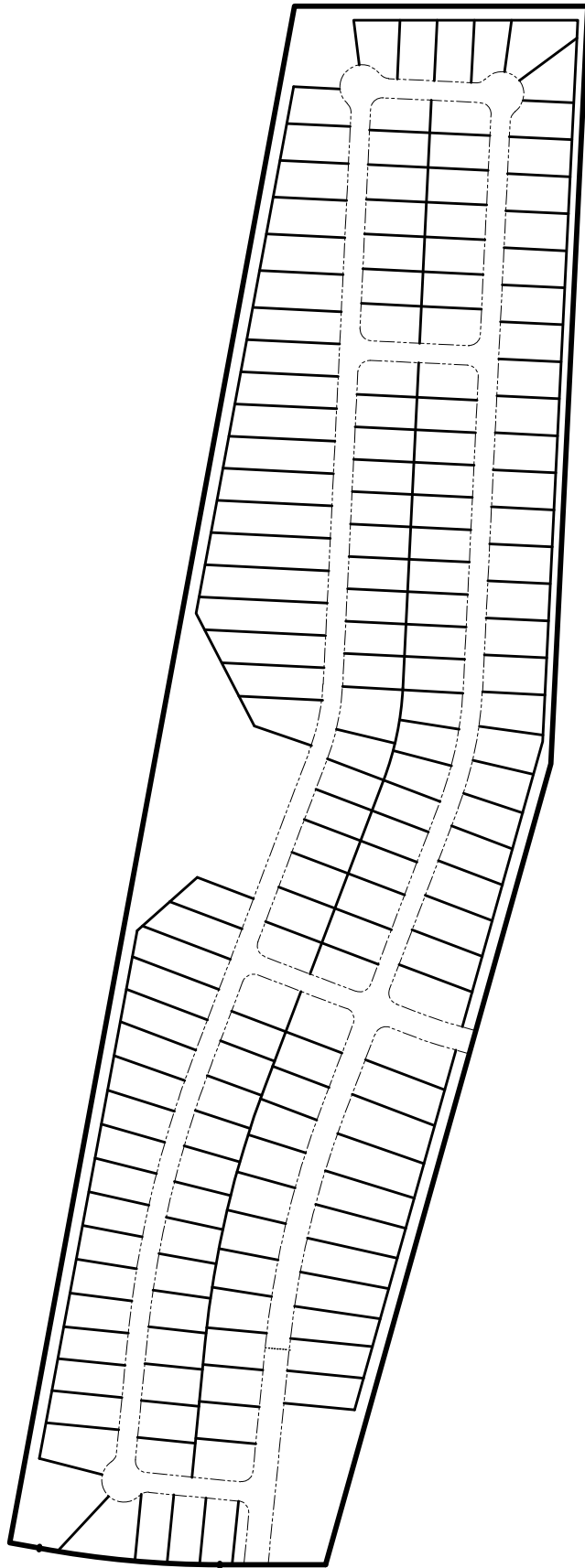
Installment Date Information

Assessment Information

The Washoe County Treasurer's Office makes every effort to produce and publish the most current and accurate information possible. No warranties, expressed or implied, are provided for the data herein, its use, or its interpretation. If you have any questions, please contact us at (775) 328-2510 or tax@washoecounty.us

This site is best viewed using Google Chrome, Internet Explorer 11, Mozilla Firefox or Safari.





TRAFFIC IMPACT STUDY
FOR
BLACKSTONE ESTATES (LOTS 1-161)

Single Family Residential Development located in the Spanish Springs Planned Area situated in Section 23, Township 21 North, Range 20 East, Washoe County Nevada

APN #534-571-01
350 Calle de la Plata



STAR Consulting

439 W. Plumb Lane Reno, NV 89509
Phone: (775) 352-4200 Email: erin@starconsultingnv.com



TRAFFIC IMPACT STUDY
FOR
BLACKSTONE ESTATES (LOTS 1-161)

Single Family Residential Development located in the Spanish Springs Planned Area situated in Section
23, Township 21 North, Range 20 East, Washoe County Nevada

APN #534-571-01
350 Calle de la Plata

Prepared for:

Blackstone Development Group
333 N. Wilmot Road, Suite 340
Tucson, AZ 85711
(520) 618-5378

Prepared by:

STAR Consulting
439 W. Plumb Lane
Reno, NV 89509

SUBMITTED:
September 15, 2015



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I. EXECUTIVE SUMMARY

This study evaluates the potential traffic impacts of the proposed residential subdivision Master Plan Amendments, Zoning Amendment and Tentative Map in northern Spanish Springs on the nearby roadway system.

PROJECT DESCRIPTION

The subject property is located on the northeast quadrant of the Calle de la Plata and Pyramid Highway intersection in Washoe County, Nevada. The proposed zoning is for residential development of a density of 2.75 dwelling units per acre.

PROJECT ACCESS

One primary entrance is proposed to serve the subdivision and is to be located on Calle de la Plata. Direct access to Pyramid Highway is under discussion with the adjacent land owners, but is not proposed at this time. A secondary emergency access is proposed on Calle de la Plata via a cross-access agreement with the property to the east of the subject property.

STUDY INTERSECTIONS AND SCENARIOS

The following study intersections were analyzed, consistent with previous studies of the site:

- Calle de la Plata / Pyramid Highway
- Calle de la Plata / Project Primary Access

AM and PM weekday peak hour intersection level of service was analyzed for the following conditions:

- Existing Conditions
- 2016 Background Conditions
- 2016 Background plus Project

Daily roadway segment level of service was analyzed for the following conditions:

- Existing Conditions
- 2016 Background Conditions
- 2016 Background plus Project

EXISTING CONDITIONS

AM and PM weekday peak hour intersection turning movement volumes were collected and used to analyze intersection level of service. The Calle de la Plata/Pyramid Highway intersection currently operates at LOS F during the AM and PM peak hours.

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PROJECT CONDITIONS

The estimated trip generation for the proposed development is 1,541 daily, 121 AM peak hour, and 163 PM peak hour vehicle trips. Internal capture and pass-by reductions are not applicable to the proposed use and have therefore been excluded in the trip generation estimate.

EXISTING PLUS PROJECT CONDITIONS

The Calle de la Plata / Pyramid Highway intersection operates at LOS F under existing plus project conditions without planned regional roadway improvements. The Calle de la Plata / Primary Access intersection will operate at acceptable levels of service with side-street stop controls.

REGIONAL IMPROVEMENTS

The following planned regional roadway improvements are listed in the RTP:

- Pyramid Highway – Widen from two lanes to four lanes, from Sunset Springs Lane to Calle de la Plata

The Spanish Springs Area Plan also recommends a traffic signal at the Calle de la Plata / Pyramid Highway intersection.

With the planned regional roadway improvements, the Calle de la Plata / Pyramid Highway intersection is expected to operate at LOS C and D during the AM and PM peak hours, respectively.

The Pyramid Highway and Calle de la Plata daily traffic volumes near the project site were compared to the Regional Transportation Commission's (RTC) daily level of service thresholds. The roadway segments will operate at LOS D or better with the planned roadway improvements.

The RTP avoids recommending specific intersection improvements, recognizing that the specific intersection configurations should be determined at the time when the corridor is improved and actual turning movements are known. The RTP project listed above assumes that intersection upgrades will be accomplished with the widenings.

A. PURPOSE OF REPORT AND STUDY OBJECTIVES

In order for Washoe County to operate and maintain the roadway network as safely and efficiently as possible, it is necessary to evaluate the impact of development generated traffic. Such impact can be identified by conducting a Traffic Impact Study (TIS). A Traffic Impact Study was completed by Fehr and Peers in August of 2009 at the time of the Zoning Amendment application for what was at that time called Village at the Peak. This study focuses on the impacts of a larger area consisting of single family residential, neighborhood commercial and industrial land uses. **The proposed use of 2.75 residents per acre single-family residential is a decrease from the projected traffic from the current zoning.**

1. WASHOE COUNTY

A traffic impact report is required whenever the proposed development project will generate 80 or more weekday peak hour trips as determined using the latest edition Institute of Transportation

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Engineers (ITE) trip generation rates or other such sources as may be accepted by the Washoe County Engineering. Projects with less than 200 peak hour trips may not need to perform an impact analysis for future years.

The proposed development will generate 163 PM peak hour trips. Due to this estimate of peak hour trips, a Traffic Impact Report is required for the proposed development. Impact analysis for future years is not required by Washoe County.

2. *NEVADA DEPARTMENT OF TRANSPORTATION*

Traffic studies are required by the Department to adequately assess the impact of a proposed development on the existing and/or planned highway system. The developer will have the primary responsibility for assessing the traffic impacts associated with a proposed development, with the Department serving in a review and approval capacity. The traffic study will be the responsibility of the applicant and must be prepared and sealed by a Nevada Licensed Engineer who has expertise in traffic studies and transportation planning. Upon receipt of a draft traffic study the NDOT Traffic Engineering Division will review the study data (sources, methods and findings) and will respond with written comments. The developer and engineer will then have an opportunity to incorporate necessary revisions prior to submitting a final report. The NDOT Traffic Engineering Division then must approve the final report before an application will be accepted. All previous traffic studies that are more than two (2) years old at the time that construction commences on the project will require updating. This may be waived if conditions have not significantly changed.

More specifically, traffic studies will be required for the for residential subdivision developments that, although not directly accessing the Department's rights-of-way or highway, will have significant impact to the traffic on an existing highway.

Because this development will immediately access Pyramid Highway after exiting onto Calle de la Plata, this report will be provided to NDOT for a cursory review.

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B. CONCLUSIONS & RECOMMENDATIONS

- 1: This project will generate
 - 121 morning peak hour trips
 - 163 evening peak hour trips
 - 1,541 average weekday trips
- 2: The number of trips generated by the proposed residential use is a decrease from the number of trips proposed with the current mixed use zoning. The proposed residential use is only 53% of the currently zoned uses (2,888 trips).
- 3: This analysis demonstrates adequate regional roadway improvements are planned to accommodate regional growth. Acceleration of the planned improvements is a viable option since regional projects are re-evaluated and prioritized every two years.
- 4: Although intersection improvements are planned by the RTC, the installation of a left turn lane at the Calle de la Plata / Pyramid Intersection should be considered with this development.
- 5: The proposed development will have no negative impact on the surrounding road network or intersections.
- 6: The proposed development will have no measureable impact on the level of service of the adjacent segments or intersections, when regional improvements (traffic signal at Calle de la Plata) are completed.
- 7: The adjacent roadways are currently operating under capacity.
- 8: When the new driveway is constructed, it is further recommended that curb access ramps be installed and care be taken to insure ADA slopes to match the existing sidewalk are maintained.
- 9: The project intersections must be designed to provide adequate sight distances, in conformance with Washoe County standards.
- 10: All signs and pavement markings associated with the development must conform to the MUTCD or Washoe County requirements.

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C. CONFORMANCE WITH SPANISH SPRINGS VISION AND CHARACTER STATEMENT

Policy SS.17.2 of the Spanish Springs Area Plan requires compliance with several traffic related criteria. Our response based on the traffic analysis follows the text for each specific item.

b. A traffic analysis has been conducted that clearly identifies the impacts to the adopted level of service with the (unincorporated) Spanish Springs Hydrographic Basin and the improvements likely to be required to maintain/achieve the adopted level of service. This finding may be waived by the Department of Public Works for projects that are determined to have minimal impacts. The Department of Public Works may request any information it deems necessary to make this determination.

RESPONSE: This study demonstrates that acceptable levels of service can be maintained on the regional roadway system.

e. If the proposed intensification will result in a drop below the established policy level of service for transportation (as established by the Regional Transportation Commission and Washoe County) within the Spanish Springs Hydrographic Basin, the necessary improvements required to maintain the established level of service are scheduled in either the Washoe County Capital Improvements Program or Regional Transportation Improvement Program within three years of approval of the intensification. For impacts to regional roads, this finding may be waived by the Washoe County Planning Commission upon written request from the Regional Transportation Commission.

REPOSE: This study discusses the potential impacts and timing of improvements outlined in the RTC plan as well as developer financed improvements.

f. If roadways impacted by the proposed intensification are currently operating below adopted levels of service, the intensification will not require infrastructure improvements beyond those articulated in the Washoe County and Regional transportation plans AND the necessary improvements are scheduled in either Washoe County Capital Improvements Program or Regional Transportation Improvement Program within three years of approval of the intensification.

RESPONSE: The improvements necessary to accommodate regional traffic flows and this project can be timed appropriately to avoid adverse traffic impacts.

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II. INTRODUCTION

A. SITE AND STUDY AREA BOUNDARIES

The proposed development is located on approximately 58.5 acres in the Spanish Springs Planned area within Washoe County. The project address is 350 Calle de la Plata. The parcel number is 534-571-01 and is situated in Section 23 of Township 21, Range 20. The existing topography is gently sloping in uniform slope toward the northwest.

The project is within the jurisdictional boundaries of Washoe County, in Spanish Springs. The proposed development is located just east of, but does not abut, State Road 445 (Pyramid Highway) and north of Calle de la Plata. The existing site is undeveloped and bordered by residential to the north and east as well as undeveloped areas and commercial uses to the west.

The existing zoning is neighborhood commercial (NC), industrial (I) and suburban residential (SR). **This report is being prepared in conjunction with a Master Plan Amendment Application, a Rezoning Application and a Tentative Map Application.** The proposed zoning is residential with a maximum development density of 3.0 dwelling units per acre.

There are several existing roads and driveways in the vicinity of the subject parcel. State Road 445 (Pyramid Highway) is located west of the subject property. Calle de la Plata will serve as the primary access for the development. The existing road, Dykes Court, is located south of Calle de la Plata and is in the alignment of the proposed primary access point to the development. Direct access to Pyramid Highway is not proposed at this time but is being discussed as an alternative. If such access were to be pursued it would be in the alignment of and at the existing access point of Partel Road (called Sha Neva Road). The next access to Calle de la Plata is Echaniz Court, north side, located approximately 1,900 feet east of the proposed primary access point.

The study limits for this Traffic Impact Study are limited to the proposed primary access point at Calle de la Plata and the existing intersection of Calle de la Plata and Pyramid Highway.

An Aerial Image with existing roadways labeled is shown in Exhibit II.A for reference.

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Exhibit II.A: Aerial Image and Existing Roadways



Source: Google Earth Imagery Date 04/29/14

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B. EXISTING AND PROPOSED SITE USES AND DENSITIES

The proposed development, as shown on the site plan, is a residential subdivision with a density of 3.0 dwelling units per acre. The average proposed lot size is 7,000 – 8,000 SF. The balance of the site is proposed as common area to serve the drainage and recreation needs of the development. The proposed on-site roadways are public roads. Due to the lot size of less than 0.5 acre, standard roadway section B as shown in the Washoe County standard drawing W-1.2 is applicable to this site. The proposed right-of-way is 42' or 52' throughout the development.

The use of a standard cul-de-sac, per Washoe County standard drawing W-7, is required at any end sections of roadway. This may be used as a temporary feature for phased development or as a permanent paved turnaround as needed for site design.

The proposed development currently has one access point from Calle de la Plata. While the access to SR 445 is under discussion, no agreement for access has been reached at the time of this report. A secondary, emergency access point may be necessary for a development of this size. The Washoe County standard drawing W-1.5 provides for a Permanent Emergency Access Road that can be used with the approval of the County Engineer. Furthermore, a cross-access agreement is under discussion with the property owner to the east. This is the recommended secondary access.

The standard drawings are shown for reference in Exhibit II.B.

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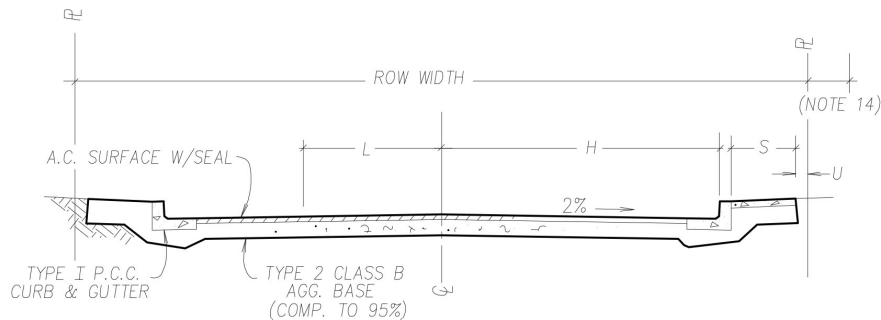
Phone: (775) 352-4200 Email: erin@starconsultingnv.com



Exhibit II.B: Washoe County Standard Drawings (for reference)

SECTION 110.436.25-2: ROADWAY SECTIONS - B

GENERAL APPLICATIONS: URBAN AREAS, SUBURBAN AREAS, LOT SIZES LESS THAN 0.5 AC.



ROW	H	S	U	L	B	PL	ADT MAX PER 2 TRAVEL LANES	REMARKS
52	20	5	0.5	12	4	0	7300	COLLECTOR
42	16	4	0.5	11	0	2	1000	LOCAL

NOTES

- ALL WIDTHS ARE IN FEET.
- H IS MEASURED TO THE FRONT FACE OF CURB.
- L IS TRAVEL LANE; S IS SIDEWALK; B IS BICYCLE LANE; PL IS MAX. NUMBER OF PARKING LANES ALLOWED; ROW IS RIGHT OF WAY; ADT IS AVERAGE DAILY TRAFFIC.
- ADT REPRESENTS THE DESIGN VOLUME FOR A TWO LANE FACILITY.
- BICYCLE LANE SHALL BE PROVIDED IN ACCORDANCE W/THE BICYCLE AND PEDESTRIAN ELEMENT OF THE REGIONAL TRANSPORTATION PLAN AND TO THE SATISFACTION OF THE COUNTY ENGINEER.
- STRUCTURAL SECTIONS SHALL BE DETERMINED BY GEOTECHNICAL ENGINEERING DESIGN BUT IN NO CASE SHALL BE LESS THAN 4" A.C. OVER 6" GRAVEL BASE FOR COLLECTOR STREETS AND 3" A.C. OVER 6" GRAVEL BASE FOR LOCAL STREETS.
- ALL CURB AND GUTTER IS MONOLITHIC CONC. AND L SHAPED PER STANDARD DETAIL.
- SIDEWALK AREA IS CONC. BOTH SIDES FOR COLLECTORS, ONE SIDE FOR LOCALS. ALTERNATE SIDEWALK LOCATIONS/CONFIGURATIONS MUST BE APPROVED BY THE COUNTY ENGINEER.
- ALL A.C. SURFACES SHALL BE SEALED IN ACCORDANCE WITH WASHOE CO. STANDARDS.
- RESIDENTIAL DRIVEWAY ACCESS NOT ALLOWED TO STREETS ON WHICH 10YR. DESIGN ADT EXCEEDS 2000.
- DESIGN OF IMPROVEMENTS TO BE DONE IN ACCORDANCE WITH ARTICLES 420 & 436 OF WASHOE COUNTY DEVELOPMENT STANDARDS AND DESIGN GUIDELINES.
- ALL CONSTRUCTION IS TO BE DONE TO CURRENT WASHOE CO. STANDARDS & SPECIFICATIONS.
- SLOPE EASEMENTS MAY BE REQ'D IN CERTAIN TERRAIN TO ACCOMMODATE THE ROADWAY SECTION.
- MIN 7.5' PUBLIC UTILITY/TRAFFIC CONTROL SIGNAGE/PLOWED SNOW EASEMENT IS REQ'D ON BOTH SIDES OF ROW.

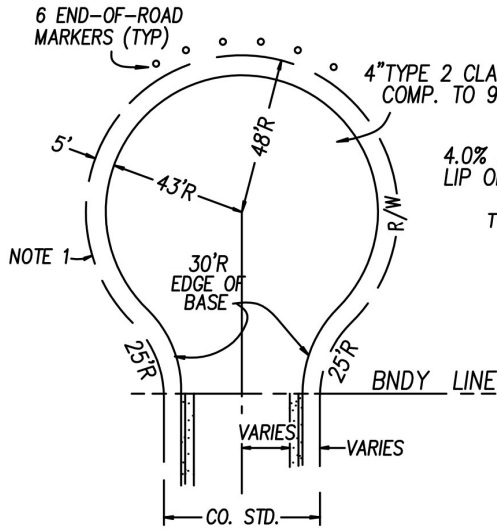
NO.	REVISED	DATE	STANDARD DETAILS FOR PUBLIC WORKS CONSTRUCTION	SECTION:
6	changed adt	12/05ss	ROADWAY SECTIONS (B) GENERAL APPLICATIONS URBAN AREAS/SUBURBAN AREAS LOT SIZE: LESS THAN 0.5 ACRE	WASHOE
3	Sub/Notes	1/94vp		DRAWING NO: W-1.2
4	Corr "U"	2/94/vp		DATE: 2/93vp
5	Save As W-2.dwg	10/01vp		PAGE: 2

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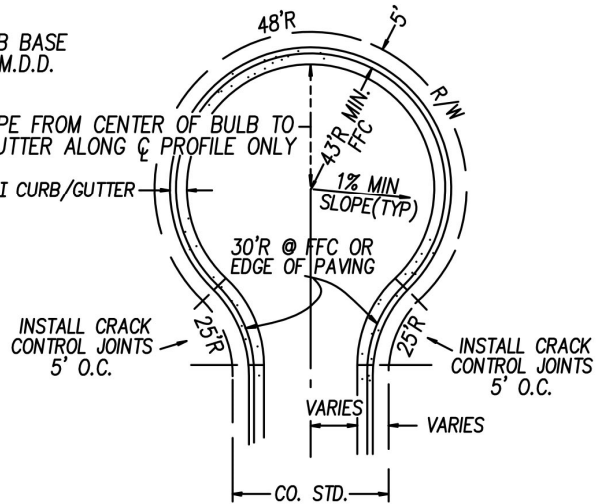
439 W. Plumb Lane Reno, NV 89509

Phone: (775) 352-4200 Email: erin@starconsultingnv.com

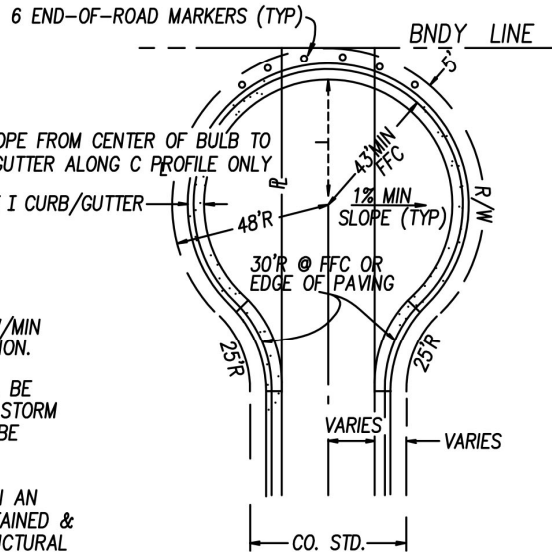




UNPAVED TEMPORARY
N.T.S.



PAVED PERMANENT
N.T.S.



PAVED TEMPORARY
N.T.S.

NOTES

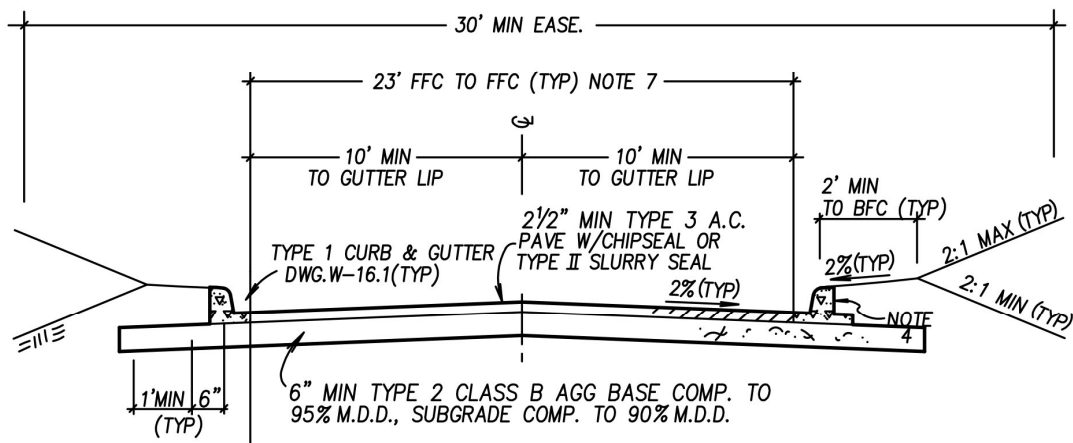
1. TEMP TURNAROUND EASEMENT DOCUMENT REQ'D W/MIN 48' RADIUS TO BE ABANDONED W/STREET EXTENSION.
2. DRAINAGE OF UNPAVED TEMP CUL-DE-SAC SHALL BE CONSISTANT W/CO. STDS INCLUDING ARTICLE 420 STORM DRAINAGE & TO BE USED ONLY IF STREET IS TO BE EXTENDED WITHIN 1 YR.
3. PAVED TEMP TURNAROUND SHALL BE CONST WHEN AN OFF-SITE TEMP TURNAROUND EASE CAN'T BE OBTAINED & STREET IS TO BE EXTENDED IN THE FUTURE. STRUCTURAL SEC. OF TURNAROUND TO MATCH STREET SEC., REFER TO CODE 111.444 FOR CONSTRUCTION.
4. PAVED TEMPORARY TURNAROUND IS REQUIRED ON ALL FUTURE THROUGH-STREETS THAT FRONT LOTS, OR EXTEND MORE THAN 150 FT BEYOND THE NEAREST INTERSECTING STREET.

STANDARD DETAILS FOR PUBLIC WORKS CONSTRUCTION				SECTION:	
NO.	REVISED	DATE	CUL-DE-SAC	WASHOE	
1	REDRAWN	5/94 vp		DRAWING NO: W-7	
2	4%-NOTE 4	10/96 vp		DATE: 5/94 vp	
3	RADII	9/97 vp		PAGE: 18	
4	Profile note	5/99vp			

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TYP. SECTION
N.T.S.

NOTES

1. ALL CONST SHALL CONFORM TO LATEST EDITION OF STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONST., THE LATEST STANDARD DETAILS & ALL OTHER APPLICABLE CODES.
2. ONE 30"x30" SIGN SHALL BE PLACED ON EACH END OF EMERGENCY ACCESS ROAD & SHALL READ "EMERGENCY VEHICLES ONLY" - "NOT A PUBLIC STREET"
3. ADDITIONAL EASEMENT MAY BE REQ'D AT INTERSECTIONS.
4. BACKFILL FOR A MIN DIST OF 2' BEHIND CURB SHALL BE COMPACTED TO 90% M.D.D. & SHALL BE EITHER TYPE 2 CLASS B BASE OR CLASS A BACKFILL.
5. ADDITIONAL EASE & ROADWAY WIDTH MAY BE REQ'D BY COUNTY ENGINEER.
6. ALL GATES & PAVEMENT WIDTHS SHALL BE TO THE SATISFACTION OF COUNTY ENGINEER & LOCAL FIRE DEPT.

NO.	REVISION	DATE	STANDARD DETAILS FOR PUBLIC WORKS CONSTRUCTION	SECTIONS	
1	REDRAWN	7/94 vp	PERMANENT EMERGENCY ACCESS ROAD TO BE USED ONLY WITH THE APPROVAL OF THE COUNTY ENGINEER	WASHOE	
2	TYPE 1 C&G	10/04 smw		DRAWING NO. W-1.5	
				DATE 10/04	PAGE 5

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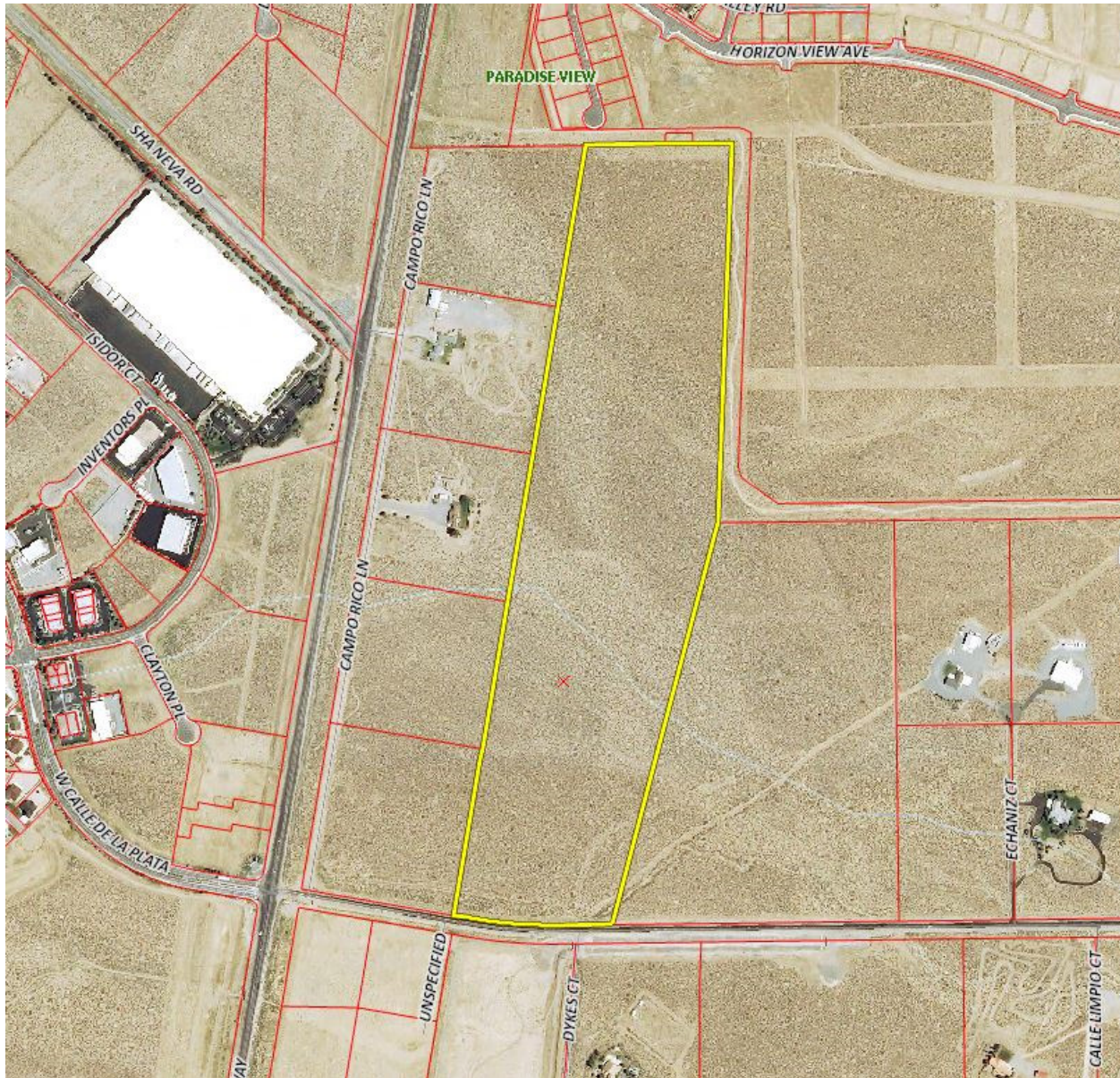


C. EXISTING AND PROPOSED USES IN VICINITY OF SITE

The Washoe County GIS provides access to vicinity maps which show the existing uses and zoning in the vicinity of the subject parcel.

The vicinity maps from the Washoe County GIS are shown for reference in Exhibit II.C.

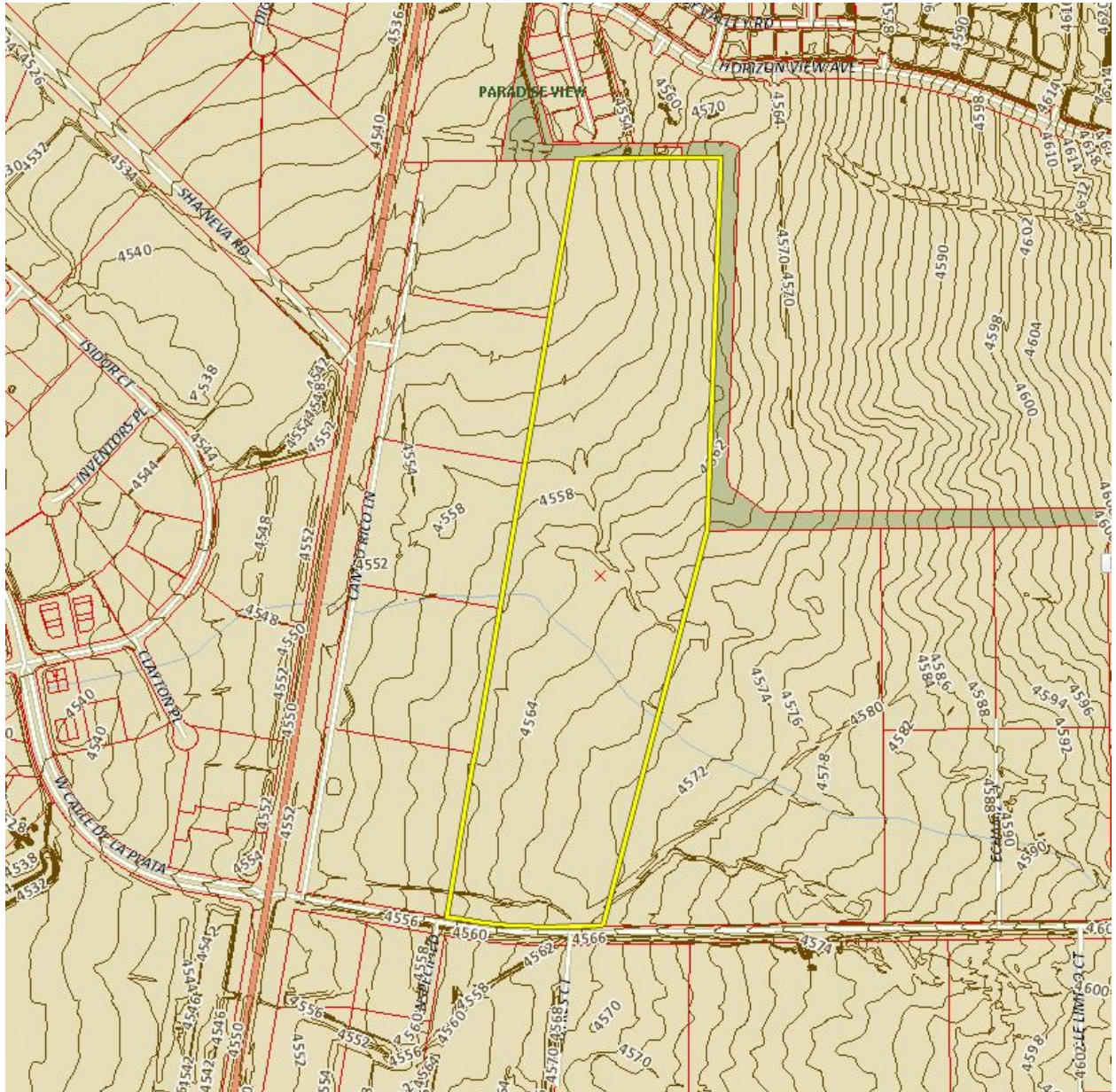
Exhibit II.C.1: Washoe County GIS – Aerial Photo in Vicinity of Site



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Exhibit II.C.2: Washoe County GIS – Topography in Vicinity of Site

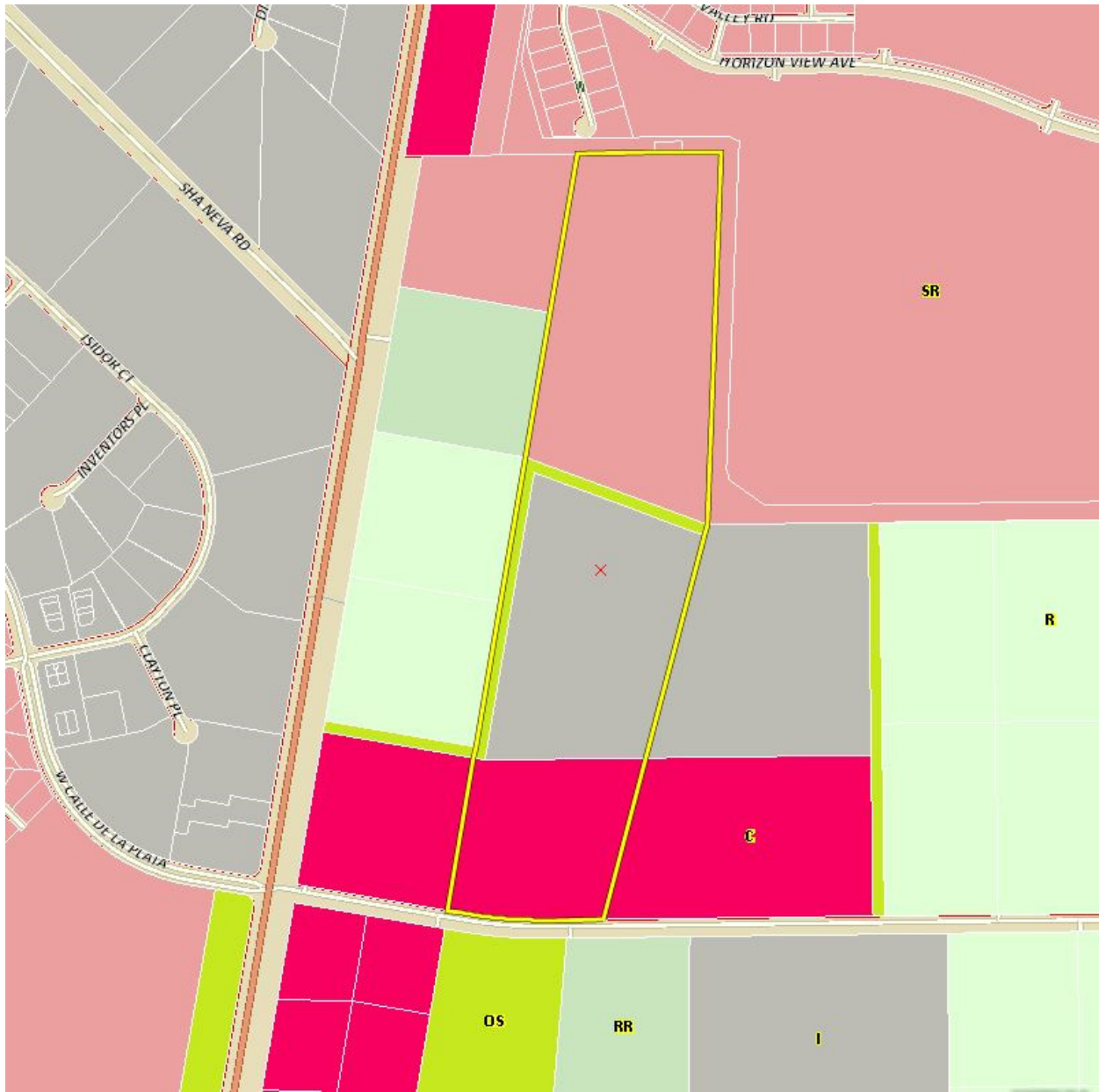


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Exhibit II.C.3: Washoe County GIS – Master Plan Designation in Vicinity of Site



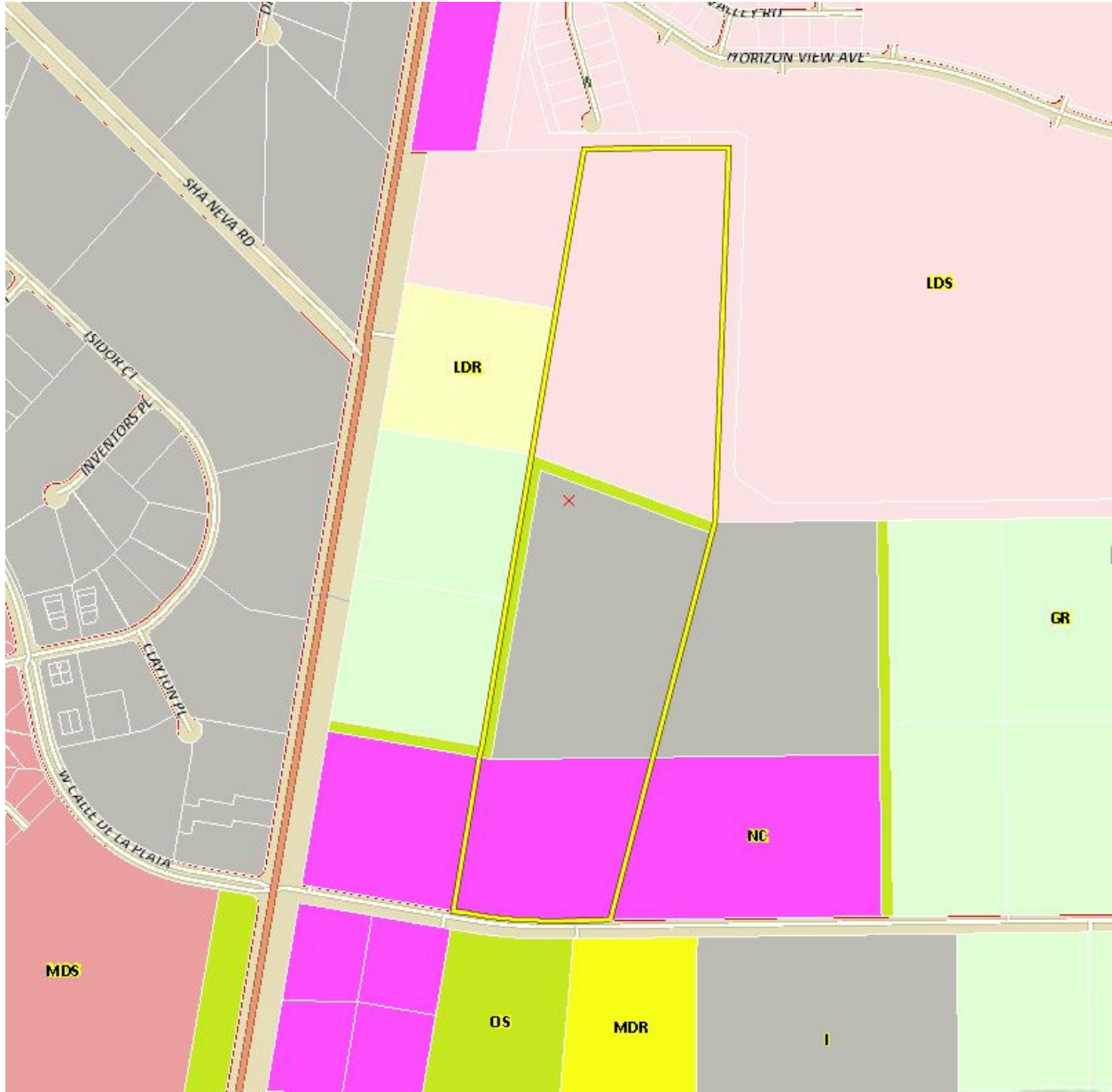
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Exhibit II.C.4: Washoe County GIS – Existing Zoning in Vicinity of Site



Trip Estimate for Current Zoning:

Residential: 718 trips
Industrial: 972 trips
Commercial: 1,198 trips
2,888 currently zoned daily trips

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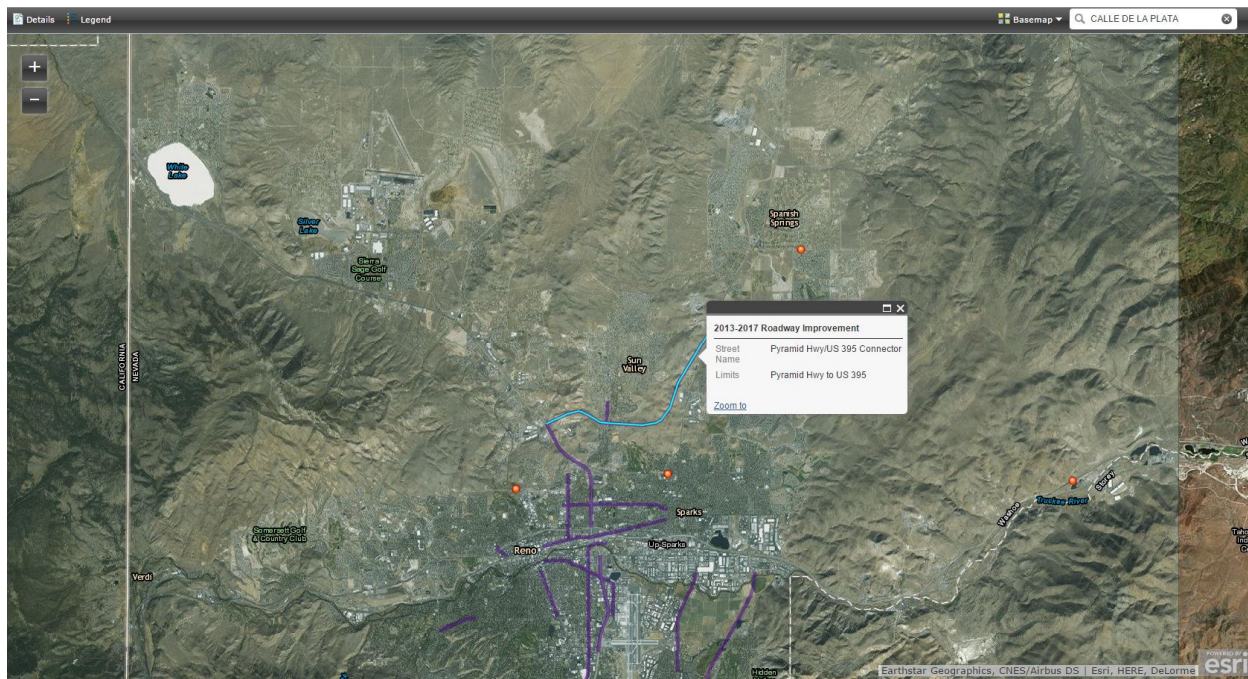
D. EXISTING AND PROPOSED ROADWAYS AND INTERSECTIONS

Existing roadways, intersections, geometrics, traffic control devices and improvements proposed by governmental agencies are planned from the current year through 2035. No publicly funded capital improvement projects are planned for the project vicinity until the 2023-2035 project plans. No further details are available for the projected improvements.

The project maps are shown in Exhibit II.D.

As shown in Exhibit II.D.1, the plans for Pyramid Highway for project years 2013-2017 are limited to south of US 395.

Exhibit II.D.1: Capital Improvement Project Plans 2013-2017



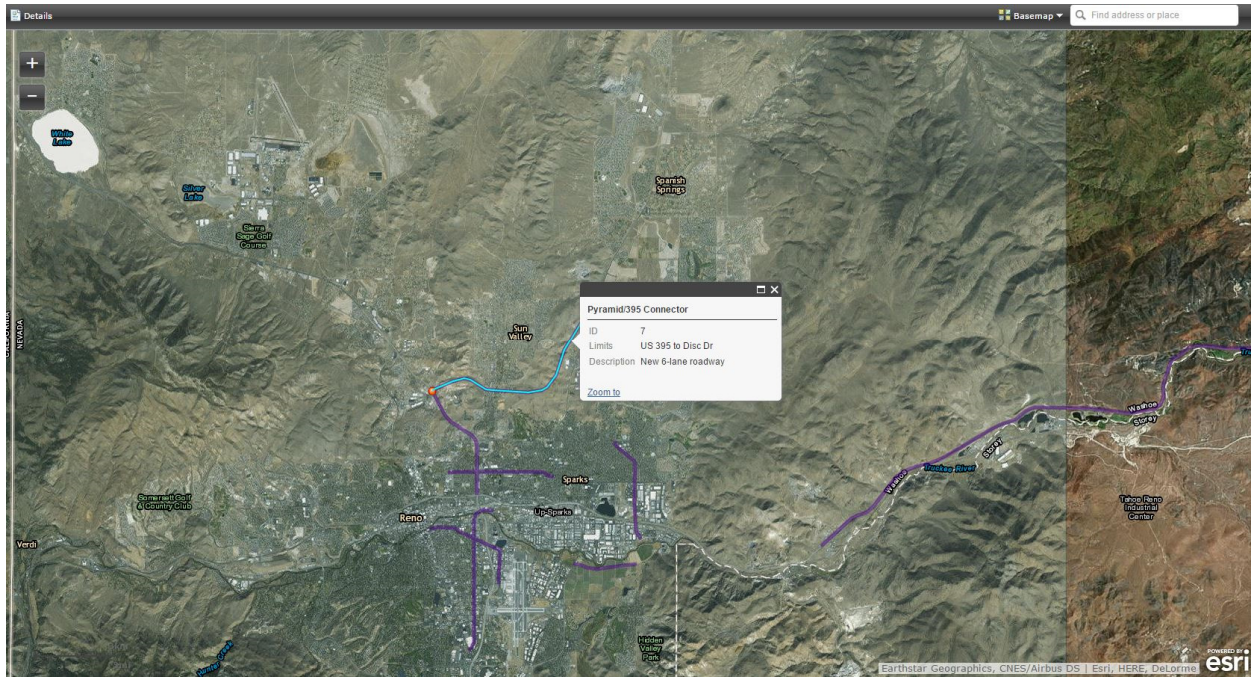
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As shown in Exhibit II.D.2, the plans for Pyramid Highway for project years 2018-2022 are limited to south of US 395.

Exhibit II.D.2: Capital Improvement Project Plans 2018-2022

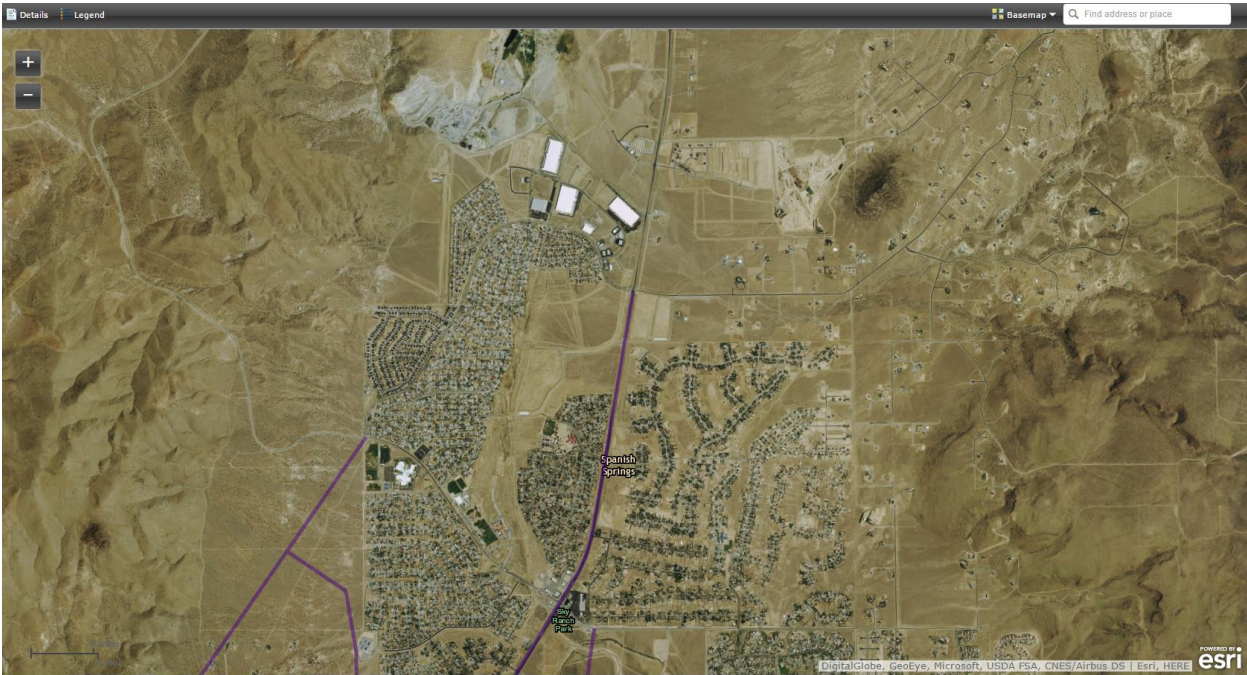
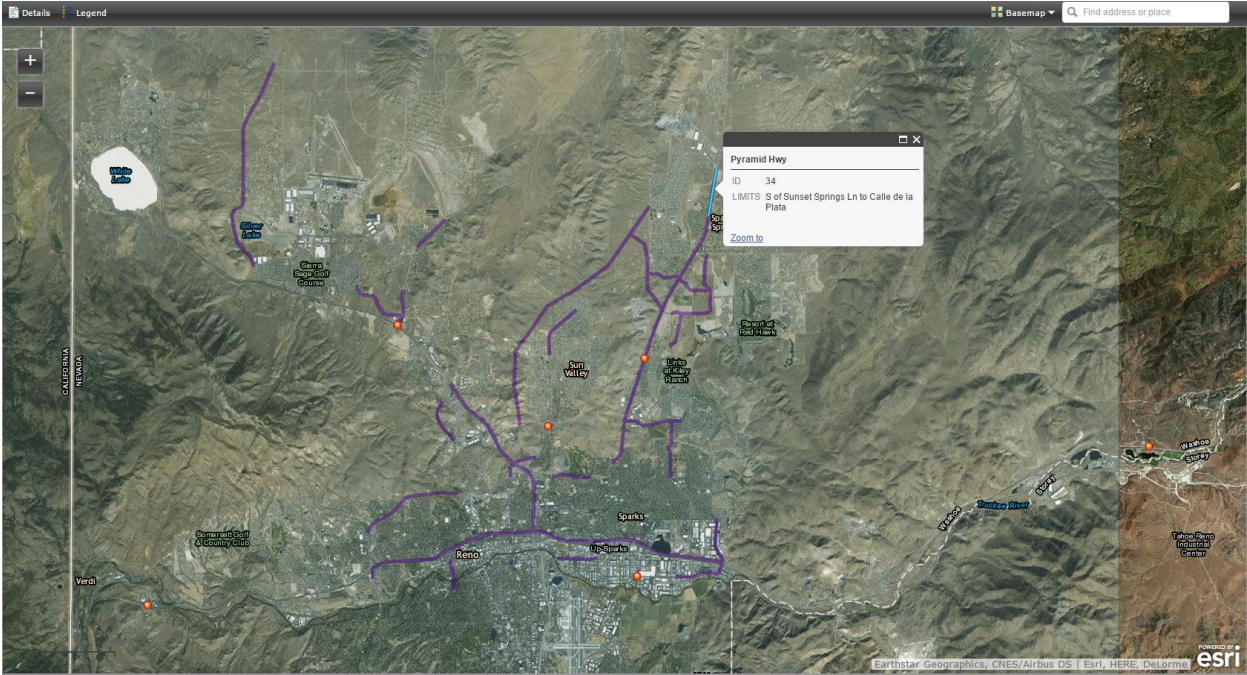


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As shown in Exhibit II.D.3, the plans for Pyramid Highway for project years 2023-2035 include the Calle de la Plata intersection.

Exhibit II.D.3: Capital Improvement Project Plans 2023-2035



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1. STATE ROAD 445 (PYRAMID HIGHWAY)

Pyramid Highway is a north-south NDOT facility that runs from Interstate 80 (I-80) in the south to Pyramid Lake in the north. Pyramid Highway is a two-lane roadway with posted speed limits of 55-65 MPH in the vicinity of the subject property. The RTP classifies Pyramid Highway as a High Access Control (HAC) Arterial south of Calle de la Plata and a Moderate Access Control (MAC) Arterial north of Calle de la Plata.

Existing R/W Width:	175'
Future R/W Width:	175'
Number of Thru Lanes:	2 (NB & SB)
Turn Lanes:	RTL (MB&SB)
	No Acceleration or Deceleration lanes
Posted Speed Limit:	55 MPH
AADT:	10,500
Medians:	No
On-street Parking:	No
Sidewalks:	No
Bike route:	No

Nevada Department of Transportation publishes traffic volumes for State Road 445. Traffic count station 0311032 is located .375 mi north of Sunset Springs Road, south of Calle de la Plata. This station indicates a consistent traffic count from 2008 to 2013 of approximately 10,500 trips. The traffic volume data has been included in Appendix B of this study.

2. CALLE DE LA PLATA

Calle de la Plata is a four lane roadway west of Pyramid Highway and a two lane roadway east of Pyramid Highway. The RTP lists Calle de la Plata as a Low Access Control (LAC) Collector west of Pyramid Highway.

Existing R/W Width:	80'
Future R/W Width:	80'
Number of Thru Lanes:	2
Turn Lanes:	0
Posted Speed Limit:	40 MPH
AADT:	3,900
Medians:	No
On-street Parking:	No
Sidewalks:	No
Bike route:	No

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TRANSIT, BICYCLE AND PEDESTRIAN FACILITIES

No existing or planned transit routes access Pyramid Highway or Calle de la Plata in the vicinity of the project. Bike lanes and sidewalks are present on Calle de la Plata west of Pyramid Highway.

Exhibit II.D.4: Intersection Aerial and Photos



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Calle de la Plata looking east, toward subject property



Calle de la Plata looking west, toward Pyramid Highway

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III. SITE PLAN REQUIREMENTS

Provide a scaled site plan, including building locations, driveways, and internal traffic and parking areas. Identify all points of access, existing and proposed, and tie to existing highway engineering stationing. This shall include all access points both adjacent to and on the opposite side of the highway for the length of the proposed development. The site plan shall show the locations and dimensions of all proposed and existing roadway accesses, highway traffic lanes, medians, pavement striping and markings, and signs involved in the analysis and proposal. The site plan shall also show the existing and proposed facilities for pedestrian traffic. The site plan shall include provisions for service and delivery vehicle traffic generated by the site. Access points expected to be used by service vehicles shall have turning paths sufficient to allow service vehicles to enter and exit the site without encroaching upon opposing lanes, curbed areas or unpaved areas.

The Preliminary Site Layout is included in Appendix A of this report for reference. At the time of this report, the Map Amendment and Rezoning Application for this project is under review with Washoe County Community Development.

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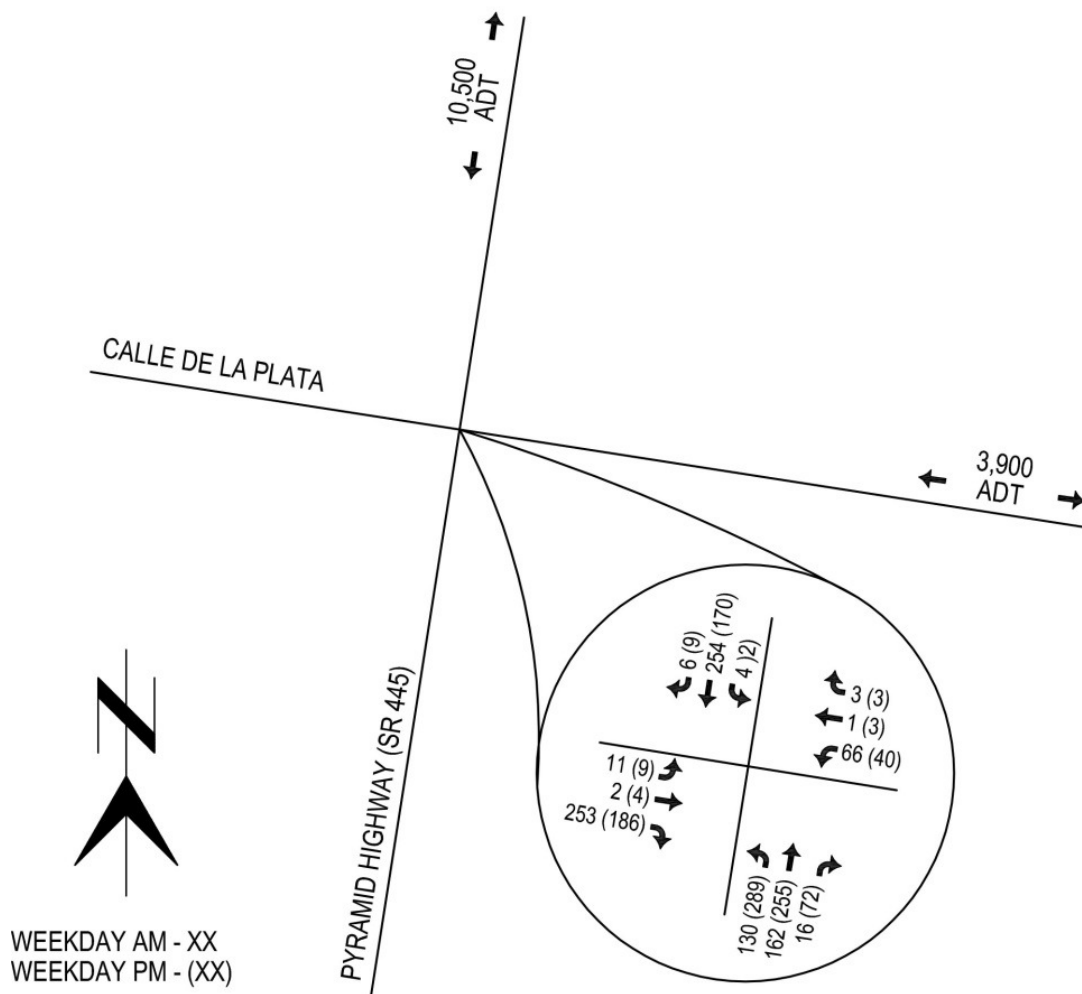
IV. EXISTING TRAFFIC COUNTS

Intersection turning movement counts were collected at the Calle de la Plata/ Pyramid Highway intersection during the AM (7:00AM to 9:00AM) and PM (4:00PM to 6:00PM) peak periods in August 2008 for the previously completed analysis. Nothing significant has changed in the vicinity or collected data to indicate that new traffic counts would reflect anything different from previously reported. For that reason, the previous data has been maintained for this report. The existing volumes, shown in Exhibit IV, were used to analyze the level of service at the study intersection. Detailed intersection movement data is provided in Appendix J.

The Calle de la Plata / Pyramid Highway side street approach operates at LOS F during the AM and PM peak hours. The overall intersection is shown to operate at LOS A.

Exhibit IV: Existing Traffic

EXISTING TRAFFIC



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V. TRIP GENERATION

The future traffic from the project is estimated using the trip rates contained in the Institute of Traffic Engineers' Trip Generation, 9th Edition, as well as additional studies, data and estimations. All referenced ITE material is provided in the Appendix of this report. The number of trips generated is the mathematical product of land use intensity and the trip generation rate. The result is the total number of one-way trips (not round trips) expected to be generated by the project. These trips represent the number of vehicles estimated to enter and leave the project. All of the estimates are based on the number of dwelling units (homes). The ITE land use code 210 is specific to the single-family detached residential home. The ITE estimated 9.57 ADT per dwelling unit, 1.01 PM Peak Hour trips per dwelling unit and 0.75 AM Peak Hour trips per dwelling unit.

It should be noted that the proposed action is a zoning amendment, and as this study analyzes the potential impacts results from an amendment, trip generation for the existing zoning should be subtracted to show the difference in traffic levels. However, because the existing zoning is more intense from a traffic perspective, that calculation would result in negative intersection movements. Alternatively, this analysis is showing the impact of the residential development regardless of the existing zoning and evaluating the impact of that development without a credit for the zone amendment.

Based on the above trip generation rates, the AM and PM peak trip generation is estimated as shown in Table V.1.

The average daily trips are shown in Table V.2.

Table V.1: AM and PM Peak Trip Rates and Trip Generation

Land Use	Unit	No. Units	ITE Categ.	AM Peak Trips Per Unit	PM Peak Trips Per Unit
Single-family	Dwelling Unit	161	210	0.75	1.01

AM Peak Hour Trips:

161 units X 0.75 trips/unit = 121 AM Peak Hour trips

Distribution: Enter: 25% (30 trips)
Exit: 75% (91 trips)

PM Peak Hour Trips:

161 units X 1.01 trips/unit = 163 PM Peak Hour trips

Distribution: Enter: 64% (104 trips)
Exit: 36% (59 trips)

Table V.2: Average Daily Trip Rates and Trip Generation

Land Use	Unit	No. Units	ITE Categ.	Trips/ Unit	ADT
Single-family	Dwelling Unit	161	210	9.57	1,541

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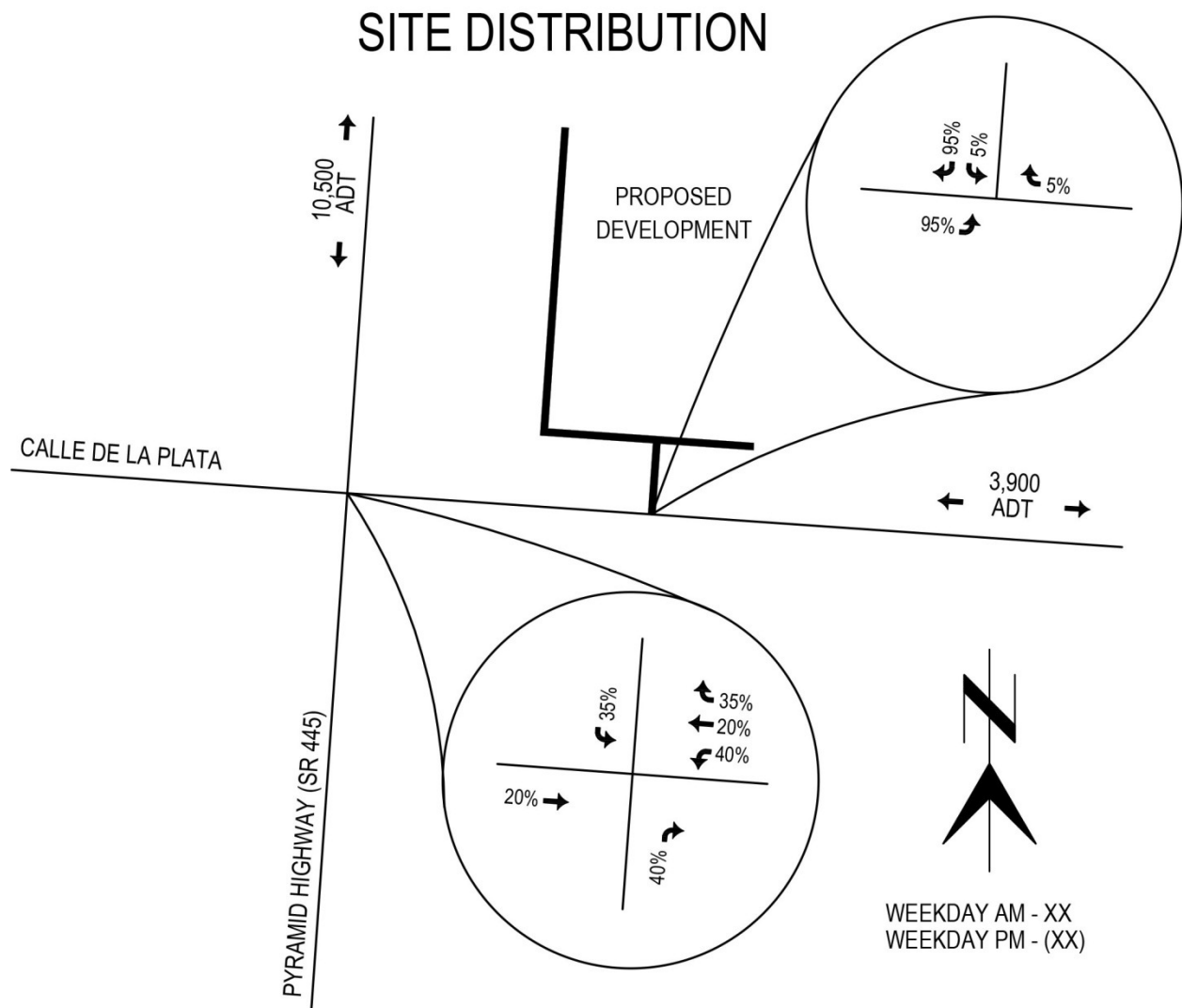
SITE TRIP DISTRIBUTION

The estimated trip distribution for the subject property shown in the following exhibits and described as follows:

- 35% to/from the north on Pyramid Highway
- 45% to/from the south on Pyramid Highway
- 20% to/from the west on Calle de la Plata
- 5% to/from the east on Calle de la Plata

Exhibit V.1 demonstrates a summary of the Trip Distribution and Exhibit V.2 demonstrates the Site Trips.

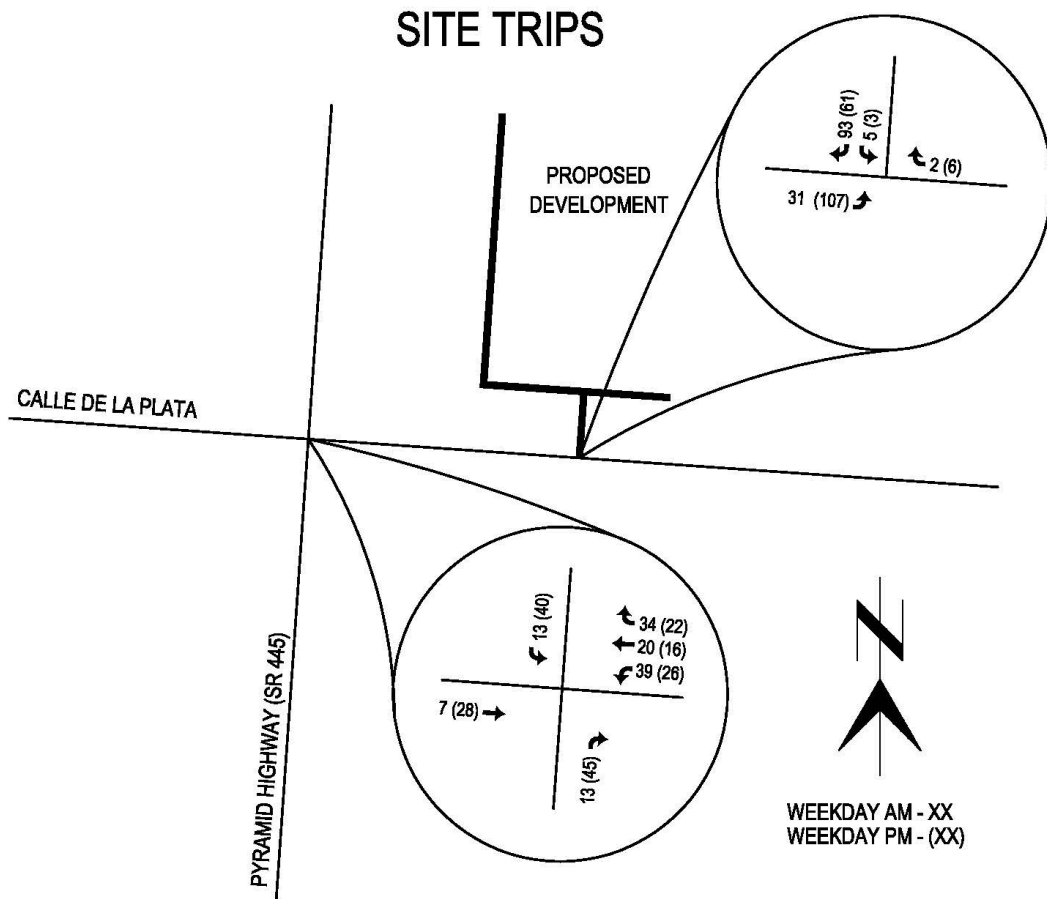
Exhibit V.1: Site Trip Distribution



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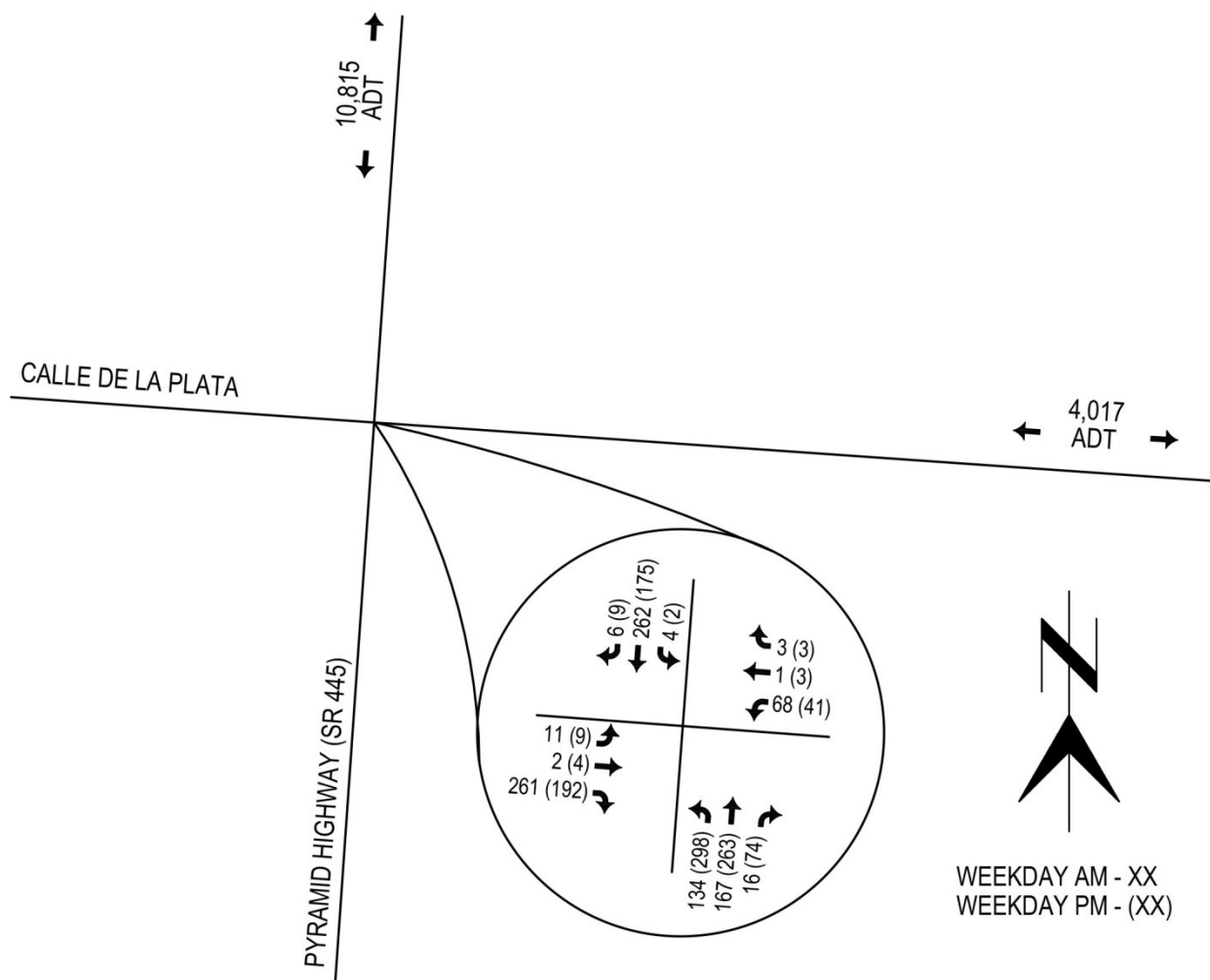
A. NON-SITE TRAFFIC FORECASTING

Based on the traffic volume counts provided by Nevada Department of Transportation, traffic volumes have remained relatively steady or decreased over the past few years. In order to account for potential economic rebounding, we estimated a conservative 3% increase per year in background traffic for the "no-project" condition.

Exhibit V.A demonstrates a summary of the Future Traffic Volumes without the Project for 2016.

Exhibit V.A: Future Traffic Volumes WITHOUT the Project

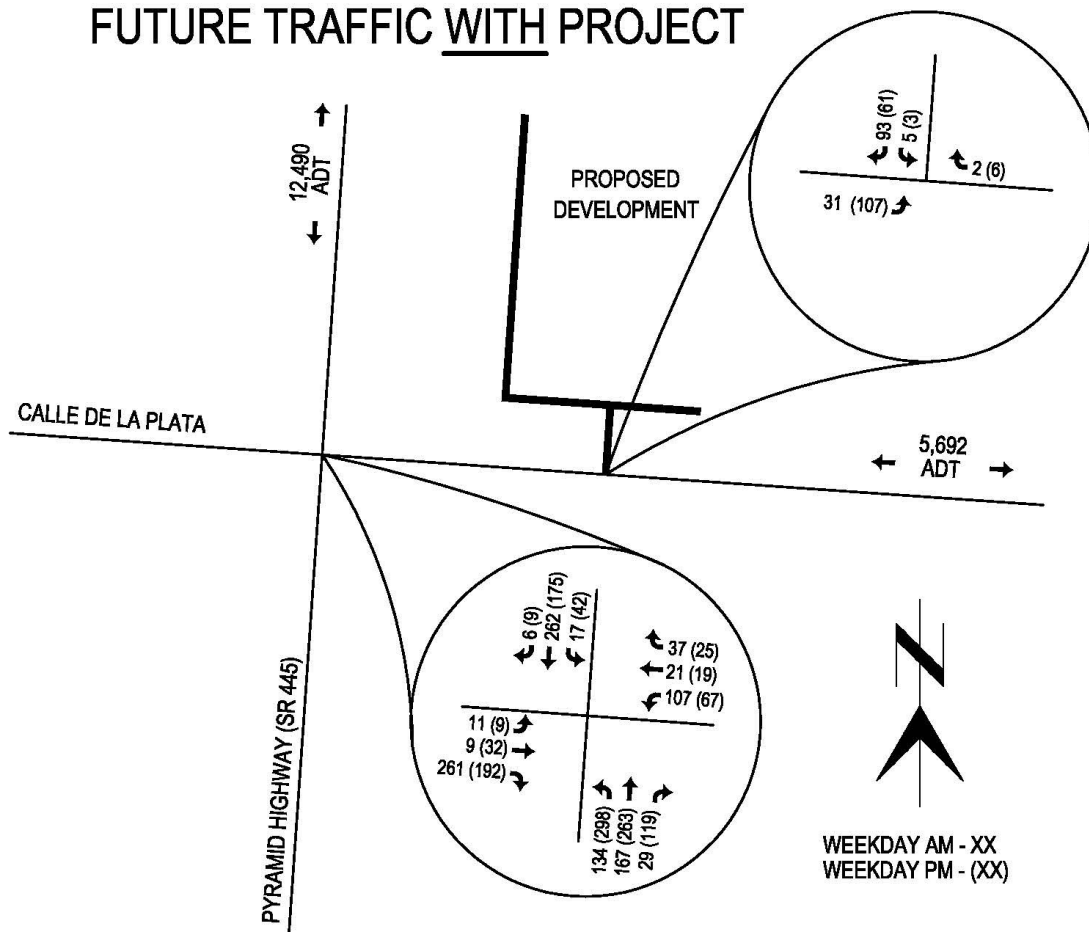
FUTURE TRAFFIC WITHOUT PROJECT



B. TOTAL TRAFFIC

Site traffic volumes were added to the background traffic to project total traffic for the horizon year 2016. The resulting peak hour turning volumes at the project intersection and driveways are demonstrated on Exhibit V.B.

Exhibit V.B: Future Traffic Volumes WITH the Project



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VI. TRAFFIC IMPACT AND CAPACITY ANALYSIS

A. LEVEL OF SERVICE

Level of service is a qualitative description of how well a roadway or intersection operates under prevailing traffic conditions based on traffic volumes and capacity. A grading system of A through F is utilized. LOS A is free-flowing traffic, whereas LOC F is forced flow and extreme congestion.

ROADWAY ANALYSIS

The following excerpt from the Washoe County Regional Transportation Plan gives a detailed qualitative description of the conditions that correspond to each level of service:

LOS	Condition of Traffic Flow
A	Free flow; individual users are virtually unaffected by the presence of others in the traffic stream
B	Reasonably free flow; the presence of other users in the traffic stream begins to be noticeable
C	Stable flow; each user is significantly affected by the presence of others
D	Approaching unstable flow; users experience poor level of comfort and convenience
E	Unstable flow; users experience decreasing speed and increasing traffic
F	Forced or breakdown flow; users experience frequent slowing and vehicles move in lockstep with the vehicle in front of it

The level of service standards used by the RTC for assessing the need for street and highway improvements at a planning level are shown in the following table:

Regional Level of Service Standards	
LOS D	<ul style="list-style-type: none"> All regional roadway facilities projected to carry less than 27,000 ADT at the latest RTP horizon
LOS E	<ul style="list-style-type: none"> All regional roadway facilities projected to carry 27,000 or more ADT at the latest RTP horizon
LOS F	<ul style="list-style-type: none"> Plumas Street—Plumb Lane to California Avenue Rock Boulevard—Glendale Avenue to Victorian Avenue South Virginia Street—Kietzke Lane to South McCarran Boulevard Sun Valley Boulevard—2nd Avenue to 5th Avenue Intersection of North Virginia Street and Interstate 80 ramps
<p>Except as noted above, all intersections shall be designed to provide a level of service consistent with maintaining the policy level of service of the intersecting corridors.</p>	

In previous years and at the time of the previous study for this area, the RTC utilized maximum service flow rates based on the facility type, number of lanes and the average daily traffic on the facility. New software

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allows the RTC to perform more a refined analysis of the level of service on the region's roadways. The current method of establishing the level of service on a roadway is based on the ratio of the volume of traffic to the capacity of the road (V/C). This methodology is widely accepted in the industry as a more accurate method of calculating level of service. The following table shows the projected LOS based on the V/C ratio:

LOS	V/C
A	0.00 to 0.60
B	0.61 to 0.70
C	0.71 to 0.80
D	0.81 to 0.90
E	0.91 to 1.00
F	Greater than 1.00

The following table presents the previously accepted level of service thresholds for roadway segments:

Exhibit VI.1: Level of Service Table - RTC

Facility Type Number of Lanes	Maximum Service Flow Rate (Daily) for Given Service Level				
	LOS A	LOS B	LOS C	LOS D	LOS E
Freeway					
4	≤ 28,600	42,700	63,500	80,000	90,200
6	≤ 38,300	61,200	91,100	114,000	135,300
8	51,100	81,500	121,400	153,200	180,400
10	63,800	101,900	151,800	191,500	225,500
Arterial – High Access Control (HAC)					
2	n/a	9,400	17,300	19,200	20,300
4	n/a	20,400	36,100	38,400	40,600
6	n/a	31,600	54,700	57,600	60,900
8	n/a	42,500	73,200	76,800	81,300
Arterial – Moderate Access Control (MAC)					
2	n/a	5,500	14,800	17,500	18,600
4	n/a	12,000	32,200	35,200	36,900
6	n/a	18,800	49,600	52,900	55,400
8	n/a	25,600	66,800	70,600	73,900
Arterial – Low Access Control (LAC)					
2	n/a	n/a	6,900	13,400	15,100
4	n/a	n/a	15,700	28,400	30,200
6	n/a	n/a	24,800	43,100	45,400
8	n/a	n/a	34,000	57,600	60,600
Arterial – Ultra-Low Access Control (ULAC)					
2	n/a	n/a	6,500	13,300	14,200
4	n/a	n/a	15,300	27,300	28,600
6	n/a	n/a	24,100	41,200	43,000
8	n/a	n/a	33,300	55,200	57,400
Arterial – Ultra-Low Access Control (ULAC)					
2	n/a	n/a	6,500	13,300	14,200
4	n/a	n/a	15,300	27,300	28,600
6	n/a	n/a	24,100	41,200	43,000
8	n/a	n/a	33,300	55,200	57,400
Collector – Ultra-Low Access Control (ULAC)					
2	n/a	n/a	7,300	8,500	9,100

* Contact the RTC Planning Department for LOS threshold for collector facilities with access controls other than ultra-low access control.
Source: Washoe County 2040 Regional Transportation Plan, RTC

The Nevada Department of Transportation (NDOT) maintains a policy of LOS D or better on their facilities. Since Pyramid Highway is an NDOT facility, LOS D or better was used as the standard for analysis. Any intersections or roadway segments that degrade from LOS A, B, C, or D to LOS E or F shall be considered an impact.

Based on the above RTC guidelines, the LOS D threshold for Pyramid Highway south of Calle de la Plata is 19,200 trips and north of Calle de la Plata is 17,500. The expected volume on Pyramid Highway with the proposed development and an increase for future regional traffic is 12,595 trips ($V/C=0.71$).

The expected level of service for Pyramid Highway with the future development is LOS C.

Based on the above RTC guidelines, the LOS E threshold for Calle de la Plata east of Pyramid Highway is 9,100 trips. The expected volume on Calle de la Plata with the proposed development and an increase for future regional traffic is 5,692 trips ($V/C=0.63$).

The expected level of service for Calle de la Plata with the future development is LOS B.

INTERSECTION ANALYSIS

Signalized Intersections

Signalized intersections were analyzed using the methodology contained in the Highway Capacity Manual. This methodology determines the level of service by comparing the average control delay for all vehicles approaching the intersection to the standard delay thresholds.

Un-signalized Intersections:

Un-signalized intersections (side-street stop-controlled) intersection level of service calculations were conducted using the methods contained in Chapter 17 of the Highway Capacity Manual. The LOS rating is based on the average control delay expressed in seconds per vehicle. At side-street stop-controlled intersections, the control delay (and LOS) is calculated for each controlled movement, the left-turn movement from the major street, and for the entire intersection. For controlled approaches composed of a single lane, the control delay is computed as the average of all movements in the lane.

Table VI.2 on the following page, an excerpt from the previously completed study, shows the Intersection Level of Service Definitions.

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Exhibit VI.2: Intersection Level of Service Definitions

TABLE 1 INTERSECTION LEVEL OF SERVICE DEFINITIONS				
Level of Service	Description	Signalized Intersections (Average Control Delay) ¹	Unsignalized Intersections (Average Control Delay) ²	
A	Represents free flow. Individual users are virtually unaffected by others in the traffic stream.	≤ 10	≤ 10	
B	Stable flow, but the presence of other users in the traffic stream begins to be noticeable.	> 10 to 20	> 10 to 15	
C	Stable flow, but the operation of individual users becomes significantly affected by interactions with others in the traffic stream.	> 20 to 35	> 15 to 25	
D	Represents high-density, but stable flow.	> 35 to 55	> 25 to 35	
E	Represents operating conditions at or near the capacity level.	> 55 to 80	> 35 to 50	
F	Represents forced or breakdown flow.	> 80	> 50	

Sources:
¹ HCM 2000, Chapter 16, Signalized Intersections. Values shown are in seconds/vehicle.
² HCM 2000, Chapter 17, Unsignalized Intersections. Values shown are in seconds/vehicle.

The Calle de la Plata/Pyramid Highway intersection operates at LOS F with and without the addition of the proposed project generated traffic. The primary entrance will operate at acceptable levels of service with side street stop controls.

A traffic signal is planned at the Calle de la Plata/Pyramid Highway intersection to improve operations to an acceptable level.

Overall, the proposed development, with the planned improvements, will have no perceived or measureable impact on the level of service of the adjacent segments or intersections.

B. ROADWAY IMPROVEMENTS

This project was evaluated for the need to install turn lanes at the existing intersection of Calle de la Plata and Pyramid Highway. A turn lane "warrant" is a justification for constructing a turn lane, based on traffic volumes at an intersection. Turn lanes are warranted based on these criteria when the peak hour turn lane volume exceeds a trigger based on the two-way daily volume (ADT) on the roadway. The thresholds are as follows:

ADT:	2,500-5,000	Max Peak Hour Trips:	100
	5,000-10,000		70
	>10,000		40

There are more than 10,000 vpd and more than 40 peak hour trips at the existing intersection. **A left turn lane is warranted.**

VII. TRAFFIC SIGNALS

The public often views traffic signals as a cure-all for traffic problems at intersections. As a result, traffic signals have often been installed at intersections where less restrictive traffic control would have been more appropriate and effective. Traffic signal warrants have been developed to establish minimum criteria for evaluating the need for a traffic signal at a specific intersection. These warrants do not define the need for a traffic signal, but merely indicate where further study of a traffic signal installation is justified. When properly justified and installed, traffic signals can have many positive benefits. However, traffic signals also have negative impacts, particularly if the signal is improperly justified or installed. The nine warrants outlined by the MUTCD, Section 4C have been evaluated for the proposed intersection. It should be noted that these warrants have been evaluated using average daily traffic counts and not hourly counts. For that reason, the trips applied to each warrant have been conservatively estimated using the available data.

Warrant 1: Eight Hour Vehicular Volume

The project ADT for Pyramid Highway is 12,595 trips (524 vph) and for Calle de la Plata is 5,797 trips (242 vph). The estimated volumes indicate that while Pyramid Highway is one lane in each direction, this warrant would apply. However, the planned improvements to widen Pyramid Highway remove the warrant.

Table 4C-1. Warrant 1, Eight-Hour Vehicular Volume									
Condition A—Minimum Vehicular Volume									
Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)				Vehicles per hour on higher-volume minor-street approach (one direction only)			
Major Street	Minor Street	100% ^a	80% ^b	70% ^c	56% ^d	100% ^a	80% ^b	70% ^c	56% ^d
1	1	500	400	350	280	150	120	105	84
2 or more	1	600	480	420	336	150	120	105	84
2 or more	2 or more	600	480	420	336	200	160	140	112
1	2 or more	500	400	350	280	200	160	140	112
Condition B—Interruption of Continuous Traffic									
Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)				Vehicles per hour on higher-volume minor-street approach (one direction only)			
Major Street	Minor Street	100% ^a	80% ^b	70% ^c	56% ^d	100% ^a	80% ^b	70% ^c	56% ^d
1	1	750	600	525	420	75	60	53	42
2 or more	1	900	720	630	504	75	60	53	42
2 or more	2 or more	900	720	630	504	100	80	70	56
1	2 or more	750	600	525	420	100	80	70	56

^a Basic minimum hourly volume

^b Used for combination of Conditions A and B after adequate trial of other remedial measures

^c May be used when the major-street speed exceeds 40 mph or in an isolated community with a population of less than 10,000

^d May be used for combination of Conditions A and B after adequate trial of other remedial measures when the major-street speed exceeds 40 mph or in an isolated community with a population of less than 10,000

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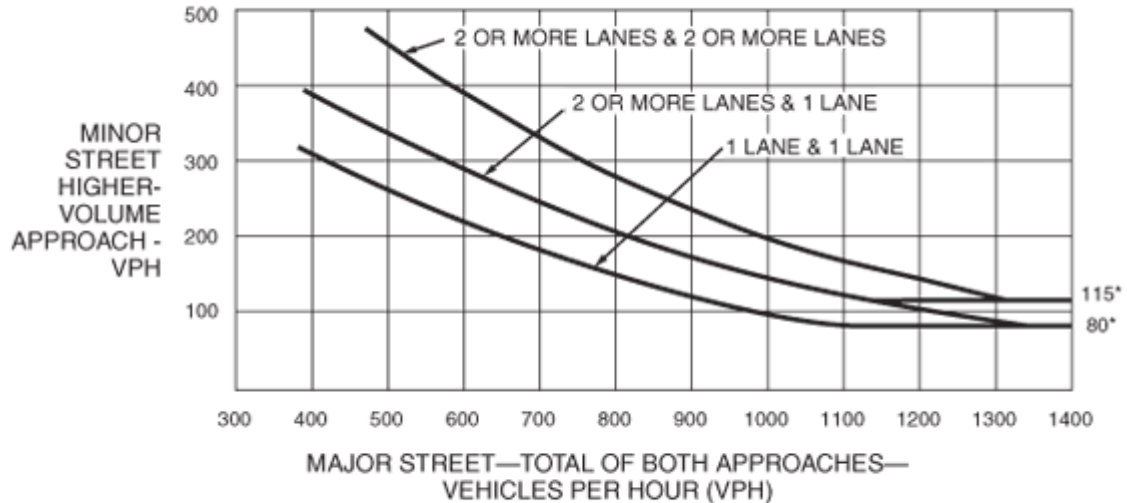
Phone: (775) 352-4200 Email: erin@starconsultingnv.com



Warrant 2: Four-hour Vehicular Volume

For a vehicle per hour on the major street (total of both approaches) of 524vph, the minimum number of vehicles per hour on the minor street (higher volume approach) is 265vph. The estimated 242 vph for Calle de la Plata is below this threshold.

Figure 4C-1. Warrant 2, Four-Hour Vehicular Volume



*Note: 115 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 80 vph applies as the lower threshold volume for a minor-street approach with one lane.

Warrant 3: Peak Hour

The Peak Hour signal warrant is intended for use at a location where traffic conditions are such that for a minimum of 1 hour of an average day, the minor-street traffic suffers undue delay when entering or crossing the major street. This signal warrant shall be applied only in unusual cases, such as office complexes, manufacturing plants, industrial complexes, or high-occupancy vehicle facilities that attract or discharge large numbers of vehicles over a short time. This warrant does not apply to a residential project.

Warrant 4: Pedestrian Volume

The Pedestrian Volume signal warrant is intended for application where the traffic volume on a major street is so heavy that pedestrians experience excessive delay in crossing the major street. Pyramid Highway is not utilized by pedestrians.

Warrant 5: School Crossing

The School Crossing signal warrant is intended for application where the fact that schoolchildren cross the major street is the principal reason to consider installing a traffic control signal. For the purposes of this warrant, the word "schoolchildren" includes elementary through high school students. School children are not anticipated at this intersection. This warrant does not apply to this section of Pyramid Highway.

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Warrant 6: Coordinated Signal System

Progressive movement in a coordinated signal system sometimes necessitates installing traffic control signals at intersections where they would not otherwise be needed in order to maintain proper platooning of vehicles. This warrant does not apply to this section of Pyramid Highway.

Warrant 7: Crash Experience

The Crash Experience signal warrant conditions are intended for application where the severity and frequency of crashes are the principal reasons to consider installing a traffic control signal. This warrant does not apply to this section of Pyramid Highway.

Warrant 8: Roadway Network

Installing a traffic control signal at some intersections might be justified to encourage concentration and organization of traffic flow on a roadway network. The need for a traffic control signal shall be considered if an engineering study finds that the common intersection of two or more major routes meets one or both of the following criteria:

- A. The intersection has a total existing, or immediately projected, entering volume of at least 1,000 vehicles per hour during the peak hour of a typical weekday and has 5-year projected traffic volumes, based on an engineering study, that meet one or more of Warrants 1, 2, and 3 during an average weekday; or
- B. The intersection has a total existing or immediately projected entering volume of at least 1,000 vehicles per hour for each of any 5 hours of a non-normal business day (Saturday or Sunday).

A major route as used in this signal warrant shall have at least one of the following characteristics:

- A. It is part of the street or highway system that serves as the principal roadway network for through traffic flow.
- B. It includes rural or suburban highways outside, entering, or traversing a city.
- C. It appears as a major route on an official plan, such as a major street plan in an urban area traffic and transportation study.

The intersection of Pyramid Highway and Calle de la Plata is scheduled for improvement with Pyramid Highway is widened.

Warrant 9: Intersection Near a Grade Crossing

The Intersection Near a Grade Crossing signal warrant is intended for use at a location where none of the conditions described in the other eight traffic signal warrants are met, but the proximity to the intersection of a grade crossing on an intersection approach controlled by a STOP or YIELD sign is the principal reason to consider installing a traffic control signal. This warrant does not apply to the proposed intersection or this section of Pyramid Highway.

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VIII. TRAFFIC ACCIDENT DATA

Intersection crash data for Pyramid Highway and Calle de la Plata was requested and provided by NDOT and is included in Appendix G of this report for reference. For the five year study period of July 1, 2009 to July 1, 2014 six crashes were reported. Of these crashes, one was fatal; three reported injuries and two were property damage only. The fatality was a one-vehicle crash where the driver apparently over-corrected and ran off the road. It is estimated that the increase in trips at this intersection will not significantly impact the low number of reported crashes.

Safety related deficiencies for Pyramid Highway (SR445) have not been noted in recent studies or shown in recent crash data.

IX. NDOT ACCESS POLICY

All projects which have or propose to have access to NDOT roadways must include a separate section which discusses adherence to the NDOT access policy, Access Management System and Standards.

Direct access to Pyramid Highway (SR445) is not proposed with this development.

There has been some discussion regarding the possibility of adding direct access to the highway through an adjacent parcel in alignment with the existing Sha Neva Road (Parteli Road). The spacing requirement for Rural Highways at 55 mph is 0.25 mile. This location would meet the spacing requirements should the Developer pursue this option for access.

X. REGIONAL ROAD IMPACT FEE (RRIF)

New development creates a demand for new roadway capacity. The Regional Road Impact Fee (RRIF) is a tool to collect the cost of providing the new capacity for new development. The RRIF is divided into the north service area and the south service area. The funds collected in each service area are to be spent in the same service area. I-80 is the dividing line between the service areas. The proposed development falls in the **North Service Area**. The RRIF fee is \$3,783.11 per single-family dwelling. The RRIF funds are designed to build capacity improvements such as new roads and ramps, road widening and intersection improvements, and to preserve right of way for future capacity improvements. The fee previously discussed is based on the current fee schedule as of the date of this study. The current fee schedule went into effect March 2, 2015. The amount of impact fees shall be determined as of the date of payment. The RRIF needs to be paid at the time a building permit is issued or may be deferred to the Certificate of Occupancy, as approved by the local jurisdiction. RRIF Waivers are issued for capital improvements constructed by new development. Waivers may only be used to pay the impact fee due within the designated development of record associated with the waivers.

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APPENDIX A:

PRELIMINARY SITE LAYOUT FOR SPANISH SPRINGS – CALLE DE LA PLATA

LAND USE DATA

- NUMBER OF LOTS: 161 LOTS
- TOTAL AREA: 58.5 ACRES
- COMMON AREA: 11.06 ACRES (481,759 SF)
19% COMMON OPEN SPACE PROPOSED
A' (CENTRAL OPEN SPACE): 168,689 SF
B' (DRAINAGE/OPEN SPACE): 309,433 SF
C' (UTILITY/TRAIL CORRIDOR): 3,637 SF
- DENSITY/INTENSITY: 3 DWELLING UNITS PER ACRE PERMITTED
2.75 DWELLING UNITS PER ACRE PROPOSED
- HEIGHT: 35' MAXIMUM PERMITTED/PROPOSED HEIGHT
- LOT SIZE: 12,000 SF MINIMUM LOT SIZE PERMITTED (MDS ZONING) *
80' MINIMUM LOT WIDTH PERMITTED (MDS ZONING) *
* MINIMUM LOT SIZE MODIFIED FOR COMMON OPEN SPACE DEVELOPMENT
- COMMON OPEN SPACE DEVELOPMENT: THE PROVISIONS OF SECTION 110.404.05, LOT STANDARDS, MAY BE MODIFIED PURSUANT TO ARTICLE 408, COMMON OPEN SPACE DEVELOPMENT. THIS MODIFICATION MAY INCLUDE THE REDUCTION IN MINIMUM LOT SIZES AS LONG AS THE OVERALL DENSITY IS NOT INCREASED BEYOND THAT PERMITTED IN THE REGULATORY ZONE.
- AVERAGE LOT SIZE: 10,663 SF
- LARGEST LOT: 24,759 SF (LOT 5)
- SMALLEST LOT: 8,400 SF (LOT 20-22)
- YARD/SETBACKS: FRONT YARD: 20'
SIDE YARD: 8'
REAR YARD: 20'
- THERE SHALL BE NO FENCES OR OTHER OBSTRUCTIONS TO VISION MORE THAN 18" HIGHER THAN CURB LEVEL WITHIN THE SITE VISIBILITY TRIANGLES.
- ARCHITECTURAL FEATURES: CORNICES, CANOPIES, CHIMNEYS, EAVES OR OTHER SIMILAR ARCHITECTURAL FEATURES MAY EXTEND INTO A REQUIRED SETBACK BY A DISTANCE NOT TO EXCEED TWO (2) FEET.
- DETACHED GARAGES MAY BE LOCATED BEHIND THE REQUIRED FRONT SETBACK.
- DECKS WHICH ARE LESS THAN 18" IN HEIGHT FROM THE FINISHED GRADE ARE NOT COUNTED AS A STRUCTURE FOR SETBACK PURPOSES.
- OFF-STREET PARKING: 2 SPACES REQUIRED PER DWELLING UNIT, 1 OF WHICH MUST BE IN AN ENCLOSED GARAGE
4 SPACES PROVIDED PER DWELLING UNIT, 2 OF WHICH IN A GARAGE AND 2 OF WHICH IN THE DRIVEWAY
- OPEN SPACE: PRIVATE OPEN SPACE PROPOSED PER SECTION 110.432.10 OF THE WASHOE COUNTY DEVELOPMENT CODE AND COMMON OPEN SPACE PROPOSED PER SECTION 110.432.15 OF THE CODE
REQUIRED: 400 SF PRIVATE SPACE PER LOT
200 SF COMMON OPEN SPACE PER LOT (32,200 SF)
PROPOSED: 1,400 SF MINIMUM PRIVATE SPACE PER LOT
194,115 SF (4.45 AC) COMMON OPEN SPACE (COMMON AREA 'A')

GENERAL NOTES

- PARCEL NUMBER: 534-571-01
- PROJECT ADDRESS: 350 CALLE DE LA PLATA
- LOCATED WITHIN THE SPANISH SPRINGS PLANNED AREA OF WASHOE COUNTY
- EXISTING ZONING IS NEIGHBORHOOD COMMERCIAL/OFFICE (NC), INDUSTRIAL (I) AND SUBURBAN
PROPOSED ZONING IS MDS WITH CLUSTER OPEN SPACE OPTION
- NO BUILDINGS EXIST ON THE SUBJECT PROPERTY.
- NO SEPTIC SYSTEMS, WELLS, LEACH FIELDS OR OVERHEAD UTILITIES EXIST OR ARE PROPOSED ON THE SUBJECT PROPERTY.
- PROMINENT LANDMARKS, AREAS OF UNIQUE NATURAL BEAUTY, ROCK OUTCROPPINGS, VISTAS AND NATURAL FOLIAGE ARE NOT PRESENT ON THE SUBJECT PROPERTY.
- CUTS AND FILLS OF GREATER THAN 5' IN HEIGHT ARE NOT PROPOSED FOR THE SUBJECT PROPERTY.
- NO WETLANDS OR SPRINGS ARE KNOWN TO EXIST ON THE SUBJECT PROPERTY.
- SECONDARY EMERGENCY ACCESS IS PROPOSED THROUGH THE ADJACENT SUBDIVISION TO THE EAST. IN THE EVENT THIS ACCESS IS NOT AVAILABLE AT THE TIME OF DEVELOPMENT, EMERGENCY ACCESS WILL BE PROVIDED THROUGH LOT 5 IN ACCORDANCE WITH WASHOE COUNTY STANDARD DETAIL W-1.5.
- LANDSCAPING REQUIRED PER SECTION 110.412 OF THE WASHOE COUNTY DEVELOPMENT CODE.
- LIGHTING SHALL BE IN CONFORMANCE WITH SECTION 110.414 OF THE WASHOE COUNTY DEVELOPMENT CODE. SPECIFICALLY, PER SECTION 110.414.21, COVERS MUST BE INSTALLED ON ALL LIGHTING FIXTURES AND LAMPS MUST NOT EXTEND BELOW THE BOTTOM OF THE COVER.
- THE DESIGN AND POSTED SPEED FOR THIS SUBDIVISION IS 25 MPH.
- ALL SIGNS AND PAVEMENT MARKINGS SHALL CONFORM WITH THE MOST RECENT EDITION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD), PUBLISHED BY THE FEDERAL HIGHWAY ADMINISTRATION AND WASHOE COUNTY STANDARDS.
- THE MINIMUM PAVEMENT STRUCTURAL SECTION SHALL BE TWO AND ONE-HALF (2.5) INCHES OF TYPE 2 OR TYPE 3 ASPHALT CONCRETE PAVEMENT COMPACTED TO NINETY-FIVE (95) PERCENT MINIMUM DENSITY OVER AN ENGINEERED SUBGRADE. DRAINAGE SHALL BE CONSISTENT WITH COUNTY STANDARDS, INCLUDING ARTICLE 420, STORM DRAINAGE STANDARDS. THE PAVEMENT SHALL BE SEALED IN ACCORDANCE WITH WASHOE COUNTY STANDARDS.

BASIS OF BEARINGS: THE BASIS OF BEARING FOR THIS PLAT IS BASED ON THE NEVADA COORDINATE SYSTEM OF 1983, WEST ZONE, NAD 86/94. DISTANCES SHOWN ARE GROUND DISTANCES USING A PROJECT COMBINED GRID TO GROUND SCALE FACTOR OF 1.0001998699

BASIS OF ELEVATIONS: DATUM: NAVD 88
PROJECT BENCHMARK: LUMOS CONTROL POINT 500 HAVING AN ELEVATION OF 4550.27'

TOPOGRAPHY DERIVED FROM AERIAL PHOTOGRAMMETRY, DATE OF FLIGHT 07/23/2015

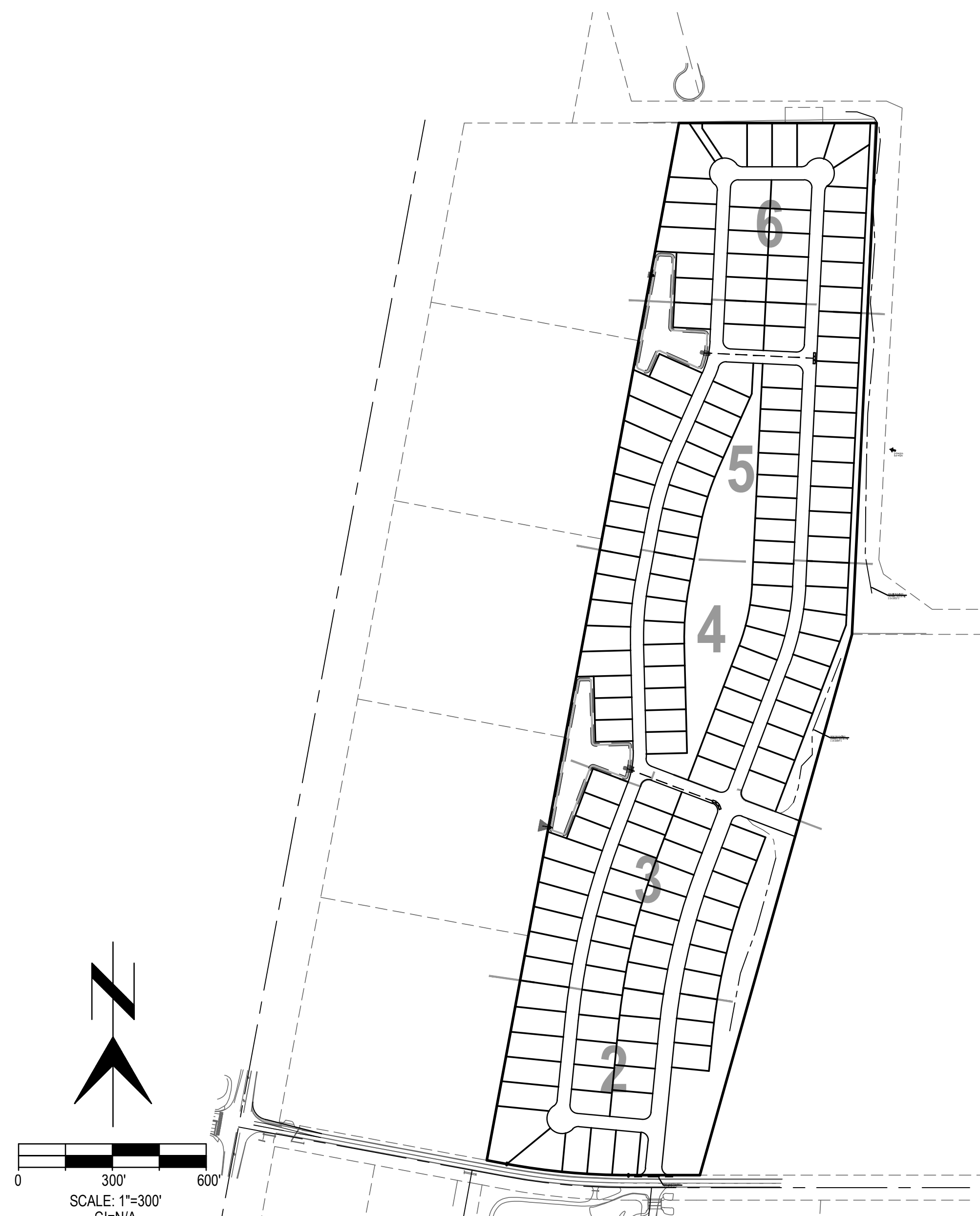
PRELIMINARY GRADING NOTES

- ESTIMATED CUT: XXX CY
ESTIMATED FILL: XXX CY
- AREA OF DISTURBANCE: 100%
- NO MATERIAL IS TO BE REMOVED FROM THE SITE.
- BEST MANAGEMENT PRACTICES:
 - IF A DISTURBED AREA IS LEFT UNDEVELOPED FOR OVER THIRTY DAYS, THE AREA IS TO BE TREATED TO PREVENT EROSION. THE TREATMENT MAY INCLUDE RE-VEGETATION, INSTALLATION OF STRAW MATTING AND/OR RE-SEEDING WITH COMPOSTED MULCH. SURFACE APPLICATION OF WATER, BOTH TO PREVENT WIND-BLOWN EROSION AND PROMOTE GROWTH OF VEGETATION, IS REQUIRED UNTIL VEGETATION IS FULLY ESTABLISHED AND THE SITE IS STABILIZED.
 - WADDLES WILL BE INSTALLED ACROSS ALL STORM DRAIN INLETS, DEPRESSED CURB INLETS, CULVERT INLETS AND LOW-FLOW OUTLET PIPES TO PREVENT TRANSPORT OF SITE-GENERATED SEDIMENT.
 - STRAW BALES WILL BE PLACED ACROSS THE DOWNSTREAM END OF ALL GRADED CHANNELS AND DITCHES TO PREVENT TRANSPORT OF SEDIMENT. IN ADDITION, STRAW BALES WILL BE INSTALLED ACROSS THE DOWNSTREAM END OF THE DETENTION BASIN OUTLET WEIRS AND LOW-FLOW OUTLET PIPES.
 - CONTINUOUS SILT FENCING WILL BE INSTALLED ALONG THE ENTIRE SITE PERIMETER.
 - APPLICATION OF WATER TO PREVENT WIND-BLOWN SEDIMENT TRANSPORT WILL BE REQUIRED FOR ALL EXPOSED SURFACES THROUGHOUT THE DURATION OF CONSTRUCTION.

SANITARY SEWER NOTES

- MAXIMUM MANHOLE SPACING IS 400 FEET.
- MINIMUM PIPE RADIUS IS 400 FEET - HORIZONTAL LAYOUT AS SHOWN ON PLAN.
- THE INVERT GRADE AT THE EXIT OF EACH MANHOLE IS 0.1 FOOT BELOW THE INVERT GRADE OF THE ENTRANCE PIPE.
- ALL MANHOLES SHALL BE A CONE TYPE 1-A AS SHOWN IN DWR STANDARD DETAIL NO. WR-1.3 'TYPE 1-A MANHOLE' WITH THE VERTICAL WALL ON THE INFLOW SIDE.
- WATERTIGHT, BOLTED MANHOLE COVERS SHALL BE USED ON MANHOLES LOCATED IN AREAS SUBJECT TO FLOODING.

**TENTATIVE MAP
FOR
BLACKSTONE ESTATES
LOTS 1-161
A SINGLE-FAMILY RESIDENTIAL SUBDIVISION
WASHOE COUNTY, NEVADA**



SITE PLAN

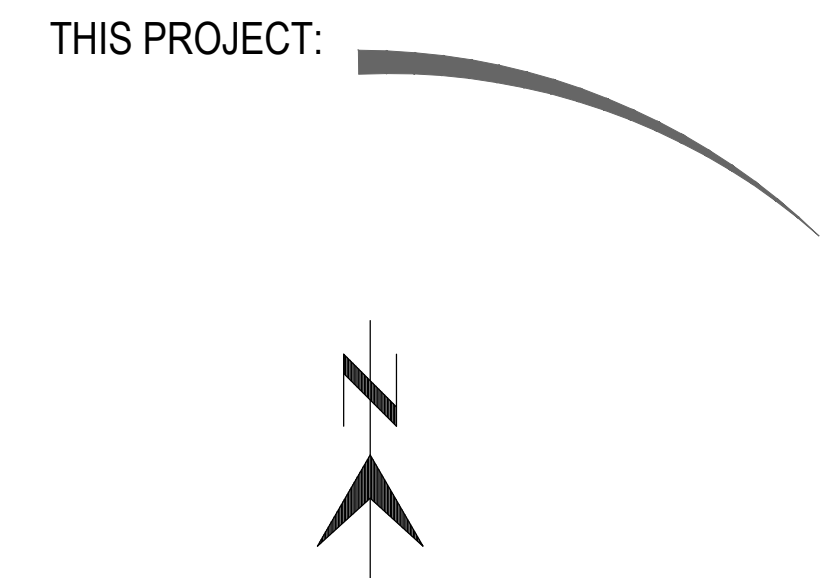
SCALE: 1"=300'

DEVELOPER
BLACKSTONE DEVELOPMENT GROUP
ATTN: JOSHUA MYERS
333 N. WILMOT ROAD, SUITE 340
TUCSON, AZ 85711
TELEPHONE: (520) 618-5378
FAX: (520) 529-1752

OWNER
XXXX
ATTN: XXX
XXX
XXX
TELEPHONE: (775) XXX-XXXX
FAX: (775) XXX-XXXX



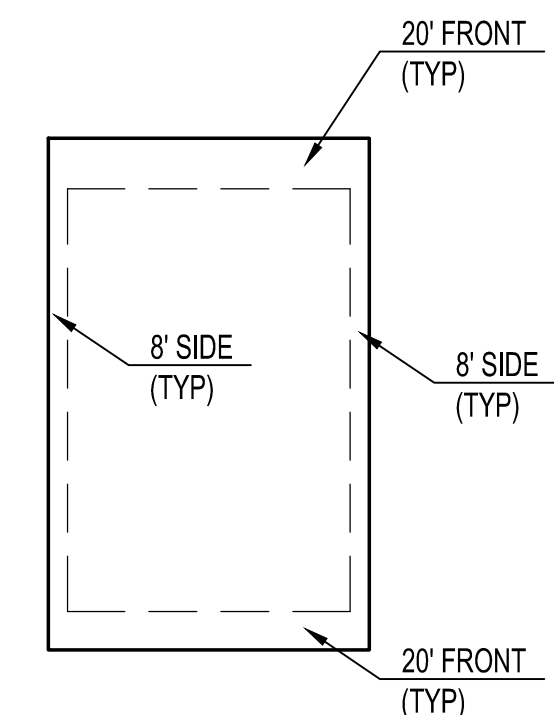
NO.	DATE	REVISION	BY	CHKD.	APPR.



VICINITY MAP
SITUATED IN SECTION 23
TOWNSHIP 21 NORTH, RANGE 20 EAST
WASHOE COUNTY, NEVADA

LEGEND

- BOUNDARY LINE
- LOT / COMMON AREA LINES
- EASEMENT LINE
- BUILDING SETBACK LINE
- ADJACENT PARCEL LINES
- DRIVEWAY RESTRICTED TO THIS SIDE OF LOT



TYPICAL LOT DETAIL

N.T.S.

SHEET INDEX

- SHEET 1: COVER SHEET
- SHEETS 2-6: MAP SHEETS
- SHEET 7: OFFSITE IMPROVEMENTS
- SHEETS 8-9: DETAIL SHEETS

ENGINEER'S STATEMENT

THIS TENTATIVE MAP IS IN COMPLIANCE WITH ALL APPLICABLE PROVISIONS OF THE WASHOE COUNTY DEVELOPMENT CODE.

TENTATIVE MAP BLACKSTONE ESTATES A SINGLE FAMILY RESIDENTIAL SUBDIVISION LOTS 1-161 AND COMMON AREAS 'A' - 'C'			
PARCEL 23-1-0-1 OF SPANISH SPRING RANCHES, NO 2 AS RECORDED IN LAND DIVISION MAP NO 23 AND RECORD OF SURVEY NO 1098, WASHOE COUNTY, NEVADA			
	439 W. PLUMB LANE RENO, NV 89509 (775) 352-4200 PROJECT NO. 14021	DRWN BY: EEH DSGN BY: EEH CHKD BY: GWH	CASE NO. SHEET NO. 1 OF 9

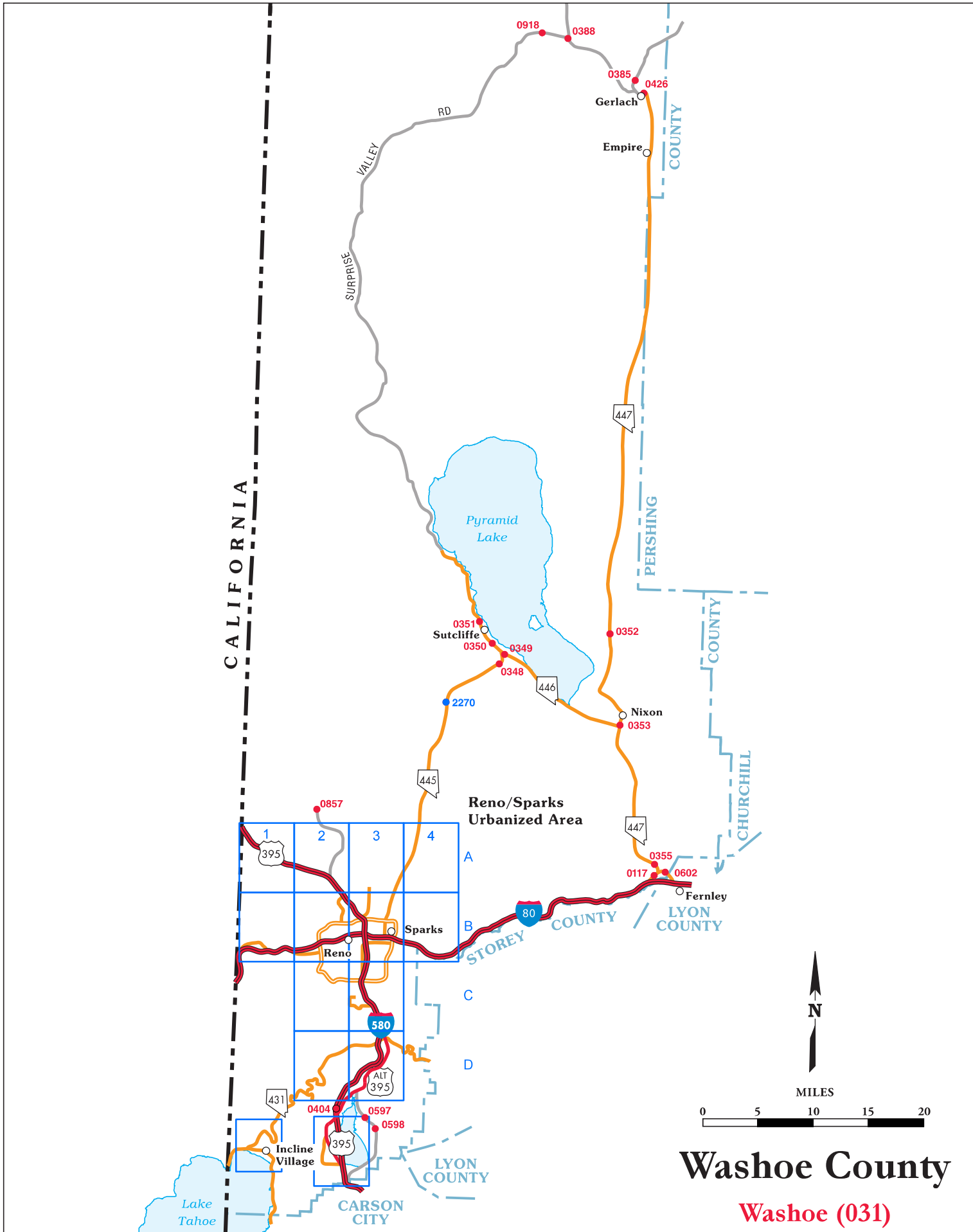
APPENDIX B:

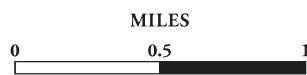
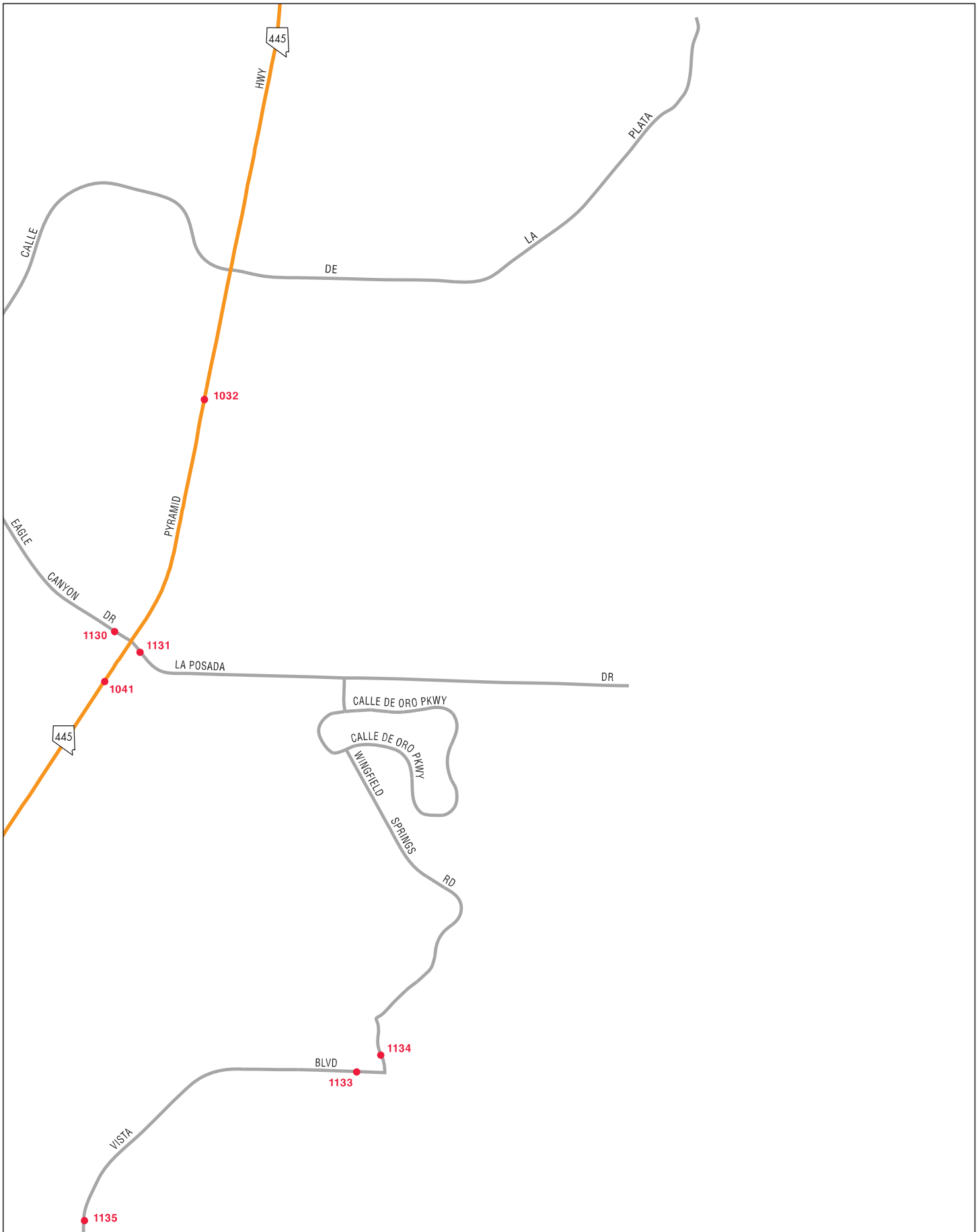
2013 WASHOE COUNTY TRAFFIC COUNTS



NEVADA







Station	Route / Location	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
		AADT	AADT	AADT	AADT	AADT	AADT	AADT	AADT	AADT	AADT
0311017	SR659, McCarran Bl, 500ft N of Plumb Ln.	25,500	25,500	26,600	24,000	21,000	20,000	22,000*	22,000*	23,000	22,500*
0311018	SR659, McCarran Bl, 365ft S of Plumb Ln.	19,100	19,400	19,900	18,000	16,000	15,000	16,000*	16,000	16,000	15,500*
0311019	IR580, 400ft S of Damonte Ranch Intch N/B off-ramp.	53,000	54,500*	57,000*	59,000	58,000*	56,000	56,000*	55,000*	54,500*	62,500*
0311027	US395, N/B on-ramp of the US-395/Clear Acre Intch.				1,200*	1,200	1,400	1,300	1,500	1,500	1,500
0311028	US395, N/B off-ramp of the US-395/Clear Acre Intch.				8,900*	8,400	8,400	8,300	8,700	7,600	8,500
0311031	SR341, 'C St', btwn Pinion & Kivett Ln	4,700	5,000	5,350	5,000	4,900	4,800	4,500	5,000	3,700	3,600
0311032	SR445, .375 mi N of Sunset Springs Rd.					10,000	10,000	10,000	10,000	9,600*	10,500
0311033	IR80, W/B off-ramp to US-395 N/B and S/B.				30,000	29,000	30,000*	29,000	30,000	28,000	29,000
0311035	IR80, W of Thisbe/Derby Dam Intch 'Exit 36'					25,000*	24,000*	24,000*	23,000*	23,000	24,500
0311039	Queens Wy, .1 mi E of Probasco Wy.	1,500	1,350	1,500	1,300	1,400	1,300	1,200	1,200	1,100	1,100
0311040	Lincoln Wy, 350 ft W of E McCarran Bl.	2,650	2,600	2,450	2,400	2,100	2,200	2,000	4,900	4,600	2,000
0311041	SR445, Pyramid Hw, .1 mi S of La Posada Rd.	26,100	28,800	30,500	31,000	27,000	27,000	28,000	28,000*	26,000	27,000
0311042	Red Baron Bl, 150ft N of Silver Lake Bl.	1,900	1,850	1,750	1,500	1,500	1,400	1,300	1,200	1,200*	1,200
0311043	Silver Lake Bl, 500ft S of Stead Bl.	6,500	6,550	5,900	6,000	5,700	5,600	5,800	5,600	5,200	6,300
0311044	Hunter Lake Dr, 300ft N of California Av.	4,100	3,950	4,050	3,700	3,100	2,600	2,300	2,300*	2,300	2,600
0311045	Greensburg Cr, .2 mi N of McCarran Bl.	400	420	390	380	360	350	330	330	350*	300*
0311046	Gibraltar Dr, 90ft S of Cashill Bl.	540	460	440	480	460	420	410	440	400	450

* Data Adjusted or Estimated

APPENDIX C:

INFORMATION REPORT: TRIP GENERATION BY ITE

Trip Generation

By ITE Technical Council Committee 6A6

The primary objective of Committee 6A6's report, here summarized, is to provide traffic and transportation engineers with a single document and guide on trip generation rates for all land uses and building types. It is intended that the full report, soon to be published by the Institute, will be updated periodically.

Members of Committee 6A6 were: Dan Cherepacha (M); Juergen A. Fehr (M); Christopher R. Fleet (A); Lawrence Gassman (M); Lawrence V. Hammel (M); Herman A. J. Kuhn (M); Clinton L. Lefler (M); Gary D. Long (M); and James B. Saag (M). Special thanks are given to the U.S. Department of Transportation, Federal Highway Administration for its assistance in computer programming and analysis.

Carl H. Buttke (M)
Chairman

Trip generation rates have been developed for the average weekday, Saturday and Sunday for the peak hours of the generator and of the adjacent street traffic. However, in some cases, only limited data could be obtained and thus may not be too indicative of a particular building type. This report is intended as a guide in estimating the number of trips which may be generated by a specific building or land use.

Variations in generation rates for the same building or land use type exist and have been identified in the report. Because of these variations, sample size and special characteristics of a site being analyzed, extreme care must be made in the use of the rates. The data in this report represents weighted averages of those collected throughout the United States since 1966. At specific sites, the traffic and transportation engineer may wish to modify the generation rate presented in this report because of public transportation service, proximity to other developments which may reduce vehicle trip making through walking or combining trips or because of special characteristics of the site or the surrounding area.

Definition of Terms. The following definitions of terms are presented to clarify the terminology used throughout the text and tables:

Trip: A single or one-direction vehicle movement with either the origin or destination (exiting or entering) inside the study site.

Trip End: The origin or destination of a trip. Each trip has two ends. On a daily basis, each end has two trips: one entering and one exiting for an attractor of trips, and one exiting and one entering for a producer of trips. In this report, trip end refers to a two-direction vehicle movement at the origin or destination of a trip.

Average Trip Rate: A weighted average of the number of trips or trip ends per unit of related independent variable, i.e., trip ends per dwelling unit, employee, etc. The average rate was calculated by summing all trips or trip ends and all independent variables where paired data was available and then dividing the trip sum by the sum of the independent variable to obtain a weighted average.

Average Weekday Vehicle Trip Ends (AWDVTE): The weighted 24-hour total of all vehicle trips counted to and from a study site from Monday through Friday.

Average Trip Rate for Peak Hour of Adjacent Street Traffic: The weighted average trip rate during the hour of the highest volume of traffic passing the site on adjacent streets between 7 and 9 A.M. or between 4 and 6 P.M.

Average Trip Rate for Peak Hour of Generator: The weighted trip rate during the hour of highest volume of traffic entering and exiting the study site in the A.M. or in the P.M. It may or may not coincide in time or volume with the trip rate for the peak hour of the adjacent street traffic.

Independent Variable: A physical measureable and predictable unit quantifying the study site or generator, i.e., building area, employees, seats, acres, dwelling units, etc.

Regression Equation: An expression of the optimal mathematical relationship

between two or more related items (variables) according to a specified criterion, as: $Y = a + bX$.

The objective in developing the relationship between X (independent variable) and Y (dependent variable) is to determine values of the parameters "a" and "b" so that the expected error involved in estimating the dependent variable given estimates of the independent variable will be a minimum.

Correlation Coefficient (R): A measure of the degree of linear association between two variables. The correlation coefficient indicates the degree of which the model estimated values account for the deviations in the individual observed values of the dependent variable from their mean value. Numerical magnitudes for "least squares" models range from -1 to +1 with larger absolute values representing higher degrees of linear association. The correlation coefficient for rate models is undefined when the use of a constant of trips is better than the use of the rate model (this does not occur with least square models) (Figure 1).

Data Collection Procedure

The data analyzed in this report was obtained from various local governmental agencies, consulting engineers, universities and colleges and technical reports from sections of the Institute of Transportation Engineers. No attempt was made to conduct original field surveys for this initial report.

Field Data Collection. Generally, the data has been collected with automatic counters varying from one weekday to seven days, by counting vehicular traffic entering and exiting a site. These counts cordoned the site and did not include through traffic. They were made on driveways of sufficient length to avoid double counts of turning vehicles. In some cases, counts were nondirectional and therefore did not separate entering from exiting vehicles. Manual counts supplemented some of the automatic counts to obtain vehicle occupancy and classification, to check the reliability of

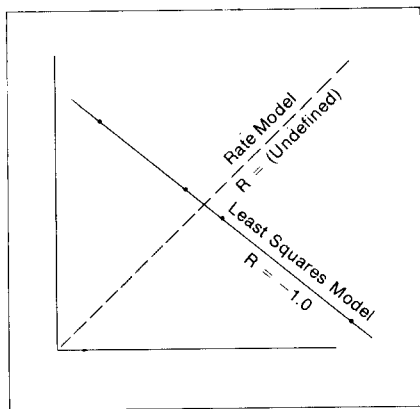


Figure 1.

the automatic counters and to obtain directional counts during peak periods where a nondirectional automatic count was being made. In other cases, only manual counts were made during peak periods. Therefore, all data summarized in this report results in vehicle trip generation rather than person trip generation.

Because some data provided only average weekday volumes, some only nondirectional peak hour volumes and some directional peak hour and average weekday volumes, separate analyses were made for each type of measurement to obtain generation rates for various time periods of the day or week. Therefore, in most cases, the peak hour entering plus exiting rates do not equal the total two-way rates. Before the reader uses these rates, an adjustment in the entering and exiting rates usually must be made to equal the total two-way rate.

Data concerning the generator or site was obtained either through personal interviews, actual measurements, telephone conversations or mail-back questionnaires.

Data Reports. In almost all cases, the data analyzed in this report was contained in published reports listed in the References, which appear in the full report. Additional data was provided from unpublished analyses by governmental agencies, firms or individuals. The References provide detailed information concerning specific generators; numbers at the bottom of the trip generation rates tables refer to References.

Generation Rate Analyses

The generation rate analyses were performed by coding the data from each source document and then, by use of computer, determining the related variables, the average trip generation rates and regression equations.

Coding Format. All data was coded

uniformly on a six-page input form. This form was established to permit additional land uses not studied thus far and to add other variables, if necessary. All data was coded to a Standard Metropolitan Statistical Area (SMSA) when known. The SMSA four-digit code was obtained from the 1970 Geographic Identification Code Scheme of the Bureau of the Census.

A three-digit land use code was established to identify the types of uses studied or requiring study. This code (see Appendix) can easily be expanded to include uses not presently identified.

The data coded and keypunched on cards permits additional computer analyses for any one land use or building type and an opportunity to examine the data from each set and source.

Statistical Programs. Three statistical computer programs were used to produce the rates and regression equations and their associated statistics:

1. *Statistics.* Statistics for each variable were developed using program BMD01D "Simple Data Description."* This program, part of a series of statistical programs developed by the University of California at Los Angeles, computes simple averages and provides measures of dispersion of the variables specified.

Certain methods for handling blanks and special values can be specified by the user. For this analysis, blanks were not counted and did not enter the computations as this situation was the result of missing data or data that was not available from the source studies.

The output of this program includes: means; standard deviations; standard errors of the means; maximum values; minimum values; ranges; and sample sizes. All items were calculated for each land use activity measured, e.g., number of employees, persons, vehicles, etc., and each trip variable. Only the maximum and minimum values and sample sizes were used from this program as the means produced are developed by averaging the mean of each set, and thus not a weighted average.

2. *Rates.* The rates (for all combinations of paired variables) were developed using program MATCH** which was written to obtain rates based on the totals of each variable that had valid data coded for each source study. These rates can be quite different from rates developed using BMD01D, which de-

velops a rate for each case first, then computes an average rate.

The output from this program (in matrix format) includes: number of observations; means of each dependent variable with respect to all independent variables; means of each independent variable with respect to all dependent variables; and trip rates for each independent/dependent variable combination. A flow chart of the program logic is included in the full report together with an example of the computer program output.

3. *Equations.* Equations were developed using the "Sub-Program Regression" in the Statistical Package for the Social Sciences (SPSS).* This is a stepwise multiple regression program which allows the choice of independent variables that will give the "best" final equation so that certain statistical limitations are satisfied. Use of a specified option allowed the deletion of cases which contain missing data values. Thus, if a value of either an independent or dependent variable were missing from the data, the case involving that variable was eliminated from the calculations.

The output of the program includes: variable means and standard deviations; simple correlation coefficients; and, for each step: the variables in the equation; variables not in the equation; the regression coefficients for each variable; the equation constant; R^2 ; standard error of estimate; degrees of freedom; and the F value.

Generation Rates

Vehicle trip generation rates, correlation analyses between average weekday vehicle trip ends and the independent variables and regression equations were made for land uses and/or building types within the following categories:

ITE Land Use Code	Description
000	Ports and Terminals
100	Industrial and Agricultural
200	Residential
300	Lodging
400	Recreation
500	Institutions
600	Medical
700	Office
800	Retail
900	Services

Table 1 summarizes the average weekday vehicle trip ends generation rates for each land use/building type studied. For each measured building or land use within the categories in the table, a description of each has been presented to-

*Complete user documentation, including brief descriptions of the statistical principles involved, is available in "BMD Biomedical Computer Programs Manual," published and distributed by the University of California Press, 2223 Fulton, Berkeley, California 94720.

** Documentation and source deck can be obtained from Dan H. Bryant, Urban Planning Division, Federal Highway Administration, Washington, D.C. 20590.

* Nie, Norman, Dale H. Bent and C. Hadlai Hull, *Statistical Package for the Social Sciences*, New York City: McGraw-Hill Book Co., 1970.

Table 1. Average Weekday Vehicle Trip Ends Generation Rate Summary.

ITE Land Use Code	Land Use of Building Type	Vehicle Trip Ends Rate
021	Commercial Airport	11.8/Employee
022	General Aviation Airport	6.5/Employee
110	General Light Industrial	3.2/Employee
130	Industrial Park	4.1/Employee
140	Manufacturing	2.2/Employee
150	Warehousing	4.3/Employee
210	Single Family Detached Unit	10.0/Unit
220	Apartment	6.1/Unit
230	Condominium	5.6/Unit
240	Mobile Home	5.4/Unit
310	Hotel	10.5/Occupied Room
320	Motel	9.6/Occupied Room
330	Resort Hotel	10.2/Occupied Room
411	City Park	60.0/Acre
412	County Park	5.1/Acre
413	State Park	0.6/Acre
420	Marina	3.8/Boat Berth
430	Golf Course	9.1/Acre
501	Military Base	1.8/Employee
520	Elementary School	0.5/Student
530	High School	1.2/Student
540	Junior/Community College	1.6/Student
550	University	2.4/Student
590	Library	41.8/1,000 gross square feet
610	Hospital	12.2/Bed
620	Nursing Home	2.7/Bed
630	Clinic	5.9/Employee
710	General Office Building	11.7/1,000 Gross Square Feet
720	Medical Office	75.0/1,000 Gross Square Feet
820	Shopping Center	116.0 to 26.5/1,000 Gross Square Feet
831	Quality Restaurant	56.3/1,000 Gross Square Feet
832	High Turnover Restaurant	164.4/1,000 Gross Square Feet
833	Drive-in Restaurant	553.0/1,000 Gross Square Feet
844	Auto Service Station	748.0/Station
850	Supermarket	125.0/1,000 Gross Square Feet
851	Convenience Market	578.0/1,000 Gross Square Feet

Table 2. Summarization of Rate Tables of Different Types of Dwelling Units.

Type of Dwelling Unit	Average Weekday Average	Vehicle Trip Maximum	Ends per Unit Minimum
210—Single Family Detached Unit	10.0	21.9	4.3
220—General Apartment	6.1	12.3	0.5
221—Low-Rise Apartment	5.4	5.5	4.7
222—High-Rise Apartment	4.3	6.4	3.1
230—Condominium	5.6	5.6	5.6
240—Mobile Home	5.4	6.8	2.8
250—Retirement Community	3.3	4.9	2.8
270—Planned Unit Development	7.9	10.0	6.2

Table 3. Correlation Between Average Weekday Vehicle Trip Ends and Independent Variables for Single Family Detached Houses.

Independent Variable	Correlation Coefficient (R)
Persons	0.995
Number of Units	0.937
Number of Vehicles	
Owned	0.999
Units per Acre	0.999
Acres	0.339

gether with the trip characteristics, trip generation rate tables and data limitations. The following is an example of the detail provided for each building type, taken from the section concerning residential land uses (200) and, more specifically, single family detached housing (210).

Residential 200. This section summarizes trip generation for all types of residential dwellings. Each category of residential housing, particularly single-family detached housing and apartments, used data from a wide range of units with varying sizes, price ranges, locations and ages. Consequently, there could be as wide a variation in trips generated within each category as there is between different categories. As expected, dwelling units that were larger in size, more expensive or farther away from the Central Business District (CBD) had a higher trip generation rate per unit than those smaller in size, less expensive or closer to the CBD. However, other factors such as geographic location within the country and type of adjacent and nearby development also had an effect on the generation rate. Thus, only the above general statement (instead of some linear relationship) concerning size, cost and location of dwelling unit and the income of the occupant could be made.

Table 2 summarizes the rate tables of the different types of dwelling units. As expected, the single family detached unit has the highest generation rate of all residential uses. This is followed by apartments, with retirement communities having the lowest rate. The rate for planned unit developments which have a mix of single family, detached units and apartments is in between these two types. The single family detached unit has the highest rate because: they are the largest units in size and have more people and more vehicles per unit than the other types of units; they are generally located farther away from shopping centers, employment areas and other attractors than are other types; and they have fewer alternate modes available because they are not as concentrated as other types of units.

Single Family Detached Housing 210. Any single family detached home on an individual lot is included in this category. A typical example is a home in a modern subdivision.

Slightly over 200 different studies were made of subdivisions containing single family homes. The average size subdivision contained 506 dwelling units for a total of more than 105,000 dwellings studied. These subdivisions were located primarily in suburban areas throughout the United States.

The average development density was 3.5 units per acre with 3.7 persons per

Table 4.

SUMMARY OF TRIP GENERATION RATES								
Land Use/Building Type		Single Family Detached House			ITE Land Use Code			210
Independent Variable—Trips per		Dwelling Unit						
			Average Trip Rate	Maximum Rate	Minimum Rate	Correlation Coefficient	Number of Studies	Average Size of Independent Variable/Study
Average Weekday Vehicle Trip Ends			10.0	21.9	4.3		208	506
Peak Hour of Adjacent Street Traffic	A.M.	Enter	0.3	0.6	0.1		37	248
		Exit	0.6	1.7	0.2		38	258
		Total	0.8	2.3	0.4		173	269
	P.M.	Enter	0.7	1.8	0.3		38	245
		Exit	0.4	1.2	0.1		38	245
		Total	1.0	3.0	0.4		196	292
Peak Hour of Generator	A.M.	Enter	0.3	0.6	0.1		38	245
		Exit	0.6	1.7	0.2		38	245
		Total	0.8	2.3	0.4		175	271
	P.M.	Enter	0.7	1.8	0.3		40	252
		Exit	0.4	1.2	0.1		38	245
		Total	1.0	3.0	0.4		193	261
Saturday Vehicle Trip Ends			10.1	14.7	6.3		43	292
Peak Hour of Generator	Enter	0.5	1.0	0.4		21	273	
	Exit	0.5	0.7	0.3		21	273	
	Total	1.0	1.7	0.7		35	296	
Sunday Vehicle Trip Ends			8.8	11.7	0.5		38	301
Peak Hour of Generator	Enter	0.5	0.8	0.3		19	252	
	Exit	0.5	1.2	0.4		19	252	
	Total	1.0	2.0	0.7		34	284	
Source Numbers 1, 4, 5, 6, 7, 8, 11, 12, 13, 14, 16, 19, 20, 21, 24, 26, 34, 35, 36, 38, 40, 71, 72 (references appear in the committee's full report, available from ITE).								
ITE Technical Committee 6A-6—Trip Generation Rates								
Date: _____								

unit. The average automobile ownership measured was 1.6 vehicles per unit.

Trip Characteristics. The analysis of correlation between average weekday vehicle trip ends and all measured independent variables is shown in Table 3.

Although the number of vehicles and number of residents have the highest correlations with average weekday trip ends, these variables have limited use. This is because the number of vehicles and residents is difficult to obtain and very few of the studies contained this data, and because the data is also difficult to predict. The number of units has a high correlation with average weekday vehicle trip ends. This variable is best because it is contained in most studies, it is easy to project and convenient to use.

As indicated in Table 4, single family dwellings generate on the average 10 vehicle trip ends per weekday per dwelling unit. Saturday vehicle trip generation is slightly higher; on Sunday, it is lower.

The regression equations developed for calculating the average weekday vehicle trip ends (AWDVTE) are as follows:

$$\begin{aligned} \text{AWDVTE} &= 138 + 8.17 \times \text{Units} \\ &\quad R = 0.937 \\ &= -100 + 2.55 \times \text{Persons} \\ &\quad R = 0.995 \\ &= -185 + 6.76 \times \text{Vehicles} \\ &\quad R = 0.999 \end{aligned}$$

Some data is from studies conducted in the late 1960s and therefore should be updated. Additional data concerning auto occupancy and other modes of transportation is necessary.

Data Limitations

As indicated in the trip generation table, the data presented has limitations. The basic limitation, and one reason for variations in rates, is the sample size of counts at some generators and for peak hours for most generators. Additional data is needed for most generators to state more accurately the peak hour entering and exiting rates.

Another reason for variation in the generation rates is caused by different lengths of count periods and the time of the year the traffic volumes were counted. There exist daily and seasonal variations for most generators. In some cases, full week counts were made to define the average weekday and in other cases, a single day's count was obtained. In almost no case was the generation measurement adjusted for seasonal variations. This is especially true for shopping centers.

Variations in generation rates may also exist because of the location of the generator studied either within a metropolitan area or within the U.S. These locations have been identified in the data

sets but no separate analyses have been made to determine if a difference exists because of location.

In all cases, the generation rates presented in this report represent driveway volumes of vehicles entering and exiting the site. For some building types, such as retail establishments, the generation rate could overstate the volume of traffic when assigned to the adjacent street system because some traffic is attracted to the site from the passing stream of traffic. That portion of the total generated traffic attracted to the site would pass on the adjacent street system whether or not the site were developed. It is essential that heavy effort be focused on defining how much of the total generated traffic to all building types would be attracted from the passing adjacent street traffic in order to define more accurately the traffic impact on the street system caused by development of a site.

The data summarized in this report is only for vehicle trip ends and does not include all person trip ends by mode. More data is needed for each building and land use type to define vehicle occupancy rates and person trip generation rates by mode of travel.

More data is also needed to define generation rates for the following types of buildings or land uses:

- water ports
- truck terminals
- railroad terminals
- low- and high-rise apartments
- condominiums
- retirement communities
- residential planned unit developments containing a mixture of duplexes, apartments and/or single family units
- day care centers
- churches
- museums
- libraries
- hospitals
- nursing homes
- clinics
- medical offices
- government buildings
- specialty shopping centers containing a mixture of small specialty shops and restaurants
- building materials retail establishments
- high quality restaurants
- drinking establishments
- banks, savings and loans, real estate offices, insurance offices and other financial services
- recreational uses.

Update Procedure

The Institute is establishing a formal procedure to update this report and to add data for additional land uses or building types not sufficiently covered in the report and to develop information on person trip ends by mode.

It is recommended that all ITE districts and sections be involved in this continual update procedure. These organizations, through their respective technical committees, can collect data from at least one or more sites annually and send it either on keypunch cards or on the trip generation coding sheets to the ITE Technical Council. In many cases, traffic counters, or even personnel, may be available from time to time to conduct a generation study in a given area.

It is also proposed that ITE work with the U.S. Department of Transportation, state, county and city departments of transportation or traffic engineering and with private consultants to obtain additional current data and include it in the updated reports. In this manner, a continual, uniform method of obtaining and summarizing the current trip generation data for all types of special generators, land uses and building types will be produced.

To implement this update procedure, the ITE Technical Council is establishing a permanent committee on trip generation rates for special generators, land uses or building types to update this report at least every two years.

The function of this committee will be to:

1. Store all trip generation data.
2. Coordinate with ITE district and section technical committees, government agencies and private consultants for the collection of additional data.
3. Distribute trip generation coding sheets and instructions to those collecting data.
4. Maintain computer program for trip generation analyses and summarization.
5. Maintain and modify when necessary a uniform procedure for collecting data.
6. Summarize trip generation data.
7. Conduct special trip generation analyses when appropriate.
8. Revise trip generation rate tables and appropriate text of report on basis of the additional data.
9. Establish data collection needs in areas where deficiencies exist or where little information is available.

The following procedure is presented to obtain new generation data from actual traffic volume counts. It is recommended that it be followed when collecting data and to transmit it on the coding sheets shown in the full report or on keypunch cards.

- Count a special generator where automatic counts can be made on drives without double-counting turning vehicles and without counting through traffic. Preferably, directional counts should be made. The site should be self-contained with adequate parking not shared by other activities.

- Conduct seven-day automatic counts during a typical week of the year to provide data concerning the average weekday, Saturday and Sunday and peak hours.
- Supplement automatic counts with a manual count for several hours on a weekday to record hourly inbound and outbound vehicular traffic by classification and vehicle occupancy and to compare with corresponding automatic counters to determine a counter factor for adjusting the raw automatic counts.
- Where recording or directional counts cannot be made automatically, manual counts should be made on a typical weekday during the A.M. and P.M. peak two-hour periods of the special generator being counted and that of the adjacent street traffic to record the peak-hour entering and exiting volumes.
- Where recording or directional counts cannot be made automatically, manual counts should be made on a typical weekday during the A.M. and P.M. peak two-hour periods of the special generator being counted and that of the adjacent street traffic to record the peak-hour entering and exiting volumes.
- Where possible, supplement the above work with manual counts or controlled interviews to determine average weekday person trip ends by mode and determine how many trips were actually generated by the site and how many trips were attracted to the site from the adjacent street traffic normally passing the site.
- Data concerning the site should be obtained through interviews with the site owner or manager and through physical measurements, if necessary. Information on the maximum number of related variables should be obtained to determine which is the best related to trip generation. In all cases, it is essential to obtain the number of employees, the gross building area, the number of occupied rooms or dwelling units, the population and the acreage of development.
- Code data on coding forms by following instructions contained in the full report.
- Obtain trip generation bibliography number from permanent committee and, if necessary, a new land use or building type code if one does not already exist.
- Transmit data to Technical Council.

APPENDIX

Trip Generation Land Use Code

000 Port and Terminal

- 010 Water Port
- 020 Airport
- 021 Commercial Airport
- 022 General Aviation Airport
- 030 Truck Terminal
- 040 Railroad Terminal

100 Industrial/Agricultural

- 110 General Light Industrial
- 120 General Heavy Industrial
- 130 Industrial Park
- 140 Manufacturing
- 150 Warehousing
- 160 Construction
- 170 Utility
- 180 Agricultural

200 Residential

- 210 Single Family Detached Housing
- 220 Apartment
- 221 Low-Rise Apartment
- 230 Condominium
- 231 Low-Rise Condominium
- 232 High-Rise Condominium
- 240 Mobile Home
- 250 Retirement Community
- 260 Recreational Home
- 270 Planned Unit Development

300 Lodging

- 310 Hotel
- 320 Motel
- 330 Resort Hotel

400 Recreational

- 410 Park
- 411 City Park
- 412 County Park
- 413 State Park
- 420 Marina
- 430 Golf Course
- 440 Theater
- 441 Live Theater
- 442 Music Theater
- 443 Movie-Theater (sit down)
- 444 Drive-In Theater
- 450 Stadium
- 451 Baseball/Football
- 452 Horse Race
- 453 Auto Race
- 454 Dog Race
- 460 Camp
- 480 Amusement Park

500 Institutional

- 501 Military Base
- 510 Preschool
- 520 Elementary School
- 530 High School
- 540 Junior/Community College
- 550 University
- 560 Church
- 570 Court
- 580 Museums/Gallery
- 590 Library

600 Medical

- 610 Hospital
- 620 Nursing Home
- 630 Clinic

700 Office

- 710 General Office Building
- 720 Medical Office Building
- 730 Government Office Building
- 740 Civic Center
- 750 Office Park
- 760 Research Center

800 Retail

- 810 Retail/General Merchandise
- 820 Shopping Center
- 821 Regional Shopping Center—over 500,000 G.L.F.A.
- 822 Community Shopping Center—100,000 to 500,000 G.L.F.A.
- 823 Neighborhood Shopping Center—under 100,000 G.L.F.A.
- 824 Discount Shopping Center
- 825 Specialty Retail Center
- 826 Specialty Store
- 827 Building Material
- 830 Restaurant
- 831 Quality Restaurant
- 832 High Turnover Sit-Down Restaurant
- 833 Drive-In Restaurant
- 834 Drinking Place
- 840 Auto
- 841 New Car Sale
- 842 Used Car Sale
- 843 Auto Parts Sale
- 844 Service Station
- 845 Tire, Battery and Accessory
- 846 Car Wash
- 847 Auto Repair
- 848 Highway Oasis (including truck fuel, minimal trucker and mechanical services)
- 849 Truck Stop (including food, auto and truck mechanical services, trucker supplies and trucker overnight sleeping accommodations)
- 850 Food Store
- 851 Convenience Market
- 860 Wholesale
- 870 Apparel
- 890 Furniture

900 Services

- 910 Financial
- 911 Bank (walk-in)
- 912 Drive-In Bank
- 913 Savings and Loan (walk-in)
- 914 Drive-In Savings and Loan
- 915 Stock Broker
- 916 Lending Agency
- 920 Real Estate
- 930 Insurance

APPENDIX D:

TRIP GENERATION RATES, PLOTS AND EQUATIONS BY ITE, 6TH EDITION

INSTITUTE OF TRANSPORTATION ENGINEERS COMMON TRIP GENERATION RATES (PM Peak Hour)

(Trip Generation Manual, 9th Edition)

Code	Description	Unit of Measure	Trips Per Unit
PORT AND TERMINAL			
30	Truck Terminal	Acres	6.55
90	Park and Ride Lot with Bus Service	Parking Spaces	0.62
INDUSTRIAL			
110	General Light Industrial	1,000 SF	0.97
120	General Heavy Industrial	Acres	2.16
130	Industrial Park	1,000 SF	0.85
140	Manufacturing	1,000 SF	0.73
150	Warehousing	1,000 SF	0.32
151	Mini-Warehouse	1,000 SF	0.26
152	High-Cube Warehouse	1,000 SF	0.12
170	Utilities	1,000 SF	0.76
RESIDENTIAL			
210	Single-Family Detached Housing	Dwelling Units	1.00
220	Apartment	Dwelling Units	0.62
221	Low-Rise Apartment	Dwelling Units	0.58
230	Residential Condominium / Townhouse	Dwelling Units	0.52
240	Mobile Home Park	Dwelling Units	0.59
251	Senior Adult Housing - Detached	Dwelling Units	0.27
252	Senior Adult Housing - Attached	Dwelling Units	0.25
253	Congregate Care Facility	Dwelling Units	0.17
254	Assisted Living	Beds	0.22
255	Continuing Care Retirement Community	Dwelling Units	0.16
LODGING			
310	Hotel	Rooms	0.60
320	Motel	Rooms	0.47
330	Resort Hotel	Rooms	0.42
RECREATIONAL			
411	City Park	Acres	0.19
412	County Park	Acres	0.09
413	State Park	Acres	0.07
415	Beach Park	Acres	1.30
416	Campground / Recreation Vehicle Park	Camp Sites	0.27
417	Regional Park	Acres	0.20
420	Marina	Berths	0.19
430	Golf Course	Acres	0.30
431	Miniature Golf Course	Holes	0.33

Code	Description	Unit of Measure	Trips Per Unit
432	Golf Driving Range	Tees / Driving Positions	1.25
433	Batting Cages	Cages	2.22
435	Multi-Purpose Recreational Facility	Acres	5.77
437	Bowling Alley	1,000 SF	1.71
441	Live Theater	Seats	0.02
443	Movie Theater without Matinee	1,000 SF	6.16
444	Movie Theater with Matinee	1,000 SF	3.80
445	Multiplex Movie Theater	1,000 SF	4.91
452	Horse Race Track	Acres	4.30
454	Dog Race Track	Attendance Capacity	0.15
460	Arena	Acres	3.33
473	Casino / Video Lottery Establishment	1,000 SF	13.43
480	Amusement Park	Acres	3.95
488	Soccer Complex	Fields	17.70
490	Tennis Courts	Courts	3.88
491	Racquet / Tennis Club	Courts	3.35
492	Health / Fitness Club	1,000 SF	3.53
493	Athletic Club	1,000 SF	5.96
495	Recreational Community Center	1,000 SF	1.45
INSTITUTIONAL			
520	Elementary School	1,000 SF	1.21
522	Middle School / Junior High School	1,000 SF	1.19
530	High School	1,000 SF	0.97
536	Private School (K-12)	Students	0.17
540	Junior / Community College	1,000 SF	2.54
560	Church	1,000 SF	0.55
565	Daycare Center	1,000 SF	12.46
566	Cemetery	Acres	0.84
571	Prison	1,000 SF	2.91
580	Museum	1,000 SF	0.18
590	Library	1,000 SF	7.30
591	Lodge / Fraternal Organization	Members	0.03
MEDICAL			
610	Hospital	1,000 SF	0.93
620	Nursing Home	1,000 SF	0.74
630	Clinic	1,000 SF	5.18
640	Animal Hospital / Veterinary Clinic	1,000 SF	4.72

Code	Description	Unit of Measure	Trips Per Unit
OFFICE			
710	General Office Building	1,000 SF	1.49
714	Corporate Headquarters Building	1,000 SF	1.41
715	Single Tenant Office Building	1,000 SF	1.74
720	Medical-Dental Office Building	1,000 SF	3.57
730	Government Office Building	1,000 SF	1.21
732	United States Post Office	1,000 SF	1.22
733	Government Office Complex	1,000 SF	2.85
750	Office Park	1,000 SF	1.48
760	Research and Development Center	1,000 SF	1.07
770	Business Park	1,000 SF	1.29
RETAIL			
812	Building Materials and Lumber Store	1,000 SF	4.49
813	Free-Standing Discount Superstore	1,000 SF	4.35
814	Variety Store	1,000 SF	6.82
815	Free Standing Discount Store	1,000 SF	4.98
816	Hardware / Paint Store	1,000 SF	4.84
817	Nursery (Garden Center)	1,000 SF	6.94
818	Nursery (Wholesale)	1,000 SF	5.17
820	Shopping Center	1,000 SF	3.71
823	Factory Outlet Center	1,000 SF	2.29
826	Specialty Retail Center	1,000 SF	2.71
841	New Car Sales	1,000 SF	2.62
842	Recreational Vehicle Sales	1,000 SF	2.54
843	Automobile Parts Sales	1,000 SF	5.98
848	Tire Store	1,000 SF	4.15
850	Supermarket	1,000 SF	9.48
851	Convenience Market (Open 24 Hours)	1,000 SF	52.41
852	Convenience Market (Open 15-16 Hours)	1,000 SF	34.57
853	Convenience Market with Gasoline Pumps	1,000 SF	50.92
854	Discount Supermarket	1,000 SF	8.34
857	Discount Club	1,000 SF	4.18
860	Wholesale Market	1,000 SF	0.88
861	Sporting Goods Superstore	1,000 SF	1.84
862	Home Improvement Superstore	1,000 SF	2.33
863	Electronics Superstore	1,000 SF	4.50
864	Toy / Children's Superstore	1,000 SF	4.99
866	Pet Supply Superstore	1,000 SF	3.38
867	Office Supply Superstore	1,000 SF	3.40
875	Department Store	1,000 SF	1.87

Code	Description	Unit of Measure	Trips Per Unit
876	Apparel Store	1,000 SF	3.83
879	Arts and Craft Store	1,000 SF	6.21
880	Pharmacy / Drugstore without Drive-Through Window	1,000 SF	8.4
881	Pharmacy / Drugstore with Drive-Through Window	1,000 SF	9.91
890	Furniture Store	1,000 SF	0.45
896	DVD/Video Rental Store	1,000 SF	13.60
SERVICES			
911	Walk-In Bank	1,000 SF	12.13
912	Drive-In Bank	1,000 SF	24.30
918	Hair Salon	1,000 SF	1.93
925	Drinking Place	1,000 SF	11.34
931	Quality Restaurant	1,000 SF	7.49
932	High-Turnover (Sit-Down) Restaurant	1,000 SF	11.15
933	Fast Food Restaurant without Drive-Through Window	1,000 SF	26.15
934	Fast Food Restaurant with Drive-Through Window	1,000 SF	33.84
935	Fast Food Restaurant with Drive-Through Window and No Indoor Seating	1,000 SF	153.85
936	Coffee / Donut Shop without Drive-Through Window	1,000 SF	40.75
937	Coffee / Donut Shop with Drive-Through Window	1,000 SF	42.8
938	Coffee / Donut Shop with Drive-Through Window and No Indoor Seating	1,000 SF	75
940	Bread / Donut / Bagel Shop with Drive-Through Window	1,000 SF	18.99
941	Quick Lubrication Vehicle Shop	Service Bays	5.19
942	Automobile Care Center	1,000 SF	3.11
943	Automobile Parts and Service Center	1,000 SF	4.46
944	Gasoline / Service Station	Fueling Positions	13.87
945	Gasoline / Service Station with Convenience Market	Fueling Positions	13.51
946	Gasoline / Service Station with Convenience Market and Car Wash	Fueling Positions	13.94
947	Self Service Car Wash	Stalls	5.54
948	Automated Car Wash	1,000 SF	14.12
950	Truck Stop	1,000 SF	13.63

Note: All land uses in the 800 and 900 series are entitled to a "passby" trip reduction of 60% if less than 50,000 ft² or a reduction of 40% if equal to or greater than 50,000 ft².

* Approximated by 10% of Weekday average rate.

APPENDIX E:
TRIP GENERATION RATES, 9TH EDITION

TRIP GENERATION

6th Edition • Volume 1 of 3

TRIP GENERATION RATES, PLOTS, AND EQUATIONS

- Port and Terminal (Land Uses 000-099)
- Industrial/Agricultural (Land Uses 100-199)
- Residential (Land Uses 200-299)
- Lodging (Land Uses 300-399)
- Recreational (Land Uses 400-499)



Institute of Transportation Engineers

Trip Generation, 6th Edition

An Informational Report of the
Institute of Transportation Engineers

Volume 1 of 3

The Institute of Transportation Engineers (ITE) is an international educational and scientific association of transportation and traffic engineers and other professionals who are responsible for meeting mobility and safety needs. The Institute facilitates the application of technology and scientific principles to research, planning, functional design, implementation, operation, policy development and management for any mode of transportation by promoting professional development of members, supporting and encouraging education, stimulating research, developing public awareness, and exchanging professional information; and by maintaining of a central point of reference and action.

Founded in 1930, the Institute serves as a gateway to knowledge and advancement through meetings, seminars, and publications; and through our network of approximately 15,000 members working in some 80 countries. The Institute also has more than 70 local and regional chapters and more than 90 student chapters that provide additional opportunities for information exchange, participation and networking.



Institute of Transportation Engineers

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Single-Family Detached Housing (210)

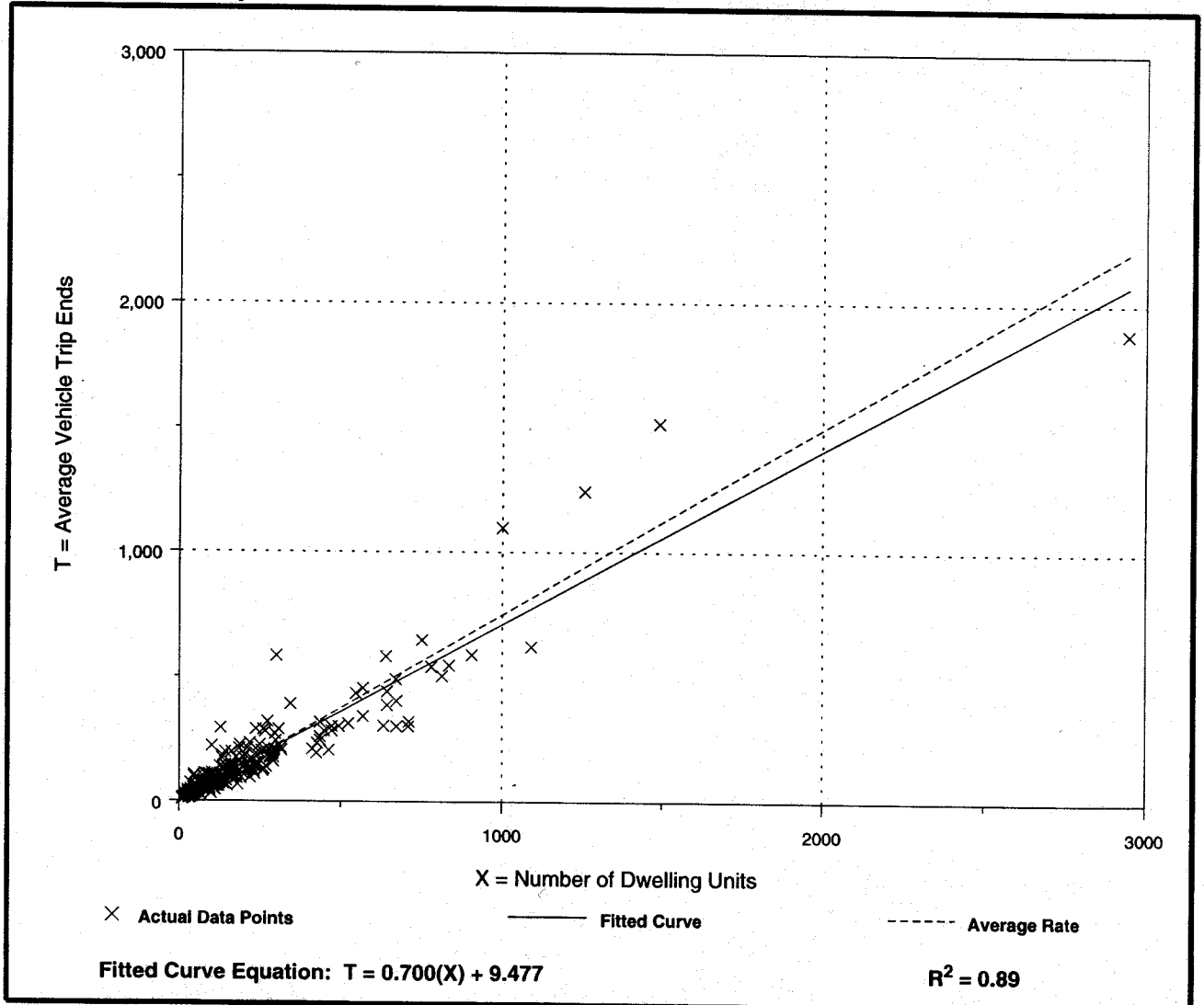
Average Vehicle Trip Ends vs: Dwelling Units
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.

Number of Studies: 271
 Avg. Number of Dwelling Units: 202
 Directional Distribution: 25% entering, 75% exiting

Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.75	0.33 - 2.27	0.90

Data Plot and Equation



Land Use: 210

Single-Family Detached Housing

Description

Single-family detached housing includes all single-family detached homes on individual lots. A typical site surveyed is a suburban subdivision.

Additional Data

The peak hour of the generator typically coincides with the peak hour of the adjacent street traffic.

The sites were surveyed from the late 1960s to the mid-1990s throughout the United States and Canada.

The number of vehicles and the number of residents have a high correlation with average weekday vehicle trip ends. The use of these variables is limited, however, because the number of vehicles and residents is often difficult to obtain or predict. The number of dwelling units is generally used as the independent variable of choice because it is usually readily available, easy to project, and has a high correlation with average weekday vehicle trip ends.

This land use includes data from a wide variety of units with different sizes, price ranges, locations, and ages. Consequently, there is a wide variation in trips generated within this category. As expected, dwelling units that were larger in size, more expensive, or farther away from the central business district (CBD) had a higher rate of trip generation per unit than those smaller in size, less expensive, or closer to the CBD. Other factors, such as geographic location and type of adjacent and nearby development, may also have had an effect on the site trip generation.

Single-family detached units have the highest trip generation rate per dwelling unit of all residential uses, because they are the largest units in size and have more residents and more vehicles per unit than other residential land uses; they are generally located farther away from shopping centers, employment areas, and other trip attractors than are other residential land uses; and they generally have fewer alternate modes of transportation available, because they are typically not as concentrated as other residential land uses.

Source Numbers

1, 4, 5, 6, 7, 8, 11, 12, 13, 14, 16, 19, 20, 21, 26, 34, 35, 36, 38, 40, 71, 72, 84, 91, 98, 100, 105, 108, 110, 114, 117, 119, 157, 167, 177, 187, 192, 207, 211, 246, 275, 283, 293, 300, 319, 320, 357, 384, 435

Single-Family Detached Housing (210)

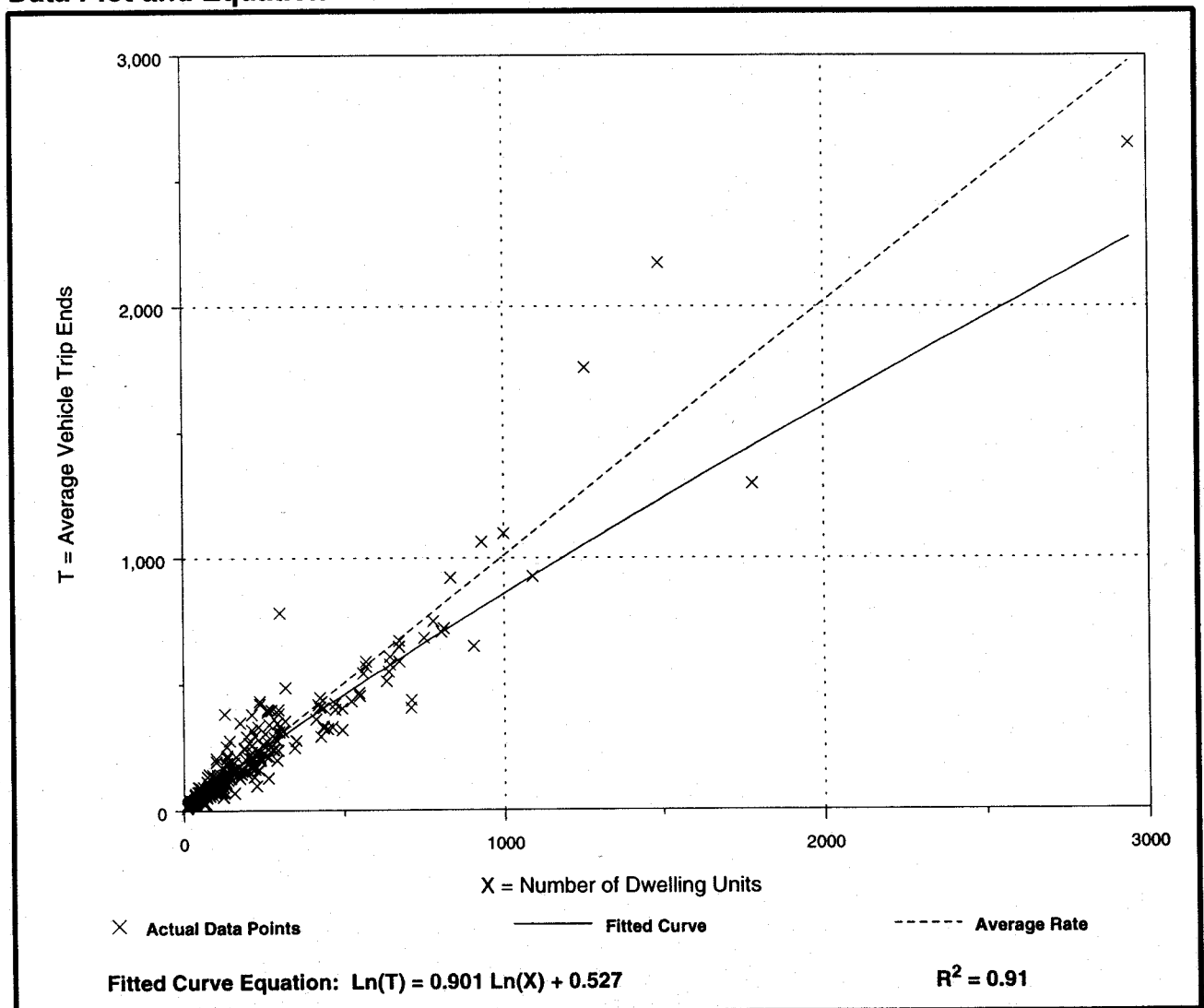
Average Vehicle Trip Ends vs: Dwelling Units
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.

Number of Studies: 294
 Avg. Number of Dwelling Units: 216
 Directional Distribution: 64% entering, 36% exiting

Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
1.01	0.42 - 2.98	1.05

Data Plot and Equation



Single-Family Detached Housing (210)

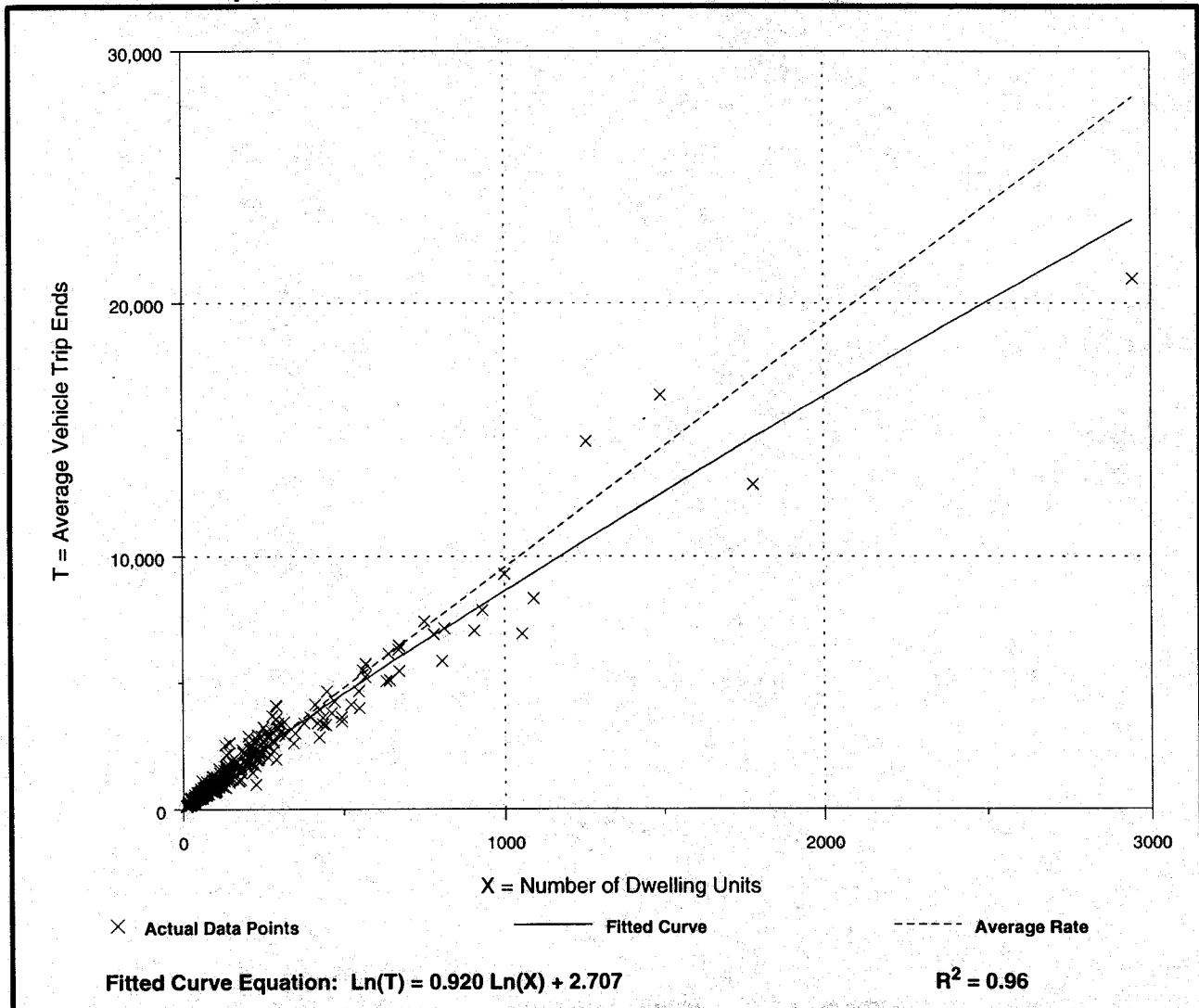
Average Vehicle Trip Ends vs: Dwelling Units
On a: Weekday

Number of Studies: 348
Avg. Number of Dwelling Units: 198
Directional Distribution: 50% entering, 50% exiting

Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
9.57	4.31 - 21.85	3.69

Data Plot and Equation



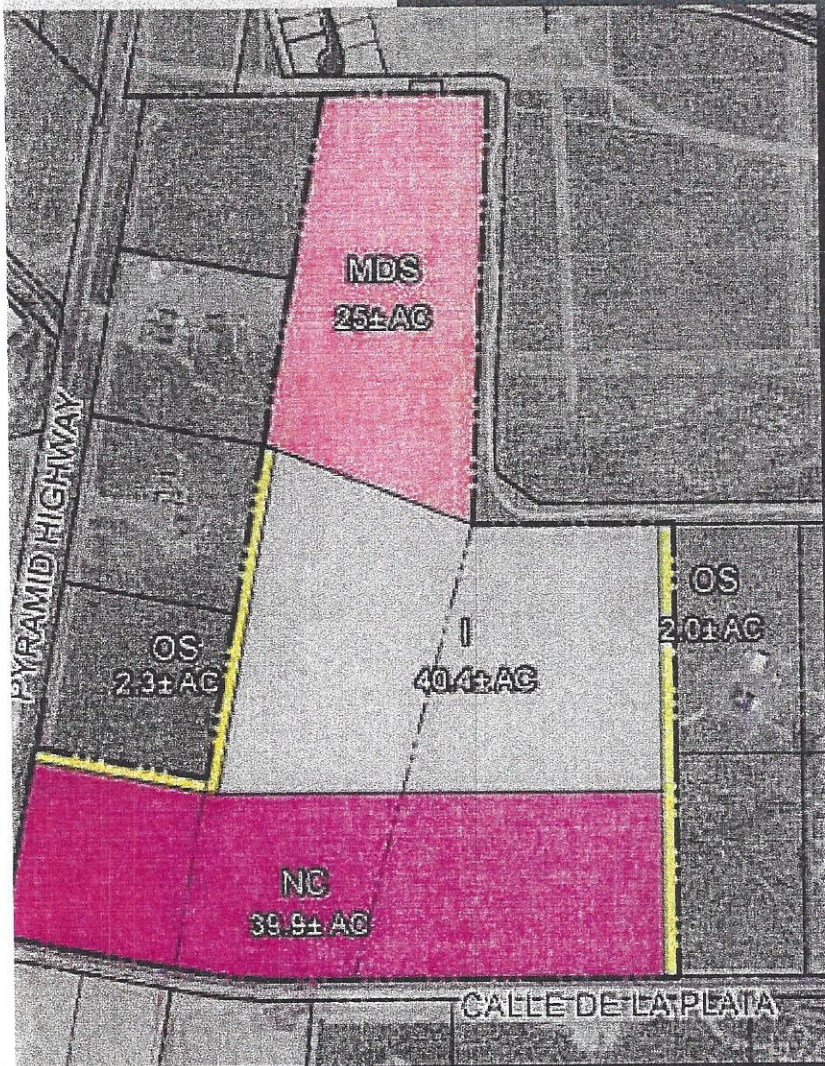
APPENDIX F:

VILLAGE AT THE PEAK TRAFFIC IMPACT STUDY

(FEHR & PEERS, AUGUST 2009)



VILLAGE AT THE PEAK TRAFFIC IMPACT STUDY



Submitted to: **Village at the Peak**

Submitted by: **Fehr & Peers**
50 W. Liberty Street, Suite 301
Reno, NV 89501

August 2009

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EXECUTIVE SUMMARY

This study evaluates the potential traffic impacts of the proposed Village at the Peak zoning amendment in northern Spanish Springs on the nearby roadway system.

PROJECT DESCRIPTION

The Village at the Peak site is located on the northeast quadrant of the Calle de la Plata/Pyramid Highway intersection in Washoe County, Nevada. The proposed zoning consists of single family residential, neighborhood commercial, and industrial land uses.

PROJECT ACCESS

Two driveways are proposed to serve the Village at the Peak site. Driveway A and Driveway B are to be located on Calle de la Plata. Driveway A was analyzed as a four leg, two lane roundabout intersection, and Driveway B was analyzed as a three leg, side-street stop controlled intersection.

STUDY INTERSECTIONS AND SCENARIOS

The following study intersections were analyzed consistent with previous studies of this site:

- Calle de la Plata/Pyramid Highway
- Calle de la Plata/Project Driveway A (plus project conditions only)
- Calle de la Plata/Project Driveway B (plus project conditions only)

AM and PM weekday peak hour intersection level of service was analyzed for the following conditions:

- Existing Conditions
- 2018 Background Conditions
- 2018 Background Plus Project Conditions

Daily roadway segment level of service was analyzed for the following conditions:

- 2018 Background Conditions and 2018 Background Plus Project Conditions
- 2040 Background Conditions and 2040 Background Plus Project Conditions

EXISTING CONDITIONS

AM and PM weekday peak hour intersection turning movement volumes were collected in August 2008 and used to analyze intersection level of service. The Calle de la Plata/Pyramid Highway intersection currently operates at LOS F during the AM and PM peak hours.

PROJECT CONDITIONS

The estimated trip generation for the proposed Village at the Peak zoning is 6,190 daily, 662 AM peak hour, and 877 PM peak hour vehicle trips. Internal capture and pass-by reductions are included in the trip generation estimate.

EXISTING PLUS PROJECT CONDITIONS

The Calle de la Plata/Pyramid Highway intersection operates at LOS F under existing plus project conditions without planned regional roadway improvements. The Calle de la Plata/Driveway A and Calle de la Plata/Driveway B intersections will operate at acceptable levels of service with side-street stop controls.

2018 BACKGROUND CONDITIONS

2018 background condition intersection turning movement volumes include regional growth and trips generated by the following project in the surrounding area:

- Village Green Commercial Center (southeast corner of Pyramid Highway/Calle de la Plata intersection)
- Campo Rico Business Center (north of Calle de la Plata along Pyramid Highway)
- Calle de la Plata Retail Project (northwest corner of Pyramid Highway/Calle de la Plata intersection)

The following planned regional roadway improvements listed in the 2040 RTP were also included in the 2018 background conditions analysis:

- Pyramid Highway – Widen from two lanes to four lanes, from Egyptian Drive to Calle de la Plata
- Pyramid Highway – Widen from two lanes to four lanes, from Calle de la Plata to Winnemucca Ranch Road
- Pyramid Highway – Widen from four lanes to six lanes, from Egyptian Drive to Calle de la Plata

The Spanish Springs Area Plan also recommends a traffic signal at the Calle de la Plata/Pyramid Highway intersection which was included in the analysis.

With planned regional roadway improvements, the Calle de la Plata/Pyramid Highway intersection is expected to operate at LOS C and D during the AM and PM peak hours, respectively.

The Pyramid Highway and Calle de la Plata daily traffic volumes near the project site were compared to the Regional Transportation Commission's (RTC) daily level of service thresholds. The roadway segments will operate at LOS D or better with planned roadway improvements.

2018 BACKGROUND PLUS PROJECT CONDITIONS

The Calle de la Plata/Pyramid Highway intersection will operate at LOS D during the AM and PM peak periods under 2018 plus project conditions. The Calle de la Plata/Driveway A was analyzed as a two-lane roundabout and is expected to operate at LOS A during both the AM and PM peak hours. The Calle de la Plata/Driveway B intersection will operate at LOS B and C during the AM and PM peak hours, respectively, with side-street stop control.

The daily roadway segment level of service analysis indicated that the Pyramid Highway and Calle de la Plata roadway segments near the project site will operate at LOS D or better under 2018 plus project conditions.

2040 AND 2040 PLUS PROJECT CONDITIONS

The daily roadway segment level of service analysis indicates that Pyramid Highway north and south of Calle de la Plata will operate at LOS F with or without the project unless improvements are made. The Calle de la Plata roadway segments near the project site will operate at acceptable levels of service (LOS C) with planned regional roadway improvements. Pyramid Highway will need to be eight lanes south of Calle de la Plata and six lanes north of Calle de la Plata to operate at acceptable levels of service in the year 2040.

CONCLUSIONS AND RECOMMENDATIONS

The Calle de la Plata/Pyramid Highway intersection currently operates at LOS F during peak hours due to side street delay. The Spanish Springs Area Plan recognizes a traffic signal will be needed at the Calle de la Plata/Pyramid Highway intersection to address the current situation.

The 2040 RTP also recognizes and includes future regional roadway improvements to increase capacity on Pyramid Highway in the project vicinity. The 2040 RTP specifically indicates the following improvements:

- Pyramid Highway – Widen from two lanes to four lanes, from Egyptian Drive to Calle de la Plata by 2018
- Pyramid Highway – Widen from two lanes to four lanes, from Calle de la Plata to Winnemucca Ranch Road by 2030
- Pyramid Highway – Widen from four lanes to six lanes, from Egyptian Drive to Calle de la Plata by 2030

The 2040 RTP intentionally avoids recommending specific intersection improvements, recognizing that the specific intersection configurations should be determined at the time when the corridor is improved and actual turning movements are known. The RTP projects listed above assume that intersection upgrades will be accomplished with the widenings.

It is important to note this analysis is ultra conservative and comprehensive with regard to Year 2018 future traffic volumes because it assumes that, in addition to background traffic growth, the following projects will be built out:

- Village Green Commercial Center (southeast corner of Pyramid Highway/Calle de la Plata intersection)
- Campo Rico Business Center (north of Calle de la Plata along Pyramid Highway)
- Calle de la Plata Retail Project (northwest corner of Pyramid Highway/Calle de la Plata intersection)

It is highly unlikely that these projects and the subject site could all build out within the next 10 years. A 20 plus year horizon (Year 2030) is more realistic. Additionally, the first two projects above (and this application) are limited to zoning amendments and no specific projects have been proposed.

The 2018 analysis demonstrates adequate regional roadway improvements are planned to accommodate regional growth, the previously approved zoning amendments listed above, and rezoning of the subject site. In the unlikely event all the project sites were to develop by 2018, RTP improvements planned for the 2018 to 2030 timeframe would need to be accelerated. Acceleration of projects is a viable option since regional projects are re-evaluated and prioritized every two years with updates of the RTC's Capital Improvement Program. Furthermore, additional traffic studies will be required as specific projects are proposed within the recently proposed and

approved zoning amendment areas and there will be numerous opportunities to assess the necessary phasing of roadway improvements relative to actual development levels.

Finally, the benefits associated with providing zoning for employment and commercial services in the north Spanish Springs area should not be overlooked. The presence of these land uses closer to the heavy concentration of residential communities in north Spanish Springs will ultimately reduce the number and length of trips on Pyramid Highway south of the study area. The presence of jobs in the northern reaches of Spanish Springs will cause a redistribution or "reversing" of work based trips, and provide a higher utilization of the available roadway capacity.

Conformance with Spanish Springs Vision and Character Statement

Policy SS.17.2 of the Spanish Springs Area Plan requires compliance with several traffic related criteria. Our response based on the traffic analysis follows the text for each specific item.

- b. A traffic analysis has been conducted that clearly identifies the impact to the adopted level of service within the [unincorporated] Spanish Springs Hydrographic Basin and the improvements likely to be required to maintain/achieve the adopted level of service. This finding may be waived by the Department of Public Works for projects that are determined to have minimal impacts. The Department of Public Works may request any information it deems necessary to make this determination.

RESPONSE: This study demonstrates that acceptable levels of service can be maintained on the regional roadway system.

- e. If the proposed intensification will result in a drop below the established policy level of service for transportation (as established by the Regional Transportation Commission and Washoe County) within the Spanish Springs Hydrographic Basin, the necessary improvements required to maintain the established level of service are scheduled in either the Washoe County Capital Improvements Program or Regional Transportation Improvement Program within three years of approval of the intensification. For impacts to regional roads, this finding may be waived by the Washoe County Planning Commission upon written request from the Regional Transportation Commission.

RESPONSE: This study discusses the potential impacts and timing of improvements outlined in the RTC's 2040 Regional Transportation Plan (2040 RTP).

- f. If roadways impacted by the proposed intensification are currently operating below adopted levels of service, the intensification will not require infrastructure improvements beyond those articulated in Washoe County and Regional transportation plans AND the necessary improvements are scheduled in either the Washoe County Capital Improvements Program or Regional Transportation Improvement Program within three years of approval of the intensification.

RESPONSE: The improvements necessary to accommodate regional traffic flows and this project can be timed appropriately to avoid adverse traffic impacts.

1. INTRODUCTION

This study evaluates the potential traffic impacts of the proposed Village at the Peak zoning amendment in northern Spanish Springs on the nearby roadway system.

PROJECT DESCRIPTION

The Village at the Peak site is located on the northeast quadrant of the Calle de la Plata/Pyramid Highway intersection in Washoe County, Nevada. The proposed zoning consists of single family residential, neighborhood commercial, and industrial land uses.

The proposed project site location is shown on **Figure 1** and the zoning land use plan is shown on **Figure 3**.

SCOPE OF STUDY

Consistent with the previous traffic impact report for this project site, the following intersections were studied:

- Calle de la Plata/Pyramid Highway
- Calle de la Plata/Project Driveway A (plus project conditions only)
- Calle de la Plata/Project Driveway B (plus project conditions only)

STUDY CONDITIONS

The following six conditions were analyzed for this study with the corresponding volumes and roadway network configurations indicated:

1. Existing Conditions – Intersection level of service analysis was performed for the AM and PM peak periods using intersection turning movement counts collected in August 2008.
2. Existing Plus Project Conditions - Intersection level of service analysis was performed for the AM and PM peak periods using existing volumes plus the addition of project generated traffic volumes.
3. 2018 Background Conditions – 2018 background conditions analysis included regional growth plus trip generation volumes from any planned/approved projects in the area. Daily roadway, and AM and PM peak hour intersection level of service analysis was performed.
4. 2018 Background Plus Project Conditions – Daily roadway, and AM and PM intersection level of service analysis was performed using 2018 background volumes plus the addition of project generated traffic volumes.
5. 2040 Background Conditions – 2040 background conditions analysis included regional growth plus trip generation volumes from any planned/approved projects in the area. Daily roadway segment level of service analysis was performed.
6. 2040 Background Plus Project Conditions – Daily roadway segment level of service analysis was performed using 2040 background volumes plus the addition of project generated traffic volumes.

INTERSECTION ANALYSIS METHODOLOGY

Transportation engineers and planners commonly use the term level of service (LOS) to measure and describe the operational status of the local roadway network. An intersection or roadway segment's level of service can range from LOS A (indicating free-flow traffic conditions with little or no delay), to LOS F (representing oversaturated conditions where traffic flows exceed design capacity, resulting in long queues and delays).

The analysis methods presented in the Transportation Research Board's *Highway Capacity Manual 2000* (HCM 2000) were used to calculate LOS for signalized and unsignalized intersections.

Signalized Intersections

Signalized intersections were analyzed using the methodology contained in HCM 2000. This methodology determines the level of service by comparing the average control delay for all vehicles approaching the intersection to the delay thresholds shown in **Table 1**.

Unsignalized Intersections

Unsignalized (side-street stop-controlled) intersection level of service calculations were conducted using the methods contained in Chapter 17 of HCM 2000. The LOS rating is based on the average control delay expressed in seconds per vehicle. At side-street stop-controlled intersections, the control delay (and LOS) is calculated for each controlled movement, the left-turn movement from the major street, and for the entire intersection. For controlled approaches composed of a single lane, the control delay is computed as the average of all movements in that lane. **Table 1** presents the thresholds for unsignalized intersections.

TABLE 1
INTERSECTION LEVEL OF SERVICE DEFINITIONS

Level of Service	Description	Signalized Intersections (Average Control Delay) ¹	Unsignalized Intersections (Average Control Delay) ²
A	Represents free flow. Individual users are virtually unaffected by others in the traffic stream.	≤ 10	≤ 10
B	Stable flow, but the presence of other users in the traffic stream begins to be noticeable.	> 10 to 20	> 10 to 15
C	Stable flow, but the operation of individual users becomes significantly affected by interactions with others in the traffic stream.	> 20 to 35	> 15 to 25
D	Represents high-density, but stable flow.	> 35 to 55	> 25 to 35
E	Represents operating conditions at or near the capacity level.	> 55 to 80	> 35 to 50
F	Represents forced or breakdown flow.	> 80	> 50

Sources:

¹ HCM 2000, Chapter 16, Signalized Intersections. Values shown are in seconds/vehicle.

² HCM 2000, Chapter 17, Unsignalized Intersections. Values shown are in seconds/vehicle.

LEVEL OF SERVICE STANDARDS

The Washoe County Regional Transportation Commission (RTC) has established level of service criteria for regionally significant roadways and intersections in the *2040 Regional Transportation Plan (2040 RTP)*. The 2040 RTP level of service standards for regional roadways and intersections are as follows:

- All regional roadway facilities projected to carry less than 27,000 ADT at the latest RTP horizon – LOS D or better.
- All regional roadway facilities projected to carry 27,000 or more ADT at the latest RTP horizon – LOS E or better
- All intersections shall be designed to provide a level of service consistent with maintaining the policy level of service of the intersecting roadways.

The Nevada Department of Transportation (NDOT) maintains a policy of LOS D or better on their facilities.

Since Pyramid Highway is an NDOT facility, LOS D or better was used as the standard for this analysis. Any intersections or roadway segments that degrade from LOS A, B, C, or D to LOS E or F shall be considered an impact.

Table 2 presents the level of service thresholds for roadway segments as established in the 2040 RTP.

**TABLE 2
RTC AVERAGE DAILY TRAFFIC ROADWAY LEVEL OF SERVICE
THRESHOLDS BY FACILITY TYPE**

Facility Type	Maximum Service Flow Rate (Daily) for Given Service Level				
	LOS A	LOS B	LOS C	LOS D	LOS E
Freeway					
4	≤ 28,600	42,700	63,500	80,000	90,200
6	≤ 38,300	61,200	91,100	114,000	135,300
8	51,100	81,500	121,400	153,200	180,400
10	63,800	101,900	151,800	191,500	225,500
Arterial – High Access Control (HAC)					
2	n/a	9,400	17,300	19,200	20,300
4	n/a	20,400	36,100	38,400	40,600
6	n/a	31,600	54,700	57,600	60,900
8	n/a	42,500	73,200	76,800	81,300
Arterial – Moderate Access Control (MAC)					
2	n/a	5,500	14,800	17,500	18,600
4	n/a	12,000	32,200	35,200	36,900
6	n/a	18,800	49,600	52,900	55,400
8	n/a	25,600	66,800	70,600	73,900
Arterial – Low Access Control (LAC)					
2	n/a	n/a	6,900	13,400	15,100
4	n/a	n/a	15,700	28,400	30,200
6	n/a	n/a	24,800	43,100	45,400
8	n/a	n/a	34,000	57,600	60,600
Arterial – Ultra-Low Access Control (ULAC)					
2	n/a	n/a	6,500	13,300	14,200
4	n/a	n/a	15,300	27,300	28,600
6	n/a	n/a	24,100	41,200	43,000
8	n/a	n/a	33,300	55,200	57,400
Arterial – Ultra-Low Access Control (ULAC)					
2	n/a	n/a	6,500	13,300	14,200
4	n/a	n/a	15,300	27,300	28,600
6	n/a	n/a	24,100	41,200	43,000
8	n/a	n/a	33,300	55,200	57,400
Collector – Ultra-Low Access Control (ULAC)					
2	n/a	n/a	7,300	8,500	9,100

* Contact the RTC Planning Department for LOS threshold for collector facilities with access controls other than ultra-low access control.
Source: Washoe County 2040 Regional Transportation Plan, RTC

2. EXISTING CONDITIONS

This chapter describes the transportation characteristics of the project study area including area roadways, existing traffic volumes, and existing bicycle, pedestrian and transit facilities.

ROADWAY SYSTEM

Pyramid Highway is a north-south NDOT facility that runs from Interstate 80 (I-80) in the south to Pyramid Lake in the north. Pyramid Highway is a two-lane roadway with posted speed limits of 55 – 65 miles per hour (mph) in the vicinity of the project. The 2040 RTP classifies Pyramid Highway as a High Access Control (HAC) Arterial south of Calle de la Plata and a Moderate Access Control (MAC) Arterial north of Calle de la Plata.

Calle de la Plata is a four-lane roadway west of Pyramid Highway and a two-lane roadway east of Pyramid Highway. The 2040 RTP lists Calle de la Plata as a Low Access Control (LAC) Collector west of Pyramid Highway.

EXISTING TRAFFIC VOLUMES AND LEVEL OF SERVICE

Intersection turning movement counts were collected at the Calle de la Plata/Pyramid Highway intersection during the AM (7:00 AM to 9:00 AM) and PM (4:00 PM to 6:00 PM) peak periods in August 2008. The existing volumes, shown on **Figure 2**, were used to analyze the level of service at the study intersection. **Table 3** displays the results. Detailed intersection LOS calculation worksheets are provided in **Appendix A**.

Intersection	Control Type ¹	AM Peak Hour		PM Peak Hour	
		Delay ²	LOS	Delay	LOS
Calle de la Plata/Pyramid Highway	SSSC	10 (>50)	A (F)	10 (>50)	A (F)

Notes: ¹ SSSC = Side Street Stop Control
² Delay is reported in seconds per vehicle for the overall intersection (worst movement) for unsignalized intersections.
Bold indicates deficient operations.
Source: Fehr & Peers, 2008

As shown in Table 3 the Calle de la Plata/Pyramid Highway side street approaches operates at LOS F during the AM and PM peak hours. The overall intersection is shown to operate at LOS A.

TRANSIT, BICYCLE, AND PEDESTRIAN FACILITIES

No existing or planned transit routes access Pyramid Highway or Calle de la Plata in the vicinity of the project. Bike lanes and sidewalks are present on Calle de la Plata west of Pyramid Highway.

3. PROJECT CONDITIONS

PROJECT DESCRIPTION

The project site is currently zoned for 25 acres of Low Density Suburban (LDS) and approximately 85 acres of General Rural land use. Under the existing zoning 27 single family residential housing units are allowed.

The proposed land use plan includes the following zonings:

- 4.3 acres of Open Space.
- 25 acres of Medium Density Suburban (MDS) containing 75 single family residences.
- 40.4 acres for Industrial use.
- 39.9 acres of Neighborhood Commercial.

It is important to note that the current application is for a zoning amendment only. There is no specific project or land use mix proposed at this time. In order to estimate project trips and potential impacts we considered a range of possible specific land uses that would fit within the proposed zonings and have provided our best estimate of future development potential. Additional traffic studies will be prepared with future project specific applications.

The proposed land use plan is included as **Figure 3**.

Two driveways are proposed to serve the Village at the Peak site. Both Driveway A and B are proposed to be located on Calle de la Plata east of Pyramid Highway. Driveway A is recommended to consist of a four legged, two-lane roundabout, and Driveway B is recommended to consist of a three legged, side-street stop controlled intersection. Driveway A could also serve the Village Green Commercial Center located on the south side of Calle de la Plata.

There is a possibility that an additional access could eventually be created to the north (to Horizon Hills Drive through the adjacent subdivision) or west to Pyramid Highway via an easement. Either alternative would require agreements with adjacent land owners, which have not been pursued since this is only a zoning request. This traffic study takes a conservative approach and assumes only the driveways on Calle de la Plata.

TRIP GENERATION

Trips were generated for the proposed project based on average trip rates in *Trip Generation* (Institute of Transportation Engineers (ITE), Seventh Edition, 2003). Adjustments were made consistent with ITE methodologies to account for internally captured trips (trips between different land uses within the project site) and pass-by trips. Pass-by trips are trips made as intermediate stops to a final destination, for example, a driver who stops at the proposed project on the way home from work. Neither internally captured trips or pass-by trips add new traffic to the roadway network.

The proposed zonings for Village at the Peak will create a mixed-use project. As noted above, in order to perform traffic analysis, we have assumed a land use mix for the site based on the types of services that would be likely and reasonable in this area. These estimations will be revisited with project specific applications.

The assumed land use mix for the 39.9 acre Neighborhood Commercial area is as follows:

- 10 acres of typical shopping center retail
- 10 acres of commercial and civic uses allowed within the Neighborhood Commercial (NC) zone. This area could include services such as a veterinarian hospital, adult care/nursing home, church, health club, bowling alley, copy/print/ship store, nursery, or a tire store for example.
- 20 acres of general office buildings

Based on the broad variety of land uses likely on this site including jobs, housing, retail, and support services, we estimate that approximately 22% of the trips generated by the project will be internally captured. This figure is consistent with documented studies of mixed-use projects and well within the range of 20%-30% internal capture typically found in smaller scale mixed-use developments.

Based on the ITE trip generation handbook, 34% of the trips generated by the commercial/retail uses will be "pass-by" trips.

Since the proposed action is a zoning amendment, and this study analyzes the potential impacts resulting from an amendment, trip generation for the existing zoning has been subtracted to show the difference in traffic levels.

The projected trip generation is summarized in **Table 4**.

Land Use	Units	ITE Code	Daily	AM Peak Hour			PM Peak Hour		
			Trips	In	Out	Total	In	Out	Total
Single Family Residential	75	210	718	14	42	56	48	28	76
Industrial	40.4 AC	140	1,571	249	51	301	74	263	337
Shopping Center/Retail	10 AC	820	3,737	53	34	87	159	166	325
Commercial/Civic	10 AC	*	2,614	192	39	231	93	330	423
Office	20 AC	710	2,396	280	57	338	71	253	325
RAW Trip Generation			11,035	789	224	1,012	446	1,040	1,485
Internal Capture			-2,428	-173	-49	-223	-98	-229	-327
Pass-By Trips			-2,159	-83	-25	-108	-86	-168	-254
Reduction for Trips Allowed by Existing Zoning			-258	-5	-15	-20	-17	-10	-27
NET NEW TRIPS			6,190	527	135	662	245	632	877

Notes: * Composite rate based on an average of the eight allowable example land uses listed above.
Source: Fehr and Peers 2009

TRIP DISTRIBUTION AND ASSIGNMENT

The site-generated trips were distributed to the study intersections based on the location of the site relative to existing and planned development in the study area. There are a number of planned developments and recent

roadway connections along Pyramid Highway between Egyptian Drive and the Pebble Creek residential area that will change travel patterns in the study vicinity. As these projects develop the directional distribution of local trips (and some regional trips) will reverse, creating more balanced flows on Pyramid Highway. The creation of jobs in the northern Spanish Springs area will in fact reduce and better balance regional traffic flow on Pyramid Highway.

The estimated trip distribution for the project site is displayed on **Figure 4** and described below:

- 35% to/from the north on Pyramid Highway
- 45% to/from the south on Pyramid Highway
- 20% to/from the west on Calle de la Plata
- 5% to/from the east on Calle de la Plata

Pass-by trips were routed from Pyramid Highway to the site based on the future trip distribution pattern. Using the above distribution, trips were assigned to the roadway system as shown in **Figure 4**.

4. EXISTING PLUS PROJECT CONDITIONS

EXISTING PLUS PROJECT LEVEL OF SERVICE

Vehicle trips generated by the Village at the Peak land use proposal were distributed to the surrounding roadway network and added to the existing traffic volumes for existing plus project conditions analysis. **Table 5** presents the level of service results. **Figure 5** shows the existing plus project traffic volumes and lane configurations.

TABLE 5
EXISTING PLUS PROJECT CONDITIONS INTERSECTION LEVEL OF SERVICE RESULTS

Intersection	Control Type ¹	Existing Conditions				Existing Plus Project Conditions			
		AM Peak		PM Peak		AM Peak		PM Peak	
		Delay ²	LOS	Delay ²	LOS	Delay ²	LOS	Delay ²	LOS
Calle de la Plata/ Pyramid Highway	SSSC	10 (>50)	A (F)	10 (>50)	A (F)	>50 (>50)	F (F)	>50 (>50)	F (F)
Calle de la Plata/ Driveway A	SSSC	--	--	--	--	6 (10)	A (A)	12 (25)	A (D)
Calle de la Plata/ Driveway B	SSSC	--	--	--	--	6 (9)	A (A)	7 (11)	A (B)

Notes: ¹ SSSC = Side Street Stop Control, AWSC = All Way Stop Control

² Delay is reported in seconds per vehicle for the overall intersection for signalized intersections and the overall intersection (worst approach) for SSSC intersections.

-- Not Applicable

Bold indicates deficient operations.

Source: Fehr & Peers, 2009

The Calle de la Plata/Pyramid Highway intersection operates at LOS F with and without the addition of project generated traffic. Driveway A and Driveway B operate at acceptable levels of service with side street stop controls.

A traffic signal is planned at the Calle de la Plata/Pyramid Highway intersection to improve operations to an acceptable level.

5. 2018 BACKGROUND CONDITIONS

2018 background conditions analysis includes roadway network and intersection improvements listed in the 2040 RTP, as well traffic volume increases from regional growth and planned/approved zoning amendment and development projects in the area.

2018 BACKGROUND TRAFFIC VOLUMES

2018 background traffic volumes were developed using several sources. The initial 2018 background traffic volumes (accounting for regional growth in the area) were extracted from the approved Frear Comprehensive Plan Amendment (also known as Village Green Commercial Center) Traffic Analysis (Solaegui Engineers, 2008) as provided by the RTC's regional travel demand model. Additionally, project generated traffic volumes for the Frear Comprehensive Plan Amendment and two other planned/approved project studies in the area (Campo Rico Business Center Traffic Analysis, Solaegui Engineers, 2008 and Calle de la Plata/Pyramid Highway Retail Project Traffic Impact Study, Fehr & Peers, 2007) were included in the 2018 background traffic volumes.

ROADWAY NETWORK AND INTERSECTION IMPROVEMENTS BY OTHERS

The 2040 RTP lists regional roadway improvements to be completed by 2018 and 2030. The 2018 planned improvements include widening Pyramid Highway, from Egyptian Drive to Calle de la Plata, from two lanes to four lanes. The 2030 planned improvements include widening Pyramid Highway, from Egyptian Drive to Calle de la Plata, from four lanes to six lanes, and from Calle de la Plata to Winnemucca Ranch Road, from two lanes to four lanes. Considering the magnitude of the planned/approved projects included in the 2018 background conditions analysis, it is highly unlikely that these projects will build out completely in the next ten years. Therefore, this analysis assumes that the 2018 and 2030 improvements will likely be in place by the time the projects are completed. If the projects were to build out by 2018, the 2030 planned improvements could be accelerated to accommodate traffic volumes generated by the projects earlier than expected.

Traffic analyses for the three planned/approved projects listed above all discuss the need for a traffic signal at the Calle de la Plata/Pyramid Highway intersection, as recognized in the Spanish Springs Area Plan. Therefore, under 2018 conditions, the study intersection was analyzed with a traffic signal.

Intersection improvements, including left and right turn pockets, were determined during the 2018 background conditions analysis. Improvements necessary to achieve level of service D or better at the Calle de la Plata/Pyramid Highway intersection were determined with AM and PM peak hour intersection analysis. These improvements would most likely be constructed with the RTP planned widening of Pyramid Highway south of Calle de la Plata before 2018.

Figure 6 shows the 2018 background traffic volumes and the assumed intersection lane configurations.

INTERSECTION LEVEL OF SERVICE ANALYSIS

Table 6 presents the level of service results for 2018 background conditions.

TABLE 6
2018 BACKGROUND CONDITIONS INTERSECTION LEVEL OF SERVICE RESULTS

Intersection	Control Type	AM Peak Hour		PM Peak Hour	
		Delay ¹	LOS	Delay	LOS
Calle de la Plata/Pyramid Highway	Signal	32	C	40	D

Notes: ¹ Delay is reported in seconds per vehicle for the overall intersection (worst movement) for unsignalized intersections.
Source: Fehr & Peers, 2008

The Calle de la Plata/Pyramid Highway intersection will operate at acceptable levels of service during the AM and PM peak hours with the recommended lane configurations shown in **Figure 6** and the planned widenings.

2018 AVERAGE DAILY TRAFFIC VOLUMES

2018 average daily traffic (ADT) volumes were developed for the roadway segments adjacent to the project site using the same methodology and sources used to obtain the intersection turning movement volumes previously described.

ADT volumes were compared to the RTC's Average Daily Traffic Roadway Level of Service Thresholds (shown in Table 2 of this report) to determine 2018 roadway segment level of service. The results are shown in **Table 7**.

TABLE 7
2018 BACKGROUND CONDITIONS ROADWAY SEGMENT CAPACITY RESULTS

Roadway	Location	Functional Classification ¹	Lanes	Daily Two-Way Traffic Volume	LOS
Pyramid Highway	South of Calle de la Plata	HAC Arterial	6	37,000	C
Pyramid Highway	North of Calle de la Plata	MAC Arterial	4	24,500	C
Calle de la Plata	West of Pyramid Highway	ULAC Arterial	4	10,550	C
Calle de la Plata	East of Pyramid Highway	ULAC Arterial	4	7,550	C

Notes: ¹ ULAC = Ultra-Low Access Control, LAC = Low Access Control, MAC = Moderate Access Control, HAC = High Access Control
Source: Fehr & Peers, 2009

All of the study roadway segments will operate within level of service standards under 2018 background conditions.

6. 2018 BACKGROUND PLUS PROJECT CONDITIONS

INTERSECTION LEVEL OF SERVICE ANALYSIS

Project generated traffic volumes were added to the study intersections for 2018 plus project conditions analysis. Based on the previous traffic study for this project, a two-lane roundabout was assumed for Driveway A. The 2018 plus project traffic volumes and lane configurations are shown in **Figure 7**. **Table 8** shows the level of service results.

TABLE 8
2018 BACKGROUND PLUS PROJECT CONDITIONS INTERSECTION LEVEL OF SERVICE RESULTS

Intersection	Control Type ¹	2018 Background Conditions				2018 Background Plus Project Conditions			
		AM Peak		PM Peak		AM Peak		PM Peak	
		Delay ²	LOS	Delay ²	LOS	Delay ²	LOS	Delay ²	LOS
Calle de la Plata/ Pyramid Highway	Signal	32	C	40	D	47	D	53	D
Calle de la Plata/ Driveway A	Roundabout	--	--	--	--	7	A	10	A
Calle de la Plata/ Driveway B	SSSC	--	--	--	--	3 (12)	A (B)	6 (18)	A (C)

Notes: ¹ SSSC = Side Street Stop Control, AWSC = All Way Stop Control

² Delay is reported in seconds per vehicle for the overall intersection for signalized intersections and the overall intersection (worst approach) for SSSC intersections.

-- Not Applicable

Source: Fehr & Peers, 2009

The study intersections are expected to operate at acceptable levels of service under 2018 background plus project conditions. A side-street stop control will operate sufficiently at Driveway B.

DAILY ROADWAY SEGMENT ANALYSIS

Daily trip generation volumes were added to 2018 background volumes for roadway segment level of service analysis. **Table 9** shows the level of service results.

TABLE 9
2018 BACKGROUND PLUS PROJECT CONDITIONS ROADWAY SEGMENT CAPACITY RESULTS

Roadway	Location	Functional Classification 1	Lanes	Daily Two-Way Traffic Volume	LOS
Pyramid Highway	South of Calle de la Plata	HAC Arterial	6	39,500	C
Pyramid Highway	North of Calle de la Plata	MAC Arterial	4	26,650	C
Calle de la Plata	West of Pyramid Highway	ULAC Arterial	4	11,800	C
Calle de la Plata	East of Pyramid Highway	ULAC Arterial	4	7,850	C

Notes: ¹ ULAC = Ultra-Low Access Control, LAC = Low Access Control, MAC = Moderate Access Control, HAC = High Access Control
 Source: Fehr & Peers, 2009

This analysis assumes that Calle de la Plata will have a four-lane section between Pyramid Highway and Driveway B. Two lanes would be sufficient east of Driveway B. All studied roadway segments are shown to operate at acceptable levels of service with the planned improvements.

6. 2040 AND 2040 PLUS PROJECT CONDITIONS

2040 daily roadway segment analysis was performed for 2040 background conditions and 2040 background plus project conditions.

2040 VOLUME DEVELOPMENT

2040 background traffic volumes were developed using the same methodology and sources used to obtain 2018 background traffic volumes. The initial 2040 background traffic volumes (accounting for regional growth in the area) were extracted from the Village Green Traffic Analysis as provided by the RTC's regional travel demand model. Additionally, project generated traffic volumes for the three projects discussed previously were included in the 2040 background traffic volumes. **Table 10** shows the 2040 background and 2040 background plus project traffic volumes.

**TABLE 10
2040 TRAFFIC VOLUME DEVELOPMENT**

Roadway Segment, Location		
Volume Source (Project)	Daily Volume	Percent of Total Volume
Pyramid Highway, South of Calle de la Plata		
2040 Background	50,000	72%
Village Green Commercial Center	9,700	14%
Campo Rico Business Center	5,400	8%
Calle de la Plata Retail Center	1,300	2%
Village at the Peak	2,500	4%
Total	68,900	
Pyramid Highway, North of Calle de la Plata		
2040 Background	33,150	74%
Village Green Commercial Center	2,250	5%
Campo Rico Business Center	5,700	13%
Calle de la Plata Retail Center	1,300	3%
Village at the Peak	2,150	5%
Total	44,550	
Calle de la Plata, West of Pyramid Highway		
2040 Background	6,400	52%
Village Green Commercial Center	2,500	20%
Campo Rico Business Center	2,100	17%
Calle de la Plata Retail Center	150	1%
Village at the Peak	1,250	10%
Total	12,400	
Calle de la Plata, East of Pyramid Highway		
2040 Background	3,900	46%
Village Green Commercial Center	3,300	39%
Campo Rico Business Center	890	10%
Calle de la Plata Retail Center	150	2%
Village at the Peak	310	3%
Total	8,550	

Notes: ¹ Delay is reported in seconds per vehicle for the overall intersection (worst movement) for unsignalized intersections.
Source: Fehr & Peers, 2008

Table 11 shows the daily roadway segment level of service results for 2040 background conditions.

TABLE 11 2040 BACKGROUND CONDITIONS ROADWAY SEGMENT CAPACITY RESULTS					
Roadway	Location	Functional Classification ¹	Lanes	Daily Two-Way Traffic Volume	LOS
Pyramid Highway	South of Calle de la Plata	HAC Arterial	6/8	66,400	F/C
Pyramid Highway	North of Calle de la Plata	MAC Arterial	4/6	42,400	F/C
Calle de la Plata	West of Pyramid Highway	ULAC Arterial	4	11,150	C
Calle de la Plata	East of Pyramid Highway	ULAC Arterial	4	8,250	C

Notes: ¹ ULAC = Ultra-Low Access Control, LAC = Low Access Control, MAC = Moderate Access Control, HAC = High Access Control
Source: Fehr & Peers, 2009

Pyramid Highway north and south of Calle de la Plata is expected to operate at LOS F under 2040 background conditions. Calle de la Plata will operate within level of service standards.

2040 BACKGROUND PLUS PROJECT CONDITIONS

Village at the Peak project generated traffic volumes were added to the 2040 background volumes for 2040 background plus project conditions daily roadway segment level of service analysis. Table 12 shows the results.

TABLE 12 2040 BACKGROUND PLUS PROJECT CONDITIONS ROADWAY SEGMENT CAPACITY RESULTS					
Roadway	Location	Functional Classification ¹	Lanes	Daily Two-Way Traffic Volume	LOS
Pyramid Highway	South of Calle de la Plata	HAC Arterial	6/8	68,900	F/C
Pyramid Highway	North of Calle de la Plata	MAC Arterial	4/6	44,550	F/C
Calle de la Plata	West of Pyramid Highway	ULAC Arterial	4	12,400	C
Calle de la Plata	East of Pyramid Highway	ULAC Arterial	4	8,550	C

Notes: ¹ ULAC = Ultra-Low Access Control, LAC = Low Access Control, MAC = Moderate Access Control, HAC = High Access Control
Source: Fehr & Peers, 2009

Unless improved, Pyramid Highway north and south of Calle de la Plata will operate at LOS F with or without the traffic generated by the proposed project. Calle de la Plata will operate within level of service standards.

2040 daily roadway segment level of service analysis shows that Pyramid Highway will need to be eight lanes south of Calle de la Plata and six lanes north of Calle de la Plata to operate at acceptable levels of service in the year 2040. The 2040 analysis should be considered "planning level" and needs further refinement through future studies.

7. CONCLUSIONS AND RECOMMENDATIONS

The Calle de la Plata/Pyramid Highway intersection currently operates at LOS F during peak hours due to side street delay. The Spanish Springs Area Plan recognizes a traffic signal will be needed at the Calle de la Plata/Pyramid Highway intersection to address the current situation.

The 2040 RTP also recognizes and includes future regional roadway improvements to increase capacity on Pyramid Highway in the project vicinity. The 2040 RTP specifically indicates the following improvements:

- Pyramid Highway – Widen from two lanes to four lanes, from Egyptian Drive to Calle de la Plata by 2018
- Pyramid Highway – Widen from two lanes to four lanes, from Calle de la Plata to Winnemucca Ranch Road by 2030
- Pyramid Highway – Widen from four lanes to six lanes, from Egyptian Drive to Calle de la Plata by 2030

The 2040 RTP intentionally avoids recommending specific intersection improvements, recognizing that the specific intersection configurations should be determined at the time when the corridor is improved and actual turning movements are known. The RTP projects listed above assume that intersection upgrades will be accomplished with the widenings.

It is important to note this analysis is ultra conservative and comprehensive with regard to Year 2018 future traffic volumes because it assumes that, in addition to background traffic growth, the following projects will be built out:

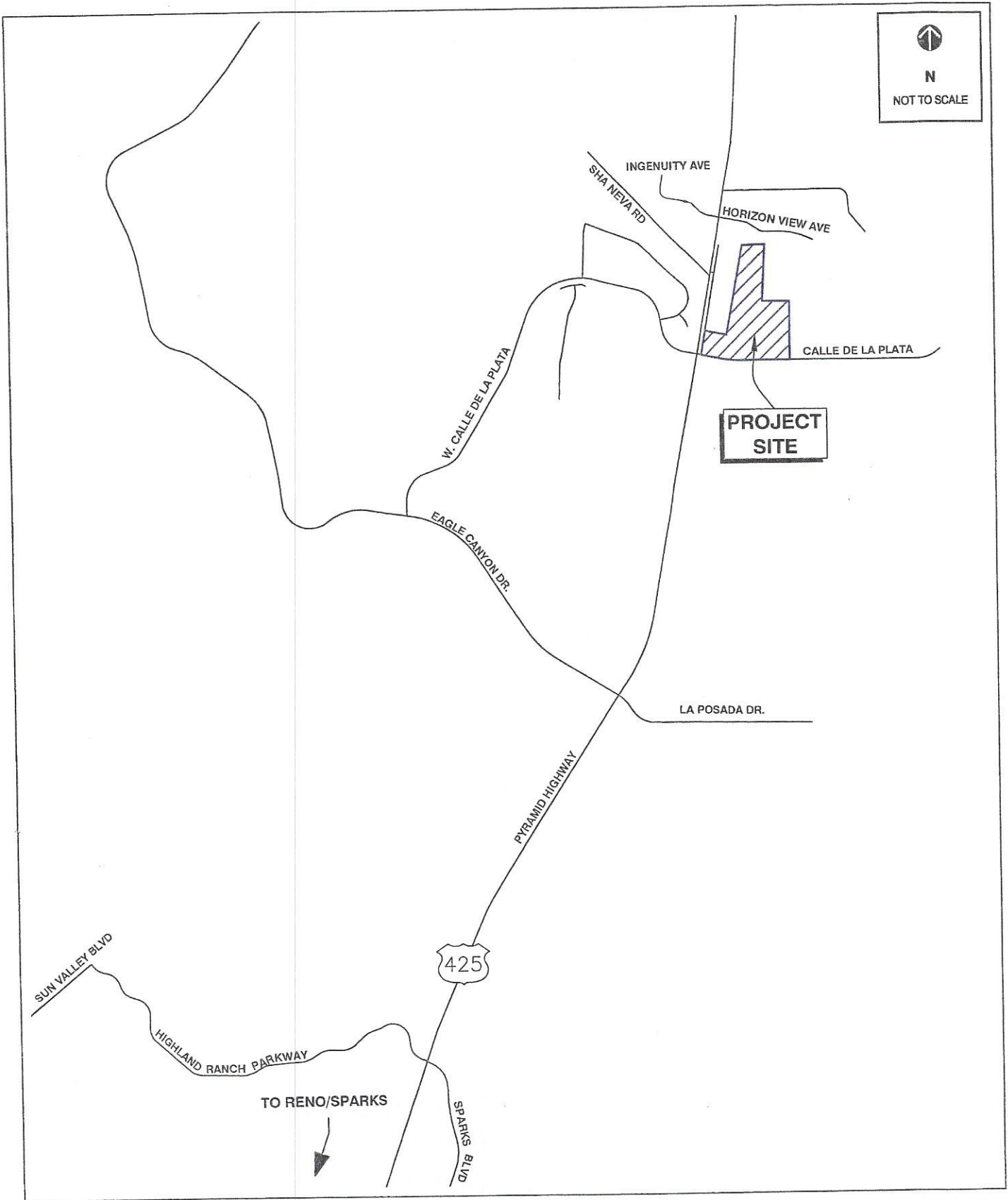
- Village Green Commercial Center (southeast corner of Pyramid Highway/Calle de la Plata intersection)
- Campo Rico Business Center (north of Calle de la Plata along Pyramid Highway)
- Calle de la Plata Retail Project (northwest corner of Pyramid Highway/Calle de la Plata intersection)

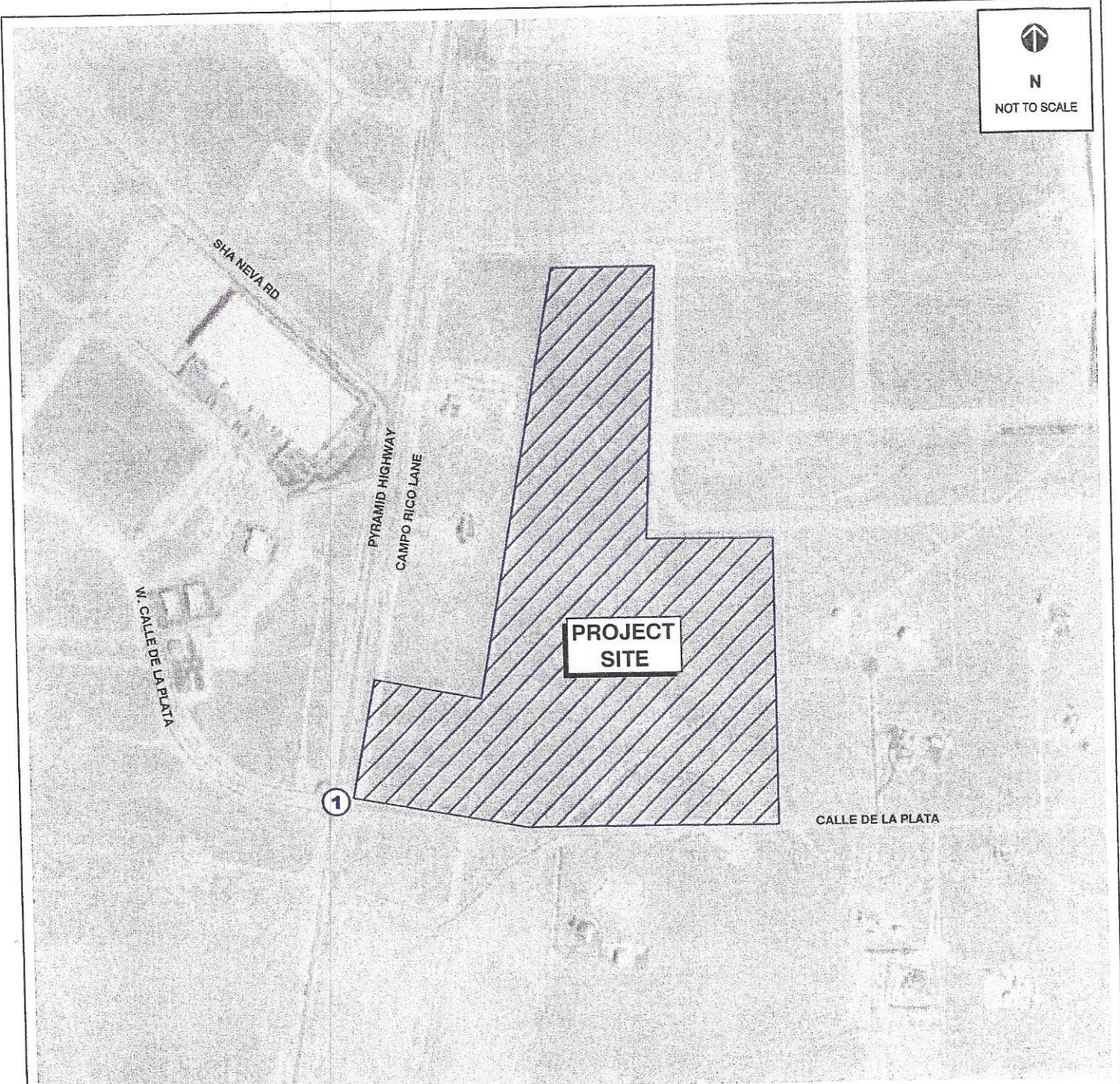
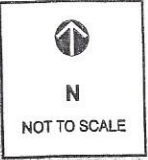
It is highly unlikely that these projects and the subject site could all build out within the next 10 years. A 20 plus year horizon (Year 2030) is more realistic. Additionally, the first two projects above (and this application) are limited to zoning amendments and no specific projects have been proposed.

The 2018 analysis demonstrates adequate regional roadway improvements are planned to accommodate regional growth, the previously approved zoning amendments listed above, and rezoning of the subject site. In the unlikely event all the project sites were to develop by 2018, RTP improvements planned for the 2018 to 2030 timeframe would need to be accelerated. Acceleration of projects is a viable option since regional projects are re-evaluated and prioritized every two years with updates of the RTC's Capital Improvement Program. Furthermore, additional traffic studies will be required as specific projects are proposed within the recently proposed and approved zoning amendment areas and there will be numerous opportunities to assess the necessary phasing of roadway improvements relative to actual development levels.

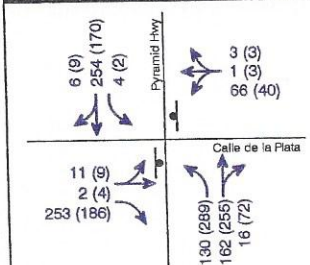
Finally, the benefits associated with providing zoning for employment and commercial services in the north Spanish Springs area should not be overlooked. The presence of these land uses closer to the heavy concentration of residential communities in north Spanish Springs will ultimately reduce the number and length of trips on Pyramid Highway south of the study area. The presence of jobs in the northern reaches of Spanish Springs will cause a redistribution or "reversing" of work based trips, and provide a higher utilization of the available roadway capacity.

FIGURES





1. Calle de la Plata/Pyramid Highway



LEGEND

Traffic Volumes:

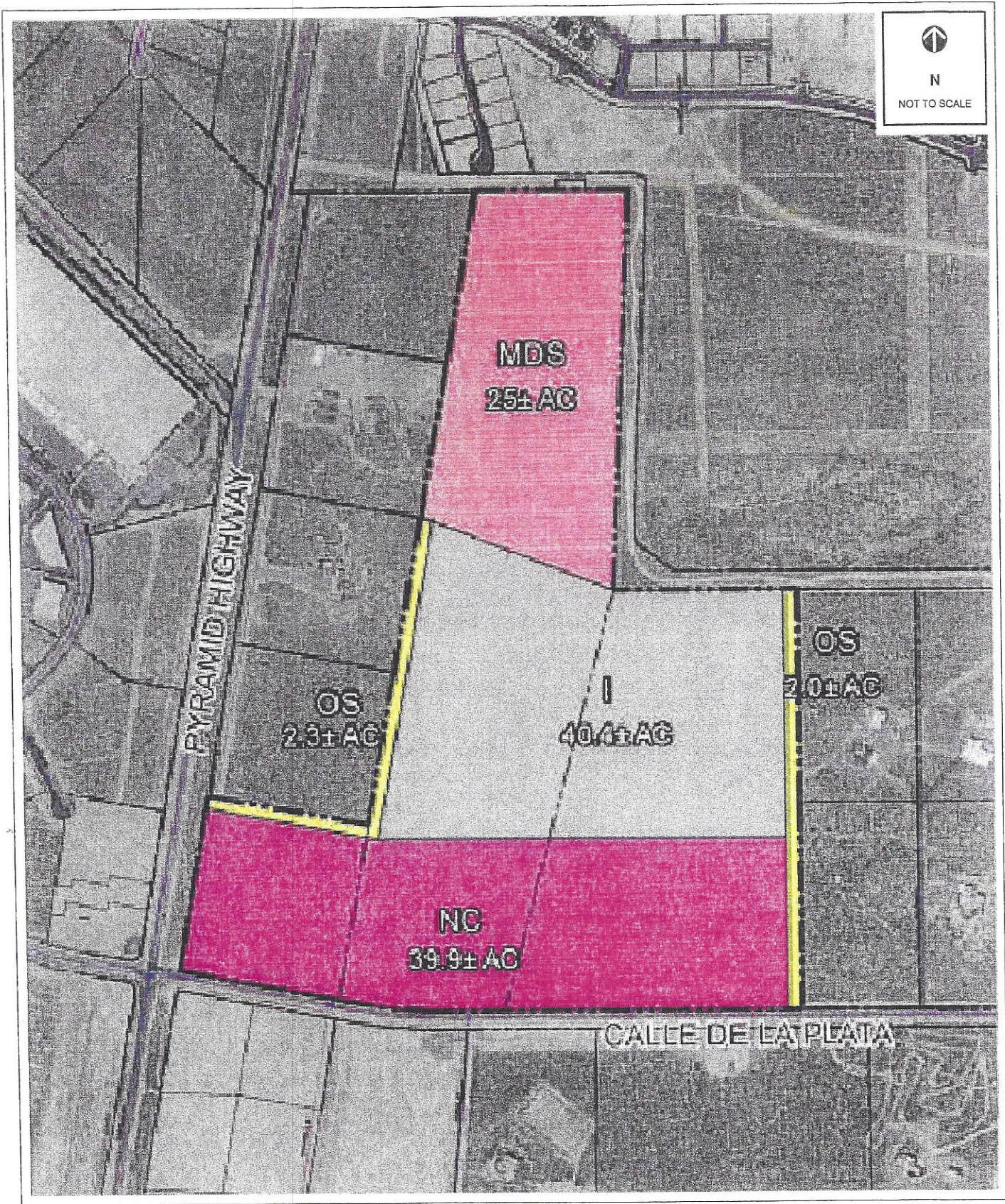
AM (PM) - Lane Configuration

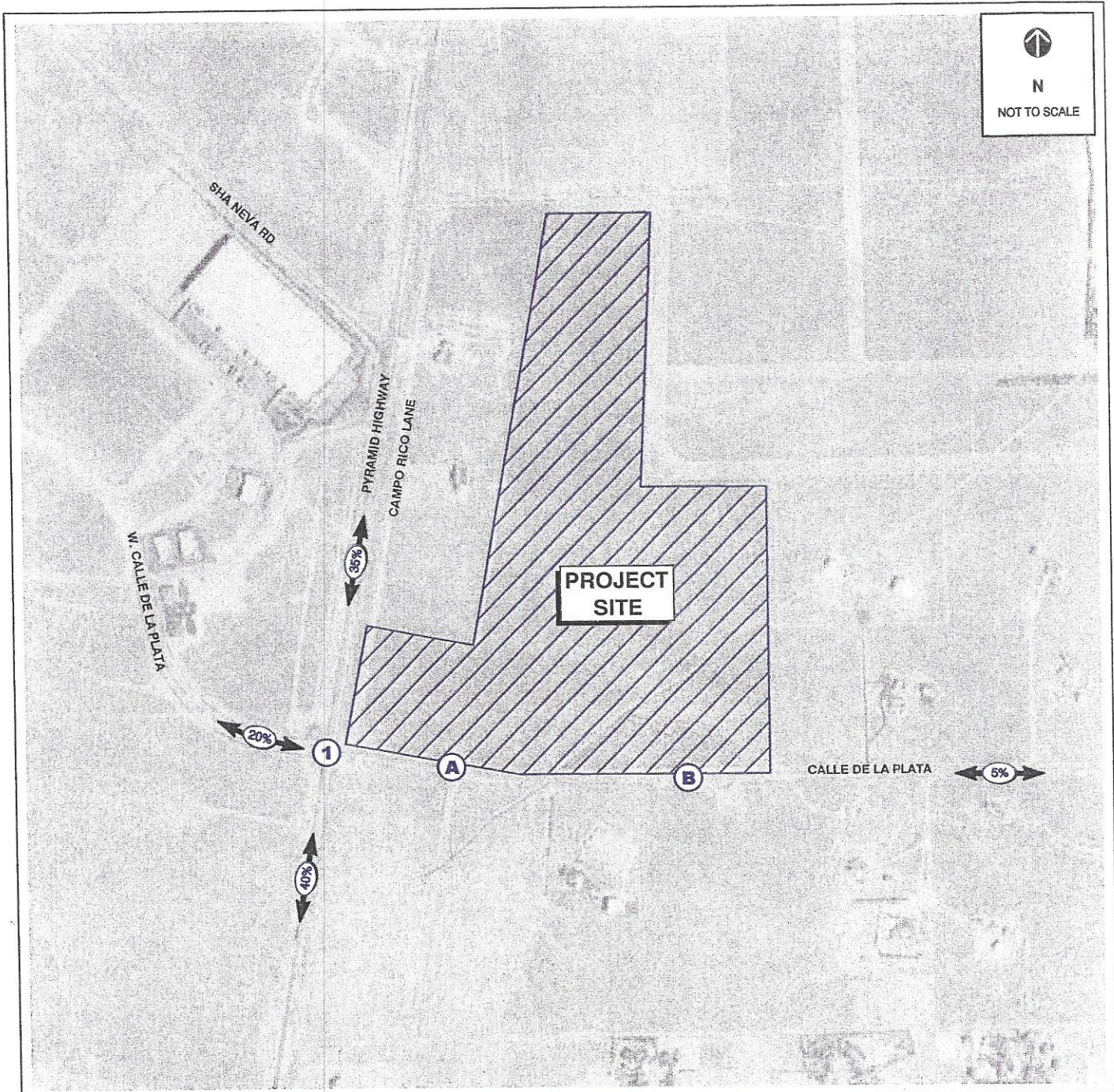
AM (PM) - Lane Configuration

AM (PM) - Lane Configuration

① - Study Intersection

↓ - Stop Sign



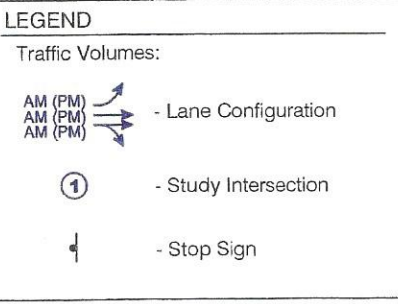
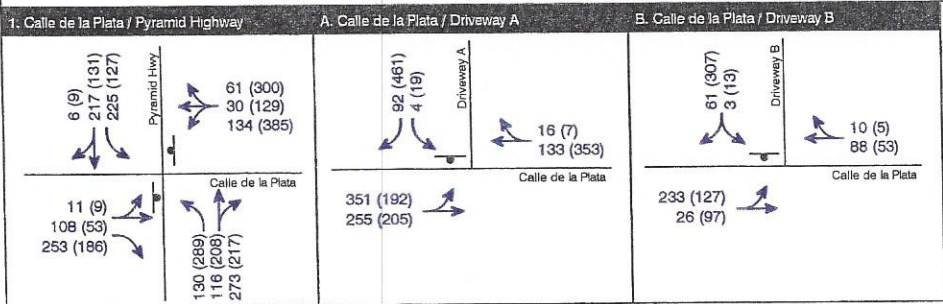
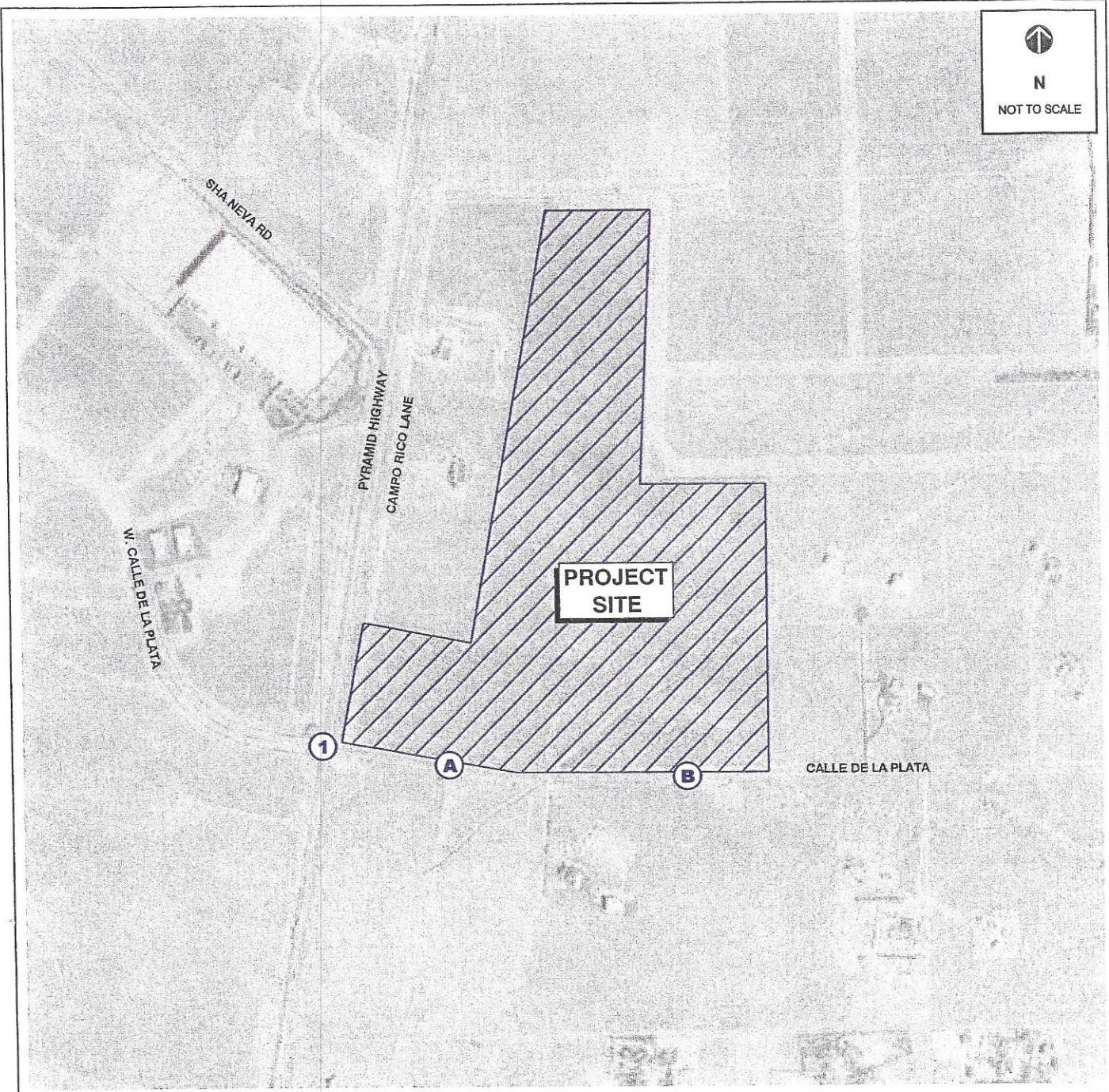


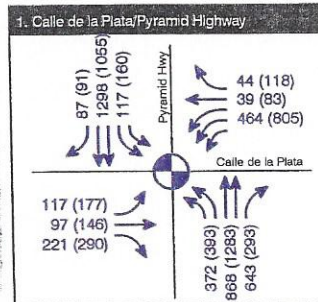
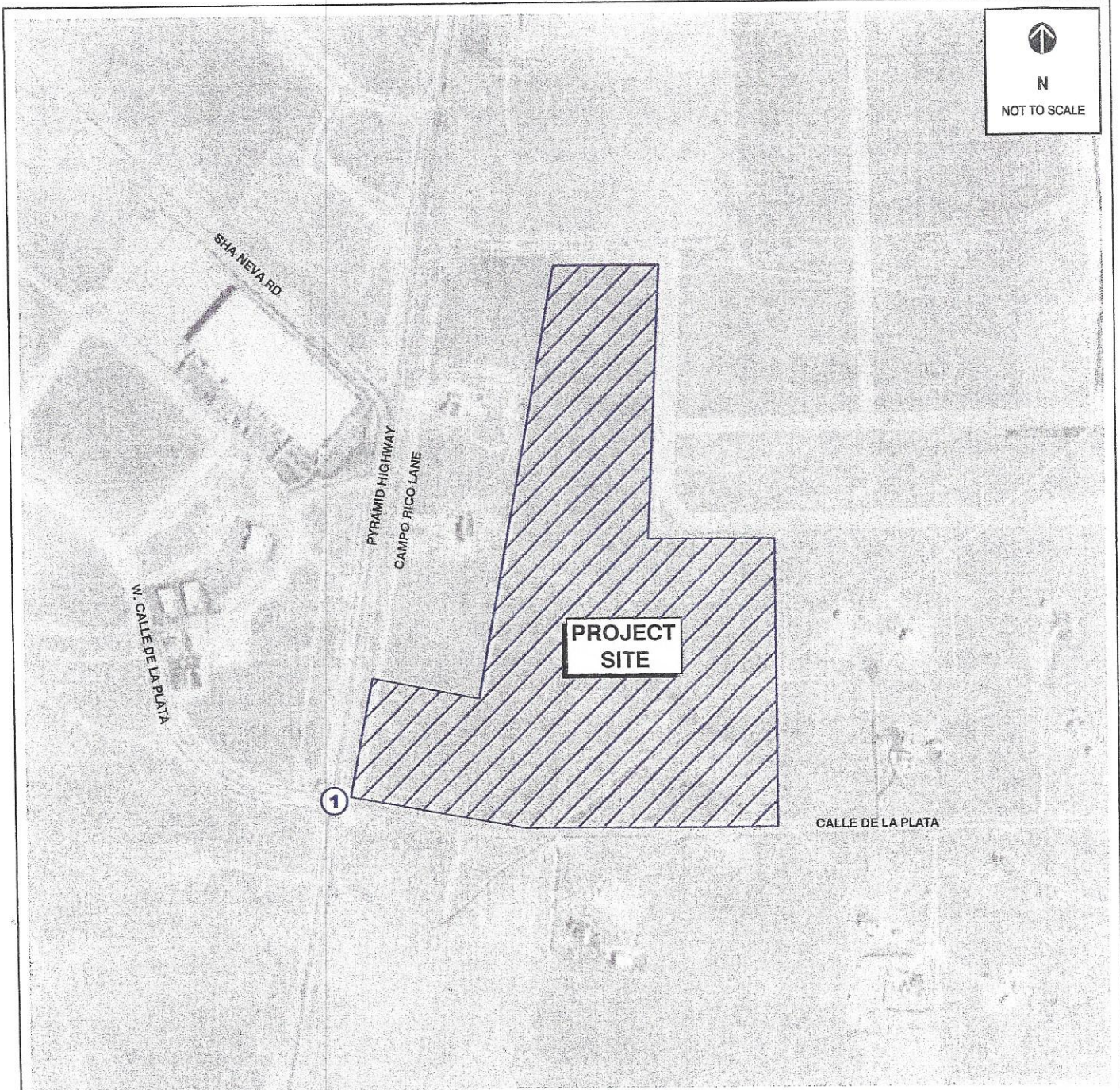
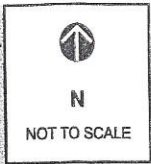
1. Calle de la Plata / Pyramid Highway	A. Calle de la Plata / Driveway A	B. Calle de la Plata / Driveway B

LEGEND

Traffic Volumes:

- AM (PM) - Project Trips (Includes Pass-By Trips)
- AM (PM) - Project Trips (Includes Pass-By Trips)
- AM (PM) - Project Trips (Includes Pass-By Trips)
- ① - Study Intersection
- Trip Distribution





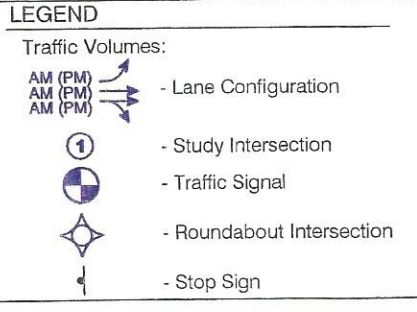
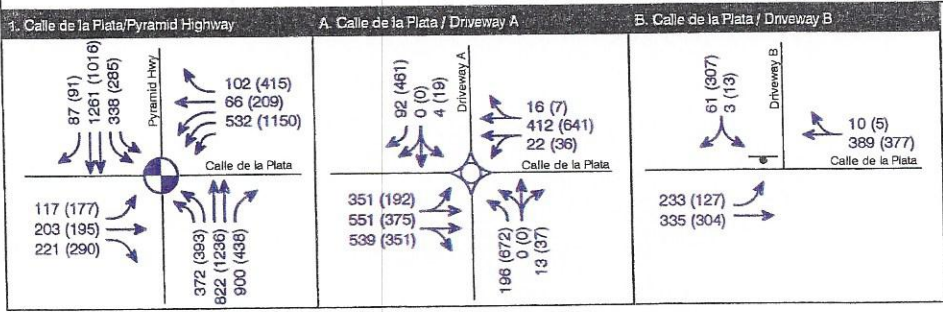
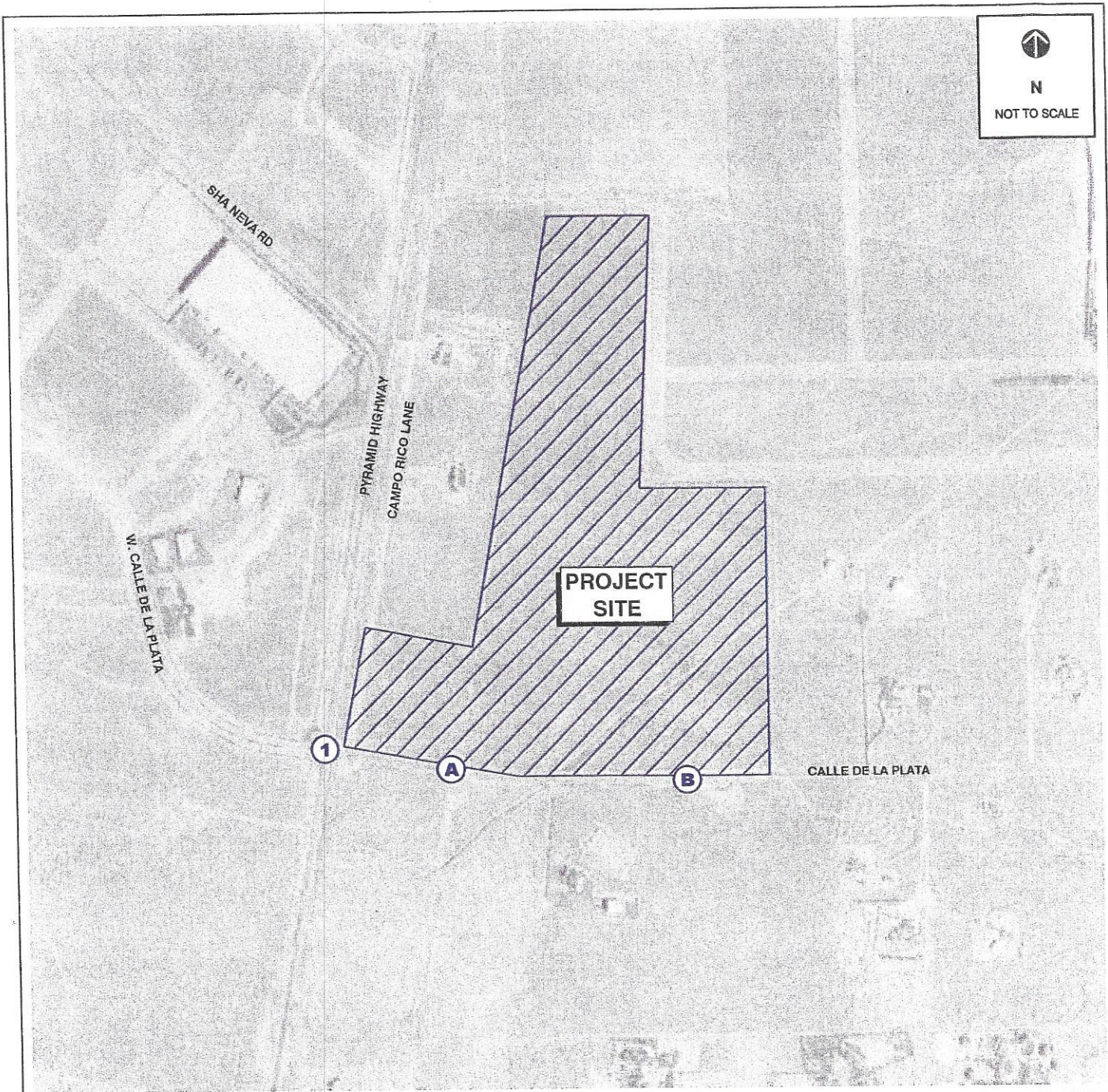
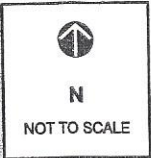
LEGEND

Traffic Volumes:

AM (PM) - Lane Configuration

① - Study Intersection

- Traffic Signal

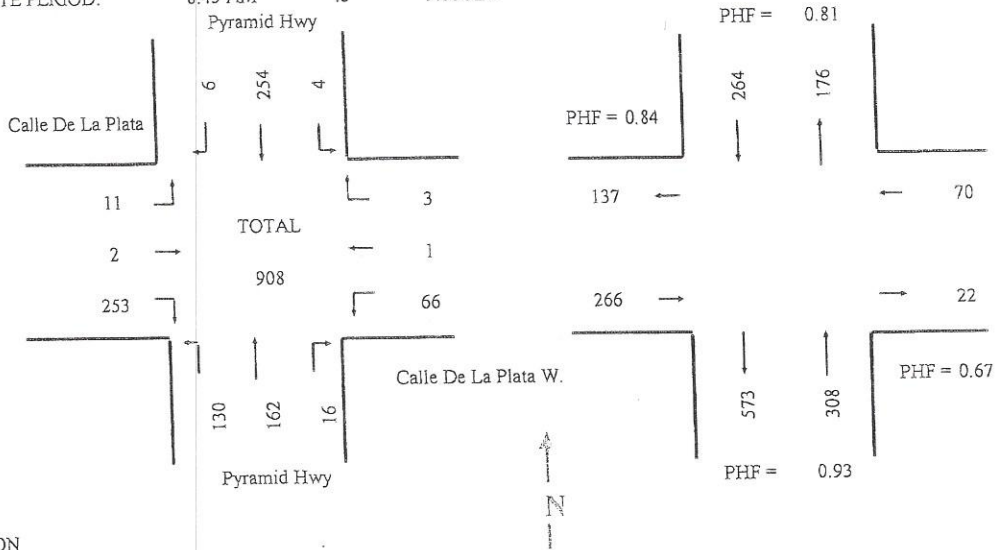


APPENDIX A:
INTERSECTION TURNING MOVEMENT DATA

INTERSECTION TURNING MOVEMENT SUMMARY

INTERSECTION: Calle De La Plata West/Pyramid Hwy
JURISDICTION: TIME: 7:00 AM to 9:00 AM
PROJECT TITLE: Calle De La Plata West DATE: Thur 8-21-08
PROJECT NO: RN08-0405

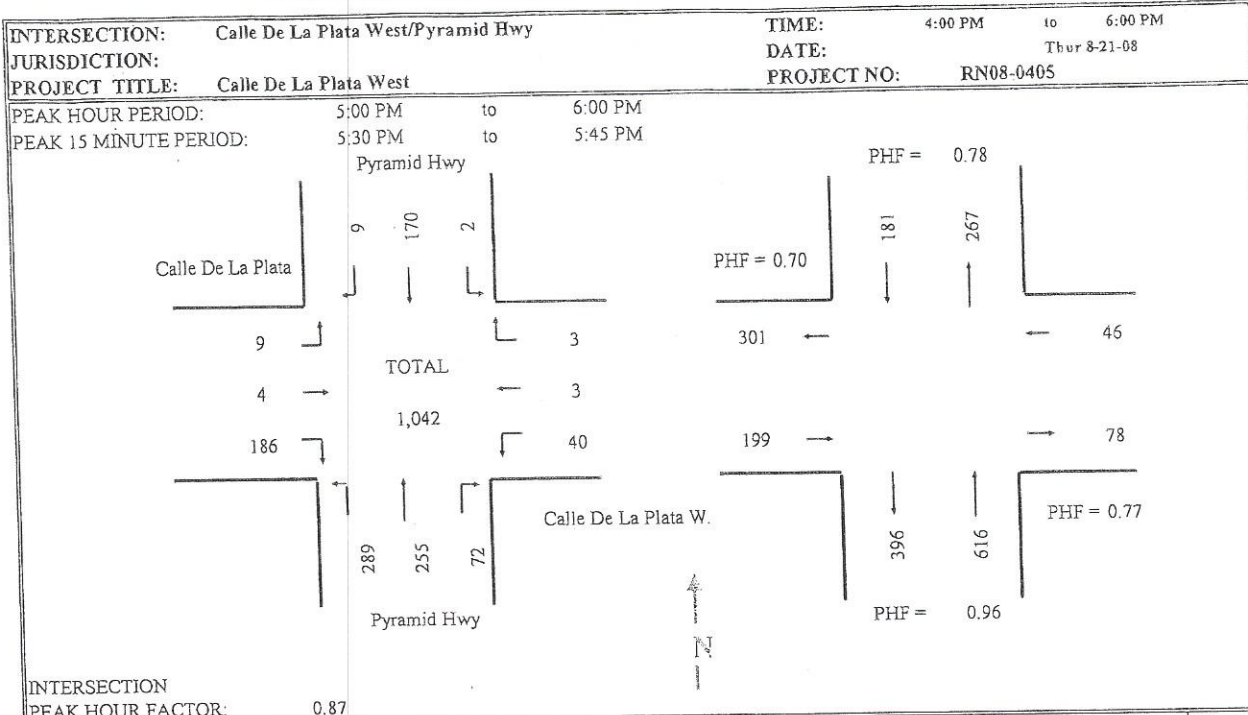
PEAK HOUR PERIOD: 8:00 AM to 9:00 AM
PEAK 15 MINUTE PERIOD: 8:45 AM to 9:00 AM



INTERSECTION PEAK HOUR FACTOR: 0.91

RUNNING COUNTS	Calle De La Plata Eastbound			Calle De La Plata W. Westbound			Pyramid Hwy Northbound			Pyramid Hwy Southbound			TOTAL
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
Period End	A	B	C	D	E	F	G	H	I	J	K	L	TOTAL
7:15 AM	4	1	71	22	1	0	23	36	3	1	65	1	228
7:30 AM	6	2	147	37	1	0	46	75	8	1	145	5	473
7:45 AM	11	2	201	50	2	1	75	107	8	2	185	5	649
8:00 AM	11	2	258	61	2	1	104	145	14	3	240	6	847
8:15 AM	14	2	302	69	2	2	130	187	18	3	296	7	1032
8:30 AM	15	3	364	89	2	4	164	232	22	6	356	8	1265
8:45 AM	20	4	434	114	3	4	201	267	26	7	415	10	1505
9:00 AM	22	4	511	127	3	4	234	307	30	7	494	12	1755
PERIOD COUNTS	A	B	C	D	E	F	G	H	I	J	K	L	TOTAL
7:15 AM	4	1	71	22	1	0	23	36	3	1	65	1	228
7:30 AM	2	1	76	15	0	0	23	39	5	0	80	4	245
7:45 AM	5	0	54	13	1	1	29	32	0	1	40	0	176
8:00 AM	0	0	57	11	0	0	29	38	6	1	55	1	198
8:15 AM	3	0	44	8	0	1	26	42	4	0	56	1	185
8:30 AM	1	1	62	20	0	2	34	45	4	3	60	1	233
8:45 AM	5	1	70	25	1	0	37	35	4	1	59	2	240
9:00 AM	2	0	77	13	0	0	33	40	4	0	79	2	250
HOURLY TOTALS	A	B	C	D	E	F	G	H	I	J	K	L	TOTAL
Beginning At	A	B	C	D	E	F	G	H	I	J	K	L	TOTAL
7:00 AM	11	2	258	61	2	1	104	145	14	3	240	6	847
7:15 AM	10	1	231	47	1	2	107	151	15	2	231	6	804
7:30 AM	9	1	217	52	1	4	118	157	14	5	211	3	792
7:45 AM	9	2	233	64	1	3	126	160	18	5	230	5	856
8:00 AM	11	2	253	66	1	3	130	162	16	4	254	6	908

INTERSECTION TURNING MOVEMENT SUMMARY



RUNNING COUNTS	Calle De La Plata Eastbound			Calle De La Plata W. Westbound			Pyramid Hwy Northbound			Pyramid Hwy Southbound			TOTAL
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
Period End	<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>	<u>E</u>	<u>F</u>	<u>G</u>	<u>H</u>	<u>I</u>	<u>J</u>	<u>K</u>	<u>L</u>	TOTAL
4:15 PM	0	0	59	11	2	1	49	64	21	0	29	1	237
4:30 PM	5	1	100	24	2	1	84	116	35	0	76	4	448
4:45 PM	6	2	141	29	3	1	128	170	53	0	117	4	654
5:00 PM	6	4	170	36	3	1	177	214	73	2	146	8	840
5:15 PM	8	4	223	47	3	3	260	271	92	3	186	10	1110
5:30 PM	12	4	255	58	6	4	326	330	106	4	225	15	1345
5:45 PM	15	7	320	69	6	4	394	402	124	4	282	16	1643
6:00 PM	15	8	356	76	6	4	466	469	145	4	316	17	1882
PERIOD COUNTS	<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>	<u>E</u>	<u>F</u>	<u>G</u>	<u>H</u>	<u>I</u>	<u>J</u>	<u>K</u>	<u>L</u>	TOTAL
4:15 PM	0	0	59	11	2	1	49	64	21	0	29	1	237
4:30 PM	5	1	41	13	0	0	35	52	14	0	47	3	211
4:45 PM	1	1	41	5	1	0	44	54	18	0	41	0	206
5:00 PM	0	2	29	7	0	0	49	44	20	2	29	4	186
5:15 PM	2	0	53	11	0	2	83	57	19	1	40	2	270
5:30 PM	4	0	32	11	3	1	66	59	14	1	39	5	235
5:45 PM	3	3	65	11	0	0	68	72	18	0	57	1	298
6:00 PM	0	1	36	7	0	0	72	67	21	0	34	1	239
HOURLY TOTALS	<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>	<u>E</u>	<u>F</u>	<u>G</u>	<u>H</u>	<u>I</u>	<u>J</u>	<u>K</u>	<u>L</u>	TOTAL
Beginning At													
4:00 PM	6	4	170	36	3	1	177	214	73	2	146	8	840
4:15 PM	8	4	164	36	1	2	211	207	71	3	157	9	873
4:30 PM	7	3	155	34	4	3	242	214	71	4	149	11	897
4:45 PM	9	5	179	40	3	3	266	232	71	4	165	12	989
5:00 PM	9	4	186	40	3	3	289	255	72	2	170	9	1042

APPENDIX B:
EXISTING & EXISTING PLUS PROJECT CONDITIONS
TECHNICAL ANALYSIS



Village at the Peak
1: Calle de la Plata & Pyramid Highway

AM Peak
Existing Conditions



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕		↖	↖		↖	↖	
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	11	2	253	66	1	3	130	162	16	4	254	6
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	12	2	278	73	1	3	143	178	18	4	279	7
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	759	773	282	1040	767	187	286			196		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	759	773	282	1040	767	187	286			196		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	96	99	63	39	100	100	89			100		
cM capacity (veh/h)	293	292	756	120	294	855	1276			1377		

Direction Lane #	EB 1	EB 2	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	14	278	77	143	196	4	286
Volume Left	12	0	73	143	0	4	0
Volume Right	0	278	3	0	18	0	7
cSH	293	756	125	1276	1700	1377	1700
Volume to Capacity	0.05	0.37	0.61	0.11	0.12	0.00	0.17
Queue Length 95th (ft)	4	42	78	9	0	0	0
Control Delay (s)	17.9	12.5	71.3	8.2	0.0	7.6	0.0
Lane LOS	C	B	F	A		A	
Approach Delay (s)	12.8		71.3	3.5		0.1	
Approach LOS	B		F				

Intersection Summary		
Average Delay		10.4
Intersection Capacity Utilization	43.3%	ICU Level of Service
Analysis Period (min)		15
		A

Village at the Peak
1: Calle de la Plata & Pyramid Highway

PM Peak
Existing Conditions



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕		↖	↕		↖	↕	
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	9	4	186	40	3	3	289	255	72	2	170	9
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	10	5	214	46	3	3	332	293	83	2	195	10
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1168	1245	201	1415	1209	334	206			376		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1168	1245	201	1415	1209	334	206			376		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	92	96	75	32	98	100	76			100		
cM capacity (veh/h)	135	131	840	68	138	707	1366			1183		

Direction Lane #	EB 1	EB 2	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	15	214	53	332	376	2	206
Volume Left	10	0	46	332	0	2	0
Volume Right	0	214	3	0	83	0	10
cSH	134	840	75	1366	1700	1183	1700
Volume to Capacity	0.11	0.25	0.71	0.24	0.22	0.00	0.12
Queue Length 95th (ft)	9	25	82	24	0	0	0
Control Delay (s)	35.2	10.7	127.8	8.5	0.0	8.1	0.0
Lane LOS	E	B	F	A		A	
Approach Delay (s)	12.3		127.8	4.0		0.1	
Approach LOS	B		F				

Intersection Summary		
Average Delay		10.4
Intersection Capacity Utilization	44.7%	ICU Level of Service
Analysis Period (min)		15
		A

Village at the Peak
1: Calle de la Plata & Pyramid Highway

AM Peak
Existing Plus Project Conditions



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕		↖	↖		↖	↕	
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	11	108	253	134	30	61	130	116	273	225	217	6
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	12	119	278	147	33	67	143	127	300	247	238	7
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1233	1449	242	1634	1303	277	245			427		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1233	1449	242	1634	1303	277	245			427		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	86	0	65	0	71	91	89			78		
cM capacity (veh/h)	84	91	797	0	112	761	1321			1132		

Direction Lane #	EB-1	EB-2	WB-1	NB-1	NB-2	SB-1	SB-2
Volume Total	131	278	247	143	427	247	245
Volume Left	12	0	147	143	0	247	0
Volume Right	0	278	67	0	300	0	7
cSH	91	797	0	1321	1700	1132	1700
Volume to Capacity	1.44	0.35	Err	0.11	0.25	0.22	0.14
Queue Length 95th (ft)	249	39	Err	9	0	21	0
Control Delay (s)	333.9	11.9	Err	8.1	0.0	9.1	0.0
Lane LOS	F	B	F	A		A	
Approach Delay (s)	114.9		Err	2.0		4.6	
Approach LOS	F		F				

Intersection Summary	
Average Delay	Err
Intersection Capacity Utilization	64.7%
ICU Level of Service	C
Analysis Period (min)	15



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↓		↓	↑
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	351	255	133	16	4	92
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	382	277	145	17	4	100
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	162				1193	153
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	162				1193	153
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	73				97	89
cM capacity (veh/h)	1417				151	893

Direction Lane #	EB 1	WB 1	SB 1	SB 2
Volume Total	659	162	4	100
Volume Left	382	0	4	0
Volume Right	0	17	0	100
cSH	1417	1700	151	893
Volume to Capacity	0.27	0.10	0.03	0.11
Queue Length 95th (ft)	27	0	2	9
Control Delay (s)	6.1	0.0	29.6	9.5
Lane LOS	A		D	A
Approach Delay (s)	6.1	0.0	10.4	
Approach LOS			B	

Intersection Summary			
Average Delay		5.5	
Intersection Capacity Utilization		54.1%	ICU Level of Service A
Analysis Period (min)		15	



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	233	26	88	10	3	61
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	253	28	96	11	3	66
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked					636	101
vC, conflicting volume	107					
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	107				636	101
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	83				99	93
cM capacity (veh/h)	1484				367	954

Direction Lane #	EB-1	WB-1	SB-1
Volume Total	282	107	70
Volume Left	253	0	3
Volume Right	0	11	66
cSH	1484	1700	888
Volume to Capacity	0.17	0.06	0.08
Queue Length 95th (ft)	15	0	6
Control Delay (s)	7.3	0.0	9.4
Lane LOS	A		A
Approach Delay (s)	7.3	0.0	9.4
Approach LOS			A

Intersection Summary			
Average Delay		5.9	
Intersection Capacity Utilization		31.5%	ICU Level of Service
Analysis Period (min)		15	A

Village at the Peak
1: Calle de la Plata & Pyramid Highway

PM Peak
Existing Plus Project Conditions



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔	↗		↔		↖	↖		↖	↔	
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	9	53	186	385	129	300	289	208	217	127	131	9
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	10	61	214	443	148	345	332	239	249	146	151	10
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1770	1601	156	1715	1481	364	161			489		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1770	1601	156	1715	1481	364	161			489		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	0	13	76	0	0	49	77			86		
cM capacity (veh/h)	0	70	890	11	83	681	1418			1075		

Direction Lane #	EB 1	EB 2	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	71	214	936	332	489	146	161
Volume Left	10	0	443	332	0	146	0
Volume Right	0	214	345	0	249	0	10
cSH	0	890	22	1418	1700	1075	1700
Volume to Capacity	Err	0.24	42.36	0.23	0.29	0.14	0.09
Queue Length 95th (ft)	Err	23	Err	23	0	12	0
Control Delay (s)	Err	10.3	Err	8.3	0.0	8.9	0.0
Lane LOS	F	B	F	A		A	
Approach Delay (s)	Err		Err	3.4		4.2	
Approach LOS	F		F				

Intersection Summary	
Average Delay	Err
Intersection Capacity Utilization	94.4%
ICU Level of Service	F
Analysis Period (min)	15



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↗	↗
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	192	205	353	7	19	461
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	209	223	384	8	21	501
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	391				1028	388
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	391				1028	388
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	82				90	24
cM capacity (veh/h)	1167				213	661

Direction Lane #	EB 1	WB 1	SB 1	SB 2
Volume Total	432	391	21	501
Volume Left	209	0	21	0
Volume Right	0	8	0	501
cSH	1167	1700	213	661
Volume to Capacity	0.18	0.23	0.10	0.76
Queue Length 95th (ft)	16	0	8	175
Control Delay (s)	5.2	0.0	23.7	25.5
Lane LOS	A		C	D
Approach Delay (s)	5.2	0.0	25.4	
Approach LOS			D	

Intersection Summary			
Average Delay		11.5	
Intersection Capacity Utilization		54.2%	ICU Level of Service A
Analysis Period (min)		15	



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	127	97	53	5	13	307
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	138	105	58	5	14	334
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	63				442	60
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	63				442	60
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	91				97	67
cM capacity (veh/h)	1540				522	1005

Direction Lane #	EB 1	WB 1	SB 1
Volume Total	243	63	348
Volume Left	138	0	14
Volume Right	0	5	334
cSH	1540	1700	969
Volume to Capacity	0.09	0.04	0.36
Queue Length 95th (ft)	7	0	41
Control Delay (s)	4.6	0.0	10.8
Lane LOS	A		B
Approach Delay (s)	4.6	0.0	10.8
Approach LOS			B

Intersection Summary			
Average Delay		7.4	
Intersection Capacity Utilization		45.2%	ICU Level of Service A
Analysis Period (min)		15	

APPENDIX C:
2018 & 2018 PLUS PROJECT CONDITIONS
TECHNICAL ANALYSIS



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↑	↗	↖↗	↑	↗	↖↗	↑↑	↗	↖↗	↑↑	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	0.94	1.00	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	4990	1863	1583	3433	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	1863	1583	4990	1863	1583	3433	3539	1583	3433	3539	1583
Volume (vph)	117	97	221	464	39	44	372	868	643	117	1298	87
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	123	102	233	488	41	46	392	914	677	123	1366	92
RTOR Reduction (vph)	0	0	132	0	0	38	0	0	179	0	0	52
Lane Group Flow (vph)	123	102	101	488	41	8	392	914	498	123	1366	40
Turn Type	Prot		Perm	Prot		Perm	Prot	pm+ov		Prot		Perm
Protected Phases	7	4		3	8		5	2	3	1	6	
Permitted Phases			4			8			2			6
Actuated Green, G (s)	9.4	11.6	11.6	12.5	14.7	14.7	10.0	37.5	50.0	5.5	33.0	33.0
Effective Green, g (s)	9.4	11.6	11.6	12.5	14.7	14.7	10.0	37.5	50.0	5.5	33.0	33.0
Actuated g/C Ratio	0.11	0.14	0.14	0.15	0.18	0.18	0.12	0.45	0.60	0.07	0.40	0.40
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	200	260	221	751	330	280	413	1597	1029	227	1405	629
v/s Ratio Prot	0.07	0.05		c0.10	c0.02		c0.11	0.26	0.07	0.04	c0.39	
v/s Ratio Perm			c0.06			0.01			0.24			0.02
v/c Ratio	0.62	0.39	0.46	0.65	0.12	0.03	0.95	0.57	0.48	0.54	0.97	0.06
Uniform Delay, d1	35.1	32.5	32.9	33.2	28.8	28.3	36.3	16.9	9.3	37.6	24.6	15.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	5.5	1.0	1.5	2.0	0.2	0.0	31.1	0.5	0.4	2.6	17.7	0.0
Delay (s)	40.6	33.5	34.4	35.2	29.0	28.3	67.4	17.4	9.7	40.2	42.3	15.5
Level of Service	D	C	C	D	C	C	E	B	A	D	D	B
Approach Delay (s)		35.9			34.2			24.6			40.6	
Approach LOS		D			C			C			D	

Intersection Summary

HCM Average Control Delay	32.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	83.1	Sum of lost time (s)	20.0
Intersection Capacity Utilization	72.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	0.94	1.00	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	4990	1863	1583	3433	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	1863	1583	4990	1863	1583	3433	3539	1583	3433	3539	1583
Volume (vph)	177	146	290	805	83	118	393	1283	293	160	1055	91
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	186	154	305	847	87	124	414	1351	308	168	1111	96
RTOR Reduction (vph)	0	0	125	0	0	106	0	0	111	0	0	63
Lane Group Flow (vph)	186	154	180	847	87	18	414	1351	197	168	1111	33
Turn Type	Prot		Perm	Prot		Perm	Prot		pm+ov	Prot		Perm
Protected Phases	7	4		3	8		5	2	3	1	6	
Permitted Phases			4			8			2			6
Actuated Green, G (s)	17.6	14.0	14.0	16.1	12.5	12.5	11.1	35.7	51.8	5.0	29.6	29.6
Effective Green, g (s)	17.6	14.0	14.0	16.1	12.5	12.5	11.1	35.7	51.8	5.0	29.6	29.6
Actuated g/C Ratio	0.20	0.16	0.16	0.19	0.14	0.14	0.13	0.41	0.60	0.06	0.34	0.34
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	359	300	255	926	268	228	439	1456	1018	198	1207	540
v/s Ratio Prot	0.11	0.08		c0.17	0.05		c0.12	c0.38	0.04	0.05	0.31	
v/s Ratio Perm			c0.11			0.01			0.09			0.02
v/c Ratio	0.52	0.51	0.71	0.91	0.32	0.08	0.94	0.93	0.19	0.85	0.92	0.06
Uniform Delay, d1	30.8	33.3	34.5	34.7	33.4	32.2	37.5	24.3	8.0	40.5	27.5	19.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.3	1.5	8.6	13.3	0.7	0.1	28.9	10.5	0.1	27.1	11.4	0.0
Delay (s)	32.1	34.8	43.0	47.9	34.1	32.3	66.4	34.8	8.1	67.6	38.9	19.3
Level of Service	C	C	D	D	C	C	E	C	A	E	D	B
Approach Delay (s)		37.9			45.0			37.1			41.0	
Approach LOS		D			D			D			D	

Intersection Summary		
HCM Average Control Delay	39.9	HCM Level of Service D
HCM Volume to Capacity ratio	0.82	
Actuated Cycle Length (s)	86.8	Sum of lost time (s) 8.0
Intersection Capacity Utilization	76.7%	ICU Level of Service D
Analysis Period (min)	15	
c Critical Lane Group		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	0.94	1.00	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Fr _t	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	4990	1863	1583	3433	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	1863	1583	4990	1863	1583	3433	3539	1583	3433	3539	1583
Volume (vph)	117	203	221	532	66	102	372	822	900	338	1261	87
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	123	214	233	560	69	107	392	865	947	356	1327	92
RTOR Reduction (vph)	0	0	170	0	0	81	0	0	42	0	0	47
Lane Group Flow (vph)	123	214	63	560	69	26	392	865	905	356	1327	45
Turn Type	Prot		Perm	Prot		Perm	Prot		pm+ov	Prot		Perm
Protected Phases	7	4		3	8		5	2	3	1	6	
Permitted Phases			4			8			2			6
Actuated Green, G (s)	12.2	15.0	15.0	23.7	26.5	26.5	12.0	39.6	63.3	13.5	41.1	41.1
Effective Green, g (s)	12.2	15.0	15.0	23.7	26.5	26.5	12.0	39.6	63.3	13.5	41.1	41.1
Actuated g/C Ratio	0.11	0.14	0.14	0.22	0.25	0.25	0.11	0.37	0.59	0.13	0.38	0.38
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	200	259	220	1097	458	389	382	1300	988	430	1349	604
v/s Ratio Prot	0.07	c0.11		0.11	0.04		c0.11	0.24	c0.20	0.10	c0.37	
v/s Ratio Perm			0.04			0.02			0.37			0.03
v/c Ratio	0.62	0.83	0.28	0.51	0.15	0.07	1.03	0.67	0.92	0.83	0.98	0.07
Uniform Delay, d1	45.6	45.1	41.6	37.0	31.8	31.2	47.9	28.6	19.9	46.0	33.0	21.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	5.5	18.9	0.7	0.4	0.2	0.1	52.9	1.3	12.8	12.4	20.5	0.1
Delay (s)	51.1	64.1	42.3	37.4	32.0	31.2	100.8	29.9	32.6	58.4	53.5	21.3
Level of Service	D	E	D	D	C	C	F	C	C	E	D	C
Approach Delay (s)		52.4			36.0			43.7			52.8	
Approach LOS		D			D			D			D	

Intersection Summary

HCM Average Control Delay	46.6	HCM Level of Service	D
HCM Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	107.8	Sum of lost time (s)	8.0
Intersection Capacity Utilization	86.1%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

SIDRA
INTERSECTION

Movement Summary

Village at the Peak - Calle de la Plata/Driveway A

2018 Plus Project Conditions - AM Peak

Roundabout

Vehicle Movements

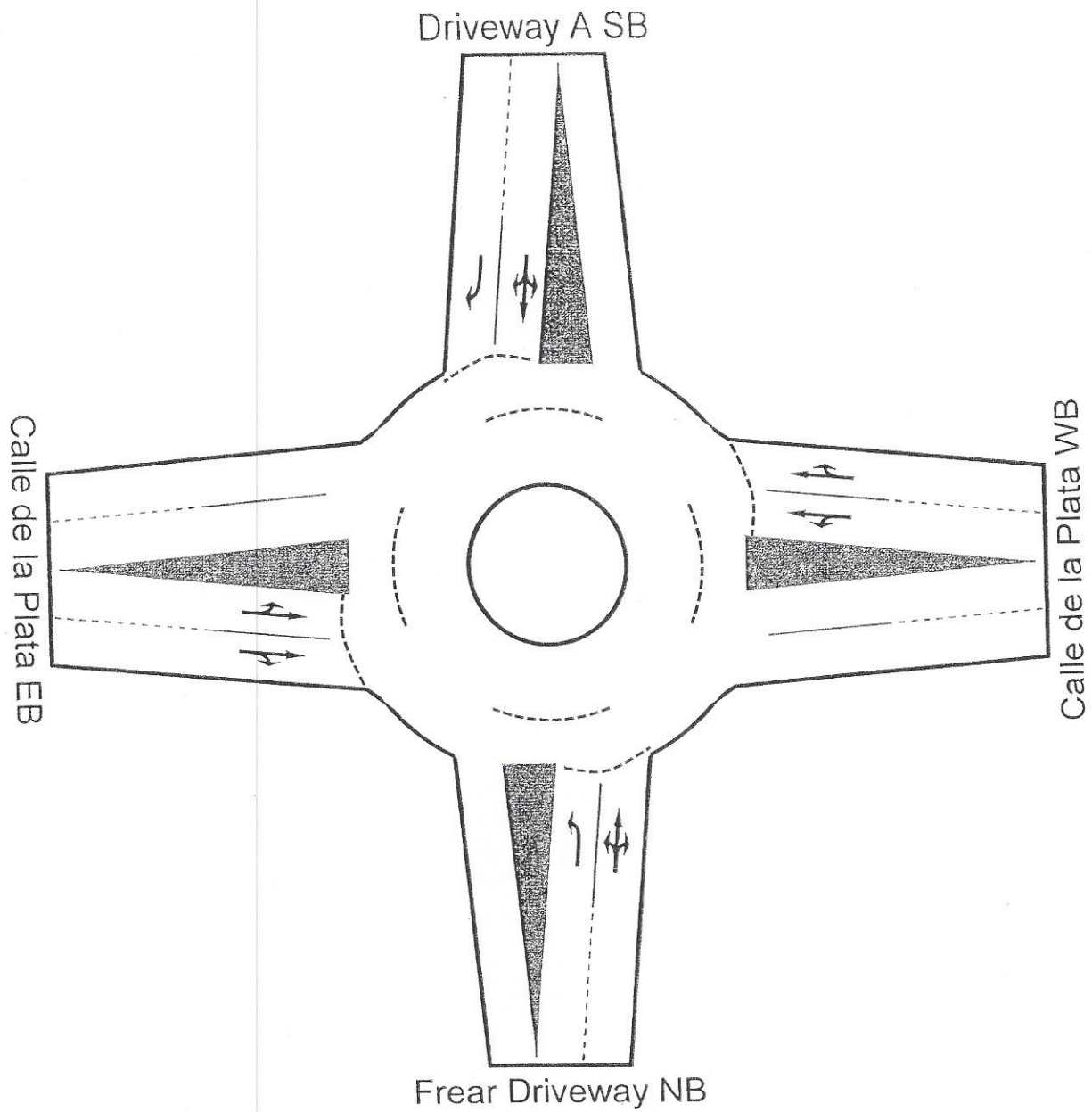
Mov ID	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (ft)	Prop. Queued	Eff. Stop Rate	Aver Speed (mph)
Frear Driveway NB										
3L	L	206	1.9	0.163	13.2	LOS B	23	0.63	0.86	21.9
8T	T	1	50.0	0.167	4.2	LOS A	23	0.63	0.62	22.9
8R	R	14	6.7	0.163	7.2	LOS A	23	0.63	0.69	23.3
Approach		223	2.7	0.164	12.7	LOS B	23	0.63	0.84	22.0
Calle de la Plata WB										
1L	L	24	4.2	0.293	12.3	LOS B	46	0.59	0.81	27.9
6T	T	448	2.0	0.293	8.1	LOS A	46	0.59	0.68	31.6
6R	R	17	5.6	0.295	8.2	LOS A	46	0.59	0.74	30.8
Approach		490	2.2	0.293	8.3	LOS A	46	0.59	0.69	31.4
Driveway A SB										
7L	L	4	20.0	0.068	11.5	LOS B	9	0.53	0.78	22.4
4T	T	1	50.0	0.069	2.6	LOS A	9	0.53	0.38	23.2
4R	R	100	2.0	0.069	5.4	LOS A	9	0.53	0.58	23.6
Approach		107	3.7	0.069	5.6	LOS A	9	0.53	0.59	23.6
Calle de la Plata EB										
5L	L	382	2.1	0.540	9.6	LOS A	136	0.20	0.59	29.1
2T	T	599	2.0	0.540	5.4	LOS A	137	0.19	0.42	33.7
2R	R	586	2.0	0.540	5.5	LOS A	137	0.19	0.45	32.8
Approach		1567	2.0	0.539	6.5	LOS A	137	0.19	0.47	32.1
All Vehicles		2387	2.2	0.540	7.4	LOS A	137	0.33	0.56	30.1

Symbols which may appear in this table:

Following Degree of Saturation
 # x = 1.00 for Short Lane with resulting Excess Flow
 * x = 1.00 due to minimum capacity

Following LOS
 # - Based on density for continuous movements

Following Queue





Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖	↑	↗		↘	
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	233	335	389	10	3	61
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	245	353	409	11	3	64
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	420				1258	415
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	420				1258	415
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	78				98	90
cM capacity (veh/h)	1139				148	638

Direction Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	245	353	420	67
Volume Left	245	0	0	3
Volume Right	0	0	11	64
cSH	1139	1700	1700	552
Volume to Capacity	0.22	0.21	0.25	0.12
Queue Length 95th (ft)	20	0	0	10
Control Delay (s)	9.0	0.0	0.0	12.4
Lane LOS	A			B
Approach Delay (s)	3.7		0.0	12.4
Approach LOS				B

Intersection Summary			
Average Delay		2.8	
Intersection Capacity Utilization		47.9%	ICU Level of Service
Analysis Period (min)		15	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↑	↗	↖↖↖	↑	↗	↖↖	↑↑	↗	↖↖	↑↑	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	0.94	1.00	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	4990	1863	1583	3433	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	1863	1583	4990	1863	1583	3433	3539	1583	3433	3539	1583
Volume (vph)	177	195	290	1150	209	415	393	1236	438	285	1016	91
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	186	205	305	1211	220	437	414	1301	461	300	1069	96
RTOR Reduction (vph)	0	0	144	0	0	186	0	0	54	0	0	66
Lane Group Flow (vph)	186	205	161	1211	220	251	414	1301	407	300	1069	30
Turn Type	Prot		Perm	Prot		Perm	Prot		pm+ov	Prot		Perm
Protected Phases	7	4		3	8		5	2	3	1	6	
Permitted Phases			4			8			2			6
Actuated Green, G (s)	14.0	14.4	14.4	24.0	24.4	24.4	13.0	35.0	59.0	9.0	31.0	31.0
Effective Green, g (s)	14.0	14.4	14.4	24.0	24.4	24.4	13.0	35.0	59.0	9.0	31.0	31.0
Actuated g/C Ratio	0.14	0.15	0.15	0.24	0.25	0.25	0.13	0.36	0.60	0.09	0.32	0.32
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	252	273	232	1217	462	393	454	1259	1014	314	1115	499
v/s Ratio Prot	0.11	c0.11		c0.24	0.12		c0.12	c0.37	0.10	0.09	0.30	
v/s Ratio Perm			0.10			0.16			0.16			0.02
v/c Ratio	0.74	0.75	0.69	1.00	0.48	0.64	0.91	1.03	0.40	0.96	0.96	0.06
Uniform Delay, d1	40.4	40.3	39.9	37.1	31.6	33.1	42.1	31.7	10.4	44.5	33.1	23.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	10.7	11.0	8.6	24.4	0.8	3.4	22.4	34.4	0.3	38.6	17.7	0.1
Delay (s)	51.2	51.3	48.5	61.6	32.3	36.5	64.6	66.1	10.6	83.1	50.8	23.6
Level of Service	D	D	D	E	C	D	E	E	B	F	D	C
Approach Delay (s)		50.1			52.3			54.0			55.6	
Approach LOS		D			D			D			E	

Intersection Summary			
HCM Average Control Delay	53.4	HCM Level of Service	D
HCM Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	98.4	Sum of lost time (s)	16.0
Intersection Capacity Utilization	87.8%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

SIDRA INTERSECTION

Movement Summary

Village at the Peak - Calle de la Plata/Driveway A

2018 Plus Project Conditions - PM Peak

Roundabout

Vehicle Movements

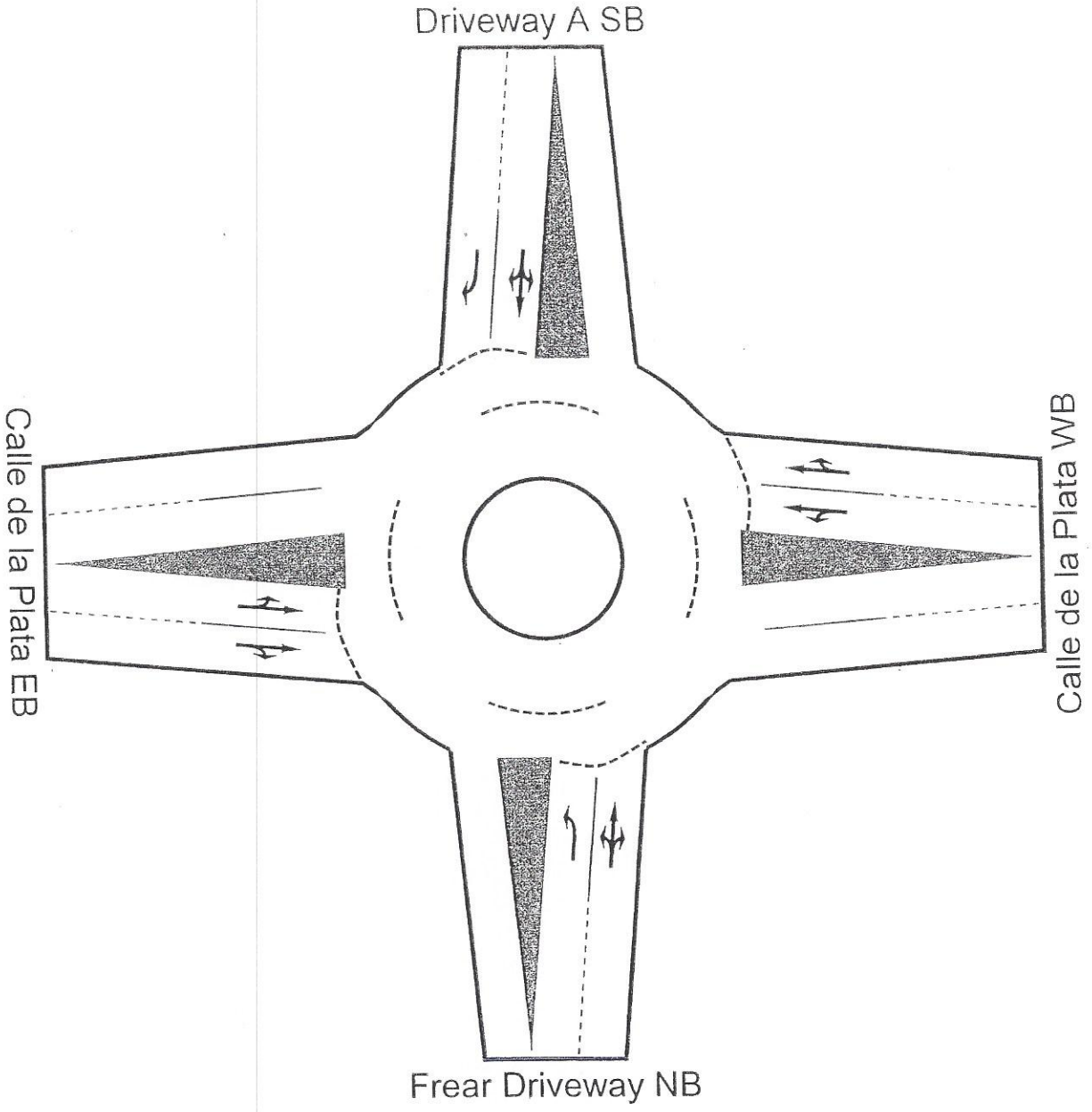
Mov ID	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (ft)	Prop. Queued	Eff. Stop Rate	Aver Speed (mph)
Frear Driveway NB										
3L	L	707	2.0	0.451	12.8	LOS B	81	0.65	0.90	22.0
8T	T	1	50.0	0.500	3.9	LOS A	81	0.65	0.61	22.8
8R	R	40	2.5	0.449	6.9	LOS A	81	0.65	0.75	23.3
Approach		749	2.1	0.451	12.5	LOS B	81	0.65	0.90	22.1
Calle de la Plata WB										
1L	L	39	2.6	0.565	15.6	LOS B	114	0.79	1.00	26.1
6T	T	697	2.0	0.562	11.3	LOS B	115	0.79	0.95	30.2
6R	R	8	12.5	0.571	11.3	LOS B	115	0.79	0.96	28.9
Approach		744	2.2	0.562	11.5	LOS B	115	0.79	0.96	29.9
Driveway A SB										
7L	L	21	4.8	0.488	16.9	LOS B	81	0.79	1.02	20.7
4T	T	1	50.0	0.500	8.0	LOS A	81	0.79	0.88	21.4
4R	R	501	2.0	0.493	10.4	LOS B	84	0.79	0.96	22.0
Approach		524	2.3	0.493	10.7	LOS B	84	0.79	0.96	22.0
Calle de la Plata EB										
5L	L	209	1.9	0.374	9.8	LOS A	74	0.23	0.60	29.0
2T	T	408	2.0	0.374	5.5	LOS A	74	0.23	0.43	33.5
2R	R	382	2.1	0.374	5.6	LOS A	74	0.23	0.47	32.6
Approach		998	2.0	0.374	6.4	LOS A	74	0.23	0.48	32.1
All Vehicles		3015	2.1	0.571	9.9	LOS A	115	0.57	0.78	26.3

Symbols which may appear in this table:

Following Degree of Saturation
 # x = 1.00 for Short Lane with resulting Excess Flow
 * x = 1.00 due to minimum capacity

Following LOS
 # - Based on density for continuous movements

Following Queue





Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖	↑	↗		↘	
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	127	304	377	5	13	307
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	134	320	397	5	14	323
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	402				987	399
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	402				987	399
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	88				94	50
cM capacity (veh/h)	1157				243	650

Direction Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	134	320	402	337
Volume Left	134	0	0	14
Volume Right	0	0	5	323
cSH	1157	1700	1700	609
Volume to Capacity	0.12	0.19	0.24	0.55
Queue Length 95th (ft)	10	0	0	84
Control Delay (s)	8.5	0.0	0.0	18.0
Lane LOS	A			C
Approach Delay (s)	2.5		0.0	18.0
Approach LOS				C

Intersection Summary			
Average Delay		6.0	
Intersection Capacity Utilization		56.9%	ICU Level of Service
Analysis Period (min)		15	B

APPENDIX G:
INTERSECTION CRASH DATA

Weather	Fatalities	Injured	Property Damage Only	Injury Type	Crash Type	Total Vehicles	V1 Type	V1 Dir	V1 Drvr Age
SNOW		1		B	NON-COLLISION	1	PICKUP	E	64
UNKNOWN			PDO		REAR-END	2	SEDAN, 4 DOOR	U	28
CLEAR		3		B	HEAD-ON	2	PICKUP	U	44
RAIN			PDO		NON-COLLISION	1	UTILITY	U	
UNKNOWN	1			K	NON-COLLISION	1	CARRY-ALL	S	
RAIN		1		C	ANGLE	2	PICKUP	W	41
	Sum: 1	Sum: 5	Count: 2						
	Count: 1	Count: 3							
	TOTAL	Count: 6							

V1 Lane Num	V1 Action	V1 Driver Factor	V1 Drvr Distracted
1	NOT REPORTED	APPARENTLY NORMAL	
1	TURNING RIGHT		
	TURNING LEFT	INATTENTION/DISTRACTED	UNKNOWN
	GOING STRAIGHT	APPARENTLY NORMAL	
	GOING STRAIGHT		
	TURNING LEFT	APPARENTLY NORMAL	

V1 Vehicle Factor	V1 Most Harmful Event	V1 Event 1
RAN OFF ROAD		DITCH
OTHER IMPROPER DRIVING		SLOW/STOPPED VEHICLE
FAILED TO YIELD RIGHT OF WAY		
FAILURE TO KEEP IN PROPER LANE OR RUNNING OFF		
ROAD. UNSAFE LANE CHANGE		
ROAD. OVER CORRECTING/OVER STEERING		RAN OFF ROAD RIGHT
FAILED TO YIELD RIGHT OF WAY	MOTOR VEHICLE IN TRANSPORT	

V1 Event 2	V2 Type	V2 Dir	V2 Drvr Age	V2 Lane Num	V2 Action
RAN OFF ROAD LEFT					
	CARRY-ALL	U	62	1	STOPPED
	UTILITY	U	36		GOING STRAIGHT
	HATCHBACK, 4 DOOR	S	40		GOING STRAIGHT

V2 Factors Driver	V2 Factors Veh	V2 Most Harm Event	V2 Seq Event1	Factors Roadway
				DRY
			SLOW/STOPPED VEHICLE	DRY
APPARENTLY NORMAL				DRY
				DRY
APPARENTLY NORMAL		MOTOR VEHICLE IN TRANSPORT		DRY

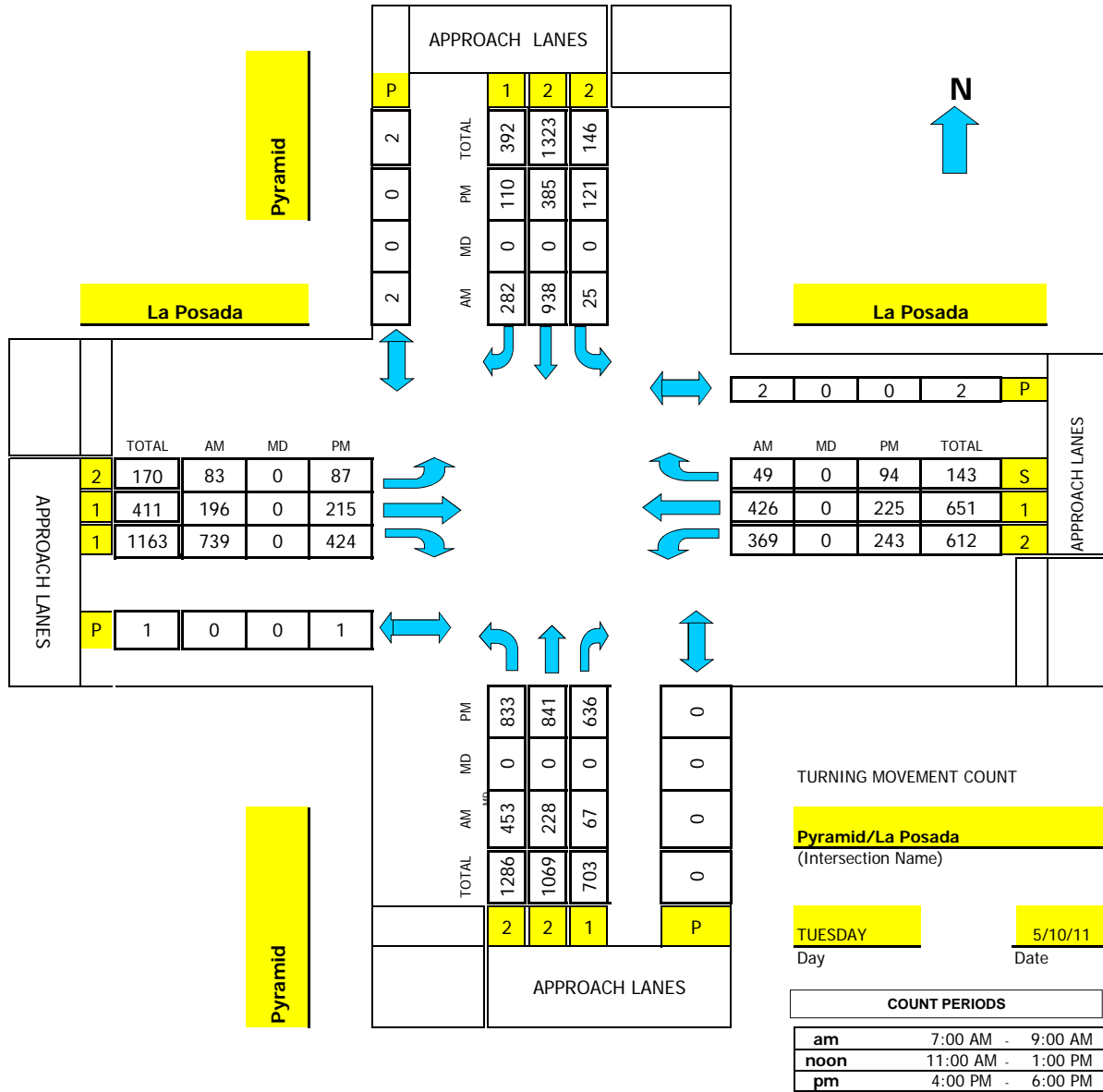
Lighting	HWY Factors	Agency	Accident Rec Num
DARK - NO LIGHTING	WEATHER	WASO	1855109
DAYLIGHT	NONE	WASO	2121766
DAYLIGHT	NONE	NHP	2100243
		NHP	2100906
DAYLIGHT	UNKNOWN	NHP	1915704
DARK - SPOT LIGHTING	NONE	NHP	1903118

APPENDIX H:

TURNING MOVEMENT COUNT: PYRAMID HIGHWAY AND POSADA

TMC Summary of Pyramid/La Posada

Project #: 0



Heavy Vehicle Percentage 0.00%

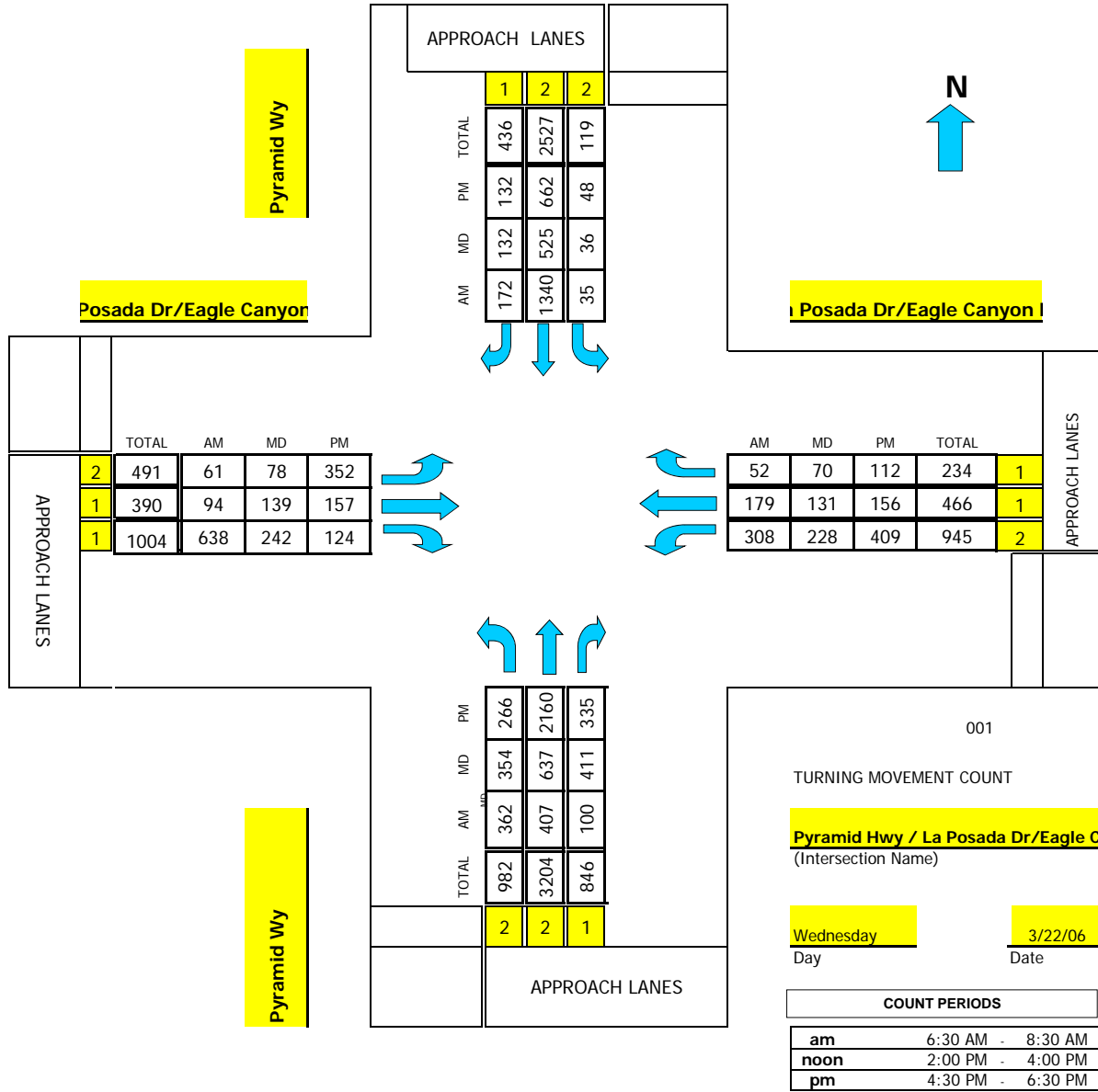
AM PEAK HOUR 700 AM

NOON PEAK HOUR 0 AM

PM PEAK HOUR 500 PM

TMC Summary of Pyramid Wy/La Posada Dr/Eagle Canyon Dr

Project #: 06-8039-061



AM PEAK HOUR 700 AM

NOON PEAK HOUR 245 PM

PM PEAK HOUR 500 PM

APPENDIX I:

5TH EDITING RRIF BROCHURE



REGIONAL ROAD IMPACT FEE SCHEDULE

Land Use	Unit	North Service Area		South Service Area	
		VMT	Dollars (\$253.39/VMT)	VMT	Dollars (\$287.05/VMT)
Residential					
Single-Family	Dwelling	14.93	\$3,783.11	14.67	\$4,211.02
Multi-Family	Dwelling	9.70	\$2,457.88	9.53	\$2,735.59
Industrial					
General Light Industrial	1,000 GFA	7.30	\$1,849.75	7.17	\$2,058.15
Manufacturing	1,000 GFA	4.00	\$1,013.56	3.93	\$1,128.11
Warehouse	1,000 GFA	3.73	\$945.14	3.66	\$1,050.60
Mini-Warehouse	1,000 GFA	2.62	\$663.88	2.57	\$737.72
Commercial/Retail					
Commercial/Retail	1,000 GFA	26.69	\$6,762.98	26.23	\$7,529.32
Eating/Drinking Places	1,000 GFA	26.69	\$6,762.98	26.23	\$7,529.32
Casino/Gaming	1,000 GFA	48.24	\$12,223.53	47.40	\$13,606.17
Office and Other Services					
Schools	1,000 GFA	10.67	\$2,703.67	10.48	\$3,008.28
Day Care	1,000 GFA	10.67	\$2,703.67	10.48	\$3,008.28
Lodging	Room	5.90	\$1,495.00	5.79	\$1,662.02
Hospital	1,000 GFA	13.85	\$3,509.45	13.61	\$3,906.75
Nursing Home	1,000 GFA	7.96	\$2,016.98	7.82	\$2,244.73
Medical Office	1,000 GFA	37.85	\$9,590.81	37.19	\$10,675.39
Office and Other Services	1,000 GFA	11.55	\$2,926.65	11.35	\$3,258.02
Regional Recreational Facility	Acre	2.39	\$605.60	2.35	\$674.57

Regional Road Impact Fee (RRIF)

**5th Edition
March 2, 2015**

An informational brochure
brought to you by the



www.rtcwashoe.com

5th Edition Regional Road Impact Fees

General Information

1. What is the Regional Road Impact Fee (RRIF)?

New development creates a demand for new roadway capacity. The RRIF is a tool to collect the cost of providing the new capacity for new development.

2. What is the cost of the RRIF?

See the impact fee schedule on the reverse side of this brochure.

3. How will the RRIF funds be used?

To build capacity improvements such as new roads and ramps, road widening and intersection improvements, and to preserve right of way for future capacity improvements.

4. When does the 5th Edition of the impact fees take effect?

The new fee schedule goes into effect March 2, 2015. The amount of impact fees shall be determined as of the date of payment.

5. When will the RRIF need to be paid?

At the time a building permit is issued or may be deferred to the Certificate of Occupancy, as approved by the local jurisdiction.

6. Payment Options?

Pay impact fees due with check or money order. Or pay impact fees due with credits or waivers earned for constructing capacity improvements or right-of-way dedication included in the RRIF Capital Improvements Plan (CIP).

Regional Road Impact Fee Administrators

City of Reno – Bill Gall, P.E.

Engineering Manager
City of Reno, Community Development
One East First Street, 2nd Floor
Reno, Nevada 89501
(775) 334-2028, fax (775) 334-2382
e-mail: gallw@reno.gov

City of Sparks – John Martini, P.E.

Assistant Community Services Director City of Sparks,
City Works
431 Prater Way
Sparks, NV 89431
(775) 353-4080, fax (775) 353-1608
e-mail: jmartini@cityofsparks.us

Washoe County - Clara Lawson, P.E.

Washoe County Public Works
Engineering Division
1001 E 9th Street, Reno, NV 89520
(775) 328-3603, fax (775) 328-3699
e-mail: clawson@mail.co.washoe.nv.us

RTC – Jeffrey D. Hale, P.E.

Engineering Director
Regional Transportation Commission
Engineering Department
1105 Terminal Way, Suite 108
(775) 348-0171, fax (775) 348-0170
e-mail: jhale@rtcwashoe.com

or Julie Masterpool, P.E.

Senior Traffic Engineer
(775)335-1897, fax (775) 348-0170
e-mail: jmasterpool@rtcwashoe.com

Significant Changes in the 5th Edition RRIF

Service Areas – North and South Service Areas are divided by I-80. Fees collected within a service area will be spent in the same service area to construct capacity improvements from the RRIF Capital Improvement Plan.

Simplified Land Use Categories – Reduction in the number of land use categories, in particular related to commercial/ retail uses.

Change of Use Fees – For modification of a previous land use requiring a permit, the impact fee will be based on the net increase of the new use to the previous use. The fee payer must provide documentation of the most recent previous use and there is no time limit for the last use determination.

RRIF Waivers – Issued for capital improvements constructed by new development after adoption of the 5th Edition RRIF. Waivers may only be used to pay the impact fee due within the designated development of record associated with the waivers.

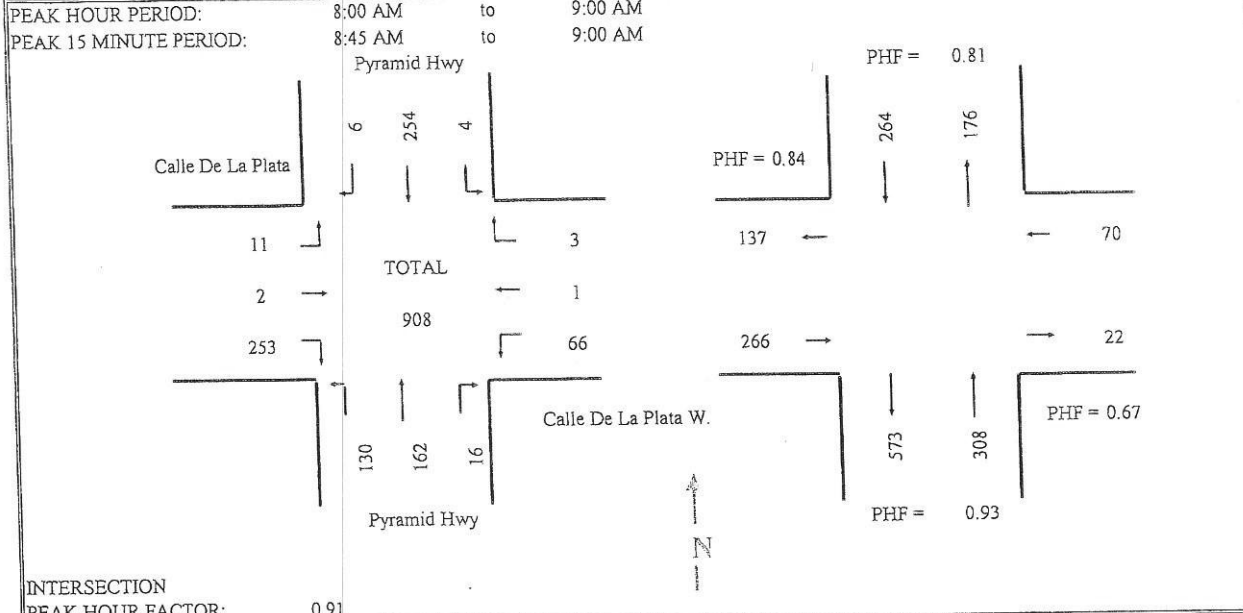
RRIF Credits – Issued for capital improvements constructed by new development prior to the adoption of the 5th Edition RRIF. Credits may be used only within the CCFEA Benefit District associated with the credits and per the CCFEA agreement.

To find out more information on the RRIF Program, please visit www.rtcwashoe.com and type “RRIF” in the search box.

APPENDIX J:
INTERSECTION TURNING MOVEMENT DATA

INTERSECTION TURNING MOVEMENT SUMMARY

INTERSECTION: Calle De La Plata West/Pyramid Hwy
JURISDICTION:
PROJECT TITLE: Calle De La Plata West
TIME: 7:00 AM to 9:00 AM
DATE: Thur 8-21-08
PROJECT NO.: RN08-0405

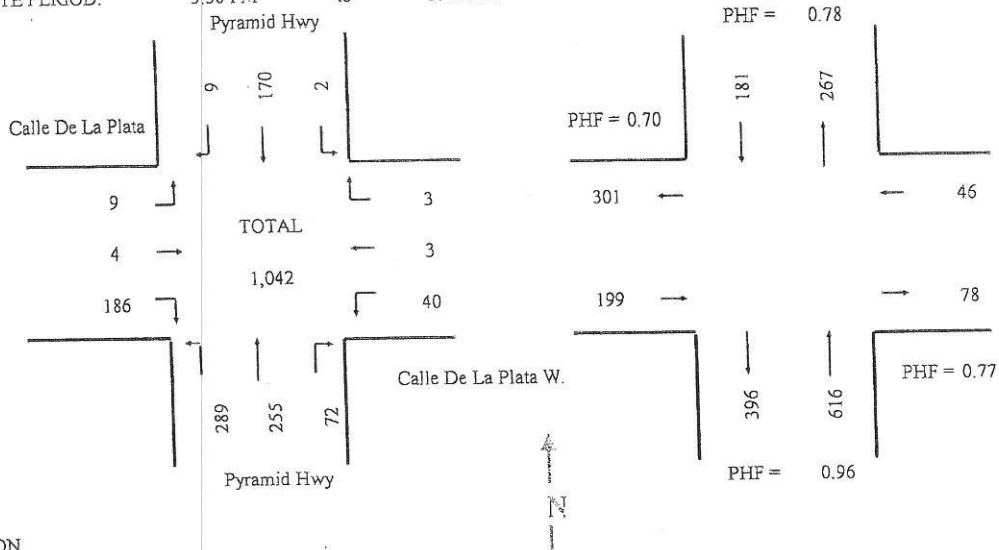


RUNNING COUNTS	Calle De La Plata Eastbound			Calle De La Plata W. Westbound			Pyramid Hwy Northbound			Pyramid Hwy Southbound			TOTAL
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
Period End	A	B	C	D	E	F	G	H	I	J	K	L	
7:15 AM	4	1	71	22	1	0	23	36	3	1	65	1	228
7:30 AM	6	2	147	37	1	0	46	75	8	1	145	5	473
7:45 AM	11	2	201	50	2	1	75	107	8	2	185	5	649
8:00 AM	11	2	258	61	2	1	104	145	14	3	240	6	847
8:15 AM	14	2	302	69	2	2	130	187	18	3	296	7	1032
8:30 AM	15	3	364	89	2	4	164	232	22	6	356	8	1265
8:45 AM	20	4	434	114	3	4	201	267	26	7	415	10	1505
9:00 AM	22	4	511	127	3	4	234	307	30	7	494	12	1755
PERIOD COUNTS													
Period End	A	B	C	D	E	F	G	H	I	J	K	L	TOTAL
7:15 AM	4	1	71	22	1	0	23	36	3	1	65	1	228
7:30 AM	2	1	76	15	0	0	23	39	5	0	80	4	245
7:45 AM	5	0	54	13	1	1	29	32	0	1	40	0	176
8:00 AM	0	0	57	11	0	0	29	38	6	1	55	1	198
8:15 AM	3	0	44	8	0	1	26	42	4	0	56	1	185
8:30 AM	1	1	62	20	0	2	34	45	4	3	60	1	233
8:45 AM	5	1	70	25	1	0	37	35	4	1	59	2	240
9:00 AM	2	0	77	13	0	0	33	40	4	0	79	2	250
HOURLY TOTALS													
Beginning At	A	B	C	D	E	F	G	H	I	J	K	L	TOTAL
7:00 AM	11	2	258	61	2	1	104	145	14	3	240	6	847
7:15 AM	10	1	231	47	1	2	107	151	15	2	231	6	804
7:30 AM	9	1	217	52	1	4	118	157	14	5	211	3	792
7:45 AM	9	2	233	64	1	3	126	160	18	5	230	5	856
8:00 AM	11	2	253	66	1	3	130	162	16	4	254	6	908

INTERSECTION TURNING MOVEMENT SUMMARY

INTERSECTION: Calle De La Plata West/Pyramid Hwy
JURISDICTION:
PROJECT TITLE: Calle De La Plata West
TIME: 4:00 PM to 6:00 PM
DATE: Thur 3-21-08
PROJECT NO.: RN08-0405

PEAK HOUR PERIOD: 5:00 PM to 6:00 PM
PEAK 15 MINUTE PERIOD: 5:30 PM to 5:45 PM



RUNNING COUNTS	Calle De La Plata Eastbound			Calle De La Plata W. Westbound			Pyramid Hwy Northbound			Pyramid Hwy Southbound			TOTAL
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
Period End	A	B	C	D	E	F	G	H	I	J	K	L	
4:15 PM	0	0	59	11	2	1	49	64	21	0	29	1	237
4:30 PM	5	1	100	24	2	1	84	116	35	0	76	4	448
4:45 PM	6	2	141	29	3	1	128	170	53	0	117	4	654
5:00 PM	6	4	170	36	3	1	177	214	73	2	146	8	840
5:15 PM	8	4	223	47	3	3	260	271	92	3	186	10	1110
5:30 PM	12	4	255	58	6	4	326	330	106	4	225	15	1345
5:45 PM	15	7	320	69	6	4	394	402	124	4	282	16	1643
6:00 PM	15	8	356	76	6	4	466	469	145	4	316	17	1882
PERIOD COUNTS	A	B	C	D	E	F	G	H	I	J	K	L	TOTAL
4:15 PM	0	0	59	11	2	1	49	64	21	0	29	1	237
4:30 PM	5	1	41	13	0	0	35	52	14	0	47	3	211
4:45 PM	1	1	41	5	1	0	44	54	18	0	41	0	206
5:00 PM	0	2	29	7	0	0	49	44	20	2	29	4	186
5:15 PM	2	0	53	11	0	2	83	57	19	1	40	2	270
5:30 PM	4	0	32	11	3	1	66	59	14	1	39	5	235
5:45 PM	3	3	65	11	0	0	68	72	18	0	57	1	298
6:00 PM	0	1	36	7	0	0	72	67	21	0	34	1	239
HOURLY TOTALS	A	B	C	D	E	F	G	H	I	J	K	L	TOTAL
Beginning At	A	B	C	D	E	F	G	H	I	J	K	L	TOTAL
4:00 PM	6	4	170	36	3	1	177	214	73	2	146	8	840
4:15 PM	8	4	164	36	1	2	211	207	71	3	157	9	873
4:30 PM	7	3	155	34	4	3	242	214	71	4	149	11	897
4:45 PM	9	5	179	40	3	3	266	232	71	4	165	12	989
5:00 PM	9	4	186	40	3	3	289	255	72	2	170	9	1042

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June 3, 2015

To: Pam Parenti
Thru: Scott Estes *SGE*
From: Holly Flores *HMF*
Re: **350 Calle De La Plata Discovery – Preliminary Water Facility Requirements**

PURPOSE:

Determine the least cost facility plan to provide water service to the proposed 186 unit subdivision in the Spanish Springs Valley. The preliminary Tentative Map for the subdivision is attached.

CONCLUSIONS AND RECOMMENDATIONS:

The project will require annexation to TMWA's retail water service territory prior to service. Once successfully annexed, water service can be provided by the Desert Springs System by extending at least two water mains to the property and constructing at least one new pressure regulating station. There are several main extension options shown on the attached exhibit. The preliminary cost estimate for service to the 350 Calle De La Plata project is approximately \$1,542,848 not including the off-site main extension costs. The included costs consist of Rate Schedule WSF charges for Area 12 and Supply and Treatment and one new pressure regulating station and do not include off-site main extensions or onsite water facilities.

DISCUSSION:

Location:

The 350 Calle De La Plata subdivision consists of 186 single-family residential units on APN 534-571-01 in Section 23 in T21N, R20E, MDM in the Spanish Springs Valley. The project is located north of Calle De La Plata and east of Pyramid Way in Washoe County. Current development plans include 186 single-family residential units on 58.5 acres with average lot size of 8,000 square feet. The project is located outside the Truckee Meadows Water Authority's retail service territory and must be annexed prior to service. An exhibit is attached showing the project location in relation to existing water facilities and retail service boundary.

Estimated Demands:

The maximum day domestic demand for the project has been estimated at 149 gpm. No separate potable irrigation demand was included in this analysis as it is unknown at this time. In addition, fire requirements are unknown and must be set by the Fire Authority prior to service.

Water Facility Requirements and Cost Estimates:

The project can be served by extending at least two water mains as shown on the attached hydraulic analyses exhibit and construction of at least one new pressure regulating station. Option 1 includes extending a main in Calle De La Plata from the existing 14-inch main near

Isidor Court to the project's eastern boundary and a new pressure regulating station near the project entrance. Option 2 involves connecting to the existing water main on the west side of Pyramid Way and extending a water main through the access road shown and construction of a new pressure regulating station. Both Options 1 and 2 will require crossing Pyramid Way which NDOT will most likely require jack and bore as opposed to open cutting installation methods. Option 3 involves connection to an existing regulated zone at Paradise View Drive or other route through the Donovan Ranch Subdivision as yet unbuilt. Option 3 will require the developer acquire easements acceptable to TMWA across properties owned by others and a route to connect to the street main through planned lots.

Two of the three off-site main extensions will be necessary to meet looping requirements under the NAC445A code and TMWA standards. Since no phasing plan was submitted, it is not known which options the builder may prefer. TMWA prefers Option 1 over Option 2 and will share costs in the main extension only in Calle De La Plata. Option 3 is intended as a secondary supply only and therefore, Option 1 or 2 must be constructed for primary service.

The preliminary water system facility requirements based on the estimated maximum day demand are summarized in the table below:

Table 1: Estimated Major Water Facility Costs

Facility Description	Quantity	Unit	Unit Cost	Total Cost	Comments
Area 12 Facility Charge	149	per gpm	\$5,789	\$862,561	Rate Schedule WSF
Supply and Treatment Facility Charge	149	per gpm	\$4,163	\$620,287	Rate Schedule WSF
Pressure Regulating Station	1 or 2	each	\$60,000	\$60,000	Depends on Option Chosen
Offsite Main Extensions	varies			unknown	Depends on Option Chosen
Estimated Cost				\$1,542,848	2015 planning level estimate only

ASSUMPTIONS:

1. The 350 Calle De La Plata subdivision will be annexed into the Truckee Meadows Water Authority's retail water service territory.
2. This preliminary study was based on information provided by Star Consulting in May 2015 including a preliminary Tentative Map and average lot sizes of 8,000 square feet.
3. The water facility plan options shown on the included exhibit are preliminary and subject to change.
4. Potable irrigation demands are unknown at this time.
5. Privately owned individual pressure regulating valves will be installed by the builder per TMWA design standards.
6. The estimated maximum day domestic demand for the project is 149 gpm. Actual demands will be determined at the time of application for service.
7. The fire flow requirement and duration has not been set by the governing fire agency and must be set prior to finalizing the water facility plan.

Truckee Meadows Water Authority is a not-for-profit, community-owned water utility, overseen by elected officials and citizen appointees from Reno, Sparks and Washoe County.

8. All cost estimates are preliminary and subject to change. The costs represented are preliminary planning level cost estimates that are based on the best information available today. Actual costs will be determined at the time of application for service.
9. This estimate does not include the cost of off-site main extensions, onsite facilities, water rights for the project or contribution to the water meter retrofit fund.
10. Dead ends must be eliminated and a looped water system designed, to the extent possible, per NAC 445A requirements. The Health Authority may require changes to the ultimate water facility plan that may in turn affect the included cost estimates.
11. The water facility plan proposed by TMWA must be reviewed for compliance with state and local codes and regulations and approved by the local health authority prior to service.

SUMMARY AND CONCLUSIONS:

The proposed 350 Calle De La Plata subdivision can be served by the Truckee Meadows Water Authority within the Desert Springs System. The partial 2015 planning level estimated cost for service to this project for is \$1,542,848. Annexation to the Truckee Meadows Water Authority's retail water service territory is required.

/hmf

Attachments: Preliminary Tentative Map by Star Consulting – reduced
TMWA Retail Service Boundary Figure
Off-Site Main Extension Options Hydraulic Analyses Schematic - Preliminary

cc: Erin Harris, Star Consulting
File 15-4370



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Date: May 7, 2015

To: Pam Parenti

From: Susan Whittet *SW*

RE: 15-4370, 350 Calle de la Plata - 186 Single Family Residence Lots
Assessor's Parcel Numbers APN: 534-571-01

Applicant: CN Properties, LLC c/o Blackstone Development Group

The New Business/Water Resource team will answer the following assumptions on each new discovery:

- Is the property within Truckee Meadows Water Authority's water service territory?
- Does the property have Truckee River water rights appurtenant to the property or resource credits associated with the property?
 - If yes, what is the status of the water right: Agricultural or Municipal and Domestic use?
- Estimated water demand for residential and or commercial projects.
- Any special conditions, or issues, that are a concern to TMWA or the customer.

The following information is provided to complete the Discovery as requested:

- The subject parcel (APN 534-571-01) is **not** within Truckee Meadows Water Authority's (TMWA's) service territory. An annexation is required; which is paralleling this discovery.
- There are no Truckee River decreed water rights appurtenant to this project. The Applicant and/or owner will be required to follow TMWA's current rules, specifically Rule 7, and pay all fees associated with the water rights needed in order to obtain a will serve commitment letter. In the event owner/applicant owns permitted surface or ground water rights, those water rights would need to be dedicated by applicant/owner towards the project. Any remaining water rights required for the project, may be purchased from TMWA. Ground or surface water rights dedicated by the applicant/owner for this project must be permitted and must be reviewed and deemed acceptable by TMWA.
- Based on the information provided, 186 Single Family Residential (SFR) lots at 8,000 sq.ft/lot are estimated to require a domestic demand of **79.98(AF)**. Plans were not submitted for the recreational elements or irrigation with your new business application; therefore, the estimated demand calculation can only be provided for the proposed single family residential lots. Once final plans are submitted, a more accurate demand will be calculated. *Please note, additional dedication for return flow may be required for irrigation and for domestic use if residential lots are not sewered back to the Truckee River.*
- Any existing right of ways and public easements would need to be reviewed, and if needed the property owner will need to grant TMWA the proper easements and/or land dedications to provide water service to the subject properties. Property owner will be required, at its sole expense, to provide TMWA with a current preliminary title report for all subject properties. Owner will represent and warrant such property offered for dedication or easements to TMWA shall be free and clear of all liens and encumbrances. Owner is solely responsible for obtaining all appropriate permits, licenses, construction easements, subordination agreements, consents from lenders, and other necessary rights from all necessary parties to dedicate property or easements with title acceptable to TMWA.



WATER RIGHTS AND METER FUND CONTRIBUTION
CALCULATION WORKSHEET FOR MULTI-TENANT APPLICATIONS

		Demand (Acre Feet)
1 Existing demand (current usage) at Service Property		0.00
2 Number of units 186 x 0.43AF (average per SFR)	79.98	
3 Retail floor space: _____ x 0.0004 per sq.ft.	0.00	
4 Fixture units: _____ x 15x 365x 3.07/ 1 mil	0.00	
5 Landscaping: TBD Turf _____ sq ft	0.00	
6 Drip: TBD		
7 Other calculated demand:	<u>0.00</u>	
8 New or additional demand at Service Property (lines 2+3+4+5+6)		<u>79.98</u>
9 Total Demand at Service Property (lines 1+8)		<u>79.98</u>
10 Less: Prior demand commitments at service property	0.00	
11 Less: Other resource credits	<u>0.00</u>	
12 Total Credits (lines 10+11)		<u>0.00</u>
13 Subtotal: Required resource dedication/commitment (lines 9-12)		<u>79.98</u>
14 Factor amount (0.11 x Line 13)		0.00
15 No return flow required		<u>0.00</u>
16 TOTAL RESOURCES REQUIRED (lines 13+14+15)		<u>79.98</u>
17 Price of Water Rights per AF \$7,500		\$ 599,850
18 Will Serve Commitment Letter Preparation Fee (\$100 per letter)		\$ 100
19 Due Diligence Fee (\$150.00 per parcel)		\$ 0
20 Document Preparation Fees (\$100.00 per document)		\$ 0
21 Meter Contribution (\$1,830 x 79.98 acre feet of demand)		\$ 0
22 TOTAL FEES DUE (lines 17+18+19+20+21)		\$ <u>599,950</u>

Project: 350 Calle de la Plata

Contact: Blackstone Development Company, Joshua Myers Quote date: 5/7/2015

Phone: (775) 352-4200 Tech contact: Sue Whittet

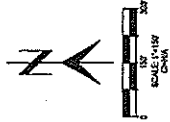
APN: 534-571-01 Project No: 15-4370

Remarks: Demand shown using TMWA's groundwater. Additional fees and demand will apply if surface water is dedicated for this project. Fees quoted are valid only within 15 calendar days of quote date.

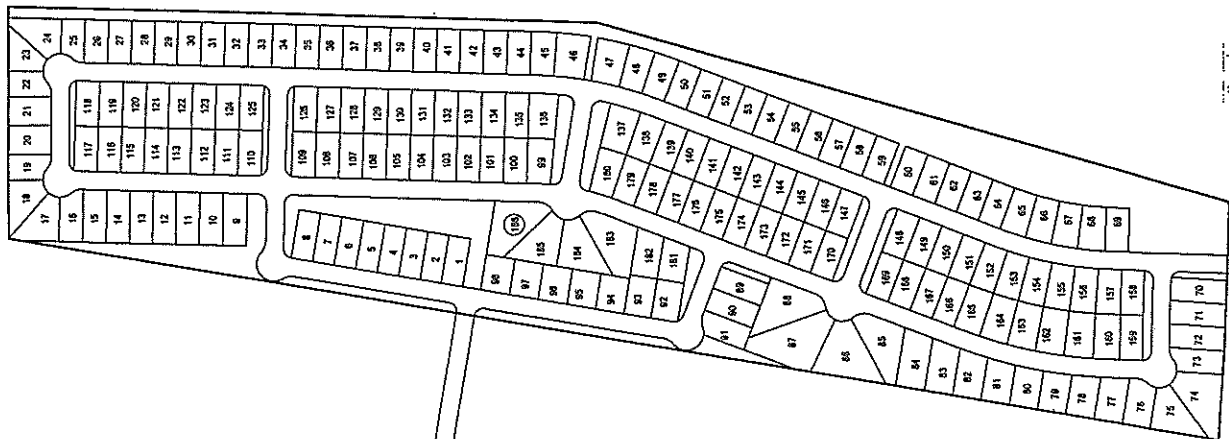
Note: There are no landscaping or recreational area plans associated with this Discovery, therefore, no demand was calculated. Applicant only supplied average lot size of 8,000 sq.ft./lot for 186 SFR lots.

SITE PLAN NOTES:

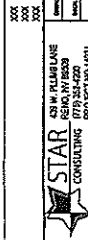
1. THIS PRELIMINARY SITE PLAN WAS CREATED WITHOUT THE BENEFIT OF A BOUNDARY OR TOPOGRAPHICAL SURVEY. ALL DIMENSIONS ARE APPROXIMATE.
2. PARCEL NUMBER: SA-21141
3. LOCATED AT 250 CALLE DELA PALMA IN SPANISH SPRINGS
4. DEVELOPMENT REGULATED BY WASHOE COUNTY, HONOLUA
5. APPROXIMATELY 33.3 ACRES WITHIN THE SPANISH SPRINGS PLANNED AREA OF THE WASHOE COUNTY LAND DEVELOPMENT CODE
6. EXISTING TOPOGRAPHY IS HEAVILY SLOPED IN UNIFORM SLOPE TOWARD THE NORTHWEST
7. EXISTING ZONING IS NEIGHBORHOOD COMMERCIAL (NCD, INDUSTRIAL (I) AND BUSINESS (B))
8. WATER PLAN DESIGNATION IS RURAL RESERVATION (RR), INDUSTRIAL (I) AND COMMERCIAL (C)
9. TOWNSHIP 21 N, RANGE 29 E, SECTION 23
10. SERVED BY THE TRUCKEE MOUNTAIN FIRE PROTECTION DISTRICT



DUNSMUIR PLUNCH
SUBDIVISION



PRELIMINARY TENTATIVE MAP
SPANISH SPRINGS
LOT 5 1/2 AND CHAMBERLAIN AREA



ASB W. KILLBUCK
RESIDENTS
PROJECT NO. 1001-101-101-101

DATE: 10/1/10
DRAWN BY: JEN
CHECKED BY: JEN
SCALE: AS SHOWN

SHEET NO. 1 OF 1

FOR MORE INFORMATION
800-782-3368
www.starconsulting.com

Conceptual Drainage Study
FOR BLACKSTONE ESTATES TENTATIVE MAP
APN 534-571-01

Prepared For:

SP 58 LLC
439 W Plumb Lane
Reno, NV 89509

Prepared By:

Lumos and Associates, Inc.
800 East College Parkway
Carson City, Nevada 89706
(775) 883-7077 (office)
(775) 883-7114 (fax)

JN 8973.001
May 2016



5-31-16

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TECHNICAL DRAINAGE STUDY
For
BLACKSTONE ESTATES TENTATIVE MAP
APN: 534-571-01

I. Introduction

A. Site Location

The project site is located at 350 Calle de la Plata Drive in Spanish Springs, Washoe County, Nevada. Assessor's Parcel Number (APN) for the property is 534-571-01 and encompasses 58 acres. The parcel is located in the northeast and southeast quarters of Section 23, Township 21 North, Range 20 East. Adjacent developments include two single family homes to the west, a planned development (Sugarloaf Ranch Estates) to the east and a development of single family homes (Donovan Ranch Subdivision) to the north.

B. Site Description

The 58 acre project site is currently undeveloped and consists of 100% low desert vegetation. Soil consists of 81.3% Haybourne loamy sand and 18.7% Wedertz sandy loam that slopes from 2-8% to the west towards Pyramid Highway. The Haybourne is classified as soil group "A" while the Wedertz is classified as soil group "C". There is a major drainage channel that flows through the southwestern corner of the project site called the "Spanish Springs Wash". This portion of the project site is zoned by FEMA as zone AO having flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined as outlined on the Flood Insurance Rate Map 32031C2865G (revised March 2009) included in the appendix. A Letter of Map Revision (LOMR) was done (May 29, 2009) that removes most of the project site from flood zone AO and is provided in the appendix. The small portion that remains is subject to 1% annual chance of flooding with a depth of one foot.

C. Proposed Project Description

This conceptual drainage study was performed for the submittal for the tentative map application for Blackstone Estates. The proposed Blackstone Estates consists of 161 single family homes with lots that average between 0.2 and 0.4 acres. Three retention/detention basins are proposed onsite. Two are intended to retain runoff that occurs onsite and one will detain offsite flow. The proposed project site will consist of two drainage basins that will flow into respective retention basins. Drainage basin A-1 encompasses 43.9 acres of the northern portion of the project site. Basin B-1 consists of 12.9 acres of the southern portion of the project site. The remaining 1.2 acres is dedicated to the conveyance and detention of the offsite flow.

D. Previous Drainage Studies

There are several previous drainage studies that are pertinent to the project site and were used as reference materials for analysis of the Blackstone Estates hydrology. The "Master Drainage Study for Donovan Ranch" performed by Matrix Engineering & Consulting, Inc. dated September 2004, herein referred to as the Matrix Report, was used for reference of offsite flows. The "Preliminary Hydrology Report for Sugarloaf Estates Tentative Subdivision" prepared by Axion Engineering dated February 2016, herein referred to as the Axion Report, was used to reference offsite flows. LOMR case number 09-09-1277X dated May 29, 2009 was used to determine the floodplain limits for the Spanish Springs Wash within the project area.

II. Historic Drainage System

A. Major Basins and Offsite Contributions

The project site is located in the Griffith Canyon watershed. The watershed originates to the east of the project site and flows west. A small portion of the project site is located in the Spanish Springs Wash that has an annual 1% chance of flooding with a depth of one foot. Basins that affect the project site are to the east and slope from east to west towards the project location. The project is located directly north of a major sedimentation/detention basin for the Griffith Canyon watershed. The tributary basins typically have the same topography and ground cover as the project site with the addition of sporadic single family homes. However, basins C and D originate at Sugarloaf Peak where the topography can be much steeper.

B. Sub-basin and Site Drainage

1. Offsite Flows

A map of offsite basins is provided in the appendix. Per the Matrix report Basin A almost completely drains into the gravel pit and retained there. Basin B drains across Calle de la Plata to the south and enters a defined drainage path that eventually enters a constructed channel that runs parallel to Calle de la Plata on the south side adjacent to the project location. Blue line stream on the USGS map shows this channel crossing back to the north, however, a channel was constructed to intercept this flow and keep it on the southern side of the road. Basin C drains towards the project location but is intercepted by a channel that crosses the southeastern corner of the property. Basins D and E flow from east to west towards and are tributary to the project site. However, both basins are subject to the Sugarloaf Ranch Estates Subdivision. This development could have substantial impact on the flow that enters the project site. It is recommended that further analysis is performed of offsite flows with the final map submittal for the Blackstone Estates Final Map.

For the purposes of this conceptual drainage report offsite flows were determined using HEC-HMS. Loss was calculated using SCS curve number method and transformation was calculated using SCS Unit Hydrograph. For all three basins a curve number of 49 was used. This represents a basin of desert shrub, in good hydraulic condition of soil group "A". A printout from HEC-HMS is included in the

appendix. Offsite flows from sub-basins C, D and E that flow on to the site are as follows:

Table 1-Runoff from Offsite Drainage Basins

Basin	5-Year, 24-Hour (cfs)	100-Year, 24-Hour (cfs)	100-Year, 24-Hour (Ac-ft)
Basin C	1.3	3.3	3.1
Basin D	0.5	2.9	2.4
Basin E	0.0*	1.3	1.0

*Basin flows were lower than 0.05 cfs and were not measured by HEC-HMS

2. Onsite Flows

Onsite flows were calculated using the Rational Method. The project site was divided into two sub-basins that would reflect the tentative map condition. The larger sub-basin A-1 encompasses 43.86 acres and the smaller sub-basin B-1 is 12.9 acres. The remaining area is dedicated to conveying and retaining offsite flows from offsite basins C and D. The pre-developed condition a Runoff Coefficient of 0.4 was chosen to reflect Open Space with slopes 5-15%. The lower end of the range of 0.4-0.5 was chosen because slopes onsite range from 2-8%. Rational Method calculations are provided in the appendix. Onsite pre-developed flows from basins A-1 and B-1 are as follows:

Table 2-Runoff from Onsite Drainage Basins – Pre-Development

Basin	5-Year, 24-Hour (cfs)	100-Year, 24-Hour (cfs)
Basin A-1	26.493	66.496
Basin B-1	7.760	19.491

III. Proposed Drainage System

Onsite flows were calculated using the Rational Method. The project site was divided into two sub-basins that would reflect the tentative map condition. The larger sub-basin A-1 encompasses 43.86 acres and the smaller sub-basin B-1 is 12.9 acres. The remaining area is dedicated to conveying and retaining offsite flows from offsite basins C and D. The post-developed condition a Runoff Coefficient of 0.5 was chosen to reflect Single Family Residential. The lower end of the range of 0.4-0.5 was chosen because the proposed lot are large and will be mostly landscaped. Rational Method calculations are provided in the appendix. Onsite post-developed flows from basins A-1 and B-1 are as follows:

Table 2-Runoff from Onsite Drainage Basins – Post-Development

Basin	5-Year, 24-Hour (cfs)	100-Year, 24-Hour (cfs)
Basin A-1	33.116	83.120
Basin B-1	9.707	24.364

This represents an increase of 16.624 cfs and 25% for the 100-year storm event for basin A-1 and an increase of 4.873 cfs and 25% for the 100-year storm event for basin B-1. The runoff from basin A-1 is going to be directed northwesterly via curb and gutter to inlet locations at the intersection of Alexis Way and North 1. From there the runoff will be conveyed via storm drain to the retention basin at the northwest corner of the project location. The runoff from basin B-1 will be directed southeasterly via curb and gutter to a low point on Lily Lane at approximately station 6+00. From there runoff will be conveyed via storm drain to the retention basin located in the southwestern corner of the project site.

Offsite flows from basins C and D will be conveyed to the retention basin located at the southeastern corner of the project site. Offsite flows from basin E are going to be intercepted at the eastern edge of the project and conveyed around the project via ditch to the retention basin on the northwestern corner of the project site. Piping and street capacity will be sized and verified with the final design. Retention basin volume calculations are provided in the appendix and all retention basins will be sized to accommodate the increase in peak flows. Method of release and rate of release will also be included in the final design.

IV. Areas within flood hazard zones

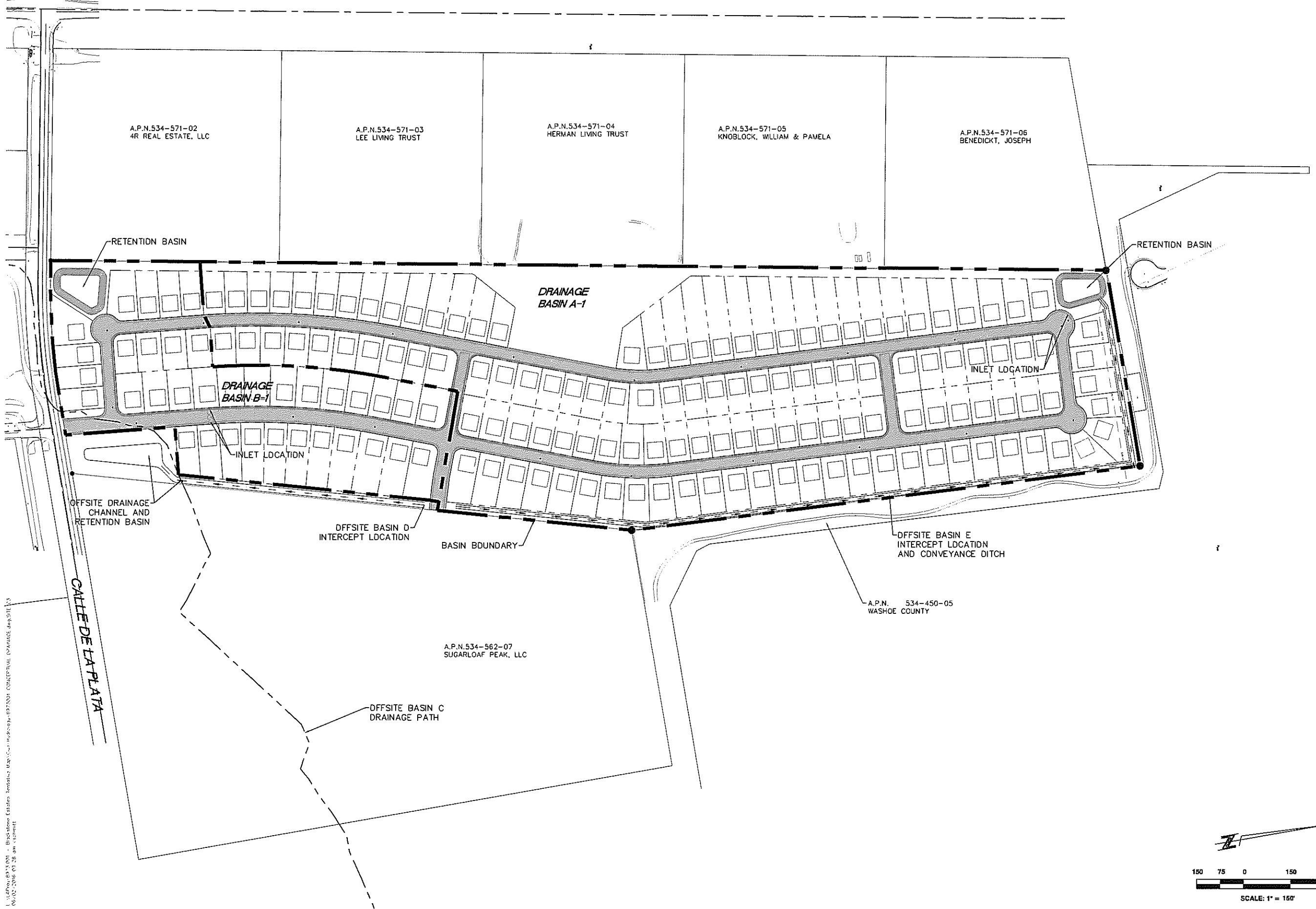
The small portion of the project site that falls within zone AO is dedicated for use for conveying offsite flows and retention storage. There will be no construction inside of the flood zone besides the construction of channel and retention basin. The construction of the channel and retention basin could aid in lowering the flood elevation for this area, but further analysis would be needed to determine its effects. The proposed drainage improvements for the project as described above are in compliance with FEMA and Douglas County Development Standards.

V. Conclusions

The proposed project will provide homes for 161 families in the Spanish Springs area. The proposed drainage modifications will be a benefit to the area because several of the offsite basins are going to be retained on site. Any adverse effects due to the increase in runoff will be negated by the use of onsite retention basins.

VI. Appendix

PYRAMID WAY - STATE ROUTE 445



A.P.N. 534-571-02
4R REAL ESTATE, LLC

A.P.N. 534-571-03
LEE LIVING TRUST

A.P.N. 534-571-04
HERMAN LIVING TRUST

A.P.N. 534-571-05
KNOBLOCK, WILLIAM & PAMELA

A.P.N. 534-571-06
BENEDICKT, JOSEPH

A.P.N. 534-450-05
WASHOE COUNTY

A.P.N. 534-562-07
SUGARLOAF PEAK, LLC

L:\Projects\8973.001 - Blackstone Estates Tentative Map\GIS\8973001 CONCEPTUAL DRAINAGE.dwg 05/02/2016 03:28 am vickramt



800 EAST COLLEGE PARKWAY
CARSON CITY, NEVADA 89706
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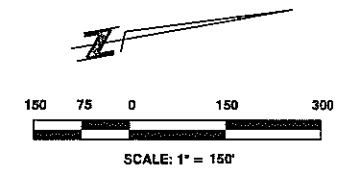
WWW.LUMOSINC.COM
CIVIL ENGINEERING
GEOTECHNICAL ENGINEERING
PLANNING
LANDSCAPE ARCHITECTURE
SURVEYING / GIS
CONSTRUCTION SERVICES
MATERIALS TESTING

NEVADA
WASHOE COUNTY
SP58, LLC.
BLACKSTONE ESTATES
TENTATIVE MAP
DRAINAGE MAP

REV	DATE	DESCRIPTION

TENTATIVE MAP

EX1



DATE: MAY 2016
DRAWN BY: CAS
DESIGNED BY: RB
CHECKED BY: RB
JOB NO.: 8973.001



Blackstone Estates
Drainage Calculation
Rational Method
May 2016



Basin A-1 Pre-Development

5-year, 10-min Storm Event
 Formula: $Q = C * i * A$

1) Runoff Coefficient C			2) Total Area (A)			3) Weighted "C" Value			
	Range	Design Value	Open Space	Other	Units		Design Value	Areas (Acres)	Total
Open Space 5-15% Slopes	0.4-0.5	0.4	1,910,655	0	Sq. Ft.	Open Space=	0.4	43.86	17.55
Other Areas =	0.1 - 0.3	0.3	43.86	0.00	Acres	Other Areas=	0.3	0.00	0
							Total	43.86	17.55
							C (Total/Total Area) =	0.40	

4) Time of Concentration (Tc = Lo + Lsc + Lc)			5) Peak Flow Rate (Q = CiA)	
Overland Flow - Lo (Min)	Shallow Concentrated Flow - Lsc (Min)	Channel Flow Lc (Min)	Intensity @ Tc (in/hr)	Peak Flow Rate (cfs)
2.4	0.0	0.0	1.51	26.493
Time of Concentration (Tc) =				
2.4				

****NOTE: Tc Minimum = 10 Minutes**

100-year, 10-min Storm Event
 Formula: $Q = C * i * A$

1) Runoff Coefficient C			2) Total Area (A)			3) Weighted "C" Value			
	Range	Design Value	Open Space	Other	Units		Design Value	Areas (Acres)	Total
Open Space 5-15% Slopes	0.4-0.5	0.40	1,910,655	0	Sq. Ft.	Open Space=	0.4	43.86	17.55
Other Areas =	0.1 - 0.3	0.3	43.86	0.00	Acres	Other Areas=	0.3	0.00	0
							Total	43.86	17.55
							C (Total/Total Area) =	0.40	

4) Time of Concentration (Tc = Lo + Lsc + Lc)			5) Peak Flow Rate (Q = CiA)	
Overland Flow - Lo (Min)	Shallow Concentrated Flow - Lsc (Min)	Channel Flow Lc (Min)	Intensity @ Tc (in/hr)	Peak Flow Rate (cfs)
2.4	0.0	0.0	3.79	66.496
Time of Concentration (Tc) =				
2.4				

****NOTE: Tc Minimum = 10 Minutes**



**Blackstone Estates
Drainage Calculation
Rational Method
May 2016**



Basin A-1 Post-Development

5-year, 10-min Storm Event
Formula: $Q = C * i * A$

1) Runoff Coefficient C			2) Total Area (A)			3) Weighted "C" Value			
	Range	Design Value	Single Family	Other	Units		Design Value	Areas (Acres)	Total
Single Family Residential=	0.45-0.60	0.5	1,910,655	0	Sq. Ft.	Single Family=	0.5	43.86	21.93
Other Areas =	0.1 - 0.3	0.3	43.86	0.00	Acres	Other Areas=	0.3	0.00	0
							Total	43.86	21.93
							C (Total/Total Area) =	0.50	

4) Time of Concentration (Tc = Lo + Lsc + Lc)			5) Peak Flow Rate (Q = CiA)	
Overland Flow - Lo (Min)	Shallow Concentrated Flow - Lsc (Min)	Channel Flow Lc (Min)	Intensity @ Tc (in/hr)	Peak Flow Rate (cfs)
2.4	0.0	0.0	1.51	33.116
Time of Concentration (Tc) =				
2.4				

****NOTE: Tc Minimum = 10 Minutes**

100-year, 10-min Storm Event
Formula: $Q = C * i * A$

1) Runoff Coefficient C			2) Total Area (A)			3) Weighted "C" Value			
	Range	Design Value	Single Family	Other	Units		Design Value	Areas (Acres)	Total
Single Family Residential=	0.45-0.60	0.50	1,910,655	0	Sq. Ft.	Single Family=	0.5	43.86	21.93
Other Areas =	0.1 - 0.3	0.3	43.86	0.00	Acres	Other Areas=	0.3	0.00	0
							Total	43.86	21.93
							C (Total/Total Area) =	0.50	

4) Time of Concentration (Tc = Lo + Lsc + Lc)			5) Peak Flow Rate (Q = CiA)	
Overland Flow - Lo (Min)	Shallow Concentrated Flow - Lsc (Min)	Channel Flow Lc (Min)	Intensity @ Tc (in/hr)	Peak Flow Rate (cfs)
2.4	0.0	0.0	3.79	83.120
Time of Concentration (Tc) =				
2.4				

****NOTE: Tc Minimum = 10 Minutes**



**Blackstone Estates
Drainage Calculation
Rational Method
May 2016**



Basin B-1 Pre-Development

5-year, 10-min Storm Event
Formula: $Q = C * i * A$

1) Runoff Coefficient C			2) Total Area (A)			3) Weighted "C" Value			
	Range	Design Value	Open Space	Other	Units		Design Value	Areas (Acres)	Total
Open Space 5-15% Slopes	0.4-0.5	0.4	560,043	0	Sq. Ft.	Open Space=	0.4	12.86	5.14
Other Areas =	0.1 - 0.3	0.3	12.86	0.00	Acres	Other Areas=	0.3	0.00	0
							Total	12.86	5.14
							C (Total/Total Area) =	0.40	

4) Time of Concentration (Tc = Lo + Lsc + Lc)			5) Peak Flow Rate (Q = CiA)	
Overland Flow - Lo (Min)	Shallow Concentrated Flow - Lsc (Min)	Channel Flow Lc (Min)	Intensity @ Tc (in/hr)	Peak Flow Rate (cfs)
2.4	0.0	0.0	1.51	7.766
Time of Concentration (Tc) =			2.4	

****NOTE: Tc Minimum = 10 Minutes**

100-year, 10-min Storm Event
Formula: $Q = C * i * A$

1) Runoff Coefficient C			2) Total Area (A)			3) Weighted "C" Value			
	Range	Design Value	Open Space	Other	Units		Design Value	Areas (Acres)	Total
Open Space 5-15% Slopes	0.4-0.5	0.40	560,043	0	Sq. Ft.	Open Space=	0.4	12.86	5.14
Other Areas =	0.1 - 0.3	0.3	12.86	0.00	Acres	Other Areas=	0.3	0.00	0
							Total	12.86	5.14
							C (Total/Total Area) =	0.40	

4) Time of Concentration (Tc = Lo + Lsc + Lc)			5) Peak Flow Rate (Q = CiA)	
Overland Flow - Lo (Min)	Shallow Concentrated Flow - Lsc (Min)	Channel Flow Lc (Min)	Intensity @ Tc (in/hr)	Peak Flow Rate (cfs)
2.4	0.0	0.0	3.79	19.491
Time of Concentration (Tc) =			2.4	

****NOTE: Tc Minimum = 10 Minutes**



**Blackstone Estates
Drainage Calculation
Rational Method
May 2016**



Basin B-1 Post-Development

5-year, 10-min Storm Event
Formula: $Q = C * i * A$

1) Runoff Coefficient C			2) Total Area (A)			3) Weighted "C" Value			
	Range	Design Value	Single Family	Other	Units		Design Value	Areas (Acres)	Total
Single Family Residential=	0.45-0.60	0.5	560,043	0	Sq. Ft.	Single Family=	0.5	12.86	6.43
Other Areas =	0.1 - 0.3	0.3	12.86	0.00	Acres	Other Areas=	0.3	0.00	0
							Total	12.86	6.43
							C (Total/Total Area) =	0.50	

4) Time of Concentration (Tc = Lo + Lsc + Lc)			5) Peak Flow Rate (Q = CiA)	
Overland Flow - Lo (Min)	Shallow Concentrated Flow - Lsc (Min)	Channel Flow Lc (Min)	Intensity @ Tc (in/hr)	Peak Flow Rate (cfs)
2.4	0.0	0.0	1.51	9.707
Time of Concentration (Tc) =				
2.4				

****NOTE: Tc Minimum = 10 Minutes**

100-year, 10-min Storm Event
Formula: $Q = C * i * A$

1) Runoff Coefficient C			2) Total Area (A)			3) Weighted "C" Value			
	Range	Design Value	Single Family	Other	Units		Design Value	Areas (Acres)	Total
Single Family Residential=	0.45-0.60	0.50	560,043	0	Sq. Ft.	Single Family=	0.5	12.86	6.43
Other Areas =	0.1 - 0.3	0.3	12.86	0.00	Acres	Other Areas=	0.3	0.00	0
							Total	12.86	6.43
							C (Total/Total Area) =	0.50	

4) Time of Concentration (Tc = Lo + Lsc + Lc)			5) Peak Flow Rate (Q = CiA)	
Overland Flow - Lo (Min)	Shallow Concentrated Flow - Lsc (Min)	Channel Flow Lc (Min)	Intensity @ Tc (in/hr)	Peak Flow Rate (cfs)
2.4	0.0	0.0	3.79	24.364
Time of Concentration (Tc) =				
2.4				

****NOTE: Tc Minimum = 10 Minutes**



Blackstone Estates
A-1 Retention Basin Calculations
100 Year Frequency @ 24 Duration



$$Volume = c * depth * area$$

	c (Runoff Coefficient)	d (Depth, in)	a (Area, sf)	Volume (cu. Ft)
Future	0.5	3.49	1910655	277841.0813
Existing	0.4	3.49	1910655	222272.865
Design Volume	Volumes based the delta value of the existing vs proposed			55568.21625



Blackstone Estates
B-1 Retention Basin Calculations
100 Year Frequency @ 24 Duration



$$Volume = c * depth * area$$

	c (Runoff Coefficient)	d (Depth, in)	a (Area, sf)	Volume (cu. Ft)
Future	0.5	3.49	560044	81439.73167
Existing	0.4	3.49	560044	65151.78533
Design Volume	Volumes based the delta value of the existing vs proposed			16287.94633

Project: Blackstone Estates Simulation Run: 5-year, 24-hour

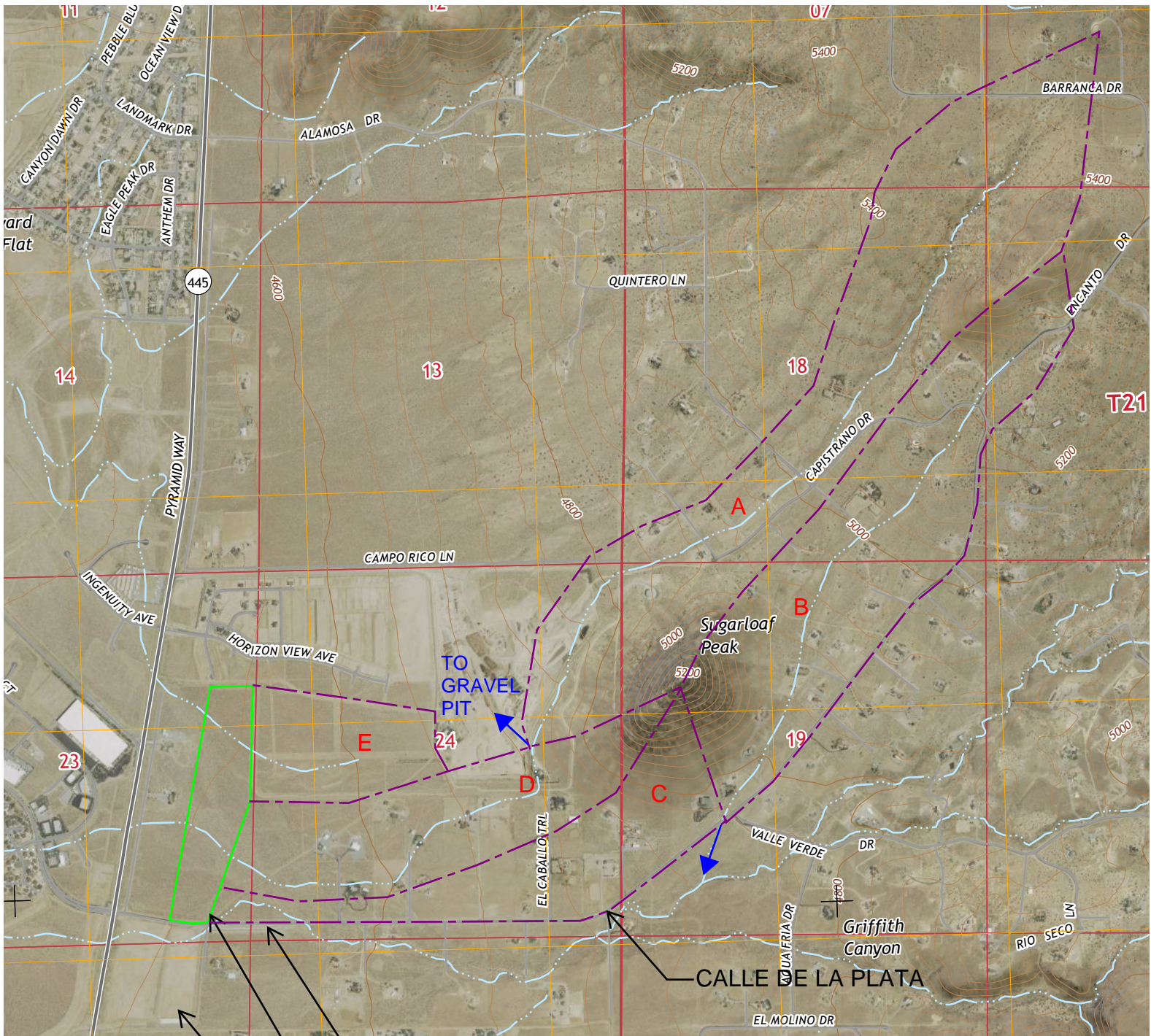
Start of Run: 01Jan2017, 00:00 Basin Model: Blackstone Estates
 End of Run: 02Jan2017, 00:00 Meteorologic Model: 5-Year
 Compute Time: 01Jun2016, 14:56:29 Control Specifications: 24-hour

Hydrologic Element	Drainage Area (MI ²)	Peak Discharge (CFS)	Time of Peak	Volume (AC-FT)
Subbasin-E	0.13	0.0	01Jan2017, 00:00	0.0
Subbasin-D	0.27	0.5	01Jan2017, 13:43	0.3
Subbasin-C	0.27	1.3	01Jan2017, 14:18	0.7

Project: Blackstone Estates Simulation Run: 100-year, 24-hour

Start of Run: 01Jan2017, 00:00 Basin Model: Blackstone Estates
 End of Run: 02Jan2017, 00:00 Meteorologic Model: 100-Year
 Compute Time: 01Jun2016, 14:27:06 Control Specifications: 100-year, 24-hour

Hydrologic Element	Drainage Area (MI ²)	Peak Discharge (CFS)	Time of Peak	Volume (AC-FT)
Subbasin-E	0.13	1.3	01Jan2017, 19:09	1.0
Subbasin-D	0.27	2.9	01Jan2017, 19:29	2.4
Subbasin-C	0.27	3.3	01Jan2017, 14:30	3.1



- DRAINAGE CHANNEL
- APPROXIMATE PROJECT SITE
- SEDIMENTATION BASIN



Federal Emergency Management Agency

Washington, D.C. 20472

LETTER OF MAP REVISION DETERMINATION DOCUMENT

COMMUNITY AND REVISION INFORMATION		PROJECT DESCRIPTION	BASIS OF REQUEST
COMMUNITY	Washoe County Nevada (Unincorporated Areas)	NO PROJECT	UPDATED INFORMATION
	COMMUNITY NO.: 320019		
IDENTIFIER	North Spanish Springs Detention Basin	APPROXIMATE LATITUDE & LONGITUDE: 39.666, -119.700 SOURCE: USGS QUADRANGLE DATUM: NAD 83	
ANNOTATED MAPPING ENCLOSURES		ANNOTATED STUDY ENCLOSURES	
TYPE: FIRM* NO.: 32031C2865 G DATE: March 16, 2009		NO REVISION TO THE FLOOD INSURANCE STUDY REPORT	

Enclosures reflect changes to flooding sources affected by this revision.

* FIRM - Flood Insurance Rate Map; ** FBFM - Flood Boundary and Floodway Map; *** FHBM - Flood Hazard Boundary Map

FLOODING SOURCE(S) & REVISED REACH(ES)

Spanish Springs Wash - from approximately 500 feet upstream of Rockwell Boulevard to just upstream

SUMMARY OF REVISIONS

This Letter of Map Revision (LOMR) is an update of a LOMR issued on March 18, 2009 (Case No. 09-09-0489P), which added a Special Flood Hazard Area (SFHA), an area subject to inundation by the base (1-percent-annual-chance) flood, along the revised reach of Spanish Springs Wash. In the March 18 LOMR, the new SFHA was inadvertently misrepresented north of Calle de la Plata Road from approximately 500 feet upstream to just upstream of Rockwell Boulevard. This LOMR revises a portion of the March 18 LOMR to redelineate the SFHA based on updated digital mapping data. As a result, the SFHA is removed north of Calle de la Plata Road from approximately 500 feet upstream to just upstream of Rockwell Boulevard along Spanish Springs Wash.

DETERMINATION

This document provides the determination from the Department of Homeland Security's Federal Emergency Management Agency (FEMA) regarding a request for a Letter of Map Revision (LOMR) for the area described above. Using the information submitted, we have determined that a revision to the flood hazards depicted in the Flood Insurance Study (FIS) report and/or National Flood Insurance Program (NFIP) map is warranted. This document revises the effective NFIP map, as indicated in the attached documentation. Please use the enclosed annotated map panels revised by this LOMR for floodplain management purposes and for all flood insurance policies and renewals in your community.

This determination is based on the flood data presently available. The enclosed documents provide additional information regarding this determination. If you have any questions about this document, please contact the FEMA Map Assistance Center toll free at 1-877-336-2627 (1-877-FEMA MAP) or by letter addressed to the LOMR Depot, 3601 Eisenhower Avenue, Alexandria, VA 22304. Additional Information about the NFIP is available on our website at <http://www.fema.gov/nfip>.

Dahlia Kasperski, P.E., CFM, Program Specialist
Engineering Management Branch
Mitigation Directorate



Federal Emergency Management Agency

Washington, D.C. 20472

LETTER OF MAP REVISION DETERMINATION DOCUMENT (CONTINUED)

COMMUNITY INFORMATION

APPLICABLE NFIP REGULATIONS/COMMUNITY OBLIGATION

We have made this determination pursuant to Section 206 of the Flood Disaster Protection Act of 1973 (P.L. 93-234) and in accordance with the National Flood Insurance Act of 1968, as amended (Title XIII of the Housing and Urban Development Act of 1968, P.L. 90-448), 42 U.S.C. 4001-4128, and 44 CFR Part 65. Pursuant to Section 1361 of the National Flood Insurance Act of 1968, as amended, communities participating in the NFIP are required to adopt and enforce floodplain management regulations that meet or exceed NFIP criteria. These criteria, including adoption of the FIS report and FIRM, and the modifications made by this LOMR, are the minimum requirements for continued NFIP participation and do not supersede more stringent State/Commonwealth or local requirements to which the regulations apply.

COMMUNITY REMINDERS

We based this determination on the 1-percent-annual-chance flood discharges computed in the FIS for your community without considering subsequent changes in watershed characteristics that could increase flood discharges. Future development of projects upstream could cause increased flood discharges, which could cause increased flood hazards. A comprehensive restudy of your community's flood hazards would consider the cumulative effects of development on flood discharges subsequent to the publication of the FIS report for your community and could, therefore, establish greater flood hazards in this area.

Your community must regulate all proposed floodplain development and ensure that permits required by Federal and/or State/Commonwealth law have been obtained. State/Commonwealth or community officials, based on knowledge of local conditions and in the interest of safety, may set higher standards for construction or may limit development in floodplain areas. If your State/Commonwealth or community has adopted more restrictive or comprehensive floodplain management criteria, those criteria take precedence over the minimum NFIP requirements.

We will not print and distribute this LOMR to primary users, such as local insurance agents or mortgage lenders; instead, the community will serve as a repository for the new data. We encourage you to disseminate the information in this LOMR by preparing a news release for publication in your community's newspaper that describes the revision and explains how your community will provide the data and help interpret the NFIP maps. In that way, interested persons, such as property owners, insurance agents, and mortgage lenders, can benefit from the information.

This determination is based on the flood data presently available. The enclosed documents provide additional information regarding this determination. If you have any questions about this document, please contact the FEMA Map Assistance Center toll free at 1-877-336-2627 (1-877-FEMA MAP) or by letter addressed to the LOMR Depot, 3601 Eisenhower Avenue, Alexandria, VA 22304. Additional Information about the NFIP is available on our website at <http://www.fema.gov/nfip>.

A handwritten signature in cursive script that reads "Dahlia Kasperski".

Dahlia Kasperski, P.E., CFM, Program Specialist
Engineering Management Branch
Mitigation Directorate



Federal Emergency Management Agency

Washington, D.C. 20472

LETTER OF MAP REVISION DETERMINATION DOCUMENT (CONTINUED)

We have designated a Consultation Coordination Officer (CCO) to assist your community. The CCO will be the primary liaison between your community and FEMA. For information regarding your CCO, please contact:

Ms. Sally M. Ziolkowski
Director, Mitigation Division
Federal Emergency Management Agency, Region IX
1111 Broadway Street, Suite 1200
Oakland, CA 94607-4052
(510) 627-7175

STATUS OF THE COMMUNITY NFIP MAPS

We will not physically revise and republish the FIRM for your community to reflect the modifications made by this LOMR at this time. When changes to the previously cited FIRM panel(s) warrant physical revision and republication in the future, we will incorporate the modifications made by this LOMR at that time.

This determination is based on the flood data presently available. The enclosed documents provide additional information regarding this determination. If you have any questions about this document, please contact the FEMA Map Assistance Center toll free at 1-877-336-2627 (1-877-FEMA MAP) or by letter addressed to the LOMR Depot, 3601 Eisenhower Avenue, Alexandria, VA 22304. Additional Information about the NFIP is available on our website at <http://www.fema.gov/nfip>.

A handwritten signature in cursive script that reads "Dahlia Kasperski".

Dahlia Kasperski, P.E., CFM, Program Specialist
Engineering Management Branch
Mitigation Directorate



Federal Emergency Management Agency
Washington, D.C. 20472

**LETTER OF MAP REVISION
DETERMINATION DOCUMENT (CONTINUED)**




PUBLIC NOTIFICATION OF REVISION

This revision is effective as of the date of this letter. Any requests to review or alter this determination should be made within 30 days and must be based on scientific or technical data.

This determination is based on the flood data presently available. The enclosed documents provide additional information regarding this determination. If you have any questions about this document, please contact the FEMA Map Assistance Center toll free at 1-877-336-2627 (1-877-FEMA MAP) or by letter addressed to the LOMR Depot, 3601 Eisenhower Avenue, Alexandria, VA 22304. Additional Information about the NFIP is available on our website at <http://www.fema.gov/nfip>.

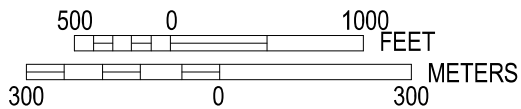
A handwritten signature in black ink that reads "Dahlia Kasperski".

Dahlia Kasperski, P.E., CFM, Program Specialist
Engineering Management Branch
Mitigation Directorate

- Legend
-  1% annual chance (100-Year) Floodplain
 -  1% annual chance (100-Year) Floodway
 -  0.2% annual chance (500-Year) Floodplain



MAP SCALE 1" = 1000'



NATIONAL FLOOD INSURANCE PROGRAM

PANEL 2865G

FIRM
FLOOD INSURANCE RATE MAP

WASHOE COUNTY,
NEVADA
AND INCORPORATED AREAS

PANEL 2865 OF 3475
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)
CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
WASHOE COUNTY	320019	2865	G
SPARKS, CITY OF	320021	2865	G

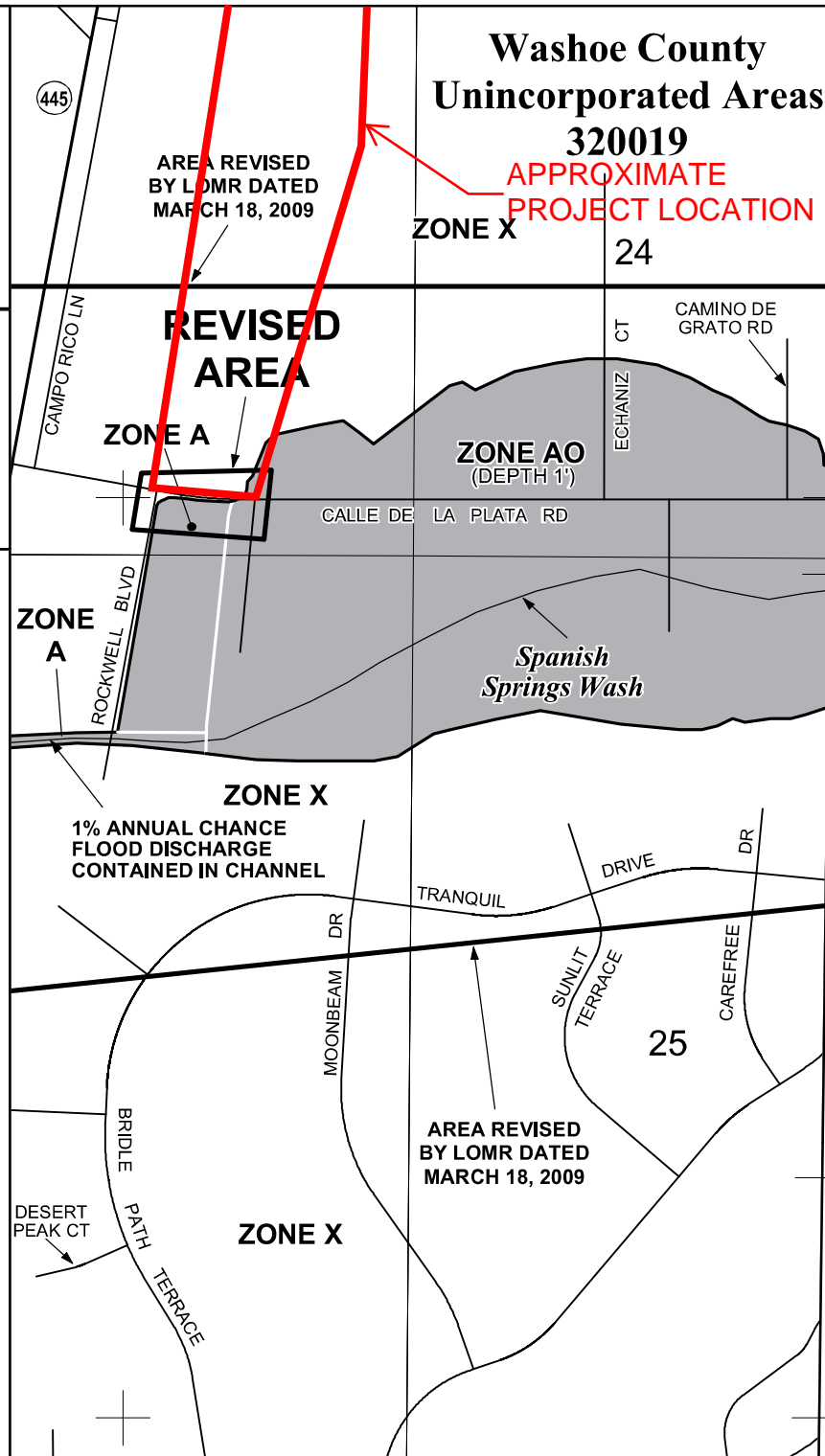
**REVISED TO
REFLECT LOMR
EFFECTIVE: May 29, 2009**

Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.



MAP NUMBER
32031C2865G
MAP REVISED
MARCH 16, 2009

Federal Emergency Management Agency





NOAA Atlas 14, Volume 1, Version 5
Location name: Sparks, Nevada, US*
Latitude: 39.6670°, Longitude: -119.6967°
Elevation: 4567 ft*
 * source: Google Maps



POINT PRECIPITATION FREQUENCY ESTIMATES

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

NOAA, National Weather Service, Silver Spring, Maryland

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

PF tabular

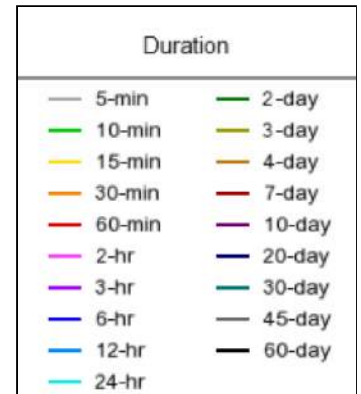
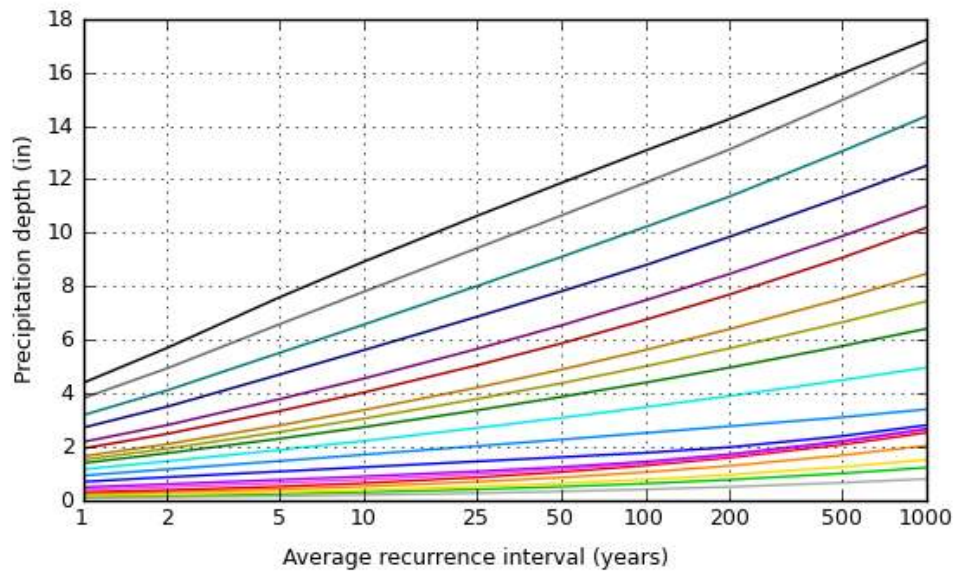
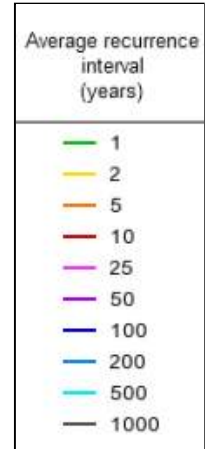
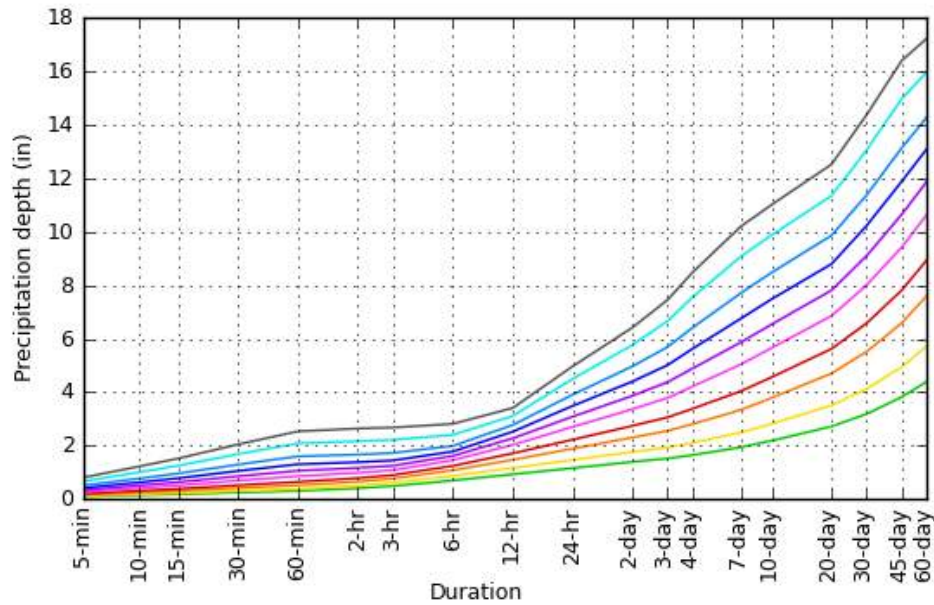
PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)¹										
Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.099 (0.083-0.114)	0.123 (0.103-0.144)	0.166 (0.140-0.196)	0.206 (0.173-0.245)	0.274 (0.225-0.331)	0.338 (0.270-0.415)	0.415 (0.322-0.517)	0.510 (0.380-0.649)	0.664 (0.469-0.874)	0.807 (0.546-1.09)
10-min	0.151 (0.126-0.174)	0.187 (0.157-0.219)	0.252 (0.212-0.298)	0.313 (0.263-0.373)	0.417 (0.343-0.504)	0.515 (0.411-0.631)	0.632 (0.490-0.787)	0.776 (0.579-0.988)	1.01 (0.713-1.33)	1.23 (0.830-1.66)
15-min	0.187 (0.156-0.215)	0.233 (0.194-0.272)	0.312 (0.263-0.369)	0.389 (0.326-0.462)	0.517 (0.425-0.625)	0.638 (0.510-0.782)	0.784 (0.608-0.975)	0.962 (0.717-1.22)	1.25 (0.884-1.65)	1.52 (1.03-2.05)
30-min	0.251 (0.210-0.290)	0.313 (0.262-0.366)	0.420 (0.354-0.497)	0.523 (0.440-0.622)	0.696 (0.573-0.842)	0.859 (0.687-1.05)	1.06 (0.819-1.31)	1.29 (0.966-1.65)	1.69 (1.19-2.22)	2.05 (1.39-2.77)
60-min	0.311 (0.260-0.359)	0.387 (0.324-0.453)	0.520 (0.438-0.615)	0.648 (0.544-0.770)	0.862 (0.709-1.04)	1.06 (0.850-1.30)	1.31 (1.01-1.63)	1.60 (1.20-2.04)	2.09 (1.47-2.75)	2.54 (1.72-3.42)
2-hr	0.411 (0.361-0.475)	0.511 (0.450-0.593)	0.658 (0.574-0.765)	0.788 (0.677-0.914)	0.988 (0.829-1.16)	1.17 (0.958-1.38)	1.38 (1.10-1.66)	1.67 (1.29-2.06)	2.17 (1.61-2.78)	2.64 (1.89-3.46)
3-hr	0.494 (0.438-0.563)	0.614 (0.550-0.704)	0.772 (0.685-0.882)	0.901 (0.793-1.03)	1.09 (0.940-1.25)	1.25 (1.06-1.45)	1.45 (1.21-1.71)	1.73 (1.41-2.07)	2.22 (1.76-2.81)	2.68 (2.07-3.49)
6-hr	0.699 (0.624-0.790)	0.874 (0.780-0.991)	1.08 (0.962-1.23)	1.25 (1.10-1.42)	1.46 (1.27-1.67)	1.62 (1.39-1.86)	1.78 (1.51-2.07)	1.99 (1.67-2.35)	2.40 (1.97-2.87)	2.81 (2.27-3.53)
12-hr	0.930 (0.829-1.04)	1.17 (1.04-1.31)	1.47 (1.31-1.66)	1.71 (1.51-1.93)	2.03 (1.77-2.31)	2.27 (1.97-2.60)	2.52 (2.15-2.92)	2.77 (2.33-3.25)	3.11 (2.54-3.71)	3.41 (2.73-4.13)
24-hr	1.16 (1.04-1.31)	1.47 (1.31-1.65)	1.89 (1.68-2.12)	2.23 (1.98-2.51)	2.70 (2.38-3.05)	3.09 (2.69-3.49)	3.49 (3.01-3.98)	3.91 (3.33-4.49)	4.49 (3.76-5.22)	4.96 (4.08-5.83)
2-day	1.40 (1.24-1.59)	1.77 (1.57-2.01)	2.31 (2.04-2.62)	2.74 (2.41-3.12)	3.37 (2.92-3.85)	3.87 (3.33-4.45)	4.40 (3.74-5.10)	4.97 (4.16-5.81)	5.77 (4.73-6.84)	6.42 (5.16-7.72)
3-day	1.52 (1.35-1.73)	1.94 (1.72-2.21)	2.56 (2.25-2.91)	3.06 (2.68-3.49)	3.79 (3.28-4.33)	4.38 (3.75-5.04)	5.01 (4.24-5.81)	5.69 (4.74-6.66)	6.66 (5.42-7.91)	7.45 (5.95-8.97)
4-day	1.65 (1.46-1.88)	2.11 (1.86-2.40)	2.81 (2.47-3.20)	3.38 (2.96-3.86)	4.21 (3.65-4.83)	4.88 (4.18-5.63)	5.62 (4.74-6.53)	6.41 (5.32-7.50)	7.54 (6.11-8.98)	8.47 (6.74-10.2)
7-day	1.94 (1.70-2.24)	2.49 (2.17-2.87)	3.34 (2.91-3.85)	4.04 (3.50-4.67)	5.04 (4.31-5.85)	5.86 (4.96-6.85)	6.75 (5.64-7.95)	7.70 (6.33-9.15)	9.07 (7.29-10.9)	10.2 (8.05-12.5)
10-day	2.19 (1.91-2.52)	2.82 (2.46-3.25)	3.79 (3.29-4.37)	4.56 (3.95-5.27)	5.65 (4.84-6.57)	6.54 (5.55-7.63)	7.48 (6.27-8.79)	8.47 (7.00-10.1)	9.87 (7.99-11.9)	11.0 (8.76-13.4)
20-day	2.72 (2.38-3.13)	3.51 (3.07-4.04)	4.70 (4.11-5.41)	5.62 (4.89-6.46)	6.85 (5.92-7.89)	7.81 (6.69-9.03)	8.79 (7.45-10.2)	9.86 (8.26-11.6)	11.3 (9.31-13.5)	12.5 (10.1-15.1)
30-day	3.19 (2.79-3.68)	4.12 (3.60-4.75)	5.51 (4.81-6.36)	6.58 (5.71-7.57)	8.00 (6.90-9.22)	9.09 (7.79-10.5)	10.2 (8.68-11.9)	11.4 (9.54-13.3)	13.0 (10.8-15.5)	14.4 (11.7-17.2)
45-day	3.82 (3.34-4.34)	4.94 (4.32-5.61)	6.58 (5.74-7.47)	7.80 (6.79-8.86)	9.41 (8.14-10.7)	10.6 (9.14-12.2)	11.9 (10.1-13.6)	13.1 (11.1-15.2)	15.0 (12.4-17.5)	16.4 (13.5-19.3)
60-day	4.39 (3.82-5.00)	5.71 (4.98-6.49)	7.59 (6.61-8.63)	8.93 (7.76-10.1)	10.6 (9.19-12.1)	11.9 (10.2-13.6)	13.1 (11.2-15.0)	14.3 (12.1-16.5)	15.9 (13.4-18.6)	17.2 (14.3-20.2)

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

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PF graphical

PDS-based depth-duration-frequency (DDF) curves
 Latitude: 39.6670°, Longitude: -119.6967°



NOAA Atlas 14, Volume 1, Version 5

Created (GMT): Wed Jun 1 16:34:40 2016

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Maps & aerials

Small scale terrain





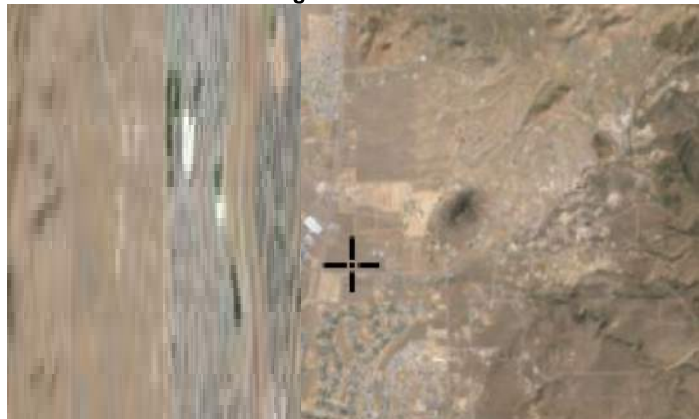
Large scale terrain



Large scale map



Large scale aerial





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[US Department of Commerce](#)
[National Oceanic and Atmospheric Administration](#)
[National Weather Service](#)
[National Water Center](#)
1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

[Disclaimer](#)



NOAA Atlas 14, Volume 1, Version 5
Location name: Sparks, Nevada, US*
Latitude: 39.6670°, Longitude: -119.6967°
Elevation: 4567 ft*
 * source: Google Maps



POINT PRECIPITATION FREQUENCY ESTIMATES

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

NOAA, National Weather Service, Silver Spring, Maryland

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

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches/hour)¹										
Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	1.19 (0.996-1.37)	1.48 (1.24-1.73)	1.99 (1.68-2.35)	2.47 (2.08-2.94)	3.29 (2.70-3.97)	4.06 (3.24-4.98)	4.98 (3.86-6.20)	6.12 (4.56-7.79)	7.97 (5.63-10.5)	9.68 (6.55-13.1)
10-min	0.906 (0.756-1.04)	1.12 (0.942-1.31)	1.51 (1.27-1.79)	1.88 (1.58-2.24)	2.50 (2.06-3.02)	3.09 (2.47-3.79)	3.79 (2.94-4.72)	4.66 (3.47-5.93)	6.06 (4.28-7.99)	7.37 (4.98-9.94)
15-min	0.748 (0.624-0.860)	0.932 (0.776-1.09)	1.25 (1.05-1.48)	1.56 (1.30-1.85)	2.07 (1.70-2.50)	2.55 (2.04-3.13)	3.14 (2.43-3.90)	3.85 (2.87-4.90)	5.01 (3.54-6.60)	6.09 (4.12-8.22)
30-min	0.502 (0.420-0.580)	0.626 (0.524-0.732)	0.840 (0.708-0.994)	1.05 (0.880-1.24)	1.39 (1.15-1.68)	1.72 (1.37-2.11)	2.11 (1.64-2.63)	2.59 (1.93-3.30)	3.37 (2.38-4.44)	4.10 (2.77-5.53)
60-min	0.311 (0.260-0.359)	0.387 (0.324-0.453)	0.520 (0.438-0.615)	0.648 (0.544-0.770)	0.862 (0.709-1.04)	1.06 (0.850-1.30)	1.31 (1.01-1.63)	1.60 (1.20-2.04)	2.09 (1.47-2.75)	2.54 (1.72-3.42)
2-hr	0.206 (0.180-0.238)	0.256 (0.225-0.296)	0.329 (0.287-0.382)	0.394 (0.338-0.457)	0.494 (0.414-0.578)	0.584 (0.479-0.691)	0.692 (0.552-0.828)	0.834 (0.645-1.03)	1.08 (0.804-1.39)	1.32 (0.946-1.73)
3-hr	0.165 (0.146-0.187)	0.204 (0.183-0.234)	0.257 (0.228-0.294)	0.300 (0.264-0.344)	0.362 (0.313-0.416)	0.416 (0.354-0.484)	0.483 (0.403-0.568)	0.576 (0.470-0.689)	0.739 (0.585-0.934)	0.892 (0.689-1.16)
6-hr	0.117 (0.104-0.132)	0.146 (0.130-0.165)	0.181 (0.161-0.206)	0.208 (0.184-0.236)	0.244 (0.213-0.278)	0.270 (0.233-0.311)	0.297 (0.253-0.346)	0.332 (0.278-0.392)	0.402 (0.329-0.480)	0.470 (0.379-0.589)
12-hr	0.077 (0.069-0.087)	0.097 (0.086-0.109)	0.122 (0.109-0.138)	0.142 (0.126-0.160)	0.168 (0.147-0.191)	0.189 (0.163-0.216)	0.209 (0.179-0.242)	0.230 (0.193-0.270)	0.258 (0.211-0.308)	0.283 (0.227-0.343)
24-hr	0.048 (0.043-0.055)	0.061 (0.055-0.069)	0.079 (0.070-0.088)	0.093 (0.082-0.104)	0.113 (0.099-0.127)	0.129 (0.112-0.146)	0.145 (0.125-0.166)	0.163 (0.139-0.187)	0.187 (0.157-0.217)	0.207 (0.170-0.243)
2-day	0.029 (0.026-0.033)	0.037 (0.033-0.042)	0.048 (0.042-0.055)	0.057 (0.050-0.065)	0.070 (0.061-0.080)	0.081 (0.069-0.093)	0.092 (0.078-0.106)	0.103 (0.087-0.121)	0.120 (0.098-0.143)	0.134 (0.108-0.161)
3-day	0.021 (0.019-0.024)	0.027 (0.024-0.031)	0.036 (0.031-0.040)	0.043 (0.037-0.048)	0.053 (0.046-0.060)	0.061 (0.052-0.070)	0.070 (0.059-0.081)	0.079 (0.066-0.092)	0.092 (0.075-0.110)	0.103 (0.083-0.125)
4-day	0.017 (0.015-0.020)	0.022 (0.019-0.025)	0.029 (0.026-0.033)	0.035 (0.031-0.040)	0.044 (0.038-0.050)	0.051 (0.044-0.059)	0.059 (0.049-0.068)	0.067 (0.055-0.078)	0.079 (0.064-0.094)	0.088 (0.070-0.106)
7-day	0.012 (0.010-0.013)	0.015 (0.013-0.017)	0.020 (0.017-0.023)	0.024 (0.021-0.028)	0.030 (0.026-0.035)	0.035 (0.029-0.041)	0.040 (0.034-0.047)	0.046 (0.038-0.054)	0.054 (0.043-0.065)	0.061 (0.048-0.074)
10-day	0.009 (0.008-0.011)	0.012 (0.010-0.014)	0.016 (0.014-0.018)	0.019 (0.016-0.022)	0.024 (0.020-0.027)	0.027 (0.023-0.032)	0.031 (0.026-0.037)	0.035 (0.029-0.042)	0.041 (0.033-0.050)	0.046 (0.036-0.056)
20-day	0.006 (0.005-0.007)	0.007 (0.006-0.008)	0.010 (0.009-0.011)	0.012 (0.010-0.013)	0.014 (0.012-0.016)	0.016 (0.014-0.019)	0.018 (0.016-0.021)	0.021 (0.017-0.024)	0.024 (0.019-0.028)	0.026 (0.021-0.031)
30-day	0.004 (0.004-0.005)	0.006 (0.005-0.007)	0.008 (0.007-0.009)	0.009 (0.008-0.011)	0.011 (0.010-0.013)	0.013 (0.011-0.015)	0.014 (0.012-0.017)	0.016 (0.013-0.019)	0.018 (0.015-0.022)	0.020 (0.016-0.024)
45-day	0.004 (0.003-0.004)	0.005 (0.004-0.005)	0.006 (0.005-0.007)	0.007 (0.006-0.008)	0.009 (0.008-0.010)	0.010 (0.008-0.011)	0.011 (0.009-0.013)	0.012 (0.010-0.014)	0.014 (0.012-0.016)	0.015 (0.012-0.018)
60-day	0.003 (0.003-0.003)	0.004 (0.003-0.005)	0.005 (0.005-0.006)	0.006 (0.005-0.007)	0.007 (0.006-0.008)	0.008 (0.007-0.009)	0.009 (0.008-0.010)	0.010 (0.008-0.011)	0.011 (0.009-0.013)	0.012 (0.010-0.014)

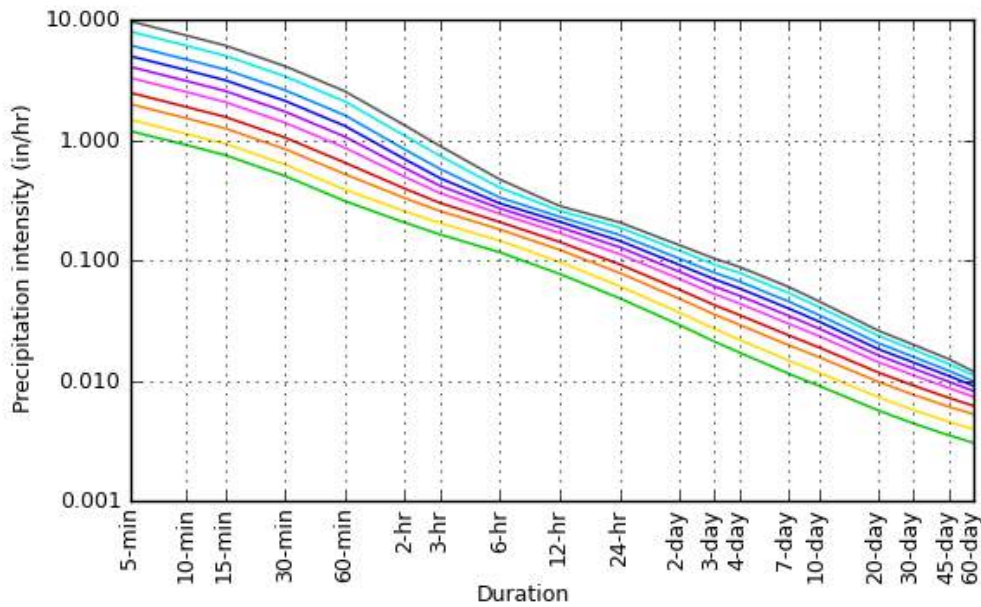
¹ Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS). Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average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

Please refer to NOAA Atlas 14 document for more information.

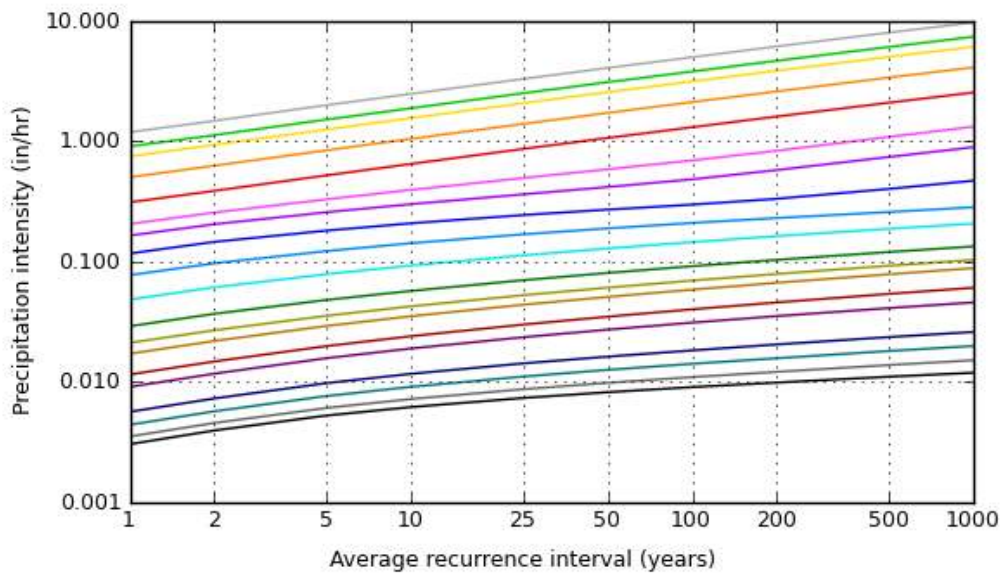
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PF graphical

PDS-based intensity-duration-frequency (IDF) curves
 Latitude: 39.6670°, Longitude: -119.6967°



Average recurrence interval (years)
1
2
5
10
25
50
100
200
500
1000



Duration	
5-min	2-day
10-min	3-day
15-min	4-day
30-min	7-day
60-min	10-day
2-hr	20-day
3-hr	30-day
6-hr	45-day
12-hr	60-day
24-hr	

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Maps & aerials

Small scale terrain





Large scale terrain



Large scale map



Large scale aerial





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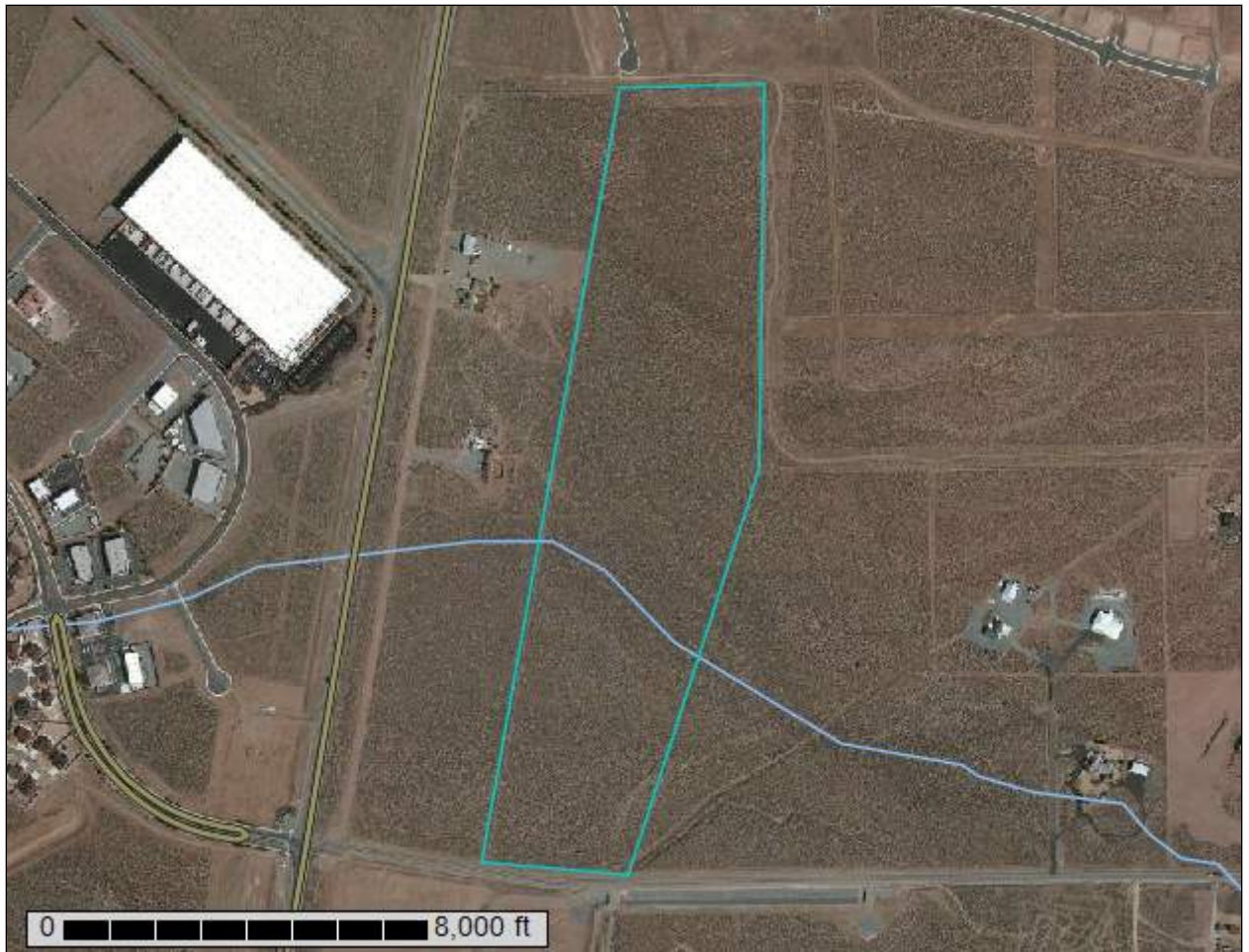
United States
Department of
Agriculture

NRCS

Natural
Resources
Conservation
Service

A product of the National
Cooperative Soil Survey,
a joint effort of the United
States Department of
Agriculture and other
Federal agencies, State
agencies including the
Agricultural Experiment
Stations, and local
participants

Custom Soil Resource Report for Washoe County, Nevada, South Part



Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (<http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/>) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (<http://offices.sc.egov.usda.gov/locator/app?agency=nrcs>) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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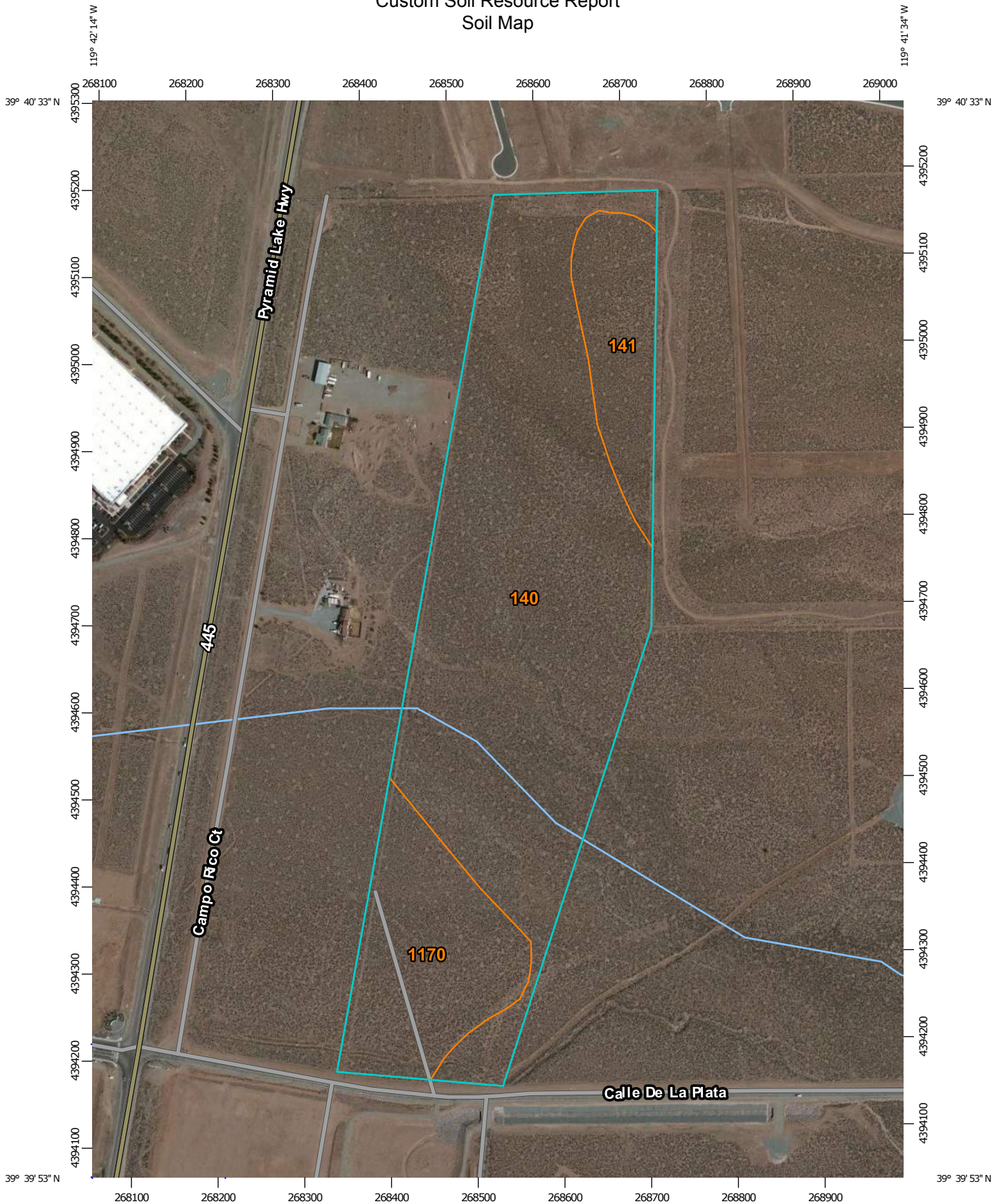
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Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report Soil Map



Map Scale: 1:6,030 if printed on A portrait (8.5" x 11") sheet.

0 50 100 200 300 Meters

0 250 500 1000 1500 Feet




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

MAP LEGEND




















Area of Interest (AOI)





Area of Interest (AOI)

Soils


-  Soil Map Unit Polygons
-  Soil Map Unit Lines
-  Soil Map Unit Points

Special Point Features






-  Blowout
-  Borrow Pit
-  Clay Spot
-  Closed Depression
-  Gravel Pit
-  Gravelly Spot
-  Landfill
-  Lava Flow
-  Marsh or swamp
-  Mine or Quarry
-  Miscellaneous Water
-  Perennial Water
-  Rock Outcrop
-  Saline Spot
-  Sandy Spot
-  Severely Eroded Spot
-  Sinkhole
-  Slide or Slip
-  Sodic Spot

-  Spoil Area
-  Stony Spot
-  Very Stony Spot
-  Wet Spot
-  Other
-  Special Line Features


Water Features

 Streams and Canals

Transportation

-  Rails
-  Interstate Highways
-  US Routes
-  Major Roads
-  Local Roads

Background

 Aerial Photography

MAP INFORMATION

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

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

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

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

Source of Map: Natural Resources Conservation Service
 Web Soil Survey URL: <http://websoilsurvey.nrcs.usda.gov>
 Coordinate System: Web Mercator (EPSG:3857)

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

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

Soil Survey Area: Washoe County, Nevada, South Part
 Survey Area Data: Version 11, Aug 21, 2014

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

Date(s) aerial images were photographed: Apr 2, 2012—Apr 29, 2012

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

Map Unit Legend

Washoe County, Nevada, South Part (NV628)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
140	Haybourne loamy sand, 2 to 4 percent slopes	41.2	70.6%
141	Haybourne loamy sand, 4 to 8 percent slopes	6.3	10.8%
1170	Wedertz sandy loam, 2 to 4 percent slopes	10.9	18.7%
Totals for Area of Interest		58.4	100.0%

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments

Custom Soil Resource Report

on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Washoe County, Nevada, South Part

140—Haybourne loamy sand, 2 to 4 percent slopes

Map Unit Setting

National map unit symbol: hxfn

Elevation: 4,500 to 5,900 feet

Mean annual precipitation: 8 to 12 inches

Mean annual air temperature: 48 to 51 degrees F

Frost-free period: 100 to 110 days

Farmland classification: Farmland of statewide importance

Map Unit Composition

Haybourne and similar soils: 85 percent

Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Haybourne

Setting

Landform: Alluvial fans

Down-slope shape: Linear

Across-slope shape: Convex

Parent material: Alluvium derived from granitic rocks

Typical profile

H1 - 0 to 10 inches: loamy sand

H2 - 10 to 26 inches: sandy loam

H3 - 26 to 63 inches: stratified gravelly coarse sand to fine sandy loam

Properties and qualities

Slope: 2 to 4 percent

Depth to restrictive feature: More than 80 inches

Natural drainage class: Well drained

Runoff class: Very low

Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: Rare

Frequency of ponding: None

Calcium carbonate, maximum in profile: 1 percent

Available water storage in profile: Low (about 5.6 inches)

Interpretive groups

Land capability classification (irrigated): 3s

Land capability classification (nonirrigated): 7s

Hydrologic Soil Group: A

Ecological site: SANDY 8-10 P.Z. (R026XY020NV)

Minor Components

Incy

Percent of map unit: 5 percent

Landform: Dunes

Down-slope shape: Convex

Across-slope shape: Convex

Ecological site: SANDY 8-10 P.Z. (R026XY020NV)

Greenbrae

Percent of map unit: 5 percent
Landform: Fan remnants
Down-slope shape: Linear
Across-slope shape: Convex
Ecological site: LOAMY 8-10 P.Z. (R026XY016NV)

Indian creek

Percent of map unit: 5 percent
Landform: Fan remnants
Down-slope shape: Linear
Across-slope shape: Convex
Ecological site: CLAYPAN 8-10 P.Z. (R026XY025NV)

141—Haybourne loamy sand, 4 to 8 percent slopes

Map Unit Setting

National map unit symbol: hxfr
Elevation: 4,500 to 5,900 feet
Mean annual precipitation: 8 to 12 inches
Mean annual air temperature: 48 to 51 degrees F
Frost-free period: 100 to 110 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Haybourne and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Haybourne

Setting

Landform: Alluvial fans
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Alluvium derived from granitic rocks

Typical profile

H1 - 0 to 10 inches: loamy sand
H2 - 10 to 26 inches: sandy loam
H3 - 26 to 60 inches: stratified gravelly coarse sand to fine sandy loam

Properties and qualities

Slope: 4 to 8 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Rare

Custom Soil Resource Report

Frequency of ponding: None
Calcium carbonate, maximum in profile: 1 percent
Available water storage in profile: Low (about 5.6 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: A
Ecological site: SANDY 8-10 P.Z. (R026XY020NV)

Minor Components

Incy

Percent of map unit: 5 percent
Landform: Dunes
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: SANDY 8-10 P.Z. (R026XY020NV)

Linhart

Percent of map unit: 5 percent
Landform: Alluvial fans
Down-slope shape: Linear
Across-slope shape: Convex
Ecological site: GRANITIC FAN 10-12 P.Z. (R026XY008NV)

Indian creek

Percent of map unit: 5 percent
Landform: Fan remnants
Down-slope shape: Linear
Across-slope shape: Convex
Ecological site: CLAYPAN 8-10 P.Z. (R026XY025NV)

1170—Wedertz sandy loam, 2 to 4 percent slopes

Map Unit Setting

National map unit symbol: hxcv
Elevation: 4,500 to 5,500 feet
Mean annual precipitation: 8 to 10 inches
Mean annual air temperature: 50 to 52 degrees F
Frost-free period: 100 to 110 days
Farmland classification: Prime farmland if irrigated and reclaimed of excess salts and sodium

Map Unit Composition

Wedertz and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Wedertz

Setting

Landform: Fan remnants
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Mixed alluvium

Typical profile

H1 - 0 to 6 inches: sandy loam
H2 - 6 to 22 inches: sandy clay loam
H3 - 22 to 34 inches: sandy loam
H4 - 34 to 60 inches: gravelly loamy sand

Properties and qualities

Slope: 2 to 4 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Rare
Frequency of ponding: None
Calcium carbonate, maximum in profile: 3 percent
Available water storage in profile: Moderate (about 6.7 inches)

Interpretive groups

Land capability classification (irrigated): 2e
Land capability classification (nonirrigated): 6c
Hydrologic Soil Group: C
Ecological site: LOAMY 8-10 P.Z. (R026XY016NV)

Minor Components

Jowec

Percent of map unit: 5 percent
Landform: Lake terraces
Down-slope shape: Linear
Across-slope shape: Convex

Aquinas

Percent of map unit: 5 percent
Landform: Fan remnants
Down-slope shape: Linear
Across-slope shape: Convex
Ecological site: LOAMY HILL 10-12 P.Z. (R026XY017NV)

Greenbrae

Percent of map unit: 5 percent
Landform: Fan remnants
Down-slope shape: Linear
Across-slope shape: Convex
Ecological site: LOAMY 8-10 P.Z. (R026XY016NV)

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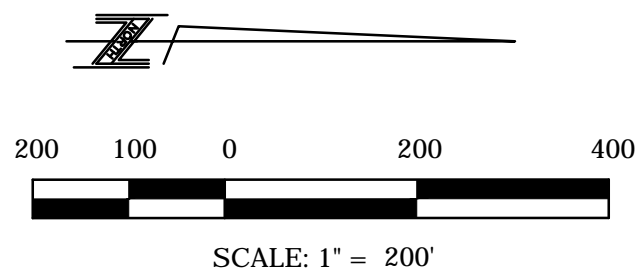
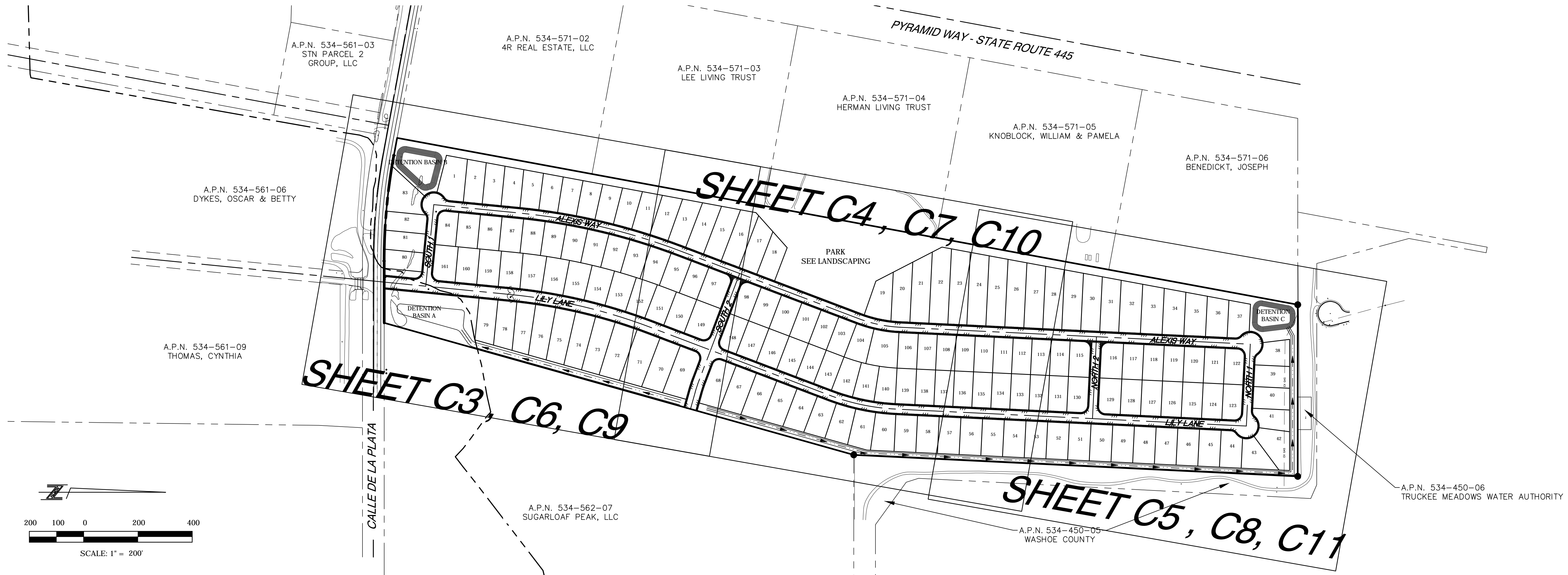
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WASHOE COUNTY

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DESIGNED BY: RB
CHECKED BY: TR
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NEVADA
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REV	DATE	DESCRIPTION

TENTATIVE MAP

C3

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KNOBLOCK, WILLIAM & PAMELA

A.P.N. 534-571-06
BENEDICKT, JOSEPH



A.P.N. 534-450-06
TRUCKEE MEADOWS WATER AUTHORITY



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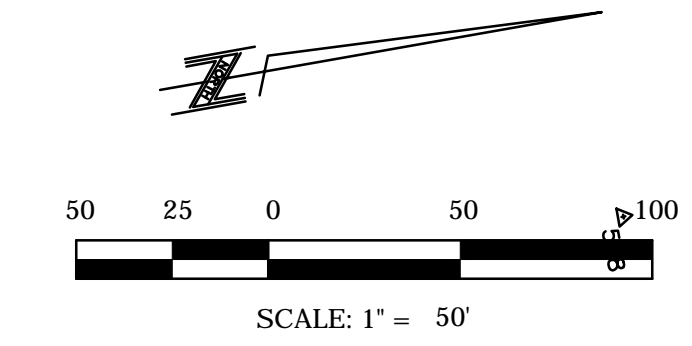


SP56, LLC.
BLACKSTONE ESTATES
TENTATIVE MAP
SITE PLAN 3
NEVADA
WASHOE COUNTY

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TENTATIVE MAP

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BLACKSTONE ESTATES
TENTATIVE MAP
GRADING PLAN 1

NEVADA
WASHOE COUNTY

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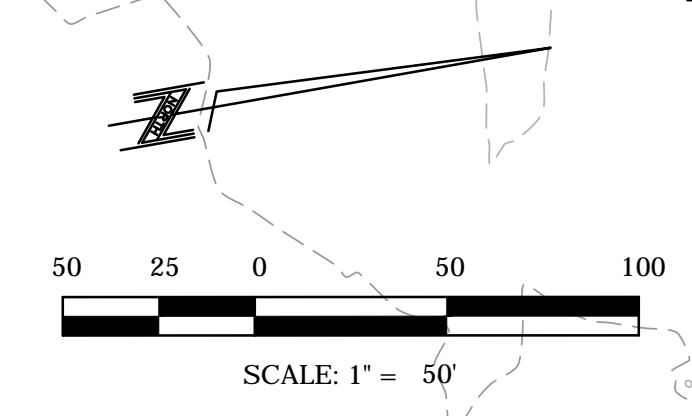
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PRELIMINARY GRADING NOTES:

- ESTIMATED EARTHWORK: CUT: 130,000 CY
FILL: 130,000 CY
- AREA OF DISTURBANCE: 100%
- 3:1 MAX SLOPE ON CATCH SLOPES, DETENTION BASINS AND DITCHES.
- NO MATERIAL IS TO BE REMOVED FROM THE SITE.
- BEST MANAGEMENT PRACTICES:
 - IF A DISTURBED AREA IS LEFT UNDEVELOPED FOR OVER THIRTY DAYS, THE AREA IS TO BE TREATED TO PREVENT EROSION. THE TREATMENT MAY INCLUDE RE-VEGETATION, INSTALLATION OF STRAW MATTING AND/OR RE-SEEDING WITH COMPOSTED MULCH. SURFACE APPLICATION OF WATER, BOTH TO PREVENT WIND-BLOWN EROSION AND PROMOTE GROWTH OF VEGETATION, IS REQUIRED UNTIL VEGETATION IS FULLY ESTABLISHED AND THE SITE IS STABILIZED.
 - WADDLES WILL BE INSTALLED ACROSS ALL STORM DRAIN INLETS, DEPRESSED CURB INLETS, CULVERT INLETS AND LOW-FLOW OUTLET PIPES TO PREVENT TRANSPORT OF SITE-GENERATED SEDIMENT.
 - STRAW BALES WILL BE PLACED ACROSS THE DOWNSTREAM END OF ALL GRADED CHANNELS AND DITCHES TO PROTECT BASIN OUTLET WEIRS AND LOW-FLOW OUTLET PIPES.
 - CONTINUOUS SILT FENCING WILL BE INSTALLED ALONG THE ENTIRE SITE PERIMETER.
 - APPLICATION OF WATER TO PREVENT WIND-BLOWN SEDIMENT TRANSPORT WILL BE REQUIRED FOR ALL EXPOSED SURFACES THROUGHOUT THE DURATION OF CONSTRUCTION.



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GROUP, LLC

A.P.N.534-571-02
4R REAL ESTATE, LLC

A.P.N.534-
LEE LIVING

A.P.N.534-561-06
DYKES, OSCAR & BETTY

A.P.N.534-561-09
THOMAS, CYNTHIA

A.P.N.534-562-07
SUGARLOAF PEAK, LLC



PRELIMINARY GRADING NOTES:

1. ESTIMATED EARTHWORK: CUT: 130,000 CY
FILL: 130,000 CY
2. AREA OF DISTURBANCE: 100%
3. 3:1 MAX SLOPE ON CATCH SLOPES, DETENTION BASINS AND DITCHES.
4. NO MATERIAL IS TO BE REMOVED FROM THE SITE.
5. BEST MANAGEMENT PRACTICES:
 - 5.1. IF A DISTURBED AREA IS LEFT UNDEVELOPED FOR OVER THIRTY DAYS, THE AREA IS TO BE TREATED TO PREVENT EROSION. THE TREATMENT MAY INCLUDE RE-VEGETATION, INSTALLATION OF STRAW MATTING AND/OR RE-SEEDING WITH COMPOSTED MULCH. SURFACE APPLICATION OF WATER, BOTH TO PREVENT WIND-BLOWN EROSION AND PROMOTE GROWTH OF VEGETATION, IS REQUIRED UNTIL VEGETATION IS FULLY ESTABLISHED AND THE SITE IS STABILIZED.
 - 5.2. WADDLES WILL BE INSTALLED ACROSS ALL STORM DRAIN INLETS, DEPRESSED CURB INLETS, CULVERT INLETS AND LOW-FLOW OUTLET PIPES TO PREVENT TRANSPORT OF SITE-GENERATED SEDIMENT.
 - 5.3. STRAW BALES WILL BE PLACED ACROSS THE DOWNSTREAM END OF ALL GRADED CHANNELS AND DITCHES TO PROTECT BASIN OUTLET WEIRS AND LOW-FLOW OUTLET PIPES.
 - 5.4. CONTINUOUS SILT FENCING WILL BE INSTALLED ALONG THE ENTIRE SITE PERIMETER.
 - 5.5. APPLICATION OF WATER TO PREVENT WIND-BLOWN SEDIMENT TRANSPORT WILL BE REQUIRED FOR ALL EXPOSED SURFACES THROUGHOUT THE DURATION OF CONSTRUCTION.



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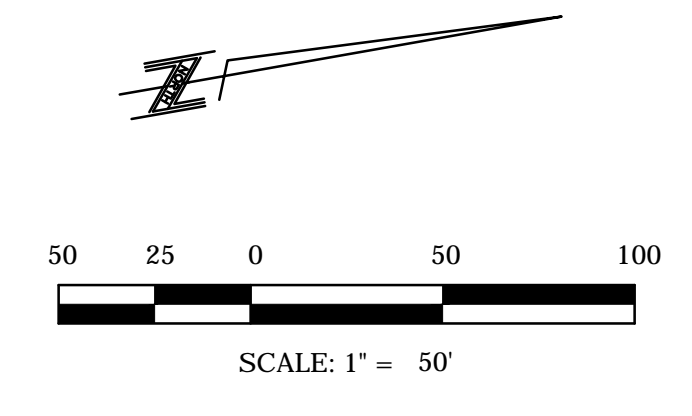
SP68, LLC.
 BLACKSTONE ESTATES
 TENTATIVE MAP
 GRADING PLAN 3
 WASHOE COUNTY
 NEVADA

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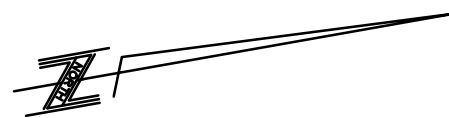
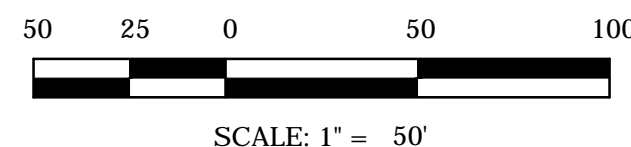
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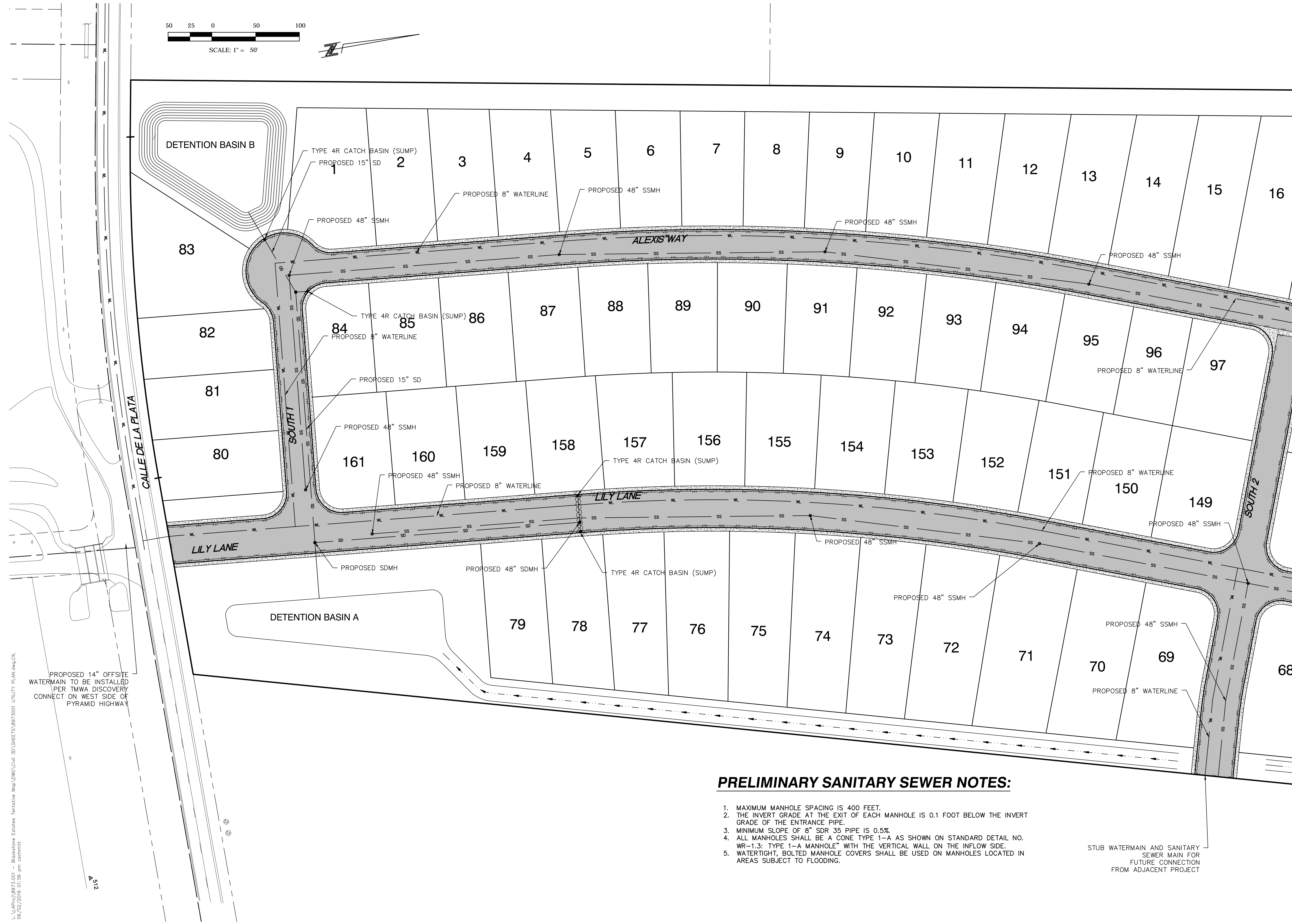
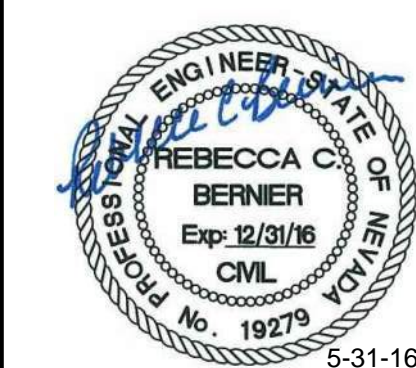
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PRELIMINARY SANITARY SEWER NOTES:

1. MAXIMUM MANHOLE SPACING IS 400 FEET.
2. THE INVERT GRADE AT THE EXIT OF EACH MANHOLE IS 0.1 FOOT BELOW THE INVERT GRADE OF THE ENTRANCE PIPE.
3. MINIMUM SLOPE OF 8\"/>

STUB WATERMAIN AND SANITARY SEWER MAIN FOR FUTURE CONNECTION FROM ADJACENT PROJECT

PROPOSED 14\"/>

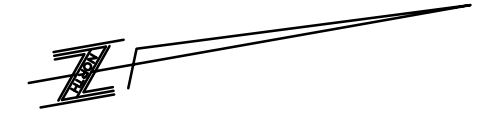
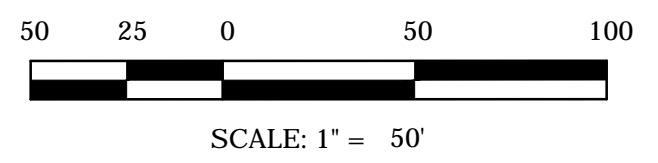
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TENTATIVE MAP
UTILITY PLAN 1

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 TENTATIVE MAP
 UTILITY PLAN 3
 WASHOE COUNTY
 NEVADA

REV	DATE	DESCRIPTION

TENTATIVE MAP

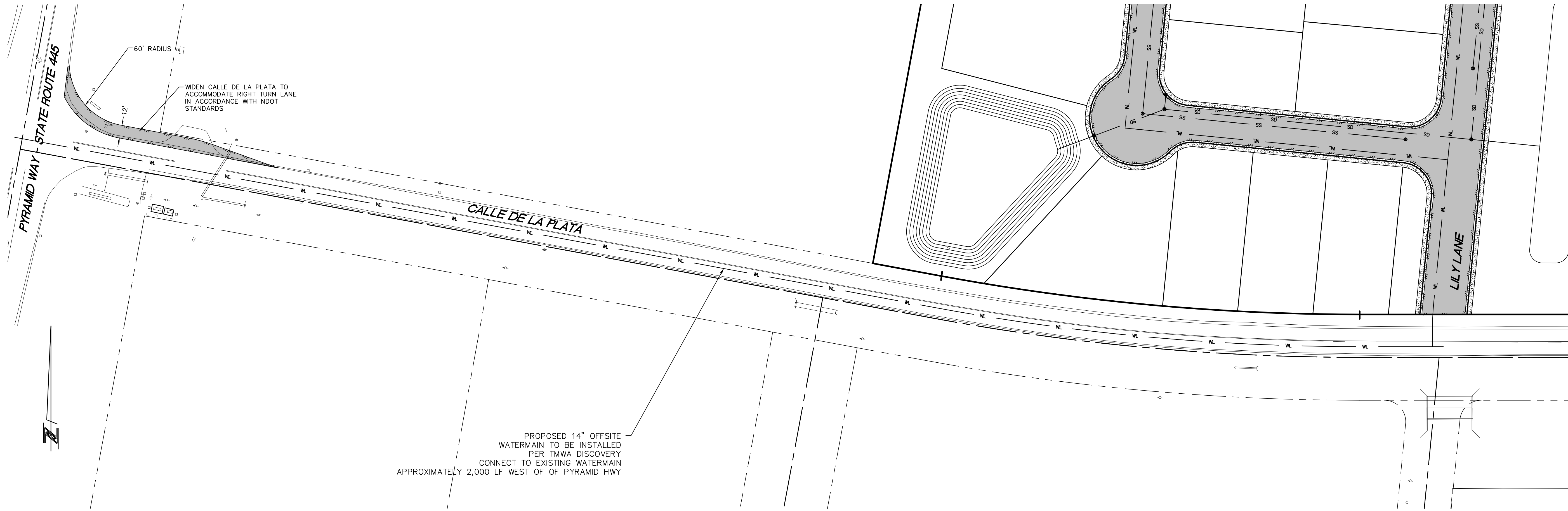
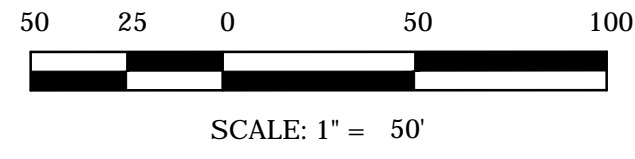
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PRELIMINARY SANITARY SEWER NOTES:

1. MAXIMUM MANHOLE SPACING IS 400 FEET.
2. THE INVERT GRADE AT THE EXIT OF EACH MANHOLE IS 0.1 FOOT BELOW THE INVERT GRADE OF THE ENTRANCE PIPE.
3. MINIMUM SLOPE OF 8" SDR 35 PIPE IS 0.5%.
4. ALL MANHOLES SHALL BE A CONE TYPE 1-A AS SHOWN ON STANDARD DETAIL NO. WR-1.3; TYPE 1-A MANHOLE WITH THE VERTICAL WALL ON THE INFLOW SIDE.
5. WATERTIGHT, BOLTED MANHOLE COVERS SHALL BE USED ON MANHOLES LOCATED IN AREAS SUBJECT TO FLOODING.

A-518



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OFFSITE IMPROVEMENTS

1. 14" WATERMAIN TO BE EXTENDED TO SILENT SPARROW. SEE TMWA DISCOVERY. BORE UNDER PYRAMID HIGHWAY. (NDOT ENCROACHMENT PERMIT REQUIRED)
2. IMPROVE INTERSECTION AT PYRAMID HIGHWAY AND CALLE DE LA PLATA WITH WIDENED AREA FOR RIGHT TURN LANE IF WARRANTED.



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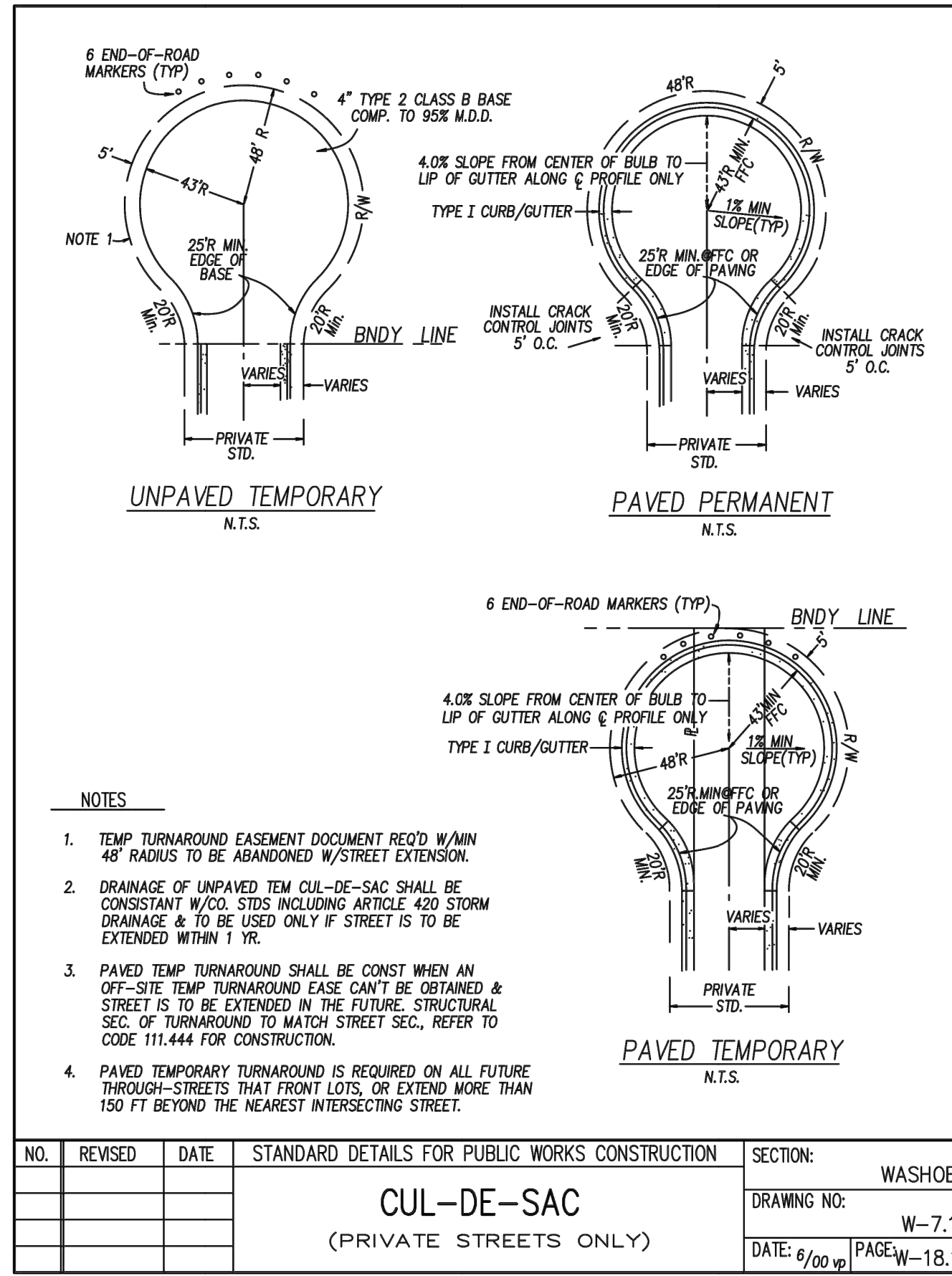
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BLACKSTONE ESTATES
TENTATIVE MAP
OFFSITE IMPROVEMENTS
WASHOE COUNTY
NEVADA

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TENTATIVE MAP

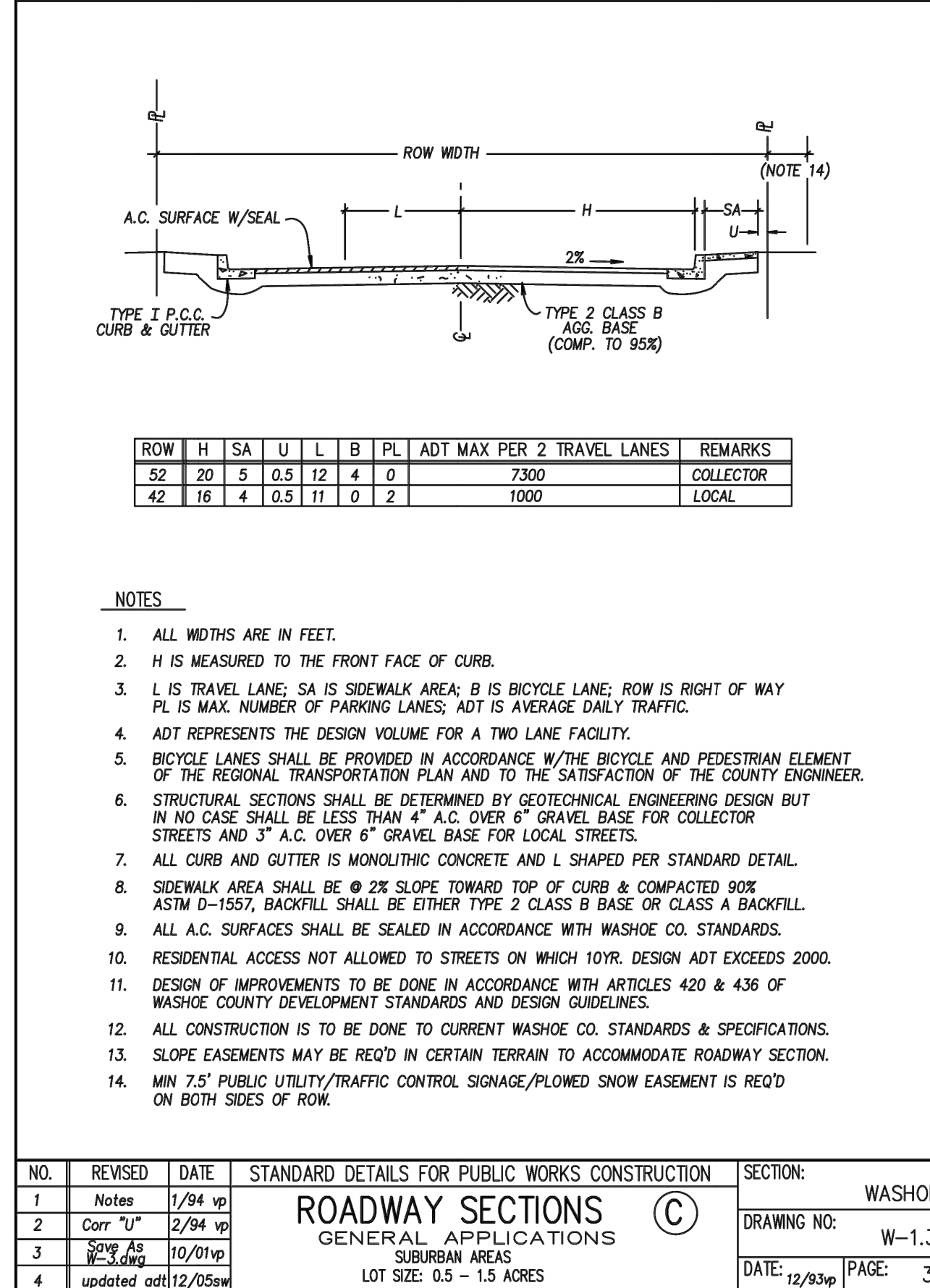
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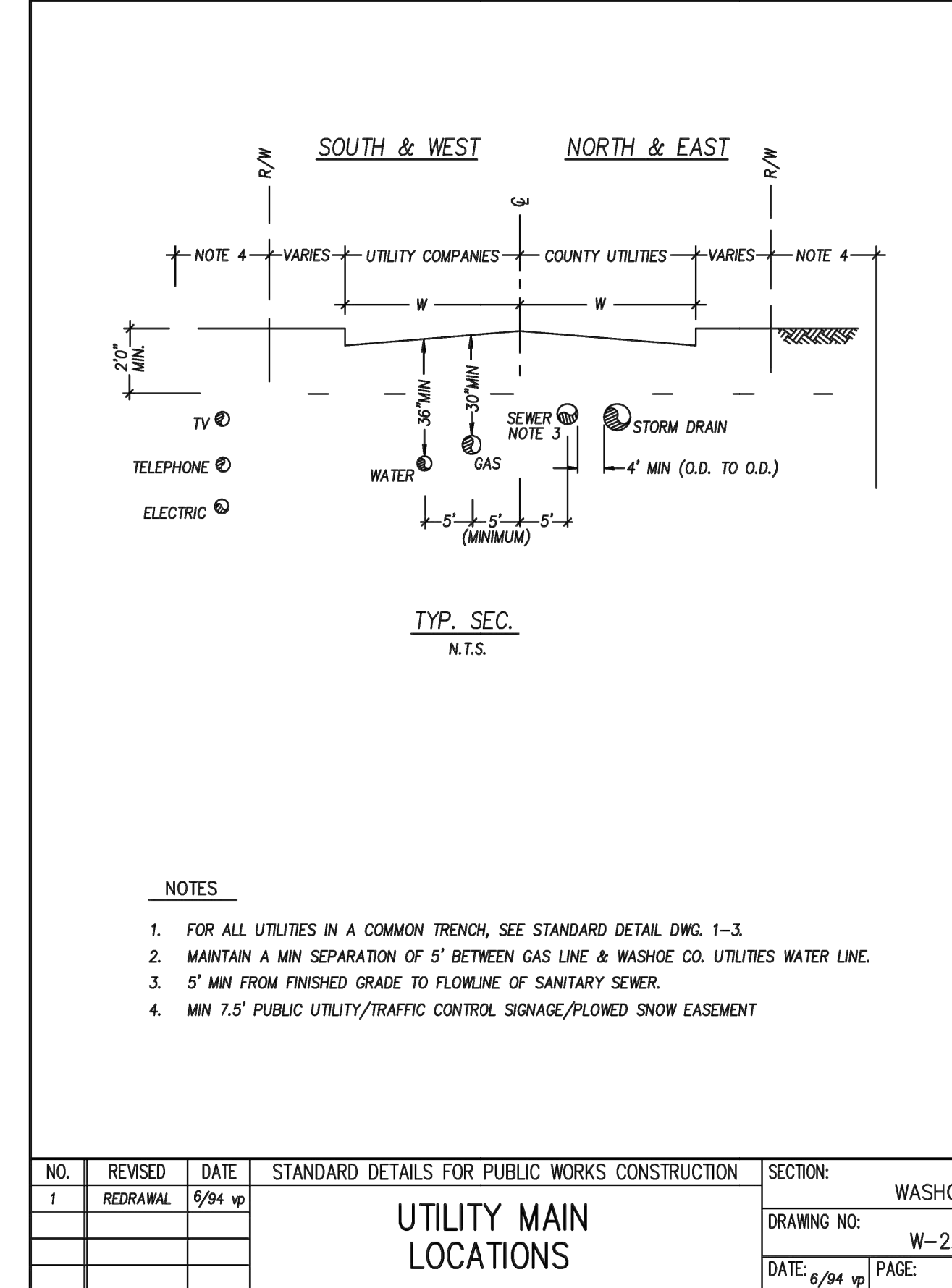
CUL-DE-SAC DETAIL
SCALE: N.T.S.

1
D1



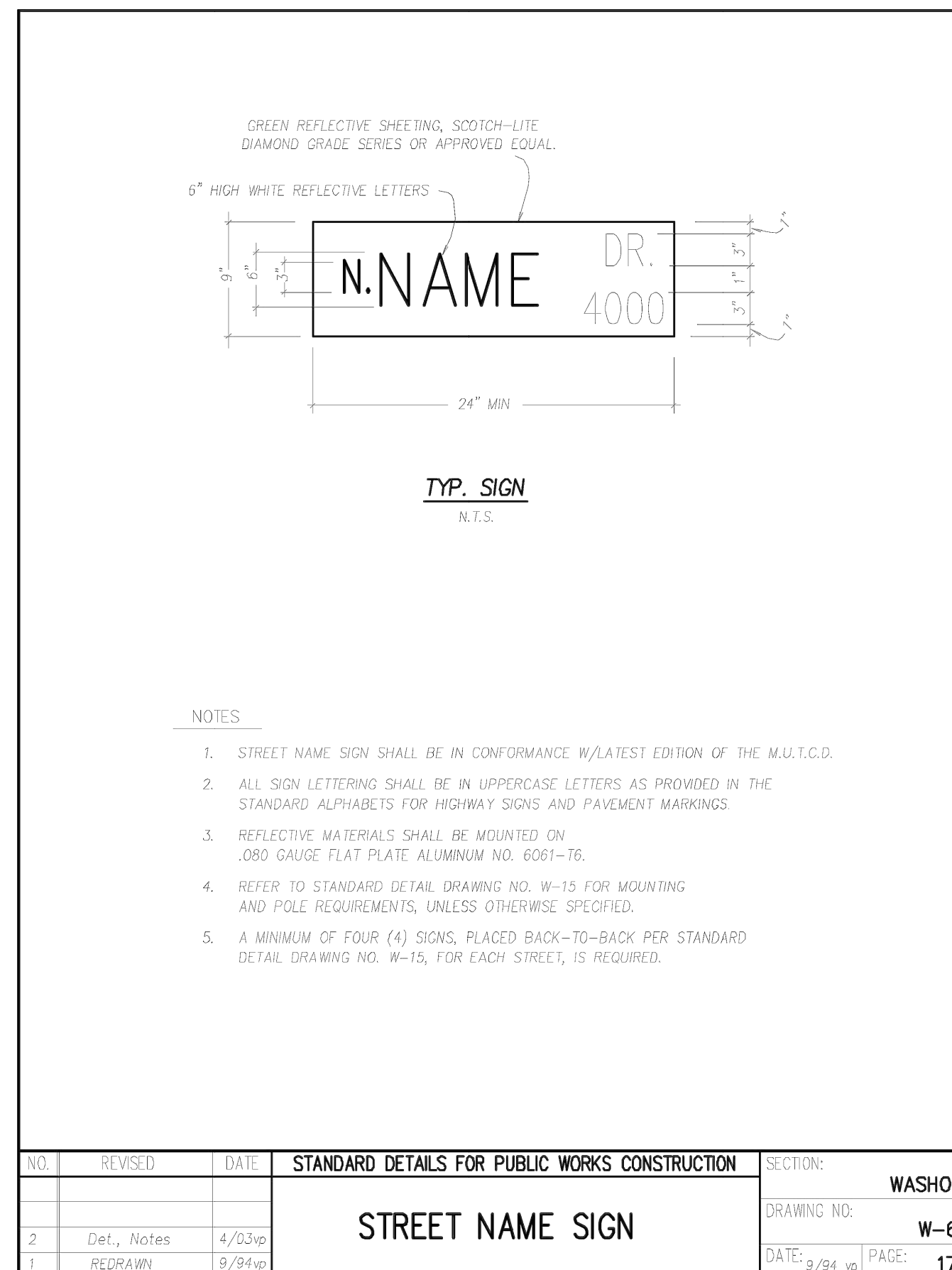
ROADWAY SECTIONS DETAIL
SCALE: N.T.S.

2
D1



UTILITY MAIN LOCATIONS DETAIL
SCALE: N.T.S.

3
D1



STREET NAME SIGN DETAIL
SCALE: N.T.S.

4
D1



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BLACKSTONE ESTATES
TENTATIVE MAP
DETAILS 1
NEVADA
WASHOE COUNTY

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TENTATIVE MAP

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BLACKSTONE ESTATES
TRAFFIC STUDY

AUGUST, 2016



8-12-16
EXP 6-30-18

Prepared by:
Solaegui Engineers, Ltd.
715 H Street
Sparks, Nevada 89431
(775) 358-1004

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BLACKSTONE ESTATES

TRAFFIC STUDY

EXECUTIVE SUMMARY

The proposed Blackstone Estates development is located in Washoe County, Nevada. The project site is located east of Pyramid Highway and north of Calle De La Plata. The project site is currently undeveloped land. The purpose of this study is to address the project's impact upon the adjacent street network. The Pyramid Highway/Calle De La Plata intersection and the Calle De La Plata/Dykes Court/Lily Lane intersection have been identified for AM and PM peak hour intersection capacity analysis for the existing, existing plus project, 2025 base, and 2025 base plus project scenarios.

The proposed Blackstone Estates will include the construction of 161 single family dwelling units. Project access will be provided from a new roadway (Lily Lane) intersecting Calle De La Plata approximately 1,350 feet east of Pyramid Highway. The project is anticipated to generate 1,533 average daily trips with 121 trips occurring during the AM peak hour and 161 trips occurring during the PM peak hour.

Traffic generated by the Blackstone Estates development will have some impact on the adjacent street network. The following recommendations are made to mitigate project traffic impacts.

It is recommended that any required signing, striping or traffic control improvements comply with Nevada Department of Transportation and Washoe County requirements.

It is recommended that traffic volumes and signal warrants be periodically monitored at the Pyramid Highway/Calle De La Plata intersection by Washoe County and the Nevada Department of Transportation and, if appropriate, a traffic signal be included in the Regional Transportation Commission's *Regional Transportation Improvement Program*.

It is recommended that the Pyramid Highway/Calle De La Plata intersection be improved to include an exclusive right turn lane at the south approach containing 465 feet of storage/deceleration length with a 20:1 taper.

It is recommended that the Calle De La Plata/Lily Lane intersection be constructed per Washoe County standards and contain a stop sign at the north approach.

It is recommended that Lily Lane and the remaining on-site roadways be constructed per Washoe County street standards.

INTRODUCTION

STUDY AREA

The proposed Blackstone Estates development is located in Washoe County, Nevada. The project site is located east of Pyramid Highway and north of Calle De La Plata. Figure 1 shows the approximate location of the site. The purpose of this study is to address the project's impact upon the adjacent street network. The Pyramid Highway/Calle De La Plata intersection and the Calle De La Plata/Dykes Court/Lily Lane intersection have been identified for AM and PM peak hour intersection capacity analysis for the existing, existing plus project, 2025 base, and 2025 base plus project scenarios.

EXISTING AND PROPOSED LAND USES

The project site is currently undeveloped land. Adjacent properties generally include undeveloped land and scattered single family residential units to the north, south, east, and west. The proposed Blackstone Estates development will include the construction of 161 single family dwelling units. Project access will be provided from a new roadway (Lily Lane) intersecting Calle De La Plata approximately 1,350 feet east of Pyramid Highway.

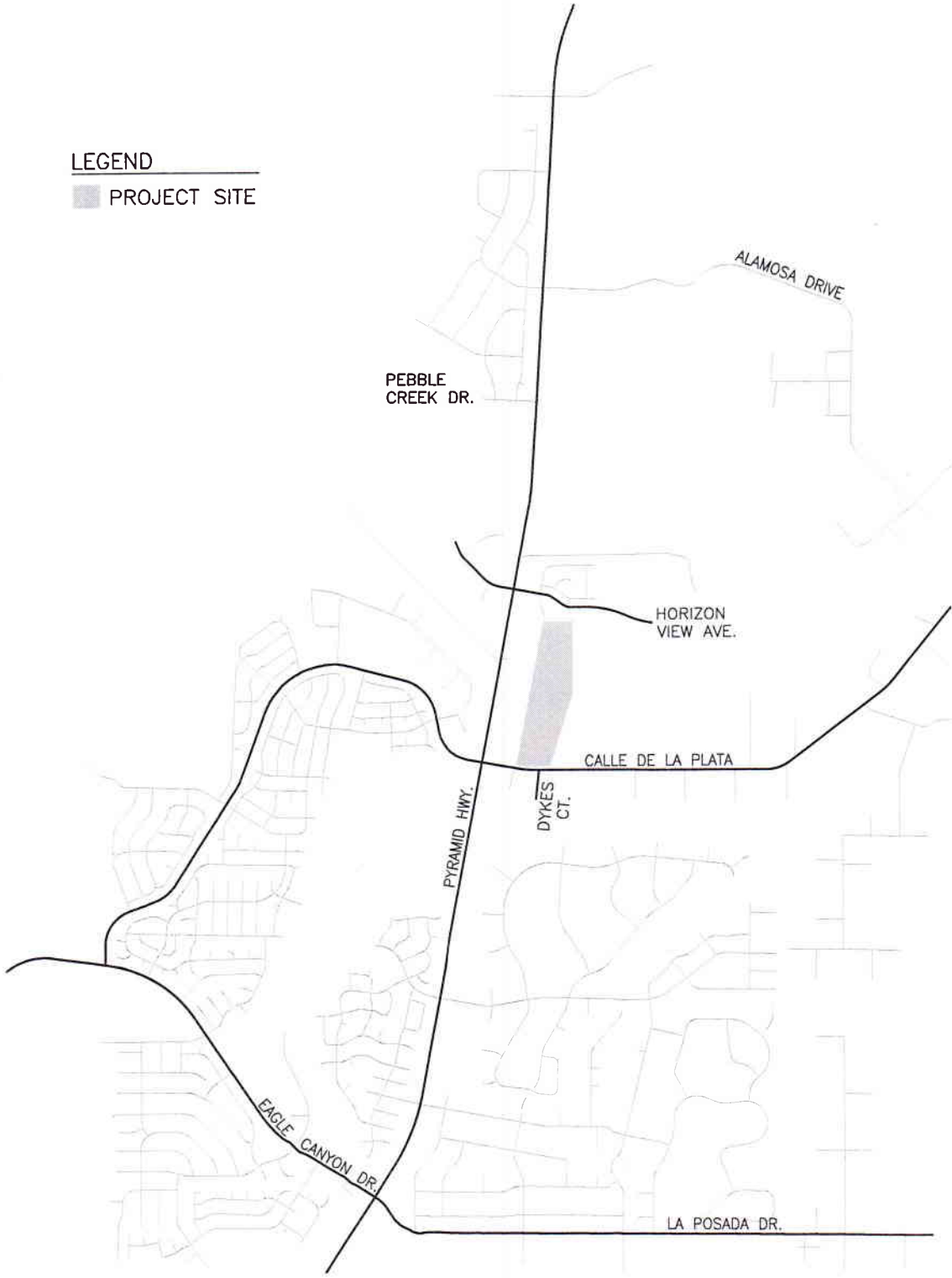
EXISTING AND PROPOSED ROADWAYS AND INTERSECTIONS

Pyramid Highway is a two-lane roadway with one through lane in each direction in the vicinity of the site. The speed limit is posted for 55 miles per hour south of Sha Neva Road and 65 miles per hour north of Sha Neva Road. Roadway improvements generally include striped white edgelines and graded shoulders on both sides of the roadway and a striped yellow centerline with striped left turn pockets at intersections.

Calle De La Plata is a four-lane roadway with two through lanes in each direction west of Pyramid Highway and a two-lane roadway with one through lane in each direction east of Pyramid Highway. The speed limit is posted for 40 miles per hour west of Pyramid Highway and 50 miles per hour east of Pyramid Highway. Roadway improvements on the four-lane section include curb, gutter, sidewalk and bike lanes on both sides of the street with a raised, landscaped center median. Roadway improvements on the two-lane section include striped white edgelines and graded shoulders on both sides of the roadway and a striped yellow centerline.

Lily Lane does not currently exist but is anticipated to be a two-lane roadway with one lane in each direction north of Calle De la Plata. The site plan indicates that Lily Lane will align with Dykes Court on the opposite side of Calle De La Plata. Dykes Court is an existing gravel roadway.

LEGEND
■ PROJECT SITE



BLACKSTONE ESTATES
VICINITY MAP
FIGURE 1

The Pyramid Highway/Calle De La Plata intersection is an unsignalized four-leg intersection with stop sign control at the east and west approaches. The north and south approaches each contain one exclusive left turn lane and one shared through-right turn lane. The west approach contains one shared left turn-through lane and one exclusive right turn lane. The west approach contains width for a future through lane. The east approach contains one shared left turn-through-right turn lane.

The Calle De La Plata/Dykes Court intersection is currently an unsignalized three-leg intersection with assumed stop control at the south approach. The east approach contains one shared left turn-through lane. The west approach contains one shared through-right turn lane. The south approach contains one shared left turn-right turn lane. With development of the project Lily Lane will be constructed and the intersection will be improved as a four-leg intersection with stop control at the north and south approaches.

TRIP GENERATION

In order to assess the magnitude of traffic impacts of the proposed project on the key intersections, trip generation rates and peak hours had to be determined. Trip generation was calculated based on rates obtained from the Ninth Edition of *ITE Trip Generation* (2012) for Land Use 210: Single Family Detached Housing. The proposed Blackstone Estates development will include the construction of 161 single family dwelling units.

Trips generated by the project were calculated for the peak hours occurring between 7:00 and 9:00 AM and 4:00 and 6:00 PM, which correspond to the peak hours of adjacent street traffic. Table 1 shows a summary of the average daily traffic (ADT) volumes and peak hour volumes generated by the project.

LAND USE	ADT	AM PEAK HOUR			PM PEAK HOUR		
		IN	OUT	TOTAL	IN	OUT	TOTAL
Single Family Housing (161 D.U.)	1,533	30	91	121	101	60	161

As shown in Table 1 the proposed Blackstone Estates development is anticipated to generate 1,533 average daily trips with a total of 121 trips occurring during the AM peak hour and a total of 161 trips occurring during the PM peak hour.

TRIP DISTRIBUTION AND ASSIGNMENT

The distribution of the project trips to the Pyramid Highway/Calle De La Plata and Calle De La Plata/Lily Lane/Dykes Court intersections was based on existing peak hour traffic patterns and the locations of attractions and productions in the area. The anticipated trip distribution is shown on Figure 2. The peak hour project trips shown in Table 1 were subsequently assigned to the key intersections based on the trip distribution. Figure 3 shows the project trip assignment at the key intersections during the AM and PM peak hours.

EXISTING AND PROJECTED TRAFFIC VOLUMES

Figure 4 shows the existing traffic volumes at the key intersections for the AM and PM peak hours. The existing traffic volumes were obtained from traffic counts taken in August of 2015.

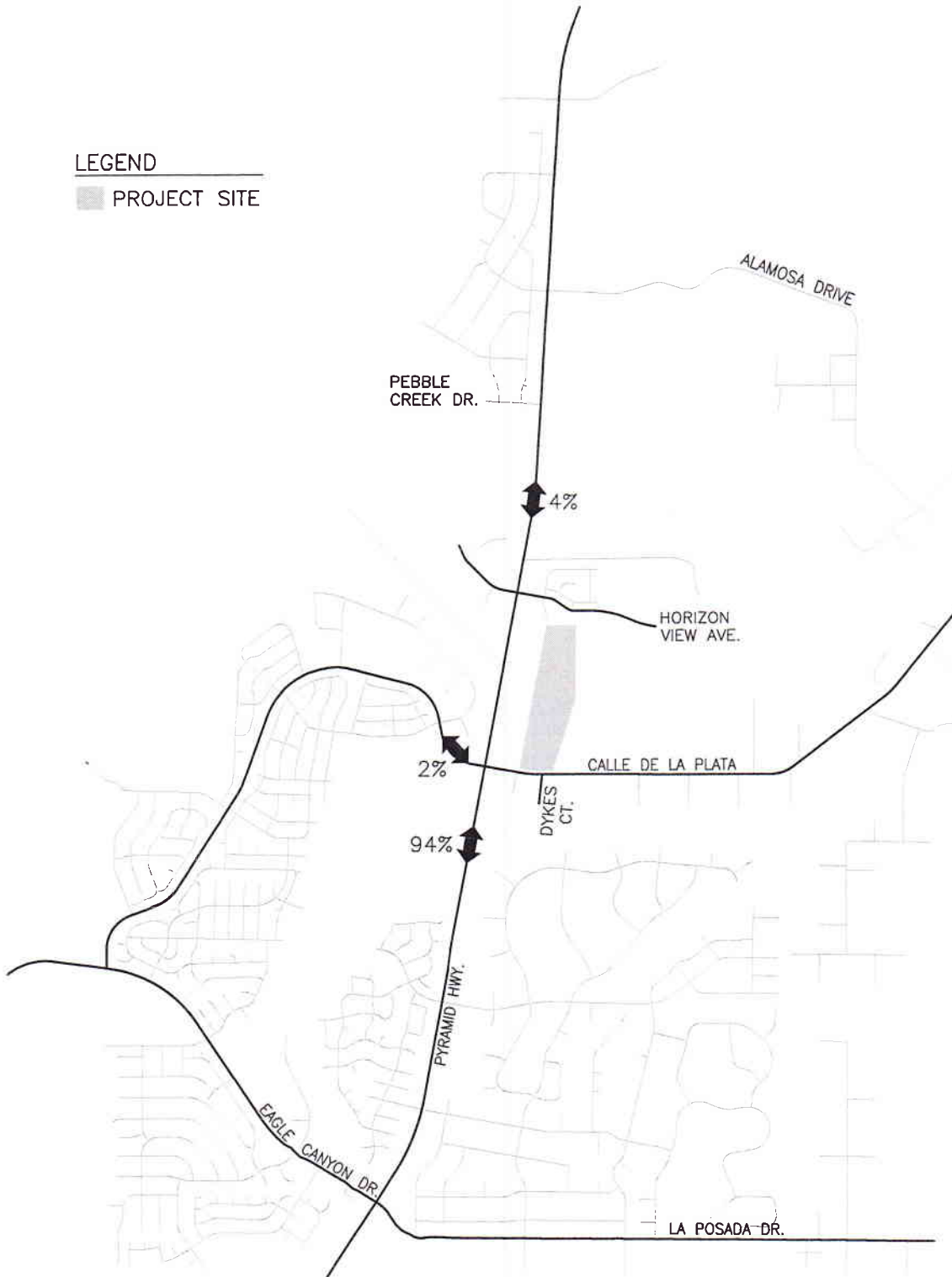
Figure 5 shows the existing plus project traffic volumes at the key intersections for the AM and PM peak hours. The existing plus project traffic volumes were obtained by adding the trip assignment volumes shown on Figure 3 to the existing traffic volumes shown on Figure 4.

Figure 6 shows the 2025 base traffic volumes at the key intersections during the AM and PM peak hours. The 2025 base turning movements were estimated based on directional roadway link volumes obtained directly from the Regional Transportation Commission's traffic forecasting model. The traffic analysis zone (TAZ 641) in which the project is located shows no household or population growth between the 2015 and 2025 scenarios and therefore the 2025 base volumes do not include traffic generated by the project.

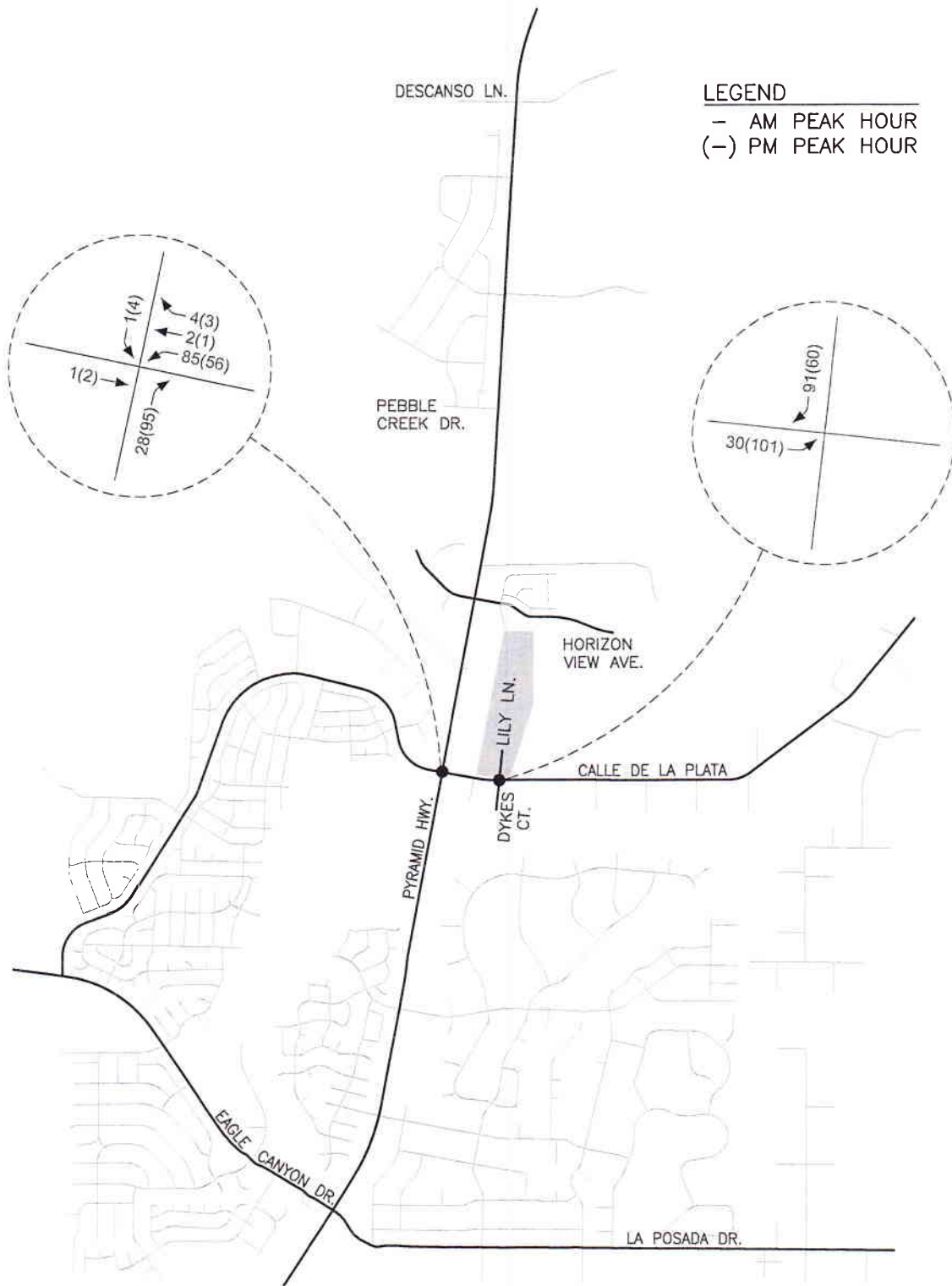
Figure 7 shows the 2025 base plus project traffic volumes at the key intersections during the AM and PM peak hours. The 2025 base plus project traffic volumes were obtained by adding the trip assignment volumes shown on Figure 3 to the 2025 base traffic volumes shown on Figure 6.

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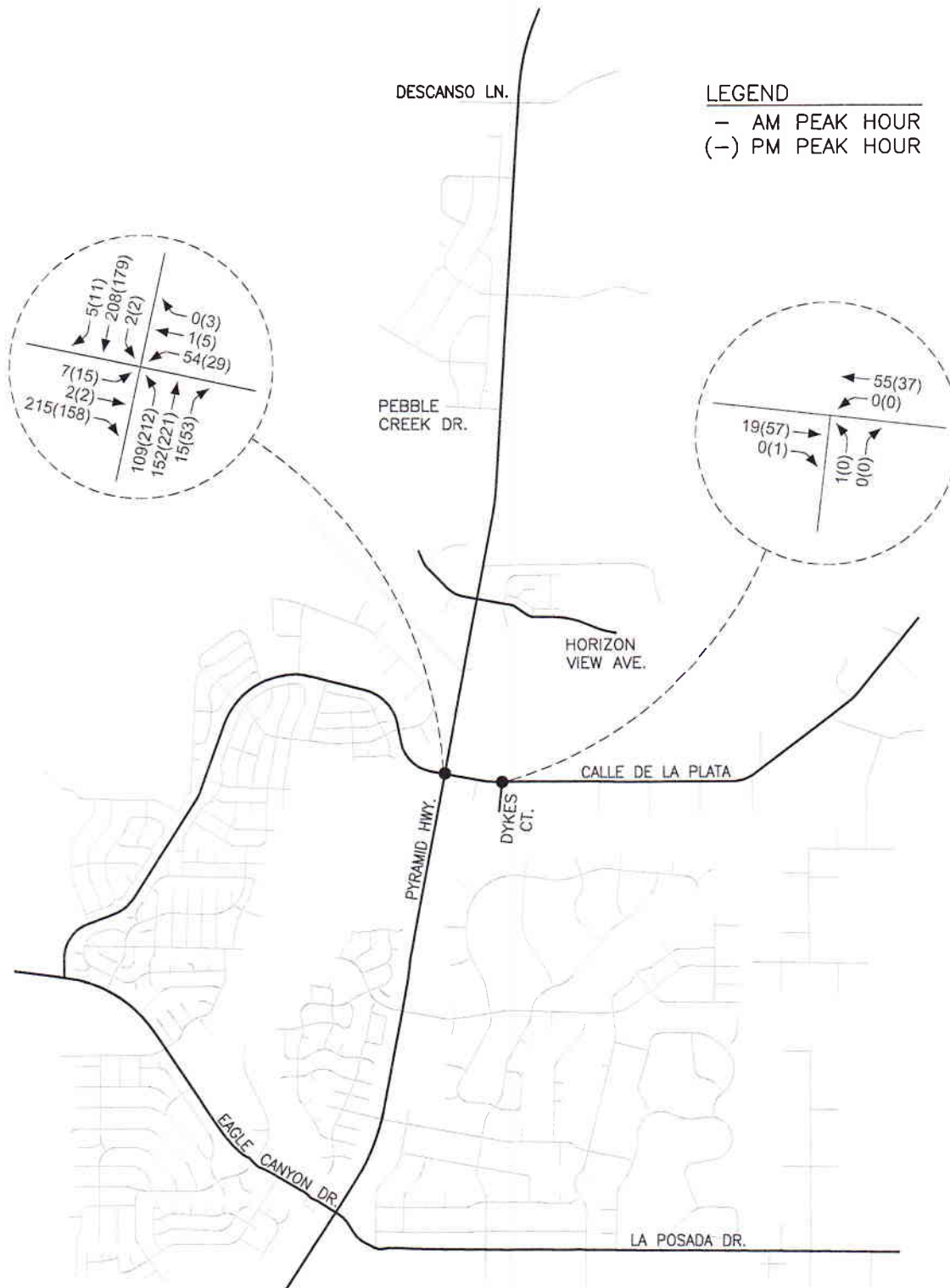
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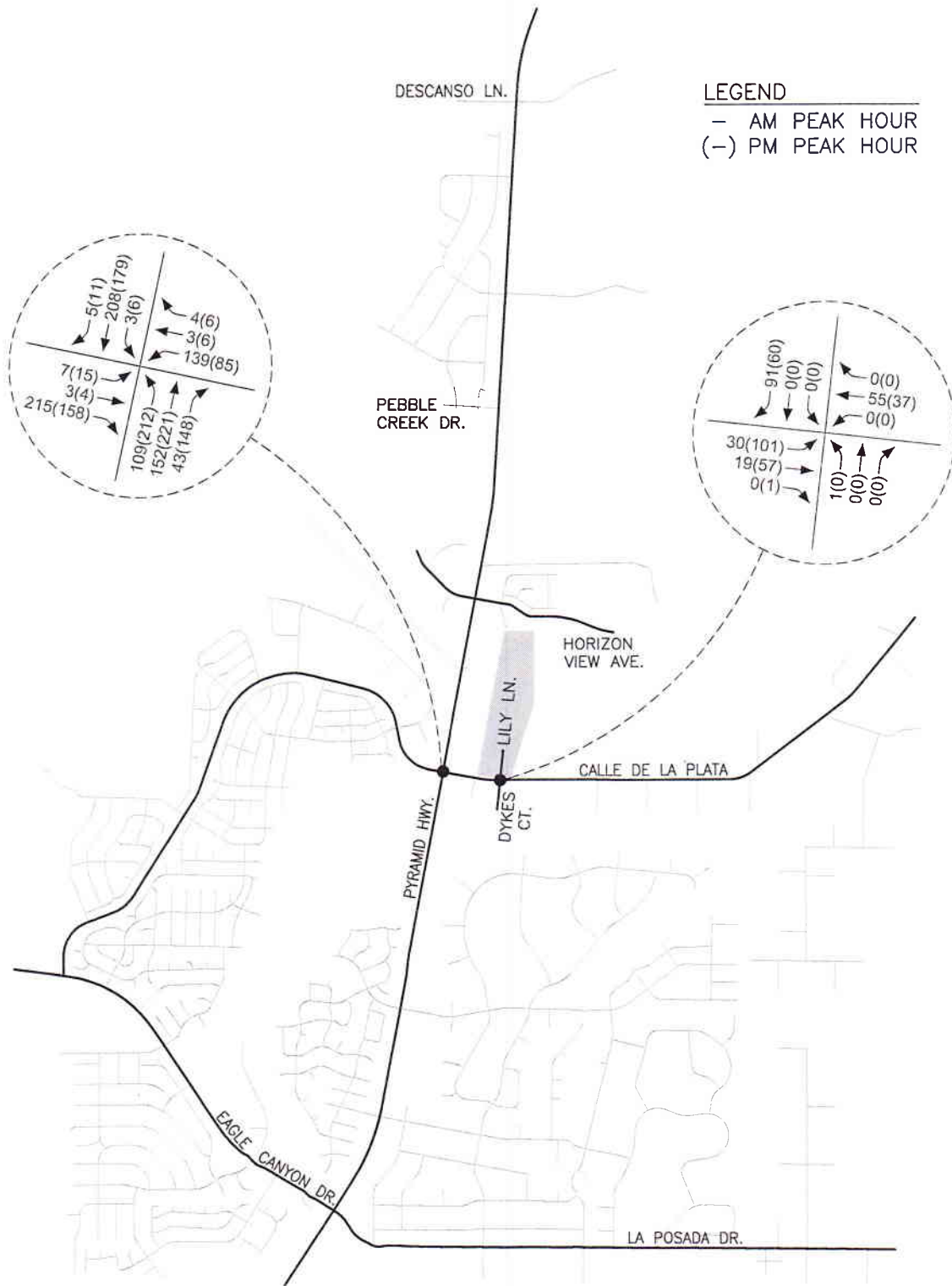
BLACKSTONE ESTATES
TRIP DISTRIBUTION
FIGURE 2



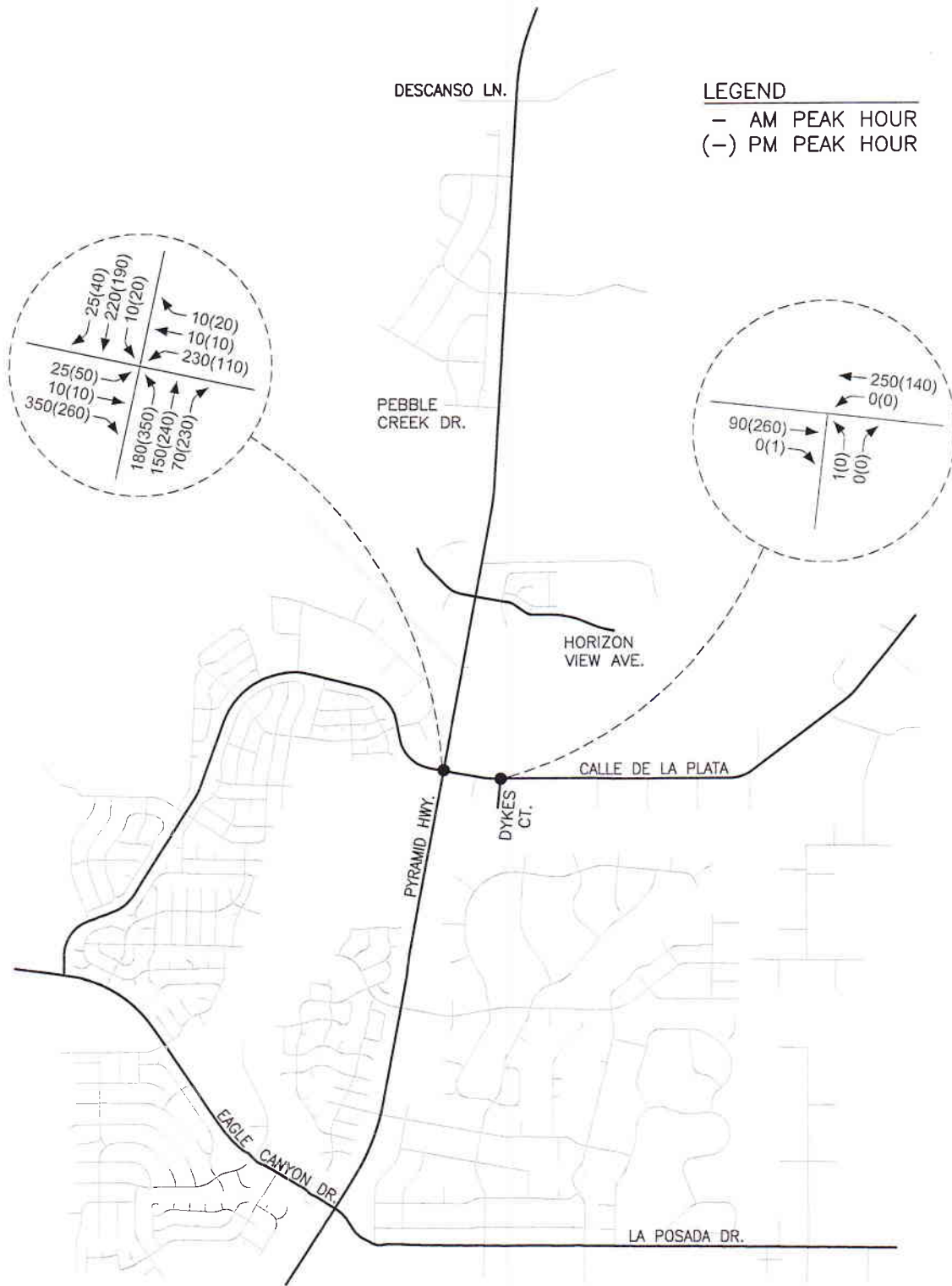
BLACKSTONE ESTATES
TRIP ASSIGNMENT
FIGURE 3



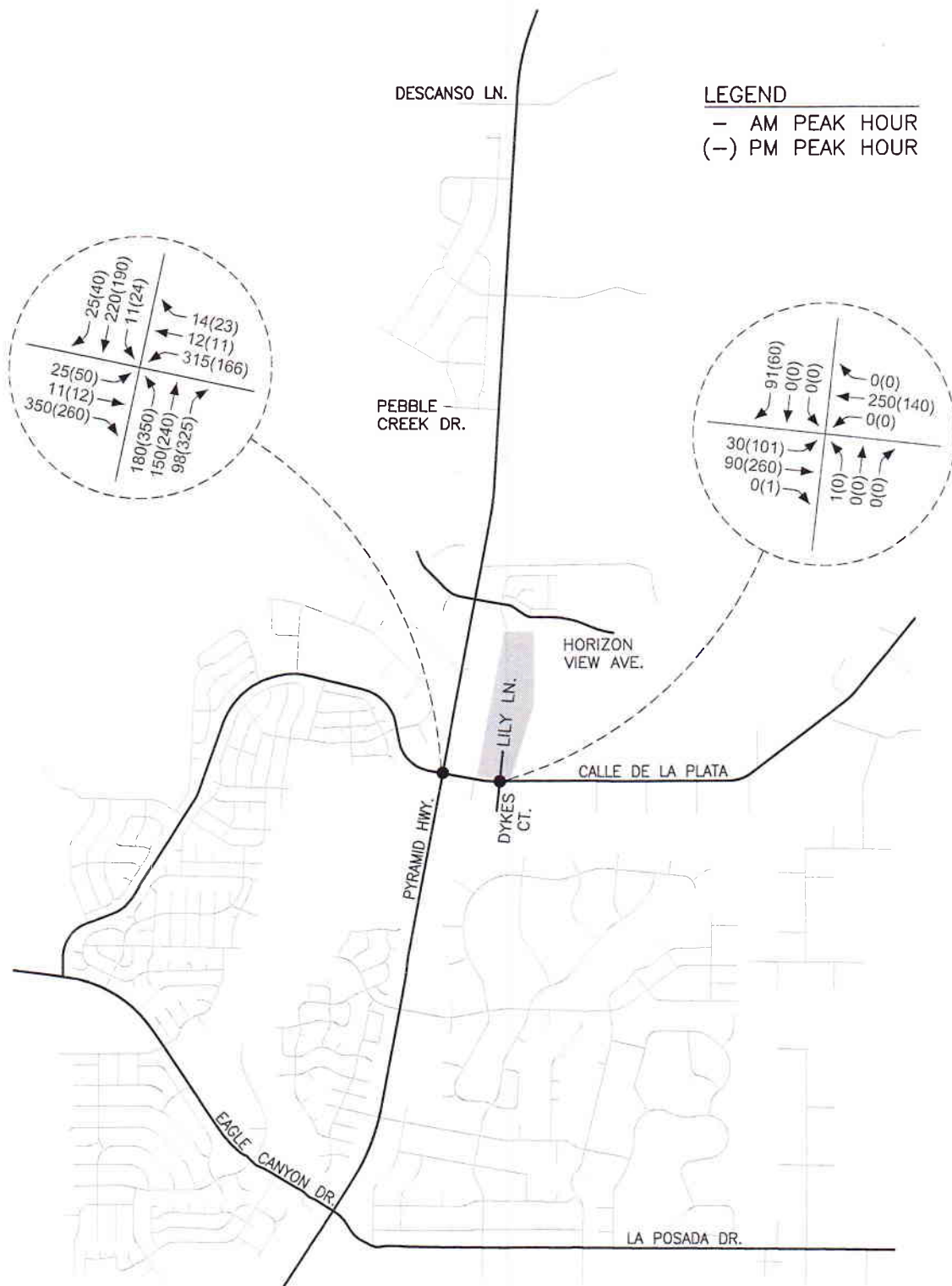
BLACKSTONE ESTATES
EXISTING TRAFFIC VOLUMES
FIGURE 4



BLACKSTONE ESTATES
EXISTING PLUS PROJECT TRAFFIC VOLUMES
FIGURE 5



BLACKSTONE ESTATES
2025 BASE TRAFFIC VOLUMES
FIGURE 6



BLACKSTONE ESTATES
2025 BASE PLUS PROJECT TRAFFIC VOLUMES
FIGURE 7

INTERSECTION CAPACITY ANALYSIS

The key intersections were analyzed for capacity based on procedures presented in the *Highway Capacity Manual* (2010), prepared by the Transportation Research Board, using the latest version of the Highway Capacity software. The result of capacity analysis is a level of service (LOS) rating for each signalized intersection and unsignalized intersection minor movement. Level of service is a qualitative measure of traffic operating conditions where a letter grade “A” through “F”, corresponding to progressively worsening traffic operation, is assigned to the intersection or minor movement.

The *Highway Capacity Manual* defines level of service for stop controlled intersections in terms of computed or measured control delay for each minor movement. Level of service is not defined for the intersection as a whole. The level of service criteria for unsignalized intersections is shown in Table 2.

LEVEL OF SERVICE	DELAY RANGE (SEC/VEH)
A	≤ 10
B	>10 and ≤ 15
C	>15 and ≤ 25
D	>25 and ≤ 35
E	>35 and ≤ 50
F	>50

Level of service for signalized intersections is stated in terms of the average control delay per vehicle for a peak 15 minute analysis period. The level of service criteria for signalized intersections is shown in Table 3.

LEVEL OF SERVICE	CONTROL DELAY PER VEHICLE (SEC)
A	≤ 10
B	>10 and ≤ 20
C	>20 and ≤ 35
D	>35 and ≤ 55
E	>55 and ≤ 80
F	>80

Table 4 shows a summary of the level of service and delay results at the key intersections for the existing, existing plus project, 2025 base, and 2025 base plus project scenarios. The intersection capacity worksheets are included in the Appendix.

INTERSECTION	EXISTING		EXISTING + PROJECT		2025 BASE		2025 BASE + PROJECT	
	AM	PM	AM	PM	AM	PM	AM	PM
Pyramid & Calle De La Plata Unsignalized Four-Leg								
EB Left-Thru	B14.9	C22.7	C15.4	D25.3	C22.7	F126.2	C23.7	F171.2
EB Right	B11.1	B10.3	B11.1	B10.3	B13.4	B11.6	B13.4	B11.6
WB Left-Thru-Right	D26.1	D31.0	E48.9	F64.9	F781.7	F903.5	F1246	F1755
NB Left	A7.9	A8.1	A7.9	A8.1	A8.2	A8.8	A8.2	A8.8
SB Left	A7.6	A7.8	A7.6	A8.1	A7.7	A8.4	A7.8	A8.8
Pyramid & Calle De La Plata Signalized	N/A	N/A	B18.5	B19.0	C21.2	C23.2	C22.5	C24.7
Calle De La Plata & Dykes Unsignalized Three-Leg								
WB Left	A0.0	A0.0	N/A	N/A	A0.0	A0.0	N/A	N/A
NB Left-Right	A8.9	A0.0	N/A	N/A	B10.6	A0.0	N/A	N/A
Calle De La Plata & Dykes/Lily Unsignalized Four-Leg								
EB Left	N/A	N/A	A7.4	A7.5	N/A	N/A	A7.8	A7.7
WB Left	N/A	N/A	A0.0	A0.0	N/A	N/A	A0.0	A0.0
NB Left-Thru-Right	N/A	N/A	B10.3	A0.0	N/A	N/A	B13.3	A0.0
SB Left-Thru-Right	N/A	N/A	A8.9	A8.7	N/A	N/A	B10.3	A9.3

Pyramid Highway/Calle De La Plata Intersection

The Pyramid Highway/Calle De La Plata intersection was analyzed for capacity as an unsignalized four-leg intersection with stop sign control at the east and west approaches for all scenarios. The intersection minor movements currently operate at LOS D or better during the AM and PM peak hours. For the existing plus project volumes the westbound left turn movement operates at LOS E during the AM peak hour and LOS F during the PM peak hour. For the 2025 base volumes the eastbound left turn movement will operate at LOS F during the PM peak hour and the westbound left turn movement will operate at LOS F during the AM and PM peak hours. For the 2025 base plus project volumes the eastbound left turn movement will operate at LOS F during the PM peak hour and the westbound left turn movement will operate at LOS F during the AM and PM peak hours. The intersection was analyzed with the existing approach lanes and traffic control for all scenarios.

Traffic signal warrant 3 per the *Manual on Uniform Traffic Control Devices* (2009) was subsequently reviewed at the Pyramid Highway/Calle De La Plata intersection due to the LOS E and F operation for some minor movements. Traffic signal warrant 3 is not met for the existing or existing plus project traffic volumes but is met for the 2025 traffic volumes. The installation of a traffic signal at the Pyramid Highway/Calle De La Plata intersection will provide LOS C or better operation during the AM and PM peak hours for all scenarios. It should be noted that peak hour warrant 3 should be applied only in unusual cases such as office complexes, manufacturing plants, industrial complexes, or other high-occupancy vehicle facilities that attract or discharge large numbers of vehicles over a short time. The *Manual on Uniform Traffic Control Devices* has eight additional warrants that should be evaluated when considering the need for the installation of a signal. It is recommended that traffic volumes and signal warrants be periodically monitored at the Pyramid Highway/Calle De La Plata intersection by Washoe County and the Nevada Department of Transportation and, if appropriate, a signal be included in the Regional Transportation Commission's *Regional Transportation Improvement Program*.

The existing left turn pocket at the north approach of the Pyramid Highway/Calle De La Plata intersection was reviewed for storage and deceleration requirements. Less than 50 feet of storage length is required for the existing and existing plus project volumes based on both NDOT's unsignalized and signalized intersection criteria. However, the access management standards specify that a minimum of 100 feet of left turn storage be provided. NDOT's access management standards also indicate that the left turn lane shall contain a desirable deceleration length of 365 feet or a minimum deceleration length of 245 feet based on the 55 mile per hour speed limit on Pyramid Highway. The existing left turn lane contains ± 310 feet of storage/deceleration length which does not meet the 100 foot storage and 245 foot minimum deceleration requirements for either the existing or existing plus project scenarios. However, the left turn lane will meet the 245 foot minimum deceleration length and calculated 50 foot storage length. It should be noted that the project will add only 1 AM peak hour and 4 PM peak hour vehicles to this movement.

The project site plan indicates that a right turn lane is proposed at the east approach of the Pyramid Highway/Calle De La Plata intersection. It is suggested that a right turn deceleration lane be provided at the south approach rather than the east approach since NDOT's access management standards require that an exclusive right turn deceleration lane be provided at the south approach based on the 55 mile per hour speed limit on Pyramid Highway. Again, the access management standards indicate that the right turn lane contain a minimum of 100 feet of storage length, a desirable deceleration length of 365 feet, and a 20:1 taper based on the 55 mile per hour speed limit on Pyramid Highway. It is therefore recommended that the Pyramid Highway/Calle De La Plata intersection be improved to include an exclusive right turn lane at the south approach containing 465 feet of storage/deceleration length with a 20:1 taper.

The need for a westbound to northbound acceleration lane at the Pyramid Highway/Calle De La Plata intersection was also reviewed. The westbound to northbound right turn volume is low for all existing and with project scenarios. The north approach currently contains a ± 200 foot tapered acceleration lane which will accommodate the westbound to northbound right turn traffic.

Calle De La Plata/Dykes Court/Lily Lane Intersection

The Calle De La Plata/Dykes Court intersection was initially analyzed as an unsignalized three-leg intersection with stop control at the south approach for the existing and 2025 base scenarios. The intersection minor movements currently operate at LOS A during the AM and PM peak hours and will operate at LOS B or better during the AM and PM peak hours for the 2025 base volumes. The intersection was analyzed with the existing approach lanes.

The Calle De La Plata/Dykes Court/Lily Lane intersection was subsequently analyzed as an unsignalized four-leg intersection with stop control at the north and south approaches for the existing plus project and 2025 base plus project scenarios. For the existing plus project volumes the intersection minor movements operate at LOS B or better during the AM and PM peak hours. For the 2025 base plus project volumes the intersection minor movement operate at LOS B or better during the AM and PM peak hours. The intersection was analyzed with one shared left turn-through-right turn lane at all approaches.

The need for an exclusive left turn lane at the west approach of the Calle De La Plata/Dykes Court/Lily Lane intersection was reviewed based on the AASHTO publication *A Policy on Geometric Design of Highways and Streets* (2011). An exclusive left turn lane is not required on Calle De La Plata based on the existing plus project volumes. It is recommended that the Calle De La Plata/Lily Lane intersection be constructed per Washoe County standards and contain a stop sign at the north approach.

SITE PLAN REVIEW

A copy of the Tentative Map for the Blackstone Estates development is included in this submittal. The tentative map indicates that project access will be provided from Lily Lane via Calle De La Plata. It is recommended that Lily Lane and the remaining on-site roadways be constructed per Washoe County street standards.

RECOMMENDATIONS

Traffic generated by the Blackstone Estates development will have some impact on the adjacent street network. The following recommendations are made to mitigate project traffic impacts.

It is recommended that any required signing, striping or traffic control improvements comply with Nevada Department of Transportation and Washoe County requirements.

It is recommended that traffic volumes and signal warrants be periodically monitored at the Pyramid Highway/Calle De La Plata intersection by Washoe County and the Nevada Department of Transportation and, if appropriate, a traffic signal be included in the Regional Transportation Commission's *Regional Transportation Improvement Program*.

It is recommended that the Pyramid Highway/Calle De La Plata intersection be improved to include an exclusive right turn lane at the south approach containing 465 feet of storage/deceleration length with a 20:1 taper.

It is recommended that the Calle De La Plata/Lily Lane intersection be constructed per Washoe County standards and contain a stop sign at the north approach.

It is recommended that Lily Lane and the remaining on-site roadways be constructed per Washoe County street standards.

APPENDIX

Trip Generation Summary - Alternative 1

Project: New Project
 Alternative: Alternative 1

Open Date: 8/8/2016
 Analysis Date: 8/8/2016

ITE	Land Use	Average Daily Trips			AM Peak Hour of Adjacent Street Traffic			PM Peak Hour of Adjacent Street Traffic		
		Enter	Exit	Total	Enter	Exit	Total	Enter	Exit	Total
210	SFHOUSE 1	767	766	1533	30	91	121	101	60	161
	161 Dwelling Units									

Unadjusted Volume	0	0	0	0	0	0	0	0	0	0
Internal Capture Trips	0	0	0	0	0	0	0	0	0	0
Pass-By Trips	0	0	0	0	0	0	0	0	0	0
Volume Added to Adjacent Streets	0	0	0	0	0	0	0	0	0	0

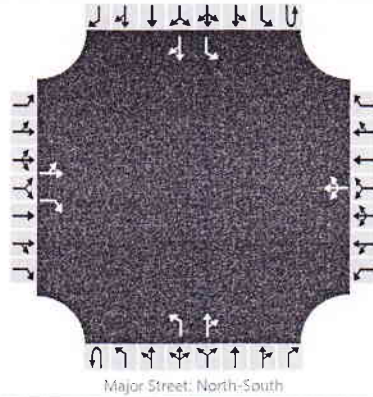
Total AM Peak Hour Internal Capture = 0 Percent

Total PM Peak Hour Internal Capture = 0 Percent

HCS 2010 Two-Way Stop Control Summary Report

General Information		Site Information	
Analyst	MSH	Intersection	Pyramid & Calle De La Plata
Agency/Co.	Solaegui Engineers	Jurisdiction	Washoe County
Date Performed	8/8/2016	East/West Street	Calle De La Plata
Analysis Year	2016	North/South Street	Pyramid Highway
Time Analyzed	AM Existing	Peak Hour Factor	0.95
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description			

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	1		0	1	0	0	1	1	0	0	1	1	0
Configuration		LT		R		LTR				L		TR		L		TR
Volume (veh/h)		7	2	215		54	1	0		109	152	15		2	208	5
Percent Heavy Vehicles		2	2	2		2	2	2		2				2		
Proportion Time Blocked																
Right Turn Channelized	No				No				No				No			
Median Type	Undivided															
Median Storage																

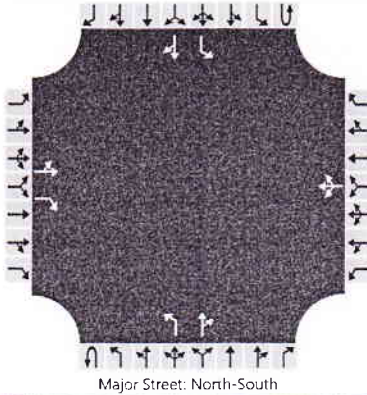
Delay, Queue Length, and Level of Service

Flow Rate (veh/h)		9		226				58				115				2
Capacity		371		817				228				1344				1399
v/c Ratio		0.02		0.28				0.25				0.09				0.00
95% Queue Length		0.1		1.1				1.0				0.3				0.0
Control Delay (s/veh)		14.9		11.1				26.1				7.9				7.6
Level of Service (LOS)		B		B				D				A				A
Approach Delay (s/veh)		11.2				26.1				3.1				0.1		
Approach LOS		B				D										

HCS 2010 Two-Way Stop Control Summary Report

General Information		Site Information	
Analyst	MSH	Intersection	Pyramid & Calle De La Plata
Agency/Co.	Solaegui Engineers	Jurisdiction	Washoe County
Date Performed	8/8/2016	East/West Street	Calle De La Plata
Analysis Year	2016	North/South Street	Pyramid Highway
Time Analyzed	PM Existing	Peak Hour Factor	0.95
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description			

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound				
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R	
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6	
Number of Lanes		0	1	1		0	1	0	0	1	1	0	0	1	1	0	
Configuration		LT		R		LTR				L		TR		L		TR	
Volume (veh/h)		15	2	158		29	5	3		212	221	53		2	179	11	
Percent Heavy Vehicles		2	2	2		2	2	2		2				2			
Proportion Time Blocked																	
Right Turn Channelized		No				No				No				No			
Median Type	Undivided																
Median Storage																	

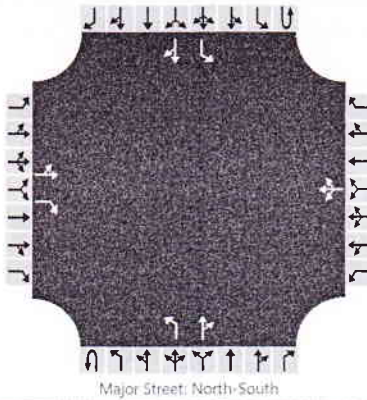
Delay, Queue Length, and Level of Service

Flow Rate (veh/h)		18		166		39				223				2			
Capacity		221		847		177				1371				1272			
v/c Ratio		0.08		0.20		0.22				0.16				0.00			
95% Queue Length		0.3		0.7		0.8				0.6				0.0			
Control Delay (s/veh)		22.7		10.3		31.0				8.1				7.8			
Level of Service (LOS)		C		B		D				A				A			
Approach Delay (s/veh)		11.5				31.0				3.5				0.1			
Approach LOS		B				D											

HCS 2010 Two-Way Stop Control Summary Report

General Information		Site Information	
Analyst	MSH	Intersection	Pyramid & Calle De La Plata
Agency/Co.	Solaegui Engineers	Jurisdiction	Washoe County
Date Performed	8/8/2016	East/West Street	Calle De La Plata
Analysis Year	2016	North/South Street	Pyramid Highway
Time Analyzed	AM Existing + Project	Peak Hour Factor	0.95
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description			

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	1		0	1	0	0	1	1	0	0	1	1	0
Configuration		LT		R		LTR				L		TR		L		TR
Volume (veh/h)		7	3	215		139	3	4		109	152	43		3	208	5
Percent Heavy Vehicles		2	2	2		2	2	2		2				2		
Proportion Time Blocked																
Right Turn Channelized	No				No				No				No			
Median Type	Undivided															
Median Storage																

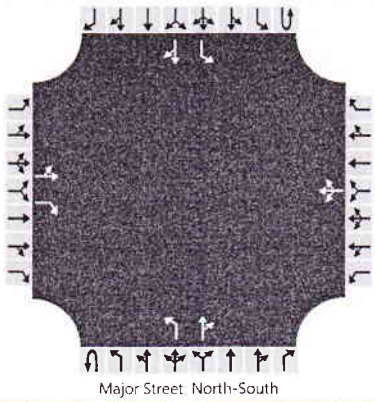
Delay, Queue Length, and Level of Service

Flow Rate (veh/h)		10	226		153		115		3			
Capacity		356	817		226		1344		1365			
v/c Ratio		0.03	0.28		0.68		0.09		0.00			
95% Queue Length		0.1	1.1		4.3		0.3		0.0			
Control Delay (s/veh)		15.4	11.1		48.9		7.9		7.6			
Level of Service (LOS)		C	B		E		A		A			
Approach Delay (s/veh)		11.3			48.9			2.8			0.1	
Approach LOS		B			E							

HCS 2010 Two-Way Stop Control Summary Report

General Information		Site Information	
Analyst	MSH	Intersection	Pyramid & Calle De La Plata
Agency/Co.	Solaegui Engineers	Jurisdiction	Washoe County
Date Performed	8/8/2016	East/West Street	Calle De La Plata
Analysis Year	2016	North/South Street	Pyramid Highway
Time Analyzed	PM Existing + Project	Peak Hour Factor	0.95
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description			

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement																
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	1		0	1	0	0	1	1	0	0	1	1	0
Configuration		LT		R			LTR			L		TR		L		TR
Volume (veh/h)		15	4	158		85	6	6		212	221	148		6	179	11
Percent Heavy Vehicles		2	2	2		2	2	2		2				2		
Proportion Time Blocked																
Right Turn Channelized	No				No				No				No			
Median Type	Undivided															
Median Storage																

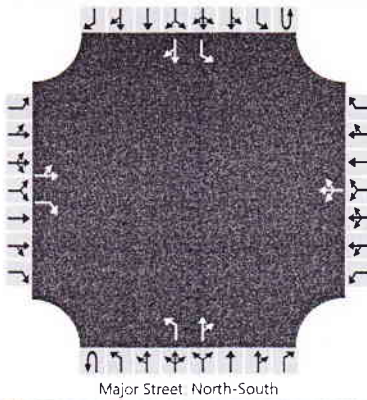
Delay, Queue Length, and Level of Service

Flow Rate (veh/h)		20		166				101				223				6
Capacity		197		847				154				1371				1169
v/c Ratio		0.10		0.20				0.66				0.16				0.01
95% Queue Length		0.3		0.7				3.7				0.6				0.0
Control Delay (s/veh)		25.3		10.3				64.9				8.1				8.1
Level of Service (LOS)		D		B				F				A				A
Approach Delay (s/veh)	11.8				64.9				3.0				0.2			
Approach LOS	B				F											

HCS 2010 Two-Way Stop Control Summary Report

General Information				Site Information			
Analyst	MSH			Intersection	Pyramid & Calle De La Plata		
Agency/Co.	Solaegui Engineers			Jurisdiction	Washoe County		
Date Performed	8/8/2016			East/West Street	Calle De La Plata		
Analysis Year	2025			North/South Street	Pyramid Highway		
Time Analyzed	AM Base			Peak Hour Factor	0.95		
Intersection Orientation	North-South			Analysis Time Period (hrs)	0.25		
Project Description							

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound					
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R		
Movement																		
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6		
Number of Lanes		0	1	1		0	1	0		0	1	1	0		0	1	1	0
Configuration		LT		R			LTR			L		TR		L		TR		
Volume (veh/h)		25	10	350		230	10	10		180	150	70		10	220	25		
Percent Heavy Vehicles		2	2	2		2	2	2		2				2				
Proportion Time Blocked																		
Right Turn Channelized	No				No				No				No					
Median Type	Undivided																	
Median Storage																		

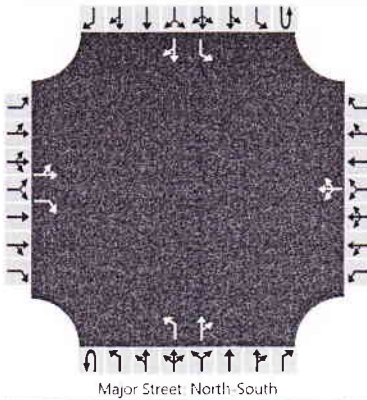
Delay, Queue Length, and Level of Service

Flow Rate (veh/h)		37		368			264			189				11		
Capacity		240		793			104			1306				1335		
v/c Ratio		0.15		0.46			2.53			0.14				0.01		
95% Queue Length		0.5		2.5			24.1			0.5				0.0		
Control Delay (s/veh)		22.7		13.4			781.7			8.2				7.7		
Level of Service (LOS)		C		B			F			A				A		
Approach Delay (s/veh)	14.2				781.7				3.7				0.3			
Approach LOS	B				F											

HCS 2010 Two-Way Stop Control Summary Report

General Information		Site Information	
Analyst	MSH	Intersection	Pyramid & Calle De La Plata
Agency/Co.	Solaegui Engineers	Jurisdiction	Washoe County
Date Performed	8/8/2016	East/West Street	Calle De La Plata
Analysis Year	2025	North/South Street	Pyramid Highway
Time Analyzed	PM Base	Peak Hour Factor	0.95
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description			

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	1		0	1	0	0	1	1	0	0	1	1	0
Configuration		LT		R		LTR				L		TR		L		TR
Volume (veh/h)		50	10	260		110	10	20		350	240	230		20	190	40
Percent Heavy Vehicles		2	2	2		2	2	2		2				2		
Proportion Time Blocked																
Right Turn Channelized	No				No				No				No			
Median Type	Undivided															
Median Storage																

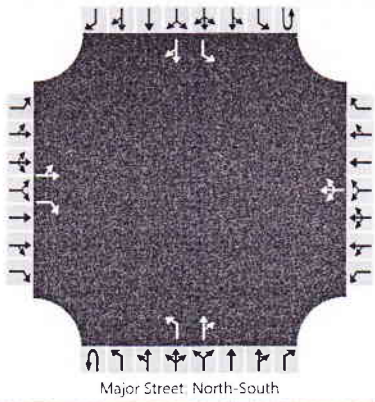
Delay, Queue Length, and Level of Service

Flow Rate (veh/h)		64		274			148			368				21		
Capacity		84		818			56			1324				1068		
v/c Ratio		0.76		0.33			2.65			0.28				0.02		
95% Queue Length		3.8		1.5			15.2			1.1				0.1		
Control Delay (s/veh)		126.2		11.6			903.5			8.8				8.4		
Level of Service (LOS)		F		B			F			A				A		
Approach Delay (s/veh)		29.8				903.5				3.7				0.7		
Approach LOS		D				F										

HCS 2010 Two-Way Stop Control Summary Report

General Information		Site Information	
Analyst	MSH	Intersection	Pyramid & Calle De La Plata
Agency/Co.	Solaegui Engineers	Jurisdiction	Washoe County
Date Performed	8/8/2016	East/West Street	Calle De La Plata
Analysis Year	2025	North/South Street	Pyramid Highway
Time Analyzed	AM Base + Project	Peak Hour Factor	0.95
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description			

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement																
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	1		0	1	0	0	1	1	0	0	1	1	0
Configuration		LT		R			LTR			L		TR		L		TR
Volume (veh/h)		25	11	350		315	12	14		180	150	98		11	220	25
Percent Heavy Vehicles		2	2	2		2	2	2		2				2		
Proportion Time Blocked																
Right Turn Channelized	No				No				No				No			
Median Type	Undivided															
Median Storage																

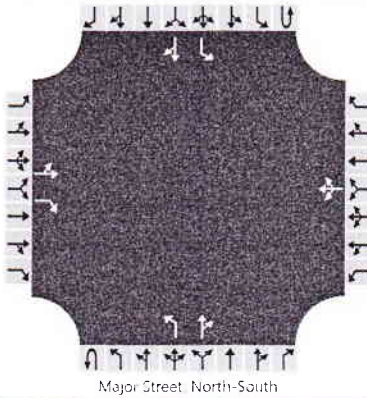
Delay, Queue Length, and Level of Service

Flow Rate (veh/h)		38		368			360			189				12		
Capacity		230		793			101			1306				1302		
v/c Ratio		0.17		0.46			3.57			0.14				0.01		
95% Queue Length		0.6		2.5			36.1			0.5				0.0		
Control Delay (s/veh)		23.7		13.4			1245.6			8.2				7.8		
Level of Service (LOS)		C		B			F			A				A		
Approach Delay (s/veh)	14.3				1245.6				3.5				0.3			
Approach LOS	B				F											

HCS 2010 Two-Way Stop Control Summary Report

General Information		Site Information	
Analyst	MSH	Intersection	Pyramid & Calle De La Plata
Agency/Co.	Solaegui Engineers	Jurisdiction	Washoe County
Date Performed	8/8/2016	East/West Street	Calle De La Plata
Analysis Year	2025	North/South Street	Pyramid Highway
Time Analyzed	PM Base + Project	Peak Hour Factor	0.95
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description			

Lanes



Vehicle Volumes and Adjustments

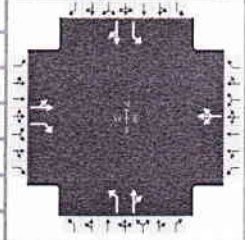
Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement																
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	1		0	1	0		0	1	1		0	1	1
Configuration		LT		R			LTR			L		TR		L		TR
Volume (veh/h)		50	12	260		166	11	23		350	240	325		24	190	40
Percent Heavy Vehicles		2	2	2		2	2	2		2				2		
Proportion Time Blocked																
Right Turn Channelized	No				No				No				No			
Median Type	Undivided															
Median Storage																

Delay, Queue Length, and Level of Service

Flow Rate (veh/h)		66		274				211				368				25
Capacity		74		818				47				1324				981
v/c Ratio		0.89		0.33				4.51				0.28				0.03
95% Queue Length		4.5		1.5				23.8				1.1				0.1
Control Delay (s/veh)		171.2		11.6				1754.4				8.8				8.8
Level of Service (LOS)		F		B				F				A				A
Approach Delay (s/veh)	36.3				1754.4				3.3				0.8			
Approach LOS	E				F											

HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Solaegui Engineers			Duration, h	0.25
Analyst	MSH	Analysis Date	Aug 9, 2016	Area Type	Other
Jurisdiction	Washoe County	Time Period	AM Peak Hour	PHF	0.95
Urban Street		Analysis Year	Existing + Project	Analysis Period	1> 7:00
Intersection	Pyramid & Calle De La...	File Name	PyCa16aw.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	7	3	215	139	3	4	109	152	43	3	208	5

Signal Information				Signal Timing (s)								Signal Phases												
Cycle, s	70.0	Reference Phase	2	Green	8.0	1.0	25.0	21.0	0.0	0.0	Yellow	4.0	0.0	4.0	4.0	0.0	0.0	Red	1.0	0.0	1.0	1.0	0.0	0.0
Offset, s	0	Reference Point	End																					
Uncoordinated	Yes	Simult. Gap E/W	On																					
Force Mode	Fixed	Simult. Gap N/S	On																					

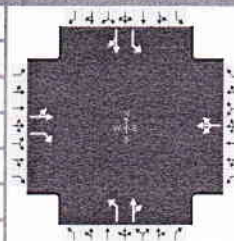
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8	5	2	1	6
Case Number		7.0		8.0	2.0	4.0	2.0	4.0
Phase Duration, s		26.0		26.0	14.0	31.0	13.0	30.0
Change Period, (Y+Rc), s		5.0		5.0	0.0	5.0	5.0	5.0
Max Allow Headway (MAH), s		3.3		3.3	3.1	3.1	3.1	3.1
Queue Clearance Time (gs), s		8.6		8.0	5.9	7.7	2.1	8.2
Green Extension Time (ge), s		0.6		0.6	0.1	0.7	0.0	0.7
Phase Call Probability		1.00		1.00	1.00	1.00	1.00	1.00
Max Out Probability		0.00		0.00	0.00	0.00	0.00	0.00

Movement Group Results	EB			WB			NB			SB			
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R	
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16	
Adjusted Flow Rate (v), veh/h		11	184		154		115	205		3	224		
Adjusted Saturation Flow Rate (s), veh/h/ln		1509	1552		1398		1774	1786		1774	1854		
Queue Service Time (gs), s		0.0	6.6		5.7		3.9	5.7		0.1	6.2		
Cycle Queue Clearance Time (gc), s		0.3	6.6		6.0		3.9	5.7		0.1	6.2		
Green Ratio (g/C)		0.30	0.30		0.30		0.20	0.37		0.11	0.36		
Capacity (c), veh/h		540	466		520		355	663		203	662		
Volume-to-Capacity Ratio (X)		0.019	0.396		0.296		0.323	0.309		0.016	0.339		
Back of Queue (Q), ft/ln (50 th percentile)		2.8	56.3		46.3		39.2	54		1.1	61.4		
Back of Queue (Q), veh/ln (50 th percentile)		0.1	2.2		1.8		1.5	2.1		0.0	2.4		
Queue Storage Ratio (RQ) (50 th percentile)		0.00	0.00		0.00		0.00	0.00		0.00	0.00		
Uniform Delay (d1), s/veh		17.2	19.5		19.2		23.9	15.6		27.5	16.5		
Incremental Delay (d2), s/veh		0.0	0.2		0.1		0.2	0.1		0.0	0.1		
Initial Queue Delay (d3), s/veh		0.0	0.0		0.0		0.0	0.0		0.0	0.0		
Control Delay (d), s/veh		17.3	19.7		19.4		24.1	15.7		27.5	16.6		
Level of Service (LOS)		B	B		B		C	B		C	B		
Approach Delay, s/veh / LOS	19.5	B		19.4	B		18.7	B			16.7	B	
Intersection Delay, s/veh / LOS	18.5						B						

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.3	B	2.3	B	2.1	B	2.3	B
Bicycle LOS Score / LOS	0.8	A	0.7	A	1.0	A	0.9	A

HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Solaegui Engineers			Duration, h	0.25
Analyst	MSH	Analysis Date	Aug 9, 2016	Area Type	Other
Jurisdiction	Washoe County	Time Period	PM Peak Hour	PHF	0.95
Urban Street		Analysis Year	Existing + Project	Analysis Period	1> 7:00
Intersection	Pyramid & Calle De La...	File Name	PyCa16pw.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	15	4	158	85	6	6	212	221	147	6	179	11

Signal Information				Signal Timing								
Cycle, s	70.0	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	Yes	Simult. Gap E/W	On									
Force Mode	Fixed	Simult. Gap N/S	On									
Green	6.0	4.0	25.0	20.0	0.0	0.0						
Yellow	4.0	0.0	4.0	4.0	0.0	0.0						
Red	1.0	0.0	1.0	1.0	0.0	0.0						

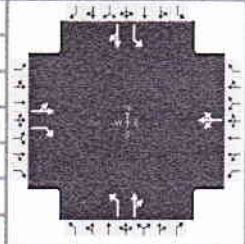
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8	5	2	1	6
Case Number		7.0		8.0	2.0	4.0	2.0	4.0
Phase Duration, s		25.0		25.0	15.0	34.0	11.0	30.0
Change Period, (Y+R _c), s		5.0		5.0	0.0	5.0	5.0	5.0
Max Allow Headway (MAH), s		3.3		3.3	3.1	3.1	3.1	3.1
Queue Clearance Time (g _s), s		6.4		5.8	9.9	13.8	2.2	7.5
Green Extension Time (g _e), s		0.4		0.4	0.2	1.1	0.0	1.0
Phase Call Probability		1.00		1.00	1.00	1.00	1.00	1.00
Max Out Probability		0.00		0.00	0.15	0.00	0.17	0.01

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h		20	124		102		223	387		6	200	
Adjusted Saturation Flow Rate (s), veh/h/ln		1462	1551		1420		1774	1729		1774	1842	
Queue Service Time (g _s), s		0.0	4.4		3.3		7.9	11.8		0.2	5.5	
Cycle Queue Clearance Time (g _c), s		0.5	4.4		3.8		7.9	11.8		0.2	5.5	
Green Ratio (g/C)		0.29	0.29		0.29		0.21	0.41		0.09	0.36	
Capacity (c), veh/h		510	443		502		380	716		152	658	
Volume-to-Capacity Ratio (X)		0.039	0.280		0.203		0.587	0.541		0.042	0.304	
Back of Queue (Q), ft/ln (50 th percentile)		5.6	37.3		30.2		83.2	107.3		2.4	54.1	
Back of Queue (Q), veh/ln (50 th percentile)		0.2	1.5		1.2		3.3	4.2		0.1	2.1	
Queue Storage Ratio (RQ) (50 th percentile)		0.00	0.00		0.00		0.00	0.00		0.00	0.00	
Uniform Delay (d ₁), s/veh		18.1	19.4		19.2		24.7	15.5		29.4	16.2	
Incremental Delay (d ₂), s/veh		0.0	0.1		0.1		1.6	0.5		0.0	0.1	
Initial Queue Delay (d ₃), s/veh		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Control Delay (d), s/veh		18.1	19.5		19.3		26.3	15.9		29.4	16.3	
Level of Service (LOS)		B	B		B		C	B		C	B	
Approach Delay, s/veh / LOS	19.3		B	19.3		B	19.7		B	16.7		B
Intersection Delay, s/veh / LOS	19.0						B					

Multimodal Results	EB		WB		NB		SB	
	Pedestrian LOS Score / LOS	2.3	B	2.3	B	2.1	B	2.3
Bicycle LOS Score / LOS	0.7	A	0.7	A	1.5	A	0.8	A

HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	Solaegui Engineers			Duration, h	0.25		
Analyst	MSH	Analysis Date	Aug 8, 2016	Area Type	Other		
Jurisdiction	Washoe County	Time Period	AM Peak Hour	PHF	0.95		
Urban Street		Analysis Year	2025 Base	Analysis Period	1 > 7:00		
Intersection	Pyramid & Calle De La...	File Name	PyCa25ax.xus				
Project Description							



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	25	10	350	230	10	10	180	150	70	10	220	25

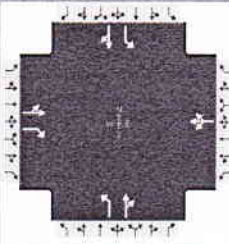
Signal Information														
Cycle, s	70.0	Reference Phase	2											
Offset, s	0	Reference Point	End											
Uncoordinated	Yes	Simult. Gap E/W	On	Green	8.0	1.0	25.0	21.0	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	0.0	4.0	4.0	0.0	0.0				
				Red	1.0	0.0	1.0	1.0	0.0	0.0				

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8	5	2	1	6
Case Number		7.0		8.0	2.0	4.0	2.0	4.0
Phase Duration, s		26.0		26.0	14.0	31.0	13.0	30.0
Change Period, (Y+R _c), s		5.0		5.0	0.0	5.0	5.0	5.0
Max Allow Headway (MAH), s		3.3		3.3	3.1	3.1	3.1	3.1
Queue Clearance Time (g _s), s		15.0		13.3	8.7	8.7	2.4	9.4
Green Extension Time (g _e), s		0.9		1.0	0.2	0.9	0.0	0.8
Phase Call Probability		1.00		1.00	1.00	1.00	1.00	1.00
Max Out Probability		0.28		0.12	0.11	0.00	0.00	0.01

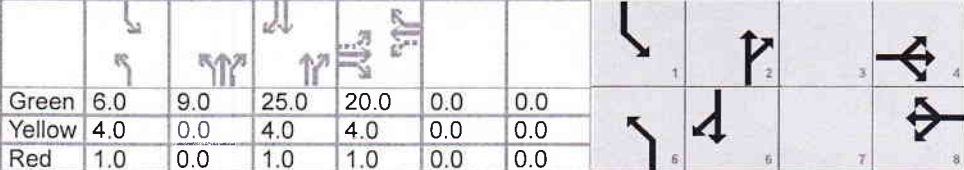
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h	37	326		263			189	232		11	258	
Adjusted Saturation Flow Rate (s), veh/h/ln	1489	1552		1400			1774	1753		1774	1826	
Queue Service Time (g _s), s	0.0	13.0		10.3			6.7	6.7		0.4	7.4	
Cycle Queue Clearance Time (g _c), s	1.0	13.0		11.3			6.7	6.7		0.4	7.4	
Green Ratio (g/C)	0.30	0.30		0.30			0.20	0.37		0.11	0.36	
Capacity (c), veh/h	535	466		519			355	651		203	652	
Volume-to-Capacity Ratio (X)	0.069	0.701		0.507			0.534	0.356		0.052	0.395	
Back of Queue (Q), ft/ln (50 th percentile)	10.1	123		87.2			69	62.2		3.9	72.4	
Back of Queue (Q), veh/ln (50 th percentile)	0.4	4.8		3.4			2.7	2.4		0.2	2.8	
Queue Storage Ratio (RQ) (50 th percentile)	0.00	0.00		0.00			0.00	0.00		0.00	0.00	
Uniform Delay (d ₁), s/veh	17.5	21.7		21.1			25.1	15.9		27.6	16.8	
Incremental Delay (d ₂), s/veh	0.0	4.0		0.3			0.8	0.1		0.0	0.1	
Initial Queue Delay (d ₃), s/veh	0.0	0.0		0.0			0.0	0.0		0.0	0.0	
Control Delay (d), s/veh	17.5	25.7		21.4			25.9	16.1		27.7	17.0	
Level of Service (LOS)		B C		C			C B			C B		
Approach Delay, s/veh / LOS	24.8	C		21.4	C		20.5	C		17.4	B	
Intersection Delay, s/veh / LOS	21.2						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.3	B	2.3	B	2.1	B	2.3	B
Bicycle LOS Score / LOS	1.1	A	0.9	A	1.2	A	0.9	A

HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information		
Agency	Solaegui Engineers			Duration, h	0.25	
Analyst	MSH	Analysis Date	Aug 8, 2016	Area Type	Other	
Jurisdiction	Washoe County	Time Period	PM Peak Hour	PHF	0.95	
Urban Street		Analysis Year	2025 Base	Analysis Period	1> 7:00	
Intersection	Pyramid & Calle De La...	File Name	PyCa25px.xus			
Project Description						

Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	50	10	260	110	10	20	350	240	230	20	190	40

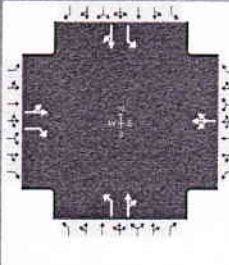
Signal Information														
Cycle, s	75.0	Reference Phase	2											
Offset, s	0	Reference Point	End											
Uncoordinated	Yes	Simult. Gap E/W	On	Green	6.0	9.0	25.0	20.0	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	0.0	4.0	4.0	0.0	0.0				
				Red	1.0	0.0	1.0	1.0	0.0	0.0				

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8	5	2	1	6
Case Number		7.0		8.0	2.0	4.0	2.0	4.0
Phase Duration, s		25.0		25.0	20.0	39.0	11.0	30.0
Change Period, (Y+R _c), s		5.0		5.0	0.0	5.0	5.0	5.0
Max Allow Headway (MAH), s		3.3		3.3	3.1	3.2	3.1	3.2
Queue Clearance Time (g _s), s		11.7		8.2	16.4	18.8	2.8	9.8
Green Extension Time (g _e), s		0.7		0.8	0.3	1.4	0.0	1.3
Phase Call Probability		1.00		1.00	1.00	1.00	1.00	1.00
Max Out Probability		0.05		0.01	0.72	0.01	0.90	0.05

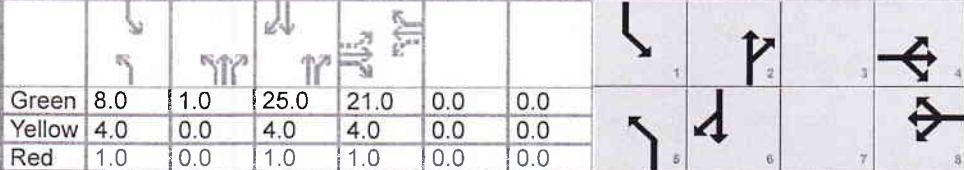
Movement Group Results	EB			WB			NB			SB			
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R	
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16	
Adjusted Flow Rate (v), veh/h		63	232		147		368	495		21	242		
Adjusted Saturation Flow Rate (s), veh/h/ln		1420	1549		1435		1774	1702		1774	1801		
Queue Service Time (g _s), s		0.0	9.7		3.7		14.4	16.8		0.8	7.8		
Cycle Queue Clearance Time (g _c), s		2.5	9.7		6.2		14.4	16.8		0.8	7.8		
Green Ratio (g/C)		0.27	0.27		0.27		0.27	0.45		0.08	0.33		
Capacity (c), veh/h		467	413		468		473	772		142	600		
Volume-to-Capacity Ratio (X)		0.135	0.561		0.315		0.779	0.641		0.148	0.403		
Back of Queue (Q), ft/ln (50 th percentile)		20.5	87.1		51.1		168.2	154.3		8.9	77.4		
Back of Queue (Q), veh/ln (50 th percentile)		0.8	3.4		2.0		6.6	6.1		0.3	3.0		
Queue Storage Ratio (RQ) (50 th percentile)		0.00	0.00		0.00		0.00	0.00		0.00	0.00		
Uniform Delay (d ₁), s/veh		21.0	23.7		22.4		25.5	15.8		32.1	19.3		
Incremental Delay (d ₂), s/veh		0.0	1.1		0.1		7.4	1.4		0.2	0.2		
Initial Queue Delay (d ₃), s/veh		0.0	0.0		0.0		0.0	0.0		0.0	0.0		
Control Delay (d), s/veh		21.1	24.8		22.5		32.8	17.2		32.3	19.4		
Level of Service (LOS)		C	C		C		C	B		C	B		
Approach Delay, s/veh / LOS	24.0	C		22.5	C		23.9	C			20.4	C	
Intersection Delay, s/veh / LOS	23.2						C						

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.3	B	2.3	B	2.1	B	2.3	B
Bicycle LOS Score / LOS	1.0	A	0.7	A	1.9	A	0.9	A

HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information		
Agency	Solaegui Engineers			Duration, h	0.25	
Analyst	MSH	Analysis Date	Aug 8, 2016	Area Type	Other	
Jurisdiction	Washoe County	Time Period	AM Peak Hour	PHF	0.95	
Urban Street		Analysis Year	2025 Base + Project	Analysis Period	1> 7:00	
Intersection	Pyramid & Calle De La...	File Name	PyCa25aw.xus			
Project Description						

Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	25	11	350	315	12	14	180	150	98	11	220	25

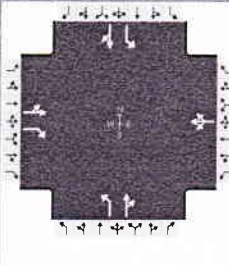
Signal Information												
Cycle, s	70.0	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	Yes	Simult. Gap E/W	On									
Force Mode	Fixed	Simult. Gap N/S	On									
		Green	8.0	1.0	25.0	21.0	0.0	0.0				
		Yellow	4.0	0.0	4.0	4.0	0.0	0.0				
		Red	1.0	0.0	1.0	1.0	0.0	0.0				

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8	5	2	1	6
Case Number		7.0		8.0	2.0	4.0	2.0	4.0
Phase Duration, s		26.0		26.0	14.0	31.0	13.0	30.0
Change Period, (Y+R _c), s		5.0		5.0	0.0	5.0	5.0	5.0
Max Allow Headway (MAH), s		3.2		3.2	3.1	3.1	3.1	3.1
Queue Clearance Time (g _s), s		15.0		19.0	8.7	9.8	2.4	9.4
Green Extension Time (g _e), s		1.0		0.5	0.2	0.9	0.0	0.8
Phase Call Probability		1.00		1.00	1.00	1.00	1.00	1.00
Max Out Probability		0.31		1.00	0.11	0.00	0.00	0.01

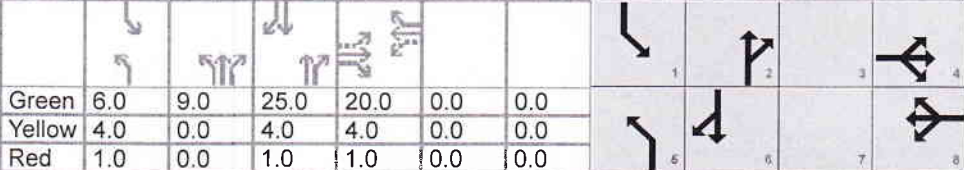
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h	38	326		359			189	261		12	258	
Adjusted Saturation Flow Rate (s), veh/h/ln	1493	1552		1394			1774	1729		1774	1826	
Queue Service Time (g _s), s	0.0	13.0		15.9			6.7	7.8		0.4	7.4	
Cycle Queue Clearance Time (g _c), s	1.1	13.0		17.0			6.7	7.8		0.4	7.4	
Green Ratio (g/C)	0.30	0.30		0.30			0.20	0.37		0.11	0.36	
Capacity (c), veh/h	535	466		517			355	642		203	652	
Volume-to-Capacity Ratio (X)	0.071	0.701		0.694			0.534	0.407		0.057	0.395	
Back of Queue (Q), ft/ln (50 th percentile)	10.4	123		140.5			69	71.8		4.2	72.4	
Back of Queue (Q), veh/ln (50 th percentile)	0.4	4.8		5.5			2.7	2.8		0.2	2.8	
Queue Storage Ratio (RQ) (50 th percentile)	0.00	0.00		0.00			0.00	0.00		0.00	0.00	
Uniform Delay (d ₁), s/veh	17.5	21.7		23.1			25.1	16.3		27.6	16.8	
Incremental Delay (d ₂), s/veh	0.0	4.0		3.4			0.8	0.2		0.0	0.1	
Initial Queue Delay (d ₃), s/veh	0.0	0.0		0.0			0.0	0.0		0.0	0.0	
Control Delay (d), s/veh	17.5	25.7		26.5			25.9	16.4		27.7	17.0	
Level of Service (LOS)		B C		C			C B			C B		
Approach Delay, s/veh / LOS	24.8	C		26.5	C		20.4	C		17.4	B	
Intersection Delay, s/veh / LOS	22.5						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.3	B	2.3	B	2.1	B	2.3	B
Bicycle LOS Score / LOS	1.1	A	1.1	A	1.2	A	0.9	A

HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information		
Agency	Solaegui Engineers			Duration, h	0.25	
Analyst	MSH	Analysis Date	Aug 8, 2016	Area Type	Other	
Jurisdiction	Washoe County	Time Period	PM Peak Hour	PHF	0.95	
Urban Street		Analysis Year	2025 Base + Project	Analysis Period	1> 7:00	
Intersection	Pyramid & Calle De La...	File Name	PyCa25pw.xus			
Project Description						

Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	50	12	260	166	11	23	350	240	325	24	190	40

Signal Information																
Cycle, s	75.0	Reference Phase	2	Green	6.0	9.0	25.0	20.0	0.0	0.0	Yellow	4.0	0.0	4.0	0.0	0.0
Offset, s	0	Reference Point	End	Red	1.0	0.0	1.0	1.0	0.0	0.0	Uncoordinated	Yes	Simult. Gap E/W	On	Force Mode	Fixed
Force Mode	Fixed	Simult. Gap N/S	On													

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8	5	2	1	6
Case Number		7.0		8.0	2.0	4.0	2.0	4.0
Phase Duration, s		25.0		25.0	20.0	39.0	11.0	30.0
Change Period, (Y+R _c), s		5.0		5.0	0.0	5.0	5.0	5.0
Max Allow Headway (MAH), s		3.3		3.3	3.1	3.2	3.1	3.2
Queue Clearance Time (g _s), s		11.7		11.5	16.4	24.5	3.0	9.8
Green Extension Time (g _e), s		0.8		0.8	0.3	1.5	0.0	1.6
Phase Call Probability		1.00		1.00	1.00	1.00	1.00	1.00
Max Out Probability		0.06		0.05	0.72	0.10	1.00	0.07

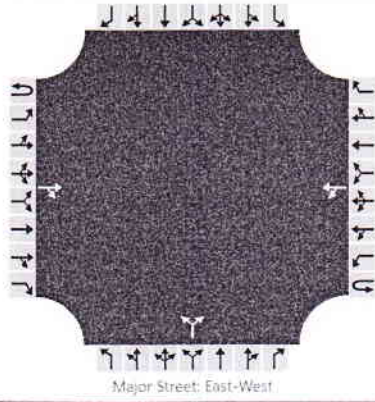
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h	65	232		211			368	595		25	242	
Adjusted Saturation Flow Rate (s), veh/h/ln	1427	1549		1419			1774	1676		1774	1801	
Queue Service Time (g _s), s	0.0	9.7		7.0			14.4	22.5		1.0	7.8	
Cycle Queue Clearance Time (g _c), s	2.5	9.7		9.5			14.4	22.5		1.0	7.8	
Green Ratio (g/C)	0.27	0.27		0.27			0.27	0.45		0.08	0.33	
Capacity (c), veh/h	467	413		466			473	760		142	600	
Volume-to-Capacity Ratio (X)	0.140	0.561		0.451			0.779	0.783		0.178	0.403	
Back of Queue (Q), ft/ln (50 th percentile)	21.2	87.1		76.9			168.2	219.6		10.7	77.4	
Back of Queue (Q), veh/ln (50 th percentile)	0.8	3.4		3.0			6.6	8.6		0.4	3.0	
Queue Storage Ratio (RQ) (50 th percentile)	0.00	0.00		0.00			0.00	0.00		0.00	0.00	
Uniform Delay (d ₁), s/veh	21.0	23.7		23.6			25.5	17.4		32.2	19.3	
Incremental Delay (d ₂), s/veh	0.1	1.1		0.3			7.4	4.9		0.2	0.2	
Initial Queue Delay (d ₃), s/veh	0.0	0.0		0.0			0.0	0.0		0.0	0.0	
Control Delay (d), s/veh	21.1	24.8		23.9			32.8	22.2		32.4	19.4	
Level of Service (LOS)		C	C		C		C	C		C	B	
Approach Delay, s/veh / LOS	24.0	C		23.9	C		26.3	C		20.6	C	
Intersection Delay, s/veh / LOS	24.7						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.3	B	2.3	B	2.1	B	2.3	B
Bicycle LOS Score / LOS	1.0	A	0.8	A	2.1	B	0.9	A

HCS 2010 Two-Way Stop Control Summary Report

General Information		Site Information	
Analyst	MSH	Intersection	Calle De La Plata & Dykes
Agency/Co.	Solaegui Engineers	Jurisdiction	Washoe County
Date Performed	8/8/2016	East/West Street	Calle De La Plata
Analysis Year	2016	North/South Street	Dykes Court
Time Analyzed	AM Existing	Peak Hour Factor	0.95
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description			

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	0	0		0	0	0
Configuration				TR		LT					LR					
Volume (veh/h)			19	0		0	55			1		0				
Percent Heavy Vehicles						2				2		2				
Proportion Time Blocked																
Right Turn Channelized	No				No				No				No			
Median Type	Undivided															
Median Storage																

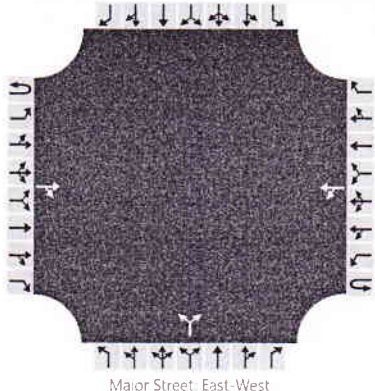
Delay, Queue Length, and Level of Service

Flow Rate (veh/h)					58					1						
Capacity					1595					924						
v/c Ratio					0.04					0.00						
95% Queue Length										0.0						
Control Delay (s/veh)					7.3					8.9						
Level of Service (LOS)					A					A						
Approach Delay (s/veh)									8.9							
Approach LOS									A							

HCS 2010 Two-Way Stop Control Summary Report

General Information		Site Information	
Analyst	MSH	Intersection	Calle De La Plata & Dykes
Agency/Co.	Solaegui Engineers	Jurisdiction	Washoe County
Date Performed	8/8/2016	East/West Street	Calle De La Plata
Analysis Year	2025	North/South Street	Dykes Court
Time Analyzed	AM Base	Peak Hour Factor	0.95
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description			

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Priority																
Number of Lanes	0	0	1	0	0	0	1	0		0	0	0		0	0	0
Configuration				TR		LT					LR					
Volume (veh/h)			90	0		0	250			1		0				
Percent Heavy Vehicles						2				2		2				
Proportion Time Blocked																
Right Turn Channelized	No				No				No				No			
Median Type	Undivided															
Median Storage																

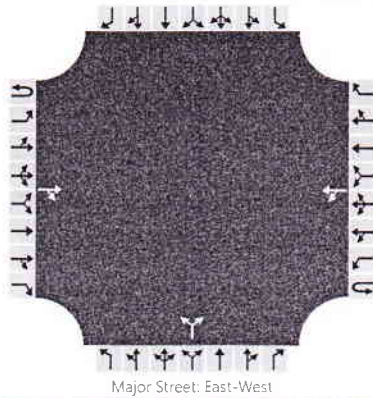
Delay, Queue Length, and Level of Service

Flow Rate (veh/h)						263						1				
Capacity						1498						640				
v/c Ratio						0.18						0.00				
95% Queue Length												0.0				
Control Delay (s/veh)						7.4						10.6				
Level of Service (LOS)						A						B				
Approach Delay (s/veh)									10.6							
Approach LOS									B							

HCS 2010 Two-Way Stop Control Summary Report

General Information		Site Information	
Analyst	MSH	Intersection	Calle De La Plata & Dykes
Agency/Co.	Solaegui Engineers	Jurisdiction	Washoe County
Date Performed	8/8/2016	East/West Street	Calle De La Plata
Analysis Year	2025	North/South Street	Dykes Court
Time Analyzed	PM Base	Peak Hour Factor	0.95
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description			

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Priority																
Number of Lanes	0	0	1	0	0	0	1	0	0	0	0		0	0	0	
Configuration				TR		LT					LR					
Volume (veh/h)			260	1		0	140			0		0				
Percent Heavy Vehicles						2				2		2				
Proportion Time Blocked																
Right Turn Channelized	No				No				No				No			
Median Type	Undivided															
Median Storage																

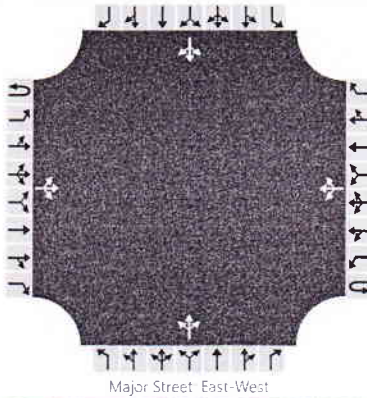
Delay, Queue Length, and Level of Service

Flow Rate (veh/h)																
Capacity																
v/c Ratio																
95% Queue Length																
Control Delay (s/veh)																
Level of Service (LOS)																
Approach Delay (s/veh)																
Approach LOS																

HCS 2010 Two-Way Stop Control Summary Report

General Information		Site Information	
Analyst	MSH	Intersection	Calle De La Plata & Lily
Agency/Co.	Solaegui Engineers	Jurisdiction	Washoe County
Date Performed	8/8/2016	East/West Street	Calle De La Plata
Analysis Year	2016	North/South Street	Lily Lane/Dykes Court
Time Analyzed	AM Existing + Project	Peak Hour Factor	0.95
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description			

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		30	19	0		0	55	0		1	0	0		0	0	91
Percent Heavy Vehicles		2				2				2	2	2		2	2	2
Proportion Time Blocked																
Right Turn Channelized	No				No				No				No			
Median Type	Undivided															
Median Storage																

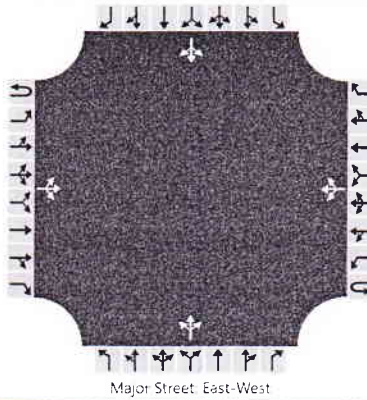
Delay, Queue Length, and Level of Service

Flow Rate (veh/h)		32									1					96			
Capacity		1545				1595					685					1008			
v/c Ratio		0.02									0.00					0.10			
95% Queue Length		0.1									0.0					0.3			
Control Delay (s/veh)		7.4				7.3					10.3					8.9			
Level of Service (LOS)		A				A					B					A			
Approach Delay (s/veh)		4.6									10.3					8.9			
Approach LOS		A									B					A			

HCS 2010 Two-Way Stop Control Summary Report

General Information		Site Information	
Analyst	MSH	Intersection	Calle De La Plata & Lily
Agency/Co.	Solaegui Engineers	Jurisdiction	Washoe County
Date Performed	8/8/2016	East/West Street	Calle De La Plata
Analysis Year	2016	North/South Street	Lily Lane/Dykes Court
Time Analyzed	PM Existing + Project	Peak Hour Factor	0.95
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description			

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		101	57	1		0	37	0		0	0	0		0	0	60
Percent Heavy Vehicles		2				2				2	2	2		2	2	2
Proportion Time Blocked																
Right Turn Channelized	No				No				No				No			
Median Type	Undivided															
Median Storage																

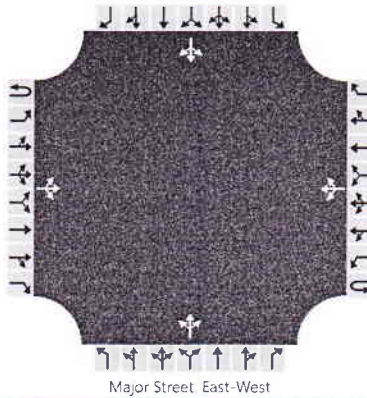
Delay, Queue Length, and Level of Service

Flow Rate (veh/h)		106														63	
Capacity		1570				1541										1032	
v/c Ratio		0.07														0.06	
95% Queue Length		0.2														0.2	
Control Delay (s/veh)		7.5				7.3					5.0					8.7	
Level of Service (LOS)		A				A					A					A	
Approach Delay (s/veh)		4.9									5.0					8.7	
Approach LOS		A									A					A	

HCS 2010 Two-Way Stop Control Summary Report

General Information		Site Information	
Analyst	MSH	Intersection	Calle De La Plata & Lily
Agency/Co.	Solaegui Engineers	Jurisdiction	Washoe County
Date Performed	8/8/2016	East/West Street	Calle De La Plata
Analysis Year	2025	North/South Street	Lily Lane/Dykes Court
Time Analyzed	AM Base + Project	Peak Hour Factor	0.95
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description			

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		30	90	0		0	250	0		1	0	0		0	0	91
Percent Heavy Vehicles		2				2				2	2	2		2	2	2
Proportion Time Blocked																
Right Turn Channelized	No				No				No				No			
Median Type	Undivided															
Median Storage																

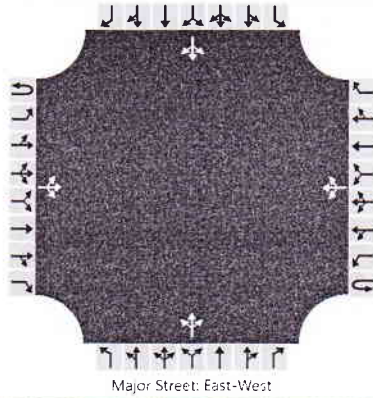
Delay, Queue Length, and Level of Service

Flow Rate (veh/h)		32									1					96			
Capacity		1300				1498					433					775			
v/c Ratio		0.02									0.00					0.12			
95% Queue Length		0.1									0.0					0.4			
Control Delay (s/veh)		7.8				7.4					13.3					10.3			
Level of Service (LOS)		A				A					B					B			
Approach Delay (s/veh)		2.1									13.3					10.3			
Approach LOS		A									B					B			

HCS 2010 Two-Way Stop Control Summary Report

General Information				Site Information			
Analyst	MSH	Intersection	Calle De La Plata & Lily				
Agency/Co.	Solaegui Engineers	Jurisdiction	Washoe County				
Date Performed	8/8/2016	East/West Street	Calle De La Plata				
Analysis Year	2025	North/South Street	Lily Lane/Dykes Court				
Time Analyzed	PM Base + Project	Peak Hour Factor	0.95				
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25				
Project Description							

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Priority																
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		101	260	1		0	140	0		0	0	0		0	0	60
Percent Heavy Vehicles		2				2				2	2	2		2	2	2
Proportion Time Blocked																
Right Turn Channelized	No				No				No				No			
Median Type	Undivided															
Median Storage																

Delay, Queue Length, and Level of Service

Flow Rate (veh/h)		106														63
Capacity		1434				1287										900
v/c Ratio		0.07														0.07
95% Queue Length		0.2														0.2
Control Delay (s/veh)		7.7				7.8					5.0					9.3
Level of Service (LOS)		A				A					A					A
Approach Delay (s/veh)	2.6								5.0				9.3			
Approach LOS	A								A				A			