



# Planning Commission Staff Report

Meeting Date: July 6, 2021

Agenda Item: 9D

TENTATIVE SUBDIVISION MAP CASE NUMBER: WTM21-006 (Silver Hills, Village 1)

BRIEF SUMMARY OF REQUEST: Tentative subdivision map for a 358-lot, single-family residential, common open space subdivision

STAFF PLANNER: Planners' Name: Roger Pelham, Sr. Planner; Daniel Cahalane  
Phone Number: 775.328.3622 (Roger); 775.328.3628 (Dan)  
E-mail: [rpelham@washoecounty.us](mailto:rpelham@washoecounty.us); [dcahalne@washoecounty.us](mailto:dcahalne@washoecounty.us)

### CASE DESCRIPTION

For hearing, discussion and possible action, to approve a tentative subdivision map to allow a 358-lot, single-family residential, common open space subdivision, with lots ranging in size from 5,000 square feet to 8,072 square feet.

Applicant / Property Owner: Lifestyle Homes TND, LLC  
Location: West side of Red Rock Road, approximately 3/4 of a mile north of its intersection with Silver Knolls Boulevard  
APN: 087-390-10 & 13  
Parcel Size: ± 308.6 acres  
Master Plan: Suburban Residential (SR)  
Regulatory Zone: Silver Hills Specific Plan  
Area Plan: North Valleys  
Citizen Advisory Board: North Valleys  
Development Code: Authorized in Article 608, Tentative Subdivision Maps and Article 408, Common Open Space Development  
Commission District: 5 – Commissioner Herman



Vicinity Map

### STAFF RECOMMENDATION

APPROVE

**NO RECOMMENDATION**

DENY

### POSSIBLE MOTIONS

**Approval:** 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 WTM21-006 for Lifestyle Homes, TND, LLC, with the conditions included as Exhibit A to this matter, having **made** all ten findings in accordance with Washoe County Code Section 110.608.25.

**Denial:** 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 deny Tentative Subdivision Map Case Number WTM21-006 for Lifestyle Homes, TND, LLC, being **unable** to make all ten findings in accordance with Washoe County Code Section 110.608.25.

**Staff Report Contents**

Tentative Subdivision Map..... 2

Site Plan ..... 3

Project Evaluation ..... 3

North Valleys Citizen Advisory Board (NVCAB) ..... 15

Reviewing Agencies ..... 15

Recommendation..... 17

Possible Motions..... 17

Appeal Process..... 18

**Exhibits Contents**

Possible Conditions of Approval ..... Exhibit A

Agency Comments ..... Exhibit B

Silver Hills Development Standards Handbook ..... Exhibit C

Project Application ..... Exhibit D

**Tentative Subdivision Map**

The purpose of a tentative subdivision map is:

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

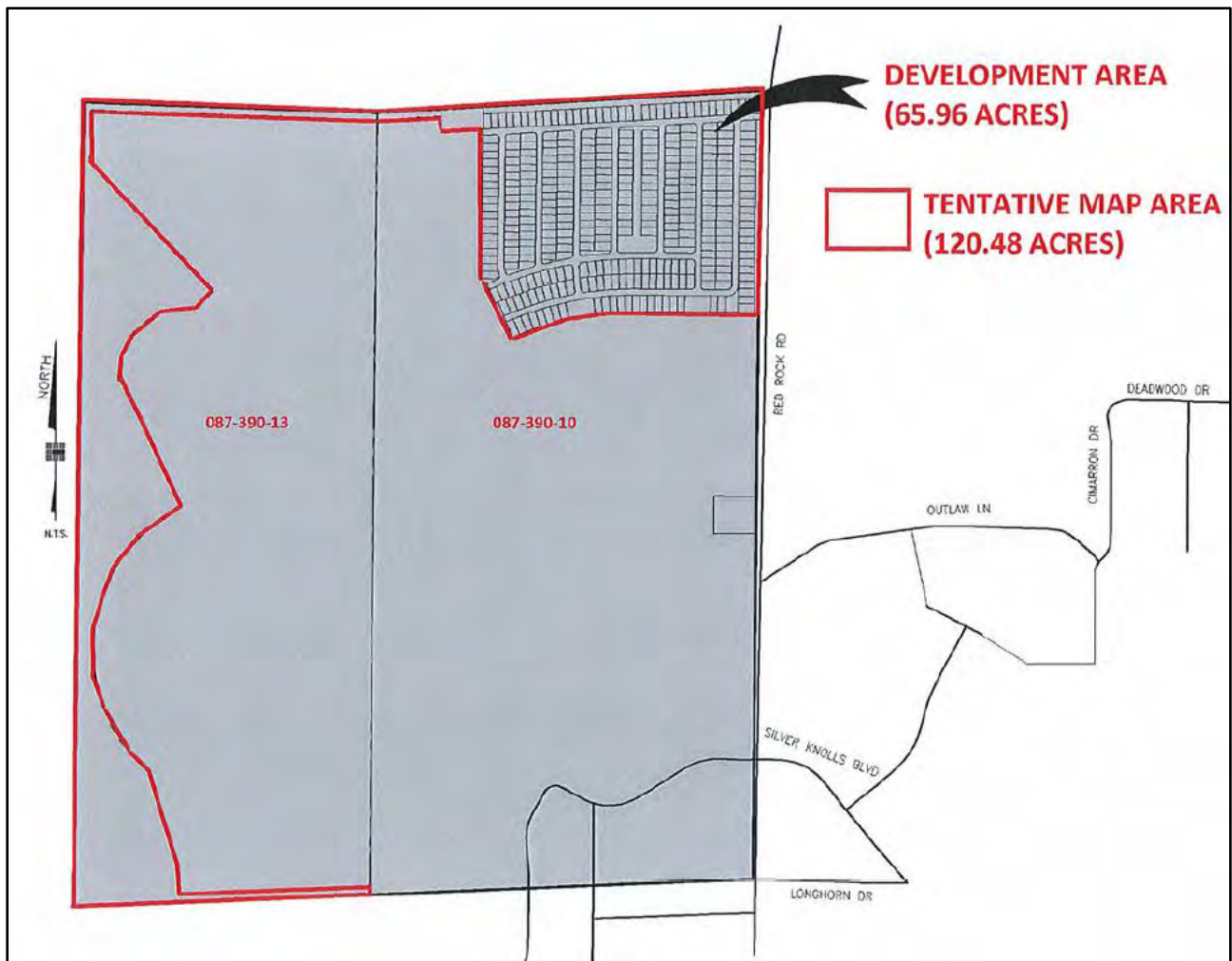
If the Planning Commission grants an approval of the tentative subdivision map, that approval is subject to conditions of approval. Conditions of approval are requirements that need to be completed during different stages of the proposed project. Those stages are typically:

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

The possible conditions of approval for Tentative Subdivision Map Case Number WTM21-006 are attached to this staff report and will be included with the action order, if approval is granted by Washoe County.

The subject property is within the Silver Hills Specific Plan, a plan which allows an overall residential density of three dwellings to the acre as well as other commercial uses and agricultural uses. The Silver Hills Development Standards Handbook (DSH) is included as Attachment C to this report.





**Site Plan**

**Project Evaluation**

Evaluation of this project must begin with the recognition that staff and management of the Planning and Building Division have worked closely with this applicant in order to ensure that the application complies with the minimum requirements of the Washoe County Development Code and the Silver Hills Specific Plan, specifically the Silver Hills Specific Plan Development Standards Handbook.

After several revisions to the application materials throughout 2017 and 2018, the Silver Hills Specific Plan (Master Plan Amendment Case Number WMPA17- 0010) was approved by the Board of County Commissioners in October of 2019, and was found to be in conformance with the Truckee Meadows Regional Plan by the Regional Plan Governing Board in February, 2020. A total of 1,872 dwellings are permissible within the specific plan area.

The applicant has now applied for a tentative subdivision map to begin construction of that development. The applicant is seeking approval of “Village 1” for Silver Hills. This request is for 358 dwellings on individual parcels of land. The minimum lot size requested is 5,000 square feet and the maximum lot size is 8,072 square feet. The project includes open space of approximately 55 acres which includes a trail head area of approximately one acre in size, a small park of approximately one acre in size and a buffer area to the north, east and west of the proposed tentative map area. The overall density of the subdivision with the open space is approximately 3 dwellings to the acre.

While the proposed subdivision includes common open space, the area proposed for development consists of a linear lot-and-block pattern of development with virtually no variation in size or shape of proposed lots and dwellings.

The following is found on page 2 of the North Valleys Area Plan and is part of the Character Statement of that plan:

The Silver Hills Community is characterized by a medium density residential land use pattern that will (i) provide for a variety of housing options to meet the needs of a broad range of the area's population, and (ii) preserve the area's character and quality of life with design standards such a density matches, open space buffers and maintaining natural open spaces. The existing ridgelines and rolling terrain provide for a "mountain ranch" themed residential development that accentuates the views and natural topography and incorporates site features that promote farm to-table living in a cooperative environment. A portion of the community was removed from the City of Reno and is still bounded by the City of Reno to its west. Limited commercial land use designations that are community-serving are desired if within a Specific Plan (with a special use permit). The North Valleys area has rapidly become one of the largest employment centers in the region and the Silver Hills community intends to (i) improve the housing/jobs balance to the area, (ii) improve fire and police protection to the area, (iii) provide support to the Silver Knolls Mutual Water Company customers, (iv) design the sanitary sewer and storm water systems to maintain levels that are at or below pre-development flows into Swan and Silver Lakes; (v) designate a school site for the Washoe County School District, and (vi) create a vibrant, balanced community.

Of primary concern is a determination by the Planning Commission as to whether or not the application, as submitted, is consistent with the Silver Hills Specific Plan. The following discussion will address the attributes of the Specific Plan, as it is described in the North Valleys Area Plan and as they relate to the tentative map for Silver Hills Village 1, as it has been submitted.

*"The Silver Hills Community is characterized by a medium density residential land use pattern..."* The tentative map application seeks approval of a very traditional lot-and-block pattern of development at a density of approximately 5.5 dwellings to the acre. Open space included in the proposed map brings the calculated density to approximately 3 dwellings to the acre.

*"Provide for a variety of housing options to meet the needs of a broad range of the area's population."* The proposed tentative map provides the opportunity for one type of housing, that being single-family detached dwellings, on lots that range in size from approximately 5000 to 8000 square feet ( $\pm 0.11$  to  $\pm 0.18$  acres). Future phases of development within this specific plan may or may not include the opportunity for other housing types, that are not represented by this request.

*"Preserve the area's character and quality of life with design standards such a density matches, open space buffers and maintaining natural open spaces..."* The predominant development pattern adjacent to the specific plan area is single-family residential with zoning of one dwelling to the acre, but actual development at a density of closer to one dwelling per 2.5 acres. Open space buffers with trails are proposed on the north, east and west sides of the tentative map area.

*"The existing ridgelines and rolling terrain provide for a "mountain ranch" themed residential development that accentuates the views and natural topography and incorporates site features that promote farm to-table living in a cooperative environment."* Building elevations and architectural details have not been provided with the application materials. The application materials (page 16, exhibit G, attached) include photos of "mountain ranch" themed dwellings from the specific plan development standards handbook. Conditions of approval have been included in Exhibit A to require the developer to adopt conditions, covenants and restrictions (CC&Rs) that incorporate these design criteria and require the establishment of a design committee that will be responsible for enforcing these design standards. There are no improvements that promote farm to table living in the current tentative map application.

Future phases of development within this specific plan may or may not include the opportunity agricultural opportunities that are not represented by this request.

Tentative map, as submitted, may or may not be seen to be consistent with the Character Statement.

There are also several specific design requirements required by the specific plan. The submittal may be seen to meet the minimum requirements. Evaluation of several of the requirements follow.

**Phasing**

Phases within the Village 1 subdivision are limited to maximum of 150 lots, and not more than one phase can be recorded per year, until certain improvements to I580 are undertaken by NDOT. The tentative map application complies with this provision, and appropriate conditions of approval have been included in Exhibit A. The entirety of Village 1 will include at least 3 final maps.

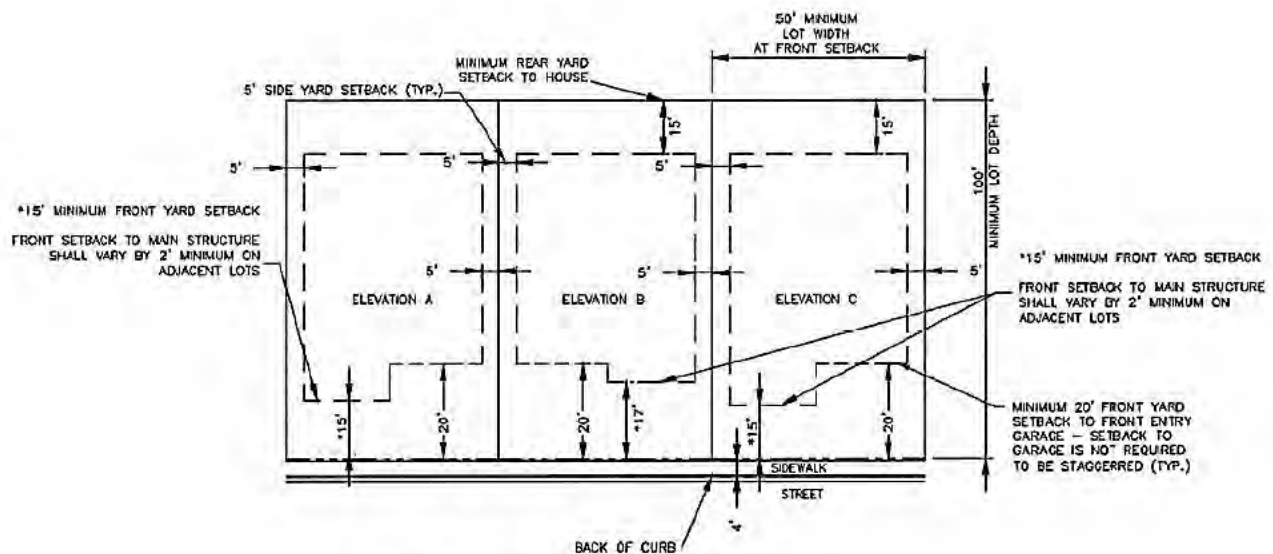
**Setbacks**

Variation in setbacks is required at DSH Section 3.2.1, as follows:

“Individual neighborhoods within Silver Hills shall promote visual diversity and avoid monotonous development patterns. Methods to achieve this include, but are not limited to: not repeating floor plans/elevations directly next to each other, providing for a minimum of three distinct elevations for each home plan, designing homes so that the garages are integrated into front elevations, varying setbacks within the neighborhood, including design elements such as porches, overhangs, etc.”

“Setbacks shall be varied to the extent possible in order to eliminate a monotonous appearance along the street.”

The applicant has provided a graphic showing “Typical Interior Lots” below.



**TYPICAL INTERIOR LOTS**

The variation proposed in the application materials is for the front yard setback to alternate between 15 feet and 17 feet, with the garage on all dwellings be located at 20 feet from the front property line. Notes have been included on the plans to require that applications for building permits show the setback of dwellings on each side of the subject parcel in order to ensure compliance. Staff recommends that the Planning Commission consider whether or not alternating setbacks by two feet every other house appropriately implements the Development Standards Handbook, which requires at section 3-4 that, “Setbacks shall be varied to the extent possible in order to eliminate a monotonous appearance along the street.” Should approval be granted appropriate conditions of approval have

been included in Exhibit A to require the final map to include a detail of the required setback for each lot.

**Trails**

The DSH calls for several trails to be constructed with the first phase of this development. Some of the required trails are outside of the proposed development area for Village 1. The application indicates that, “The trails will be constructed concurrently with the construction of new homes.” This proposal is not consistent with construction of all trails with the first final map. Conditions of approval have been included to require construction of all trails required for Village 1 prior to the approval of a certificate of occupancy of the first dwelling unit, for Village 1, Phase 1.

The DSH requires at, page 2-42, that “All trails shall be located within dedicated common areas.” All trails are not shown within areas that are proposed to be dedicated for common open space with this tentative map. Conditions of approval have been included to require that common area be dedicated with the first final map that encompasses all trails required to be constructed with the first phase of the development.

The trail head location is acceptable and appears to be generally consistent with the approved specific plan, however, landscaping and screening standards are not included with the submittal. Conditions of approval have been included to require that the trail head design be acceptable to Washoe County Parks and abide by all relevant “Green Book” standards.

**Article 408 Common Open Space**

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

Article 408 Purpose Requirement	Brief Analysis
Preserve or Provide Open Space	The applicant provided ± 65.96 acres of common open space area in the form of open space, trails and common courts within the development area.
Protect Natural and Scenic Resources	Areas of steep slopes and potential drainageways are included in the common open space area.
Achieve a More Efficient Use of Land	The average lot size for single family detached is 5,326sf.
Minimize Road Building	The road network is generally a lot-and-block pattern.
Encourage A Sense of Community	The proposed tentative subdivision provides community assets in the form of open space, a trail head and small park.

The proposed development must be shown to be in conformance with Article 408, Common Open Space Development, as well as with the Silver Hills Development Standards Handbook. The intent of Article 408 is to, “set forth regulations to permit variation of lot size, including density transfer subdivisions, in order to preserve or provide open space, protect natural and scenic resources, achieve a more efficient use of land, minimize road building, and encourage a sense of community.” The tentative map submittal provides an appropriate amount of open space, which results in an overall density of just under the maximum allowable density of 3 dwellings to the acre. Washoe County Code 110.408.45 (b) requires, “Permanent Preservation and Maintenance. Provisions shall be made for the permanent preservation and ongoing maintenance of the common open space and other common areas using a legal instrument acceptable to the County.” Appropriate conditions of approval have been included with this report, should approval be granted by the Planning Commission.

**Design Committee**

There are many references in the DSH to approval by the Silver Hills Design Committee (SHDC) and the WC Design Review Committee (WC DRC). However, the WC DRC is not currently active. For this reason, staff has crafted conditions to require the SHDC, and the developer to create a checklist of all development standards within the DSH and to include that checklist with a brief narrative and reference to location on the plan set for the building permit submitted for each dwelling, as to how compliance has been achieved for each development standard. The SHDC shall provide documentation that all development standards have been met prior to submission to Washoe County for building permit.

It is important for the Planning Commission to recognize that the WC DRC was a subcommittee of the PC and that, if approval is granted with the conditions as described, the PC is granting the Director of Planning and Building the authority to determine compliance in this case.

**Article 208 North Valley Area Modifiers**

- 110.208.10 - climatic adaptive landscaping in front yard required
- 110.208.35b– Will serve required
- 110.208.40 – dry line sanitary sewer required, WCHD may require immediate connection to community treatment service.

Article 208 is a part of the Washoe County Development Code. If approval is granted, the applicant must demonstrate compliance with this standards, prior to approval of any final map.

**Land Use and Transportation Element Evaluation**

Policy	Brief Policy Description	Complies	Condition of Approval/ Comment
2.2	Allow flexibility in development proposals to vary lot size.	Yes	See analysis in 408
2.3	Require existing suburban neighborhoods to integrate their street network with new development to create connectivity and promote walking and cycling as safe and desirable modes of transportation and recreation.	N/A	
2.4	Development reviews shall include a process to ensure that a safe and reasonable walking/biking route exists between all relevant land uses that promote these alternative transportation modes within a community or region.	Yes	110.604.25 requires a pedestrian circulation and access plan
4.1	Maintain a balanced distribution of land use patterns to: a. Provide opportunities for a variety of land uses, facilities and services that serve present and future population; b. Promote integrated communities with opportunities for employment, housing, schools, park civic facilities, and services essential to the daily life of the residents; and c. Allow housing opportunities for a broad socio-economic population.	No	Proposed development seeks approval of only one type of housing product. Future phases may or may not maintain a balanced distribution of land use patterns.

5.2	Proposed development plans shall be required to provide the minimum service standards as described in the Land Use and Transportation Plan	May or may not	Traffic LOS in the North Valleys is required to remain at a “C” level. The traffic report included with the applicant materials indicates that the development will have “some impact” on traffic, but what that impact may be is unclear.
5.3	New development shall not reduce the quality of service for existing residents and businesses nor reduce the ability of public agencies to provide quality service.	May or may not	Traffic LOS in the North Valleys is required to remain at a “C” level. The traffic report included with the applicant materials indicates that the development will have “some impact” on traffic, but what that impact may be is unclear.
5.4	Locate more intense pedestrian and transit-oriented development along major roads, transit corridors, and in activity centers within village centers.	Yes	
9.1	Create, maintain, and connect usable open space for aesthetic, recreational purposes and natural resource protection	Yes	
9.5	Require the connection of open space; trail access and bikeway systems with regard to a multitude of different trail uses	Yes	
14.1	Trails and trailheads shall be planned, designed, and constructed to avoid or minimize degradation of natural and cultural resources	Yes	
14.4	Trails shall be interconnected and provide for pedestrian, equestrian, bicycle, and motorized uses, where each use is warranted. Incompatible uses shall be appropriately separated	Yes	
17.5	The streets are narrow in width and shaded with trees. This type of street network is conducive to efficient cycling and walking.	No	Off-street trail system is proposed
18.1	Design neighborhood circulation to balance the safe and efficient movement of local pedestrian and bicycle traffic with the need to accommodate vehicular traffic.	Yes	See above regarding Pedestrian circulation and access
20.7	Require developers to establish xeriscaping Best Management practices and discourage lawns.	Yes	
25.1	Ensure that development proposals are in conformance with appropriate Master Plan policies and the relevant Area Plan policies.	May or may not	The proposed subdivision provides for only one type of housing option. The specific plan overall calls for provision of a variety of housing types, that are not included as part of this tentative map. Provision for a “mountain ranch” theme is subject to approval by the Silver Hills Design Review Committee. The



			application does specifically address the accentuating of views and natural topography. Steep areas are proposed to remain within common open space. The application does specifically address incorporation of site features that promote farm to-table living in a cooperative environment.
25.2	Early in the application process, staff shall provide applicants with relevant land use and transportation goals and policies.	Yes	
29.3	Establish a high-quality pedestrian-oriented street environment that is visually interesting, comprehensive and varied (Photo 18).	May or may not	Front setbacks are proposed to alternate between 15 and 17 feet. Landscaping and trees are proposed along the roadways. Sidewalks and trails are included in the subdivision design.
29.6	Streets and bicycle lanes within the neighborhood shall form a connected network, which disperses traffic by providing a variety of pedestrian and vehicular routes to any destination	Yes	

This application was provided to Washoe County Engineering who reviewed for impacts on traffic, roadways, drainage. That agency has recommended extensive conditions of approval. The Washoe County School District reviewed for impacts on schools and provided a letter with comments, but did not recommend any conditions of approval. Truckee Meadows Fire Protection also reviewed the proposed project and recommended conditions of approval to ensure compliance. Generally speaking compliance with all minimum Code requirements will be ensured by the appropriate agencies, prior to approval of a final map, if approval is granted.

**Conservation Plan**

Policy	Brief Policy Description	Complies	Condition of Approval/Comment
3.4	Washoe County will limit development within the Development Constraints Area in accordance with the Truckee Meadows Regional Plan.	Yes	
8.1	The Washoe County Department of Community Development will require new developments in outlying areas to establish firebreaks, and relocate and/or maintain fire roads when such roads are impacted by the development.	Yes	
10.1	The Washoe County Department of Community Development will review areas that possess severe geologic hazards and in which public safety may be jeopardized and, if appropriate, plan these areas for minimal or no development.	N/A	
10.2	Prior to the approval of a development	Yes	

	proposal, the Washoe County Department of Community Development will require geologic reports that identify potential hazards. In areas where geologic hazards are identified, extensive soil, hydrology, and engineering studies must clearly demonstrate that the proposed development will not result in avoidable public costs and will not pose significant risk of earthquake, landslide, erosion, sedimentation and drainage problems		
19.1	During development review, the Washoe County Department of Community Development will require documentary evidence of compliance with the requirements of the Federal Clean Water Act and any other federal wetland regulations.	Yes	There are no regulated wetlands on the subject site. Water services will be provided by community systems

**Area Plan Evaluation**

The subject parcel is located within the North Valleys Area Plan. The following is/are the pertinent policy(ies) from the Area Plan:

***Relevant Area Plan Policies Reviewed***

Policy	Brief Policy Description	Complies	Condition of Approval
NV 2.1	Minimize use of curb and gutter.	No	All streets include curb and gutters
NV 2.2	Minimize disruption to natural topography, utilize natural contours and slopes, complement natural characteristics of the landscape, preserve existing vegetation and groundcover, minimize cuts and fills.	Yes	Steeply slopes areas and potential drainageways are included in the proposed open space areas
NV 2.3	Site development plans must submit a plan for control of noxious weeds	Yes	
NV 2.4	Applicants must submit a statement to staff regarding how the final proposal responds to community input received at the CAB meeting	No	The North Valley Citizen Advisory Board for June was cancelled. The applicant held a public meeting at the Cold Springs Family Center (18400 Village Parkway) from 6-7:30 PM on Thursday June 17 <sup>th</sup> . Notes from that meeting are not available at the time of the writing of this staff report. The applicant will present the results of that meeting to the Planning Commission at the public hearing.
NV 2.5	Potential homeowners to be provided notice regarding the existence of livestock and potential for noise and odor.	Yes	Conditions of approval have been recommended to insure compliance
NV 2.6	Reno Tahoe Airport Authority to be contacted regarding height limitations and aviation easements.	Yes	
NV 2.7	Planning Commission to review standards and may apply similar standards to meet goals 2, 3, 4, 5, and 6	Yes	

NV 2.8	Standards established in NV 2.1-2.6 will be implemented through tentative map conditions, improvement plans, CC&Rs, or deed restrictions	Yes: with the exception of NV 2.1	The subdivision design does not minimize use of curb and gutter, it is a standard lot-and-block design.
NV 7.2	Minimum size of parcels located in Silver Hills East is 0.5 acres. Minimum size of parcel located in Silver Hills West is 1/3 acre. These may be modified pursuant to Article 408	N/A	This development is not in the Silver Hills CMA, that only applies to the eastern half of Silver Hills
NV 7.3	Subdivisions in Silver Hills CMA shall include a 50ft open space buffer and a 200ft density match with adjacent existing residential dwellings	N/A	This development is not in the Silver Hills CMA, that only applies to the eastern half of Silver Hills
NV 7.4	Subdivisions in Silver Hills CMA will vary setbacks and driveway design	N/A	This development is not in the Silver Hills CMA, that only applies to the eastern half of Silver Hills
NV 7.5	Subdivisions in Silver Hills CMA will construct no more than 10% of total residential buildings in the same architectural elevation	N/A	This development is not in the Silver Hills CMA, that only applies to the eastern half of Silver Hills
NV 7.6	Subdivisions in Silver Hills CMA will not be required to provide perimeter fencing adjacent to common open space. Perimeter fencing adjacent to common open space must be consistent with an "open fencing concept"	N/A	This development is not in the Silver Hills CMA, that only applies to the eastern half of Silver Hills
NV 7.8	Subdivision in Silver Hills CMA streetlights will be minimized. Lighting proposed must demonstrate consistency with "dark-sky" standards	N/A	This development is not in the Silver Hills CMA, that only applies to the eastern half of Silver Hills
NV 7.10	Subdivisions in Silver Hills CMA landscape designs will emphasize use of native vegetation. Homebuilder must offer at least 2 separate xeriscape options	N/A	This development is not in the Silver Hills CMA, that only applies to the eastern half of Silver Hills
NV 7.11	Standards established in NV 7.1-7.10 will be implemented through tentative map conditions, improvement plans, CC&Rs, or deed restrictions	N/A	This development is not in the Silver Hills CMA, that only applies to the eastern half of Silver Hills
NV 8.1	LOS for local transportation facilities is LOC C.		R2 Rural Highway -LOS C= 6,800 Maximum Service Flow Rate (daily) Table 7 LUT
NV 8.4	Necessary ROW and intersection requirements will be protected through dedication, setback, or other method deemed adequate by the RTC	Yes	Washoe County Engineering has provided recommended conditions of approval
NV 8.8	Future development in commercial districts or residential districts of MDS <b>intensity</b> or greater must consider and be consistent with future or existing multi-modal opportunities. Site plans/tentative maps will specify the proposed response.	N/A	

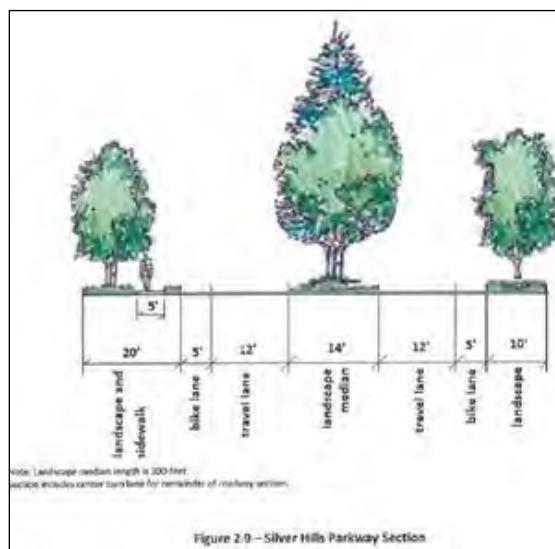
NV 9.3	Grading design shall not exceed 3:1 slopes and establish an undulating naturalistic appearance.	N/A	The subdivision design does not include grading that establishes undulating naturalistic appearance, it is a standard lot-and-block design, with a long, essentially linear, configuration. The area proposed for development is not steeply sloped.
NV 10.1	Prior to the approval of MPAs, tentative maps, or public initiated capital improvements, Nevada Department of Conservation and Natural Resources will be contacted.	N/A	
NV 10.4	Educational/interpretive displays will be provided at all parks and trailheads to provide the public with information		Washoe County Parks Planner has provided recommended conditions of approval
NV 11.2	New trails will be designed to accommodate equestrian, pedestrian and off-road bicycle traffic unless technical or severe environmental/economic hardships warrant a more limited use.	Yes	
NV 11.4	Parking will be provided at all trailheads unless technical or safety issues prevent the construction of parking facilities or cannot be screened adequately	Yes	
NV 11.6	Access to trails will be protected and improved wherever possible through dedication or easements that link significant nodes.	Yes	
NV 11.7	Development proposals will be evaluated on their impact to 7 acres of Community Park per 1000 residents.	Yes	
NV 14.1	Prior to the approval of MPAs, tentative maps, or public initiated capital improvements, NDOW will be contacted.	N/A	
NV 17.4	Creation of parcels and lots in North Valleys Planning Area will require the dedication of water rights to Washoe County	Yes	
NV 17.5	In the portion of the North Valleys planning area that is within the Washoe County Department of Water Resources Service Territory, dedication of water rights to Washoe County at the time of building permit approval or final map recordation is required.	Yes	
NV 20.1	Tentative Subdivision maps will not be approved until the water resource and infrastructure needs of that development have been evaluated by the Department of Water Resources and found consistent with all applicable water and wastewater resources and facilities plan.	Yes	

**Specific Plan**

- 2.2.1 – Development Area – 3du/acre
- 2.2.4 Density/Intensity Standards

TYPE/DESCRIPTION			Mid-Range Single Family Neighborhood
			Mid-range density subdivisions provide single family detached dwellings at typical suburban densities. Densities within these areas shall provide appropriate transitions between adjoining projects. Pedestrian connections (i.e. trails or sidewalks) shall be provided in order to provide community connectivity.
		<b>SINGLE FAMILY DETACHED</b>	<b>NOTES</b>
<b>BUILDING INTENSITY</b>			
Maximum Net Density (du/ac)	Per the Common Open Space Development standards allowed within Article 408		5% of gross project area shall be dedicated to common open space.
Typical Lot Sizes	5,000 to 15,000 square feet		
Minimum Lot Width	50 feet		
Building Height	35 feet maximum		
<b>BUILDING SETBACKS</b>			
Front Yard	15 feet <sup>1</sup>		
To Front Load Garage	20 feet		
To Side Load Garage	15 feet <sup>1</sup>		
To Alley Load Garage	5 feet		
Front Yard	15 feet		
Side Yard	5 feet		
Rear Yard	15 feet		
<b>BUILDING PROJECTIONS</b>	Refer to Washoe County Development Code (HDS standards)		
<b>ACCESSORY USES</b>			
Accessory uses shall be permitted pursuant to Washoe County Development Code Article 306			
<b>NOTES</b>			
1 – Minimum driveway depth shall be 20 feet along public rights-of-way. Setback to dwelling area may be reduced to 15 feet in order to provide building elevations that are not garage dominant.			

- 2.4 Streetscape Development Standards
  - Silver Knolls Parkway





- Silver Hills Parkway Streetscape
  - Landscaped common areas shall occur adjacent to both sides of Silver Hills Parkway
    - Minimum – 10ft on 1 side, 20ft on the other
    - 100ft landscaped median shall be provided at the primary entrances to Red Rock Rd, median setback of 15ft from intersection
    - Evergreen trees to be 6ft height min 1.5” caliper
    - 100% coverage with organic, rock, and/or bark mulch
    - Native and/or adapted species
- Red Rock Road Streetscape
  - 25ft landscape buffer along Red Rock
  - West Side
    - Landscaped common areas (25ft min width)
    - 4-6 DG path
    - Evergreen trees to be 6ft height min 1.5” caliper
    - 100% coverage with organic, rock, and/or bark mulch
    - Groupings of planting spaced a max of 60ft between clusters
- 2.4.6 Street Lighting
  - Lighting within the ROW of collector roads, local streets, and other public common areas shall be installed by Master Developer or individual builders
  - Dark skies compliant
  - Max height 20ft

Standards					
Roadway Designation	Roadway	Location	Model (Luminaire, mast arm and pole)	Placement	Spacing
Collector	Silver Hills Pkwy.	NV Energy Standards <sup>1</sup>	NV Energy approved decorative fixture (see Figure 2-9) <sup>2</sup>	Alternating <sup>1</sup>	Spaced at regular intervals
Neighborhood Local	All public streets within a parcel or subdivision	NV Energy Standards <sup>1</sup>	NV Energy approved decorative fixture (see Figure 2-9) <sup>2,3</sup>	Alternating <sup>1</sup>	Spacing Varies

<sup>1</sup> – Placement and Spacing of street lighting is subject to approval by NV Energy and Washoe County, as specified in the Washoe County Development Code.  
<sup>2</sup> – Non-NV Energy fixtures may be used subject to the approval of the Master Developer/Design Review Committee and shall be maintained by the HOA or approved sub-HOA.  
<sup>3</sup> – Any street lights that do not meet Washoe County standards shall be private, and the CC&R's shall indicate operation and maintenance of street lights shall be the responsibility of the homeowner's association or NV Energy (as applicable).

- 2.6 Trails
  - Recommended to comply with Greenbook standards
  - 6ft multiuse trail shall be located in open space buffer on the northern and southern boundaries
  - Minimum of 2 developed public trailheads
  - 5 ft paved pedestrian trail shall be located in utility corridor open space connecting western and eastern sides of project
  - Trails to be maintained by HOA
  - WC to require connections to master trail system
  - Equestrian route to be maintained during construction
  - 1 undercrossing under Red Rock required
  - Access point include barriers to prevent motorized vehicles from accessing the trail networks
  - Trails identified in white shall be constructed in initial phase of development

The project, as proposed, is consistent with the minimum requirements of the Mid-Range Single-Family Neighborhood, and for street improvements, as provided for in the DSH.



**North Valleys Citizen Advisory Board (NVCAB)**

The regularly scheduled North Valleys Citizen Advisory Board would have been held on June 14, however that meeting was cancelled. Individual requests for comments were provided to all CAB members. No individual comments were received.

**Reviewing Agencies**

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

Agency	Sent to Review	Responded	Provided Conditions	Contact
Army Corp of Engineers	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Bureau of Indian Affairs	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
NRCS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
BLM – Nevada State Office	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
US Postal Service	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Nevada Dept of Env Protection	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
NDF- Endangered Species	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Nevada Dept of Parks	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Nevada Dept of Transportation	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Nevada Dept of Water Resources	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Nevada Div. of Wildlife	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Washoe County Building & Safety	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Washoe County Parks & Open Spaces	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Washoe County Water Rights	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Washoe County Engineering	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Washoe County Sherriff	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
WCHD – Air Quality	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
WCHD – Environment Health	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
WCHD- EMS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Truckee Meadows Fire Protection District	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Airport Authority	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
RTC Washoe	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Washoe Storey Conservation District	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Washoe County School District	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Pyramid Lake Paiute Tribe	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Reno/Sparks Indian Colony	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Nevada Historic Preservation	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Washoe Tribe of Nevada	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

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

### **Staff Comment on Required Findings**

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

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

Staff Comment: The proposed tentative map meets the minimum criteria for a stand-alone common open space development at a density of 3 dwellings to the acre. The proposed map however, does not provide for a variety of housing options. Conditions of approval have been recommended to implement other goals of the Silver Hills Specific Plan, by means of CC&Rs and the creation of a Silver Hills Design Review Committee.

- 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 technical design elements such as streets, sewer, and stormwater control appear to meet minimum Code requirements and conditions have been included to ensure compliance at the final map. Conditions of approval have been provided to provide for compliance with the goals and intent of the Silver Hills Specific Plan by means of adoption of CC&RS and the creation of the Silver Hills Design Committee which will provide for enforcement of standards of the specific plan.

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

Staff Comment: There are no topographic constraints that hinder the development of a 358-lot, single-family residential, common open space subdivision, with lots ranging in size from 5,000 square feet to 8,072 square feet, at the subject site.

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

Staff Comment: Conditions of approval have been included to ensure that all minimum requirements are met.

- 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: There are no endangered species identified in the project area.

- 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 project is proposed to be served by community water and sewer services.

- 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: All required easements will be maintained. Additional public trails are proposed.

- 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: Trail access to adjacent public land is proposed with this tentative map. Secondary access for emergency vehicles is also proposed and will be required to be shown on any final map.

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

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

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

### **Recommendation**

After a thorough analysis and review, Tentative Subdivision Map Case Number WTM21-006 is being brought to the Planning Commission with neither a recommendation for approval nor denial. Staff recommends that the Planning Commission evaluate the analysis provided in the staff report, the application materials, consider the public testimony at the hearing, and determine whether or not the proposal meets the required findings of fact. Staff offers the following motions for the Board's consideration.

### **Motion for Approval**

Should the Planning Commission determine that the proposed subdivision meets the required findings of fact:

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 WTM21-006 for Lifestyle Homes, TND, LLC, having **made** all ten findings in accordance with Washoe County 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.

### **Motion for Denial**

Should the Planning Commission determine that the proposed subdivision does not meet the required findings of fact:

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 deny Tentative Subdivision Map Case Number WTM21-006 for Lifestyle Homes, TND, LLC, being **unable** to make all ten findings in accordance with Washoe County 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, unless the action is appealed to the Washoe County Board of County Commissioners, in which case the outcome of the appeal shall be determined by the Washoe County Board of County Commissioners. Any appeal must be filed in writing with the Planning and Building Division within 10 calendar days from the date the written decision is filed with the Secretary to the Planning Commission and mailed to the applicant.

Applicant/Owner: Lifestyle Homes, TND, LLC; E-mail: [lshreno@gmail.com](mailto:lshreno@gmail.com)

Representatives: Christy Corporation, Ltd; E-mail: [mike@christynv.com](mailto:mike@christynv.com)

Lewis Roca Rothgerber Christie; E-mail: [ggordon@lrrc.com](mailto:ggordon@lrrc.com)

Action Order xc: Jennifer Gustafson, District Attorney's Office; Keirsten Beck, Assessor's Office; Rigo Lopez, Assessor's Office; Tim Simpson, Utilities; Walter West, Engineering and Capital Projects; Dale Way, Truckee Meadows Fire Protection District; Nevada Division of Environmental Protection, 901 South Stewart Street, Suite. 4001, Carson City, NV 89701-5249; Regional Transportation Commission; Truckee Meadows Regional Planning Agency; North Valleys Citizen Advisory Board, Chair.



# Conditions of Approval

Tentative Subdivision Map Case Number WTM21-006

The project approved under Tentative Subdivision Map Case Number WTM21-006 shall be carried out in accordance with the conditions of approval granted by the Planning Commission on July 6, 2021. Conditions of approval are requirements placed on a permit or development by each reviewing agency. These conditions of approval may require submittal of documents, applications, fees, inspections, amendments to plans, and more. These conditions do not relieve the applicant of the obligation to obtain any other approvals and licenses from relevant authorities required under any other act.

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

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

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

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

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

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

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

- **The DISTRICT BOARD OF HEALTH, through 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.**



**STANDARD CONSIDERATIONS FOR SUBDIVISIONS**  
**Nevada Revised Statutes 278.349**

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

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

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

**Washoe County Planning and Building Division**

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

**Contact: Roger Pelham, Senior Planner, 775.328.3622, [rpelham@washoecounty.us](mailto:rpelham@washoecounty.us)**

- a. The applicant shall demonstrate substantial conformance to the plans approved as part of this tentative parcel map.
- b. The subdivision shall be in substantial conformance with the provisions of Washoe County Development Code Article 604, Design Requirements, and Article 608, Tentative Subdivision Maps.
- 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. In accordance with NRS 278.360, the sub-divider shall present to Washoe County a final map, prepared in accordance with the tentative map, for the entire area for which a tentative map has been approved, or one of a series of final maps, each covering a portion of the approved tentative map, within four years after the date of approval of the tentative map or within one year 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. Each final map submitted for WTM21-006 shall include a maximum of 150 lots. At least 12 months must elapse between recordation of final maps. This condition shall be in effect until NDOT has commenced work on I-80 North, Phase 1B improvements.
- f. All final maps shall contain the applicable portions of the following jurat:

THE TENTATIVE MAP FOR **TM case number for map name** WAS APPROVED BY THE WASHOE COUNTY PLANNING COMMISSION ON **DATE**.

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

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

THE NEXT FINAL MAP FOR **<TM CASE NUMBER>** MUST BE APPROVED AND ACCEPTED FOR RECORDATION BY THE PLANNING AND BUILDING DIRECTOR ON OR BEFORE THE EXPIRATION DATE, THE \_\_\_\_\_ DAY OF \_\_\_\_\_, 20\_\_\_\_, OR AN EXTENSION OF TIME FOR THE TENTATIVE MAP MUST BE APPROVED BY THE WASHOE COUNTY PLANNING COMMISSION ON OR BEFORE SAID DATE.

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

---

MOJRA HAUENSTEIN, DIRECTOR  
PLANNING AND BUILDING

**Jurat for ALL SUBSEQUENT FINAL MAPS**

THE TENTATIVE MAP for **<TM CASE NUMBER>** APPROVED **<denied>** BY THE WASHOE COUNTY PLANNING COMMISSION ON

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

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

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

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

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

<Insert Merger and Re-subdivision option as applicable>

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

---

MOJRA HAUENSTEIN, DIRECTOR,  
PLANNING AND BUILDING DIVISION

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

NOTE

Should any cairn or grave of a Native American be discovered during site development, work shall temporarily be halted at the specific site and the Sheriff's Office as well as the State Historic Preservation Office of the Department of Conservation and

Natural Resources shall be immediately notified per NRS 383.170.

- h. 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.

- i. Prior to acceptance of public improvements and release of any financial assurances, the developer shall furnish to Engineering Division a complete set of reproducible as-built construction drawings prepared by a civil engineer registered in the State of Nevada.
- j. The developer shall be required to participate in any applicable General Improvement District or Special Assessment District formed by Washoe County.
- k. 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.
- l. The developer and all successors shall direct any potential purchaser of the site to meet with the Planning and Building Division to review conditions of approval prior to the final sale of the site. Any subsequent purchasers of the site shall notify the Planning and Building Division of the name, address, telephone number and contact person of the new purchaser within thirty (30) days of the final sale.
- m. Front yard building setbacks shall alternate between 15 feet and 17 feet, no two setback of the same distance shall be adjacent. Garages shall be located a minimum of 20 feet from the front property line on all parcels.
- n. All applications for building permits shall show the setback of dwellings on each side of the subject parcel in order to ensure that front yard building setbacks alternate between 15 feet and 17 feet, no two setback of the same distance shall be adjacent. Garages shall be located a minimum of 20 feet from the front property line on all parcels.
- o. All trails that are required to be constructed with Phase 1 shall be constructed prior to issuance of the certificate of occupancy for the first dwelling in the development. All trails shall be located within common open space area that has been dedicated in perpetuity for that purpose.
- p. The developer shall create a checklist of all development standards within the DSH, that is acceptable to the Director of Planning and Building. The approved checklist shall be included with each application for a building permit within the development. The checklist shall include a brief narrative and reference to location on the plan set for the building permit submitted for each dwelling, as to how compliance has been achieved for all development standards.
- q. Failure to comply with all conditions of approval shall render this approval null and void.
- r. Conditions, covenants, and restrictions (CC&Rs), including any supplemental CC&Rs, shall be submitted to Planning and Building staff for review and subsequent forwarding to the District Attorney for review and approval. The final CC&Rs shall be signed and notarized by the owner(s) and submitted to Planning and Building with the recordation fee prior to the recordation of the final map. The CC&Rs shall require all phases and units of the subdivision approved under this tentative map to be subject to the same CC&Rs. Washoe County shall be made a party to the applicable provisions of the

CC&Rs to the satisfaction of the District Attorney's Office. Said CC&Rs shall specifically address the potential for liens against the properties and the individual property owners' responsibilities for the funding of maintenance, replacement, and perpetuation of the following items, at a minimum:

1. Maintenance of public access easements, common areas, and common open spaces. Provisions shall be made to monitor and maintain, for a period of three (3) years regardless of ownership, a maintenance plan for the common open space area. The maintenance plan for the common open space area shall, as a minimum, address the following:
  - a. Vegetation management;
  - b. Watershed management;
  - c. Debris and litter removal;
  - d. Fire access and suppression; and
  - e. Maintenance of public access and/or maintenance of limitations to public access.
2. All drainage facilities and roadways not maintained by Washoe County shall be privately maintained and perpetually funded by the homeowners association.
3. All open space 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.
4. The project where it is adjacent to undeveloped land shall maintain a fire fuel break of a minimum 30 feet in width until such time as the adjacent land is developed.
5. Locating habitable structures on potentially active (Holocene) fault lines, whether noted on the recorded map or disclosed during site preparation, is prohibited.
6. All outdoor lighting on all buildings and streets within the subdivision shall be down-shielded, such that light is emitted earthward only.
7. No motorized vehicles shall be allowed on the platted common area.
8. Washoe County will not assume responsibility for maintenance of the private street system of the development nor will Washoe County accept the streets for dedication to Washoe County unless the streets meet those Washoe County standards in effect at the time of offer for dedication.
9. Mandatory solid waste collection.
10. Fence material (if any), height, and location limitations, and re-fencing standards. Replacement fence must be compatible in materials, finish and location of existing fences, and consistent with the Design Standards Handbook.
11. Create a Silver Hills Design Committee, that shall be responsible for ensuring that all elements of the SH specific plan are shown on all permit applications and that all required design elements are complied with.
- s. 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 Planning and Building staff and the District Attorney.

- t. The applicant shall provide a letter from a traffic engineer with the final map submittal demonstrating that a traffic LOS C shall be maintained on all effected roadways and intersections.
- u. All potential homeowners shall be provided notice regarding the existence of livestock and potential for noise and odor in the entirety of the North Valleys Area Plan, including the subject site.
- v. Prior to recordation of all final maps the applicant shall provide a letter to the Planning and Building Division from the Nevada Department of Wildlife indicating that a Wildlife Mitigation Plan (WMP) to avoid, minimize and mitigate impacts to wildlife, has been approved by that Department and that the provisions of that plan have been included in the documents submitted with each final map.
- w. Prior to recordation of all final maps the applicant shall provide a letter to the Planning and Building Division from the Washoe County Parks Program indicating that the documents submitted with the final map comply with all conditions of approval required by that program.
- x. Prior to recordation of all final maps the applicant shall provide a letter to the Planning and Building Division from the Truckee Meadows Fire Protection District indicating that the documents submitted with the final map comply with all conditions of approval required by the Truckee Meadows Fire Protection District.
- y. Prior to recordation of all final maps the applicant shall provide a letter to the Planning and Building Division from the Engineering and Capital Projects Division indicating that the documents submitted with the final map comply with all conditions of approval required by that division.
- z. Prior to recordation of all final maps the applicant shall provide a letter to the Planning and Building Division from the Air Quality Management Division indicating that the documents submitted with the final map comply with all conditions of approval required by that division.
- aa. Prior to recordation of all final maps the applicant shall provide a letter to the Planning and Building Division from the Emergency Medical Services Oversight Program indicating that the documents submitted with the final map comply with all conditions of approval required by that program.

### **Washoe County Parks Program**

2. The following conditions are requirements of the Washoe County Parks Program, which shall be responsible for determining compliance with these conditions.

**Contact: Sophia Kirchenman, 775.328-3600, [skirchenman@washoecounty.us](mailto:skirchenman@washoecounty.us)**

- a. The Parks Program recommends that the applicant construct a trailhead kiosk, bathrooms, and a dog waste station at the trailhead site.
- b. Prior to submission of the final map, the applicant shall reach out to the BLM to obtain information about any future proposed trail development on public lands to the north of the subject site. It would be helpful to locate proposed trailheads adjacent to any future trail areas. Parks Program staff can assist with this effort, if desired.
- c. Public trail and recreational use easements shall be recorded over the trailhead area and the equestrian/multi-use trails. The updated application indicates that the southern perimeter and north-south connector trail may be relocated during future phases of development. A relocatable public trail easement shall be recorded over these trail alignments.



- d. The final map shall incorporate all of the required Phase 1 trail alignments (to include a connection to Silver Knolls Park) and be in general conformance with the DSH 2.6 Trails Map. There is an existing access road extending from Red Rock Road to Silver Knolls Park. Should the proposed trail cross this access road, appropriate signage shall be provided.
- e. Appropriate provisions shall be included in the Homeowner Association's CC&Rs regarding maintenance of the trailhead and trail areas.
- f. Pursuant to DSH 2.5.1, wayfinding signage shall be installed at the trailhead during the final phase of development for the Silver Hills Subdivision. Parks Program staff realize that final trail alignments are currently unknown. However, when the trail alignments have been finalized, wayfinding signage shall be installed at both of the trailheads and in the 10-acre park area.
- g. The applicant shall provide trail connectivity between the equestrian path along the northern boundary of the subject site and the pathway along Red Rock Road. If equestrian use is not allowed along Red Rock Road, it is recommended that appropriate signage be installed at this junction.
- h. Trails shall be constructed in conformance with Washoe County Greenbook Standards and/or the Forest Service's Trail Design Parameters, which can be provided to the applicant upon request.

#### **Truckee Meadows Fire Protection District (TMFPD)**

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

**Contact: Dale Way / Brittany Lemon, [dway@tmfpd.us](mailto:dway@tmfpd.us) / [blemon@tmfpd.us](mailto:blemon@tmfpd.us); 775.326.6000**

- a. The Truckee Meadows Fire Protection District (TMFPD) will require that this project meet the requirements of Washoe County Code 60 to include infrastructure, access, and water for fire suppression.

#### **Nevada Department of Wildlife**

4. The following conditions are requirements of the Nevada Department of Wildlife, which shall be responsible for determining compliance with these conditions.

**Contact: Mark Freese, 775.688.1145, [markfreese@ndow.org](mailto:markfreese@ndow.org)**

- a. The applicant shall develop a Wildlife Mitigation Plan (WMP) to avoid, minimize and mitigate impacts to wildlife. Key components of the WMP include:
  1. A basic assessment/analysis of the project effects and impacts to wildlife.
  2. Project design features to avoid and minimize impacts:
    - i. Reduction of housing density, parcel deferrals in important wildlife use areas, development and protection of movement corridors.
    - ii. Fence designs/restrictions - so not to impale deer or other wildlife or restrict movement to important use areas
    - iii. Fire management
    - iv. Weed prevention and management
    - v. Traffic management
    - vi. Recreation considerations - dogs on leash, trail location, seasonal timing restrictions, off-site recreation management, etc.

- vii. Construction noise and timing restrictions
- viii. BMP's for hydrology/drainage/erosion/sediment load issues in streams
- 3. Public-wildlife conflict issues – NDOW lacks the resources to deal with issues
  - i. Education and public awareness-NDOW and HOA, Living with wildlife such as bears, coyotes, mountain lions, signage, rules, etc.
  - ii. Design features to prevent issues: bear proof trash containers, limit bird feeder use, landscape standards
  - iii. Opportunity for positive wildlife education opportunities such as viewing, interpretation, signs, and classes
- 4. Offsets – to address the net loss of wildlife habitat, contribute funding to offsite projects such as seeding, seeding/plantings, weed management, spring/stream enhancements, wildlife collaring and tracking, enhancement of movement corridors such as crossing structures, wildlife education, conservation easements, acquisitions, etc.

### **Washoe County Engineering and Capital Projects**

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

**Contact: Walter West, P.E., 775.328.2041, [wwest@washoecounty.us](mailto:wwest@washoecounty.us) / Mitchell Fink, P.E. (775) 328-2050, [mfink@washoecounty.us](mailto:mfink@washoecounty.us) / Tim Simpson, P.E. (775) 954-4648, [tsimpson@washoecounty.us](mailto:tsimpson@washoecounty.us)**

- 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 provide as-built construction drawings in an acceptable digital format prepared by a civil engineer licensed in the State of Nevada.
- c. The developer shall provide written approval from the U.S. Postal Service (USPS) concerning the installation and type of mail delivery facilities. The system, other than individual mailboxes, must be shown on the project construction plans and installed as part of the onsite improvements.
- d. A complete set of construction improvement drawings, including an onsite grading plan, shall be submitted to the County Engineer for approval prior to finalization of any portion of the tentative map. Grading shall comply with best management practices (BMPs) and shall include detailed plans for grading and drainage on each lot, erosion control (including BMP locations and installation details), slope stabilization and mosquito abatement. Placement or disposal of any excavated material shall be indicated on the grading plan.
- e. All open space shall be identified as common 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.
- f. Any existing easements, facilities or utilities that conflict with the development shall be relocated, quitclaimed, and/or abandoned, as appropriate.
- g. Any easement documents recorded for the project shall include an exhibit map that shows the location and limits of the easement in relationship to the project.

- h. All existing overhead utility lines shall be placed underground, except electric transmission lines greater than 100 kilovolts, which can remain above ground.
- i. With each affected final map, provide written approval from all utility provider(s) for any improvements located within their easement or under or over their facilities.
- j. Appropriate easements shall be granted for any existing or new utilities, with each affected final map.
- k. A 10-foot public utility easement (PUE), a 10-foot Washoe County easement for traffic control signage, plowed snow storage and sidewalks, and a 10-foot United States Postal Service facilities easement shall be granted adjacent to all rights-of-way.
- l. A design level geotechnical investigation with fault study shall be provided with the submittal of each final map.
- m. Cut slopes, fill slopes, and berms shall be setback from parcel lines and access easements in accordance with Washoe County Code Article 438.
- n. Slope easements shall be provided for areas of cut or fill that fall outside of the subdivision boundary.
- o. Prior to recordation of the affected final map, an ASTM E1527-13 Phase I Environmental Site Assessment shall be submitted for all parcels or right-of-way dedicated to Washoe County.

**Flood Hazards (County Code 110.416), Storm Drainage Standards (County Code 110.420), and Storm Water Discharge Program (County Code 110.421)**

- p. 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.
- q. Prior to finalization of the first final map, a master hydrology/hydraulic report and a master storm drainage plan shall be submitted for approval.
- r. Prior to finalization of any portion of the tentative map, a final, detailed hydrology/hydraulic report for that unit shall be submitted.
- s. Any increase in storm water runoff flow rate resulting from the development and based on the 5-year and 100-year storm(s) shall be detained onsite.
- t. The project shall mitigate the increased storm water volume produced from the development based on the 100 year–10 day storm event at a minimum factor of 1.3:1. Alternatives for mitigation include excavation of material within or adjacent to the existing flood zone creating additional effective flood volume, on-site retention, or other means subject to approval by the County Engineer.
- u. Prior to the finalization of the first final map, an operation and maintenance plan for the maintenance of the project's storm water basin(s) and drainage channel(s) shall be developed in accordance with the Washoe County Code Article 421. The Operation and Maintenance Plan shall be incorporated into the project CC&Rs.
- v. The following note shall be added to each final map; "All properties, regardless if they are located within or outside of a FEMA Special Flood Hazard Area, may be subject to flooding. The property owner is required to maintain all drainage easements and natural drainages and not perform or allow unpermitted and unapproved modifications to the property that may have detrimental impacts to surrounding properties."
- w. The developer shall provide pretreatment for petrochemicals and silt for all storm drainage leaving the site.

- x. The Truckee Meadows Regional Storm Water Quality Management Program Construction Permit Submittal Checklist and Inspection Fee shall be submitted with each final map.
- y. In medians with irrigated landscaping adjacent to the curb, a subdrain system shall be installed a minimum of one foot behind the back face of curb to intercept drainage from the landscaping. The system shall be tied to the storm drain system or an acceptable alternative drainage system.
- z. 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.
- aa. A note on the final map shall indicate that all drainage facilities not maintained by Washoe County shall be perpetually maintained by a homeowner's association. The maintenance and funding of private drainage facilities shall also be addressed in the CC&Rs to the satisfaction of the District Attorney's Office.
- bb. Maintenance access and drainage easements shall be provided for all existing and proposed drainage facilities. All drainage facilities located within Common Area shall be constructed with an adjoining minimum 12-foot wide all-weather access road. Maintenance access road(s) shall be provided to the bottom of proposed storm water detention/retention basins as well as over County owned and maintained storm drainage facilities.
- cc. Drainage easements shall be provided for all storm water runoff that crosses more than one lot.
- dd. Prior to the finalization of the first final map, a maintenance and operation plan for the maintenance of the project's detention/retention basins shall be developed in accordance with the Washoe County Code Article 421.
- ee. A note shall be added to the final map and similar language contained with the project CC&Rs stating that owners of parcels created by a final map within this development shall not protest the formation of a Storm Water Utility District, Flood Control District, Special Assessment District or other funding mechanism which is approved and created for the purpose of storm water and/or flood water management.
- ff. Offsite drainage and common area drainage draining onto residential lots shall be perpetuated around the residential lots and drainage facilities capable of passing a 100-year storm shall be constructed with the subdivision improvements to perpetuate the storm water runoff to improved or natural drainage facilities. The maintenance of these drainage facilities shall be addressed in the CC&Rs to the satisfaction of the District Attorney's Office.

**Street Design Standards (County Code 110.436)**

- gg. 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 submitted.
- hh. Street names shall be reviewed and approved by the Regional Street Naming Coordinator.
- ii. 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.

- jj. An Encroachment and Excavation Permit shall be obtained from Washoe County Engineering and Capital Projects Division for any utilities or other encroachments/excavations constructed within existing County roadways/right-of-ways.
- kk. Streetlights shall be constructed to Washoe County standards at locations to be determined at the final design stage.
- ll. 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.
- mm. All retaining walls that are within the slope failure wedge from Washoe County right-of-way shall be constructed of reinforced masonry block or reinforced concrete and designed by an engineer licensed in the State of Nevada. Retaining walls shall not be located within Washoe County right-of-way. The maintenance of the retaining walls shall be by Homeowners Association and the CCR's shall clearly identify the HOA's maintenance responsibilities of retaining walls.
- nn. No retaining walls that retain soil from the County right-of-way shall be located within a plowed snow storage easement.
- oo. Sidewalks shall be constructed on both sides of all streets within the development.
- pp. Appropriate curve warning signs and/or a lower speed limit shall be determined and posted on all horizontal roadway curves that do not meet the standard Washoe County 25-mile per hour design speed.
- qq. At south end of Street B (near lot 22) the centerline radius shall be designed to meet 15 mph design speed.
- rr. Appropriate transitions shall be provided between the existing and proposed improvements at all proposed street connections. This may include removal of existing pavement.
- ss. Any streetlights that do not meet Washoe County standards shall be placed outside Washoe County right-of-way. These streetlights shall be private, and the CC&Rs shall indicate operation and maintenance of the streetlights shall be the responsibility of the Homeowners Association. The County Engineer and the District Attorney's Office shall determine compliance with this condition.
- tt. A 20' setback is required between the back of the sidewalk and the front of the garage.
- uu. Traffic calming measures over project roadways 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 cushions, bulb outs, neck downs, chicanes and mini roundabouts.
- vv. With the approval of the first final map, a left turn lane on the northbound Red Rock Road shall be designed and constructed.
- ww. Silver Hills Drive shall be designed to residential collector standards with no median curb permitted.
- xx. To support the full buildout of this project, roadway capacity improvements are required along Red Rock Road to a minor arterial standard. Prior to the approval of the first final map, a preliminary roadway design for Red Rock Road in the vicinity of the Silver Hills development with sufficient detail to establish preferred location of roadway, left turn lanes, etc., shall be approved by Washoe County and RTC and the resulting additional right-of-way dedication which may be needed to support the future improvement shall be granted on each final map located adjacent to Red Rock Road..

**Utilities (County Code 422 & Sewer Ordinance)**

- yy. The applicant shall obtain an intent to serve letter from the City of Reno.
- zz. The applicant shall conform to all conditions imposed by intergovernmental agreements required to provide sewer service to the subject project, and, if required, be a party to any such agreements.
- aaa. All sanitary sewer connection fees shall be paid to the City of Reno. Receipt of payment shall be provided to Washoe County.
- bbb. Improvement plans shall be submitted and approved by Washoe County 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.
- ccc. 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.
- ddd. The applicant 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 Washoe County.
- eee. Approved improvement plans shall be used for the construction of on-site and off-site sanitary sewer collection system. Washoe County will be responsible to inspect the construction of the sanitary sewer collection system.
- fff. The sanitary sewer collection system must be offered for dedication to Washoe County along with the recordation of each final map unless a different policy is established by interlocal agreement.
- ggg. 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 unless a different policy is established by interlocal agreement.
- hhh. A master sanitary sewer report for the entire tentative map shall be prepared and submitted by the applicant's engineer at the time of the initial submittal for the first final map which addresses:
  - 1. the estimated sewage flows generated by this project,
  - 2. projected sewage flows from potential or existing development within tributary areas,
  - 3. the impact on capacity of existing infrastructure,
  - 4. slope of pipe, invert elevation and rim elevation for all manholes,
  - 5. proposed collection line sizes, on-site and off-site alignment, and half-full velocities.
- iii. No Certificate of Occupancy will be issued until all the sewer collection facilities necessary to serve each final map have been completed, accepted and engineer prepared as-built drawings are delivered to the utility. As-built drawings must be in a format acceptable to Washoe County.
- jjj. No permanent structures (including rockery or retaining walls, building's, etc.) shall be allowed within or upon any County maintained utility easement.

- kkk. 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.
- lll. A minimum 12-foot wide all weather sanitary sewer access road shall be constructed to facilitate access to off-site sanitary sewer manholes.
- mmm. The developer will be responsible to fund the design and construction of major infrastructure such as pump structures, controls, telemetry and appurtenances, lift stations, force mains, sewer mains, interceptor and wastewater treatment facilities necessary to accommodate the project. However, the actual design will be the responsibility of Washoe County. Prior to initiation of design the Developer shall pay the estimated design costs to Washoe County. Washoe County may either provide such design in-house, or select an outside consultant. When an outside consultant is to be selected, Washoe County and the Developer shall jointly select that consultant.
- nnn. Washoe County shall reserve the right to over-size or realign the design of infrastructure to accommodate future development as determined by accepted engineering calculations.
- ooo. Interceptors built to serve this development shall be approved by Washoe County and the City of Reno

**Washoe County Health District – Air Quality Management Division**

- 6. The following conditions are requirements of Washoe County Health District – Air Quality Management Division, which shall be responsible for determining compliance with these conditions.

**Contact: Genine Rosa , 775.784.7204, grosa@washoecounty.us**

- a. Dust Control Permit will be required prior to breaking ground, failure to do so may result in enforcement action resulting in a Notice of Violation with associated fines. For Dust Control Permit questions call AQMD at 775-784-7200 or visit [www.OurCleanAir.com](http://www.OurCleanAir.com).

**Washoe County Health District – Emergency Medical Services Oversight Program**

- 7. The following conditions are requirements of the Washoe County Health District – Emergency Medical Services Oversight Program, 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: Julie Hunter , 775.326.6043, jhunter@washoecounty.us**

- a. Address numbers shall be clearly marked on the curb and the structure(s) so individuals can be quickly located by public safety agencies. Additionally, ensure that all structures meet ADA requirements, as appropriate.

\*\*\* End of Conditions \*\*\*



STEVE SISOLAK  
Governor

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION  
1263 S. Stewart Street  
Carson City, Nevada 89712

KRISTINA L. SWALLOW, P.E., Director

April 23, 2021

Washoe County Community Services Department  
Planning and Building Division  
1001 East 9<sup>th</sup> Street  
Reno, NV 89512  
Attn: Roger Pelham, MPA, Senior Planner

SENT VIA ELECTRONIC MAIL

RE: WTM21-006 Silver Hills Village 1

Dear Mr. Pelham,

Nevada Department of Transportation (NDOT) District 2 staff have reviewed the following case tentatively scheduled to be heard by the Washoe County Planning Commission and provided comments accordingly:

**Tentative Subdivision Map Case Number WTM21-006 (Silver Hills, Village 1) –**

For hearing, discussion, and possible action, to approve a tentative subdivision map to allow a 358-lot, single-family residential, common open space subdivision, with lots ranging in size from 5,000 square feet to 8,072 square feet.

**NDOT Comments:**

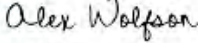
1. The traffic impact study indicates that trips generated by the project will have some level of impact on the US-395 / Red Rock Rd interchange. US-395 is an NDOT maintained road that is functionally classified as an urban other freeway.
2. The traffic impact study indicates that certain movements at the US-395 / Red Rock Rd interchange currently operate at an unacceptable level of service (LOS) based on NDOT and local entity standards, and will continue to degrade based off impacts from this project and other future development. NDOT concurs with this analysis and should continue to coordinate with the Regional Transportation Commission, City of Reno, and Washoe County to monitor traffic operations and implement improvements at this interchange as applicable.

Thank you for the opportunity to review this application. NDOT reserves the right to incorporate further changes and/or comments as these applications and design reviews



progress. Should you have any questions, please contact Alex Wolfson at (775) 834-8365.

Sincerely,

DocuSigned by:  
  
8080C88AB3244A2...

Alex Wolfson, PE, PTOE  
Traffic Engineer

Cc: Mike Fuess – NDOT District Engineer  
Rod Schilling – NDOT Traffic Operations  
Dale Keller – Regional Transportation Commission  
Rebecca Kapuler – Regional Transportation Commission  
File

Mark Freese <markfreese@ndow.org>  
To: Pelham, Roger; Cahalane, Daniel

April Agency Review Memo 1.pdf  
.pdf File

Reply Reply All Forward

Mon 4/26/2021 4:43 PM

Roger and Dan,  
I am writing regarding the Silver Hills Village 1 (WTM21-006) and Village Parkway (WTM20-007) housing development projects. The following comments cover both projects.


Wildlife populations (mule deer, antelope, quail, sagebrush obligate birds, etc.) are expected to continue to decline as a result of continued habitat loss and impacts associated with these housing developments. As housing developments are permitted that extend into wildland areas, habitat loss, fragmentation and displacement of wildlife occurs. Additionally, weed and fire risk increase, offsite recreational impacts occur, and the potential for public-wildlife conflicts arise. These project impacts will affect wildlife behavior including displacement, physiology, energetic and nutrition cost, vital rates and population dynamics negatively. To reduce these impacts without stifling development, we recommend permitting developments within the already existing development matrix prior to permitting new developments that consume wildland areas (e.g. Cold Springs Drive WTM21-009).

We understand that it is unlikely that these projects will be deferred at this stage, so we recommend developing a Wildlife Mitigation Plan (WMP) to avoid, minimize and mitigate impacts to wildlife if these projects are permitted. West Meadows Estates, Stonegate, and Santerra-Quilici developments have WMP that can be used as examples. Key components of the WMP include:

- i. A basic assessment/analysis of the project effects and impacts to wildlife
- ii. Project design features to avoid and minimize impacts:
  - a. Reduction of housing density, parcel deferrals in important wildlife use areas, development and protection of movement corridors.
  - b. Fence designs/restrictions - so not to impale deer or other wildlife or restrict movement to important use areas
  - c. Fire management
  - d. Weed prevention and management
  - e. Traffic management
  - f. Recreation considerations - dogs on leash, trail location, seasonal timing restrictions, off-site recreation management, etc.
  - g. Construction noise and timing restrictions
  - h. BMP's for hydrology/drainage/erosion/sediment load issues in streams
- iii. Public-wildlife conflict issues – NDOW lacks the resources to deal with issues
  - a. Education and public awareness-NDOW and HOA, Living with wildlife such as bears, coyotes, mountain lions, signage, rules, etc.
  - b. Design features to prevent issues: bear proof trash containers, limit bird feeder use, landscape standards
  - c. Opportunity for positive wildlife education opportunities such as viewing, interpretation, signs, and classes
- iv. Offsets – to address the net loss of wildlife habitat, contribute funding to offsite projects such as seeding, seedling/plantings, weed management, spring/stream enhancements, wildlife collaring and tracking, enhancement of movement corridors such as crossing structures, wildlife education, conservation easements, acquisitions, etc.

We are willing to work with the City and Developer on a WMP. Please let us know if you have any questions or would like to discuss further.

Thank you,  
Mark

 Mark Freese, Habitat Biologist  
Nevada Department of Wildlife  
1100 Valley Road  
Reno, Nevada 89512  
(775) 688-1145  
[markfreese@ndow.org](mailto:markfreese@ndow.org)



**WASHOE COUNTY**  
**COMMUNITY SERVICES DEPARTMENT**  
**Regional Parks and Open Space**

1001 EAST 9<sup>TH</sup> STREET  
 RENO, NEVADA 89520-0027  
 PHONE (775) 328-3600  
 FAX (775) 328.3699

---

**TO:** Roger Pelham, Senior Planner

**FROM:** Sophia Kirschenman, Park Planner

**DATE:** June 1, 2021

**SUBJECT:** Tentative Subdivision Map Case Number WTM21-006 (Silver Hills, Village 1)

---



I have reviewed the updated application for WTM21-006 on behalf of the Washoe County Regional Parks and Open Space Program (Parks Program) and prepared the following comments:

If approved, this subdivision map would allow for the creation of a 358-lot, single-family, common open space subdivision off of Red Rock Road. The proposal must be in conformance with the approved Silver Hills Development Standards Handbook (DSH). The subject site is bordered to the north by public lands administered by the Bureau of Land Management (BLM). Future phases of the Silver Hills Development will be adjacent to the existing Silver Knolls Park to the south. In terms of recreational amenities, the current phase of development includes the construction of a 1-acre trailhead, equestrian/multi-use trails, a pocket park and paved pathways.

The Parks Program does not oppose the current proposed trailhead location. However, the Parks Program recommends coordination with the BLM to ensure that this and the future trailhead align with any future BLM trail plans. Additionally, the plan set for WTM21-006 does not include a trailhead kiosk, trail wayfinding signage, a dog waste station or bathrooms at the trailhead location. The updated narrative for WTM21-006 indicates that restrooms are not proposed. While this is not a requirement, Parks Program staff continue to recommend that the applicant consider this as an option as restrooms and a dog waste station will enhance the user experience.

Per the Silver Hills Development Standards Handbook (Page 2-41), a minimum of one pedestrian undercrossing (available to equestrian use) shall be provided under Red Rock Road. The current phase of development includes a 10-ft-wide equestrian/multi-use path along the northern boundary of the site, extending from the trailhead to Red Rock Rd., where it will dead end until future phases of the project have been completed. Parks Program staff originally thought that this would be a logical location for the undercrossing to perpetuate recreational access. However, during a meeting with Parks Program staff, the applicant indicated that there is an existing location farther to the south that is more conducive to the undercrossing. Wherever the ultimate undercrossing is located, it shall need to connect to the equestrian trail system.

DSH Section 2.6 includes a Trails Plan indicating that several trails shall be completed as part of Phase 1 of the Silver Hills Development. While the final alignment of these trails is open for discussion, Phase 1 shall generally include trails along the entire northern and southern



WWW.WASHOECOUNTY.NV.US

Memo to: Roger Pelham  
Subject: WTM21-006  
Date: June 1, 2021  
Page: 2

boundaries of the parcels currently identified as APNs 087-390-10 and 087-390-13. Phase 1 shall also include a north-south trail to connect these areas. The updated application for WTM21-006 incorporates these trail requirements.

Given these considerations, the Parks Program recommends the following:

1. The Parks Program recommends that the applicant construct a trailhead kiosk, bathrooms, and a dog waste station at the trailhead site. This will improve the experience of future trail users and be an added benefit to the community.

Additionally, the Parks Program requires the following conditions of approval:

1. Prior to submission of the final map, the applicant shall reach out to the BLM to obtain information about any future proposed trail development on public lands to the north of the subject site. It would be helpful to locate proposed trailheads adjacent to any future trail areas. Parks Program staff can assist with this effort, if desired.
2. Public trail and recreational use easements shall be recorded over the trailhead area and the equestrian/multi-use trails. The updated application indicates that the southern perimeter and north-south connector trail may be relocated during future phases of development. A relocatable public trail easement shall be recorded over these trail alignments.
3. The final map shall incorporate all of the required Phase 1 trail alignments (to include a connection to Silver Knolls Park) and be in general conformance with the DSH 2.6 Trails Map. There is an existing access road extending from Red Rock Road to Silver Knolls Park. Should the proposed trail cross this access road, appropriate signage shall be provided.
4. Appropriate provisions shall be included in the Homeowner Association's CC&Rs regarding maintenance of the trailhead and trail areas.
5. Pursuant to DSH 2.5.1, wayfinding signage shall be installed at the trailhead during the final phase of development for the Silver Hills Subdivision. Parks Program staff realize that final trail alignments are currently unknown. However, when the trail alignments have been finalized, wayfinding signage shall be installed at both of the trailheads and in the 10-acre park area.
6. The applicant shall provide trail connectivity between the equestrian path along the northern boundary of the subject site and the pathway along Red Rock Road. If equestrian use is not allowed along Red Rock Road, it is recommended that appropriate signage be installed at this junction.
7. Trails shall be constructed in conformance with Washoe County Greenbook Standards and/or the Forest Service's Trail Design Parameters, which can be provided to the applicant upon request.





**REGIONAL TRANSPORTATION COMMISSION**

Metropolitan Planning • Public Transportation & Operations • Engineering & Construction

Metropolitan Planning Organization of Washoe County, Nevada

May 26, 2021

FR: Chrono/PL 181-21

Mr. Roger Pelham, Senior Planner  
Community Services Department  
Washoe County  
PO Box 11130  
Reno, NV 89520

Dear Mr. Roger Pelham,

RE: WTM21-006 (Silver Hills, Village 1)

The Regional Transportation Commission (RTC) has reviewed this request for a tentative subdivision map to allow a 358-lot, single-family residential, common open space subdivision, with lots ranging in size from 5,000 square feet to 8,072 square feet.

The project site access is located on Red Rock Road, a regional road, identified by the 2050 Regional Transportation Plan (RTP) as an Arterial with moderate access control. New accesses on Red Rock Road should be designed to meet the criteria outlined in the table below. Additionally, the 2050 RTP identifies Red Rock Road to be widened from 2 to 4 lanes in the 2026-2030 timeframe and adequate right-of-way should be required along the entire frontage of this development.

Access Management Class	Posted Speeds	Signals Per Mile and Spacing <sup>1</sup>	Median Type	Left From Major Street? (Spacing from signal)	Left From Minor Street or Driveway?	Right Decel Lanes at Driveways	Driveway Spacing <sup>2</sup>
Moderate Access Control	40-45 mph	3 or less Minimum spacing 1590 feet	Raised or painted w/ turn pockets	Yes 500 ft. minimum	No, on 6- or 8- lane roadways w/o signal	Yes <sup>3</sup>	200 ft./300 ft

1. On-street parking shall not be allowed on any new arterials. Elimination 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 existing conditions, planned signalized intersections, and other relevant factors impacting corridor level of service.
3. Minimum spacing from signalized intersection/spacing from other driveways.
4. If there are more than 30 inbound, right-turn movements during the peak-hour.
5. If there are more than 60 inbound, right-turn movements during the peak-hour.
6. Minimum spacing on collectors.

RTC Board: Neoma Jardon (Chair) • Ed Lawson (Vice Chairman) • Vaughn Hartung • Oscar Delgado • Bob Lucey  
PO Box 30002, Reno, NV 89520 • 1105 Terminal Way, Reno, NV 89502 • 775-348-0400 • rtowashoe.com

The proposed Silver Hills Phase I development will consist of the construction of 361 single family detached homes. Project access will be provided from the construction of Silver Hills Parkway west of Red Rock Road. The Silver Hills Phase 1 development is anticipated to generate 3,408 average daily trips with 267 trips occurring during the AM peak hour and 357 trips occurring during the PM peak hour.

A traffic impact analysis prepared for Phase 1 by Solaegui Engineers to evaluate the impacts to area roadways that will occur with the addition of Phase 1. The project is anticipated to generate 3,408 average daily trips, with 267 am peak hour trips and 357 pm peak hour trip. The report identifies the need for improvements at the Red Rock Road/US 395 interchange to the south and includes potential mitigation measures that can be implemented to maintain acceptable levels of service. A left turn lane should added to northbound Red Rock Road at the Silver Hills Parkway intersection, providing a dedicated lane for vehicles entering the project from the south. The project will also be subject to Regional Road Impact Fees for each unit constructed within the project. Additionally, the North Valleys Area Plan requires that a level of service (LOS) "C" or better be maintained for roadways within the plan boundary, exceeding the LOS "D" standards adopted regionally.

The applicant should assess the available stopping and intersection sight distance at the proposed project access intersections using guidelines provided in AASHTO's Policy on Geometric Design of Highways and Streets (Green Book). Landscaping and buildings should be placed so that clear sight triangles are provided.

It is recommended that this development be required to provide a 10-space Park-n-Ride area in the parking lot of the development as part of the Smart Trips Program. This is a way to promote and encourage carpooling and vanpooling to the residents and it is beneficial to help reduce air pollution and traffic congestion. Please reach out to Scott Miklos, Trip Reduction Analyst at 775-335-1920 or email [smiklos@rtcwashoe.com](mailto:smiklos@rtcwashoe.com) for information on the Smart Trips Program

The RTP, RTC Bicycle/Pedestrian Master Plan and the Nevada Department of Transportation Pedestrian Safety Action Plan, all indicate that new development and re-development will be encouraged to construct pedestrian and bicycle facilities, internal and/or adjacent to the development, within the regional road system. In addition, these plans recommend that the applicant be required to design and construct any sidewalks along the frontage of the property in conformance with the stated ADA specifications.

Thank you for the opportunity to comment on this application. Please feel free to contact me at 775-332-0174 or email me at [rkapuler@rtcwashoe.com](mailto:rkapuler@rtcwashoe.com) if, you have any questions or comments.

Sincerely,



Rebecca Kapuler  
Senior Planner

CC: Dale Keller, Regional Transportation Commission  
Blaine Petersen, Regional Transportation Commission,  
Sara Going, Regional Transportation Commission  
Tina Wu, Regional Transportation Commission  
Andrew Jankayura, Regional Transportation Commission  
Scott Miklos, Regional Transportation Commission

/Silver Hills, Village 1\_2





# WASHOE COUNTY



Date: May 21, 2021

To: Roger Pelham, Senior Planner

From: Walter West, P.E., Licensed Engineer

Re: **Silver Hills Phase 1, WTM21-006 (358 Lots)**

## GENERAL PROJECT DISCUSSION

Washoe County Engineering staff has reviewed the above referenced application. The proposed project consists of a 358 lot subdivision and is located on approximately 65 acres on the west side of Red Rock Road within a portion of APN 087-390-10. The Engineering and Capital Projects Division recommends approval subject to the following comments and conditions of approval, which supplement applicable County Code and are based upon our review of the site and the tentative map application prepared by Christy Corporation.

The applicant has indicated sanitary sewer service will be at the Reno Stead Water Reclamation Facility (RSWRF) and a preliminary interceptor analysis was provided by Shaw Engineering. Washoe County has no invested interest in RSWRF and has no Interlocal Agreement with the City of Reno. Washoe County cannot recommend approval for and in behalf of the City of Reno and its infrastructure and facilities.

For questions related to sections below, please see the contact name provided.

### **Washoe County Engineering and Capital Projects – General Land Development and Grading Standards (County Code 110.438)**

1. The following conditions are requirements of the Washoe County Engineering and Capital Projects Division which shall be responsible for determining compliance with these conditions.  
**Contact Name:** Walter West, P.E. (775) 328-2310
  - 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 provide as-built construction drawings in an acceptable digital format prepared by a civil engineer licensed in the State of Nevada.
  - c. The developer shall provide written approval from the U.S. Postal Service (USPS) concerning the installation and type of mail delivery facilities. The system, other than individual mailboxes, must be shown on the project construction plans and installed as part of the onsite improvements.
  - d. A complete set of construction improvement drawings, including an onsite grading plan, shall be submitted to the County Engineer for approval prior to finalization of any portion of the tentative map. Grading shall comply with best management practices (BMPs) and shall include detailed plans for grading and drainage on each lot, erosion control (including BMP locations and



Subject: Silver Hills Phase 1, WTM21-006 (358 Lots)  
Date: May 21, 2021  
Page: 2

- installation details), slope stabilization and mosquito abatement. Placement or disposal of any excavated material shall be indicated on the grading plan.
- e. All open space shall be identified as common 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.
  - f. Any existing easements, facilities or utilities that conflict with the development shall be relocated, quitclaimed, and/or abandoned, as appropriate.
  - g. Any easement documents recorded for the project shall include an exhibit map that shows the location and limits of the easement in relationship to the project.
  - h. All existing overhead utility lines shall be placed underground, except electric transmission lines greater than 100 kilovolts, which can remain above ground.
  - i. With each affected final map, provide written approval from all utility provider(s) for any improvements located within their easement or under or over their facilities.
  - j. Appropriate easements shall be granted for any existing or new utilities, with each affected final map.
  - k. A 10-foot public utility easement (PUE), a 10-foot Washoe County easement for traffic control signage, plowed snow storage and sidewalks, and a 10-foot United States Postal Service facilities easement shall be granted adjacent to all rights-of-way.
  - l. A design level geotechnical investigation with fault study shall be provided with the submittal of each final map.
  - m. Cut slopes, fill slopes, and berms shall be setback from parcel lines and access easements in accordance with Washoe County Code Article 438.
  - n. Slope easements shall be provided for areas of cut or fill that fall outside of the subdivision boundary.
  - o. Prior to recordation of the affected final map, an ASTM E1527-13 Phase I Environmental Site Assessment shall be submitted for all parcels or right-of-way dedicated to Washoe County.

**Washoe County Engineering and Capital Projects – Flood Hazards (County Code 110.416), Storm Drainage Standards (County Code 110.420), and Storm Water Discharge Program (County Code 110.421)**

- 2. The following conditions are requirements of the Washoe County Engineering and Capital Projects Division which shall be responsible for determining compliance with these conditions.  
**Contact Name:** Walter West, P.E. (775) 328-2310
  - a. 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.
  - b. Prior to finalization of the first final map, a master hydrology/hydraulic report and a master storm drainage plan shall be submitted for approval.

Subject: Silver Hills Phase 1, WTM21-006 (358 Lots)  
Date: May 21, 2021  
Page: 3

- c. Prior to finalization of any portion of the tentative map, a final, detailed hydrology/hydraulic report for that unit shall be submitted.
- d. Any increase in storm water runoff flow rate resulting from the development and based on the 5-year and 100-year storm(s) shall be detained onsite.
- e. The project shall mitigate the increased storm water volume produced from the development based on the 100 year–10 day storm event at a minimum factor of 1.3:1. Alternatives for mitigation include excavation of material within or adjacent to the existing flood zone creating additional effective flood volume, on-site retention, or other means subject to approval by the County Engineer.
- f. Prior to the finalization of the first final map, an operation and maintenance plan for the maintenance of the project's storm water basin(s) and drainage channel(s) shall be developed in accordance with the Washoe County Code Article 421. The Operation and Maintenance Plan shall be incorporated into the project CC&Rs.
- g. The following note shall be added to each final map; "All properties, regardless if they are located within or outside of a FEMA Special Flood Hazard Area, may be subject to flooding. The property owner is required to maintain all drainage easements and natural drainages and not perform or allow unpermitted and unapproved modifications to the property that may have detrimental impacts to surrounding properties."
- h. The developer shall provide pretreatment for petrochemicals and silt for all storm drainage leaving the site.
- i. The Truckee Meadows Regional Storm Water Quality Management Program Construction Permit Submittal Checklist and Inspection Fee shall be submitted with each final map.
- j. In medians with irrigated landscaping adjacent to the curb, a subdrain system shall be installed a minimum of one foot behind the back face of curb to intercept drainage from the landscaping. The system shall be tied to the storm drain system or an acceptable alternative drainage system.
- k. 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.
- l. A note on the final map shall indicate that all drainage facilities not maintained by Washoe County shall be perpetually maintained by a homeowner's association. The maintenance and funding of private drainage facilities shall also be addressed in the CC&Rs to the satisfaction of the District Attorney's Office.
- m. Maintenance access and drainage easements shall be provided for all existing and proposed drainage facilities. All drainage facilities located within Common Area shall be constructed with an adjoining minimum 12-foot wide all-weather access road. Maintenance access road(s) shall be provided to the bottom of proposed storm water detention/retention basins as well as over County owned and maintained storm drainage facilities.
- n. Drainage easements shall be provided for all storm water runoff that crosses more than one lot.
- o. Prior to the finalization of the first final map, a maintenance and operation plan for the maintenance of the project's detention/retention basins shall be developed in accordance with the Washoe County Code Article 421.
- p. A note shall be added to the final map and similar language contained with the project CC&Rs stating that owners of parcels created by a final map within this development shall not protest the formation of a Storm Water Utility District, Flood Control District, Special Assessment District or



Subject: Silver Hills Phase 1, WTM21-006 (358 Lots)  
Date: May 21, 2021  
Page: 4

other funding mechanism which is approved and created for the purpose of storm water and/or flood water management.

- q. Offsite drainage and common area drainage draining onto residential lots shall be perpetuated around the residential lots and drainage facilities capable of passing a 100-year storm shall be constructed with the subdivision improvements to perpetuate the storm water runoff to improved or natural drainage facilities. The maintenance of these drainage facilities shall be addressed in the CC&Rs to the satisfaction of the District Attorney's Office.

### **Washoe County Engineering and Capital Projects – Street Design Standards (County Code 110.436)**

3. The following street design conditions are requirements of the Washoe County Engineering and Capital Projects, which shall be responsible for determining compliance with these conditions.  
**Contact Information:** Walter West, P.E. (775) 328-2310; Mitchell Fink, P.E. (775) 328-2050
  - a. 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 submitted.
  - b. Street names shall be reviewed and approved by the Regional Street Naming Coordinator.
  - c. Proposed landscaping and/or fencing along street rights-of-way and within median islands shall be designed to meet American Association of State Highway and Transportation Officials (AASHTO) sight distances and safety guidelines. No tree shall overhang the curb line of any public street.
  - d. An Encroachment and Excavation Permit shall be obtained from Washoe County Engineering and Capital Projects Division for any utilities or other encroachments/excavations constructed within existing County roadways/~~right-of-ways~~.
  - e. Streetlights shall be constructed to Washoe County standards at locations to be determined at the final design stage.
  - f. AASHTO clear zones shall be determined for all streets adjacent to retaining walls or slopes steeper than 3:1. If a recoverable or traversable clear zone cannot be provided, an analysis to determine if barriers are warranted shall be submitted for approval.
  - g. All retaining walls that are within the slope failure wedge from Washoe County right-of-way shall be constructed of reinforced masonry block or reinforced concrete and designed by an engineer licensed in the State of Nevada. Retaining walls shall not be located within Washoe County right-of-way. The maintenance of the retaining walls shall be by Homeowners Association and the CCR's shall clearly identify the HOA's maintenance responsibilities of retaining walls.
  - h. No retaining walls that retain soil from the County right-of-way shall be located within a plowed snow storage easement.
  - i. Sidewalks shall be constructed on both sides of all streets within the development.
  - j. Appropriate curve warning signs and/or a lower speed limit shall be determined and posted on all horizontal roadway curves that do not meet the standard Washoe County 25-mile per hour design speed.

Subject: Silver Hills Phase 1, WTM21-006 (358 Lots)  
Date: May 21, 2021  
Page: 5

- k. At south end of Street B (near lot 22) the centerline radius shall be designed to meet 15 mph design speed.
- l. Appropriate transitions shall be provided between the existing and proposed improvements at all proposed street connections. This may include removal of existing pavement.
- m. Any streetlights that do not meet Washoe County standards shall be placed outside Washoe County right-of-way. These streetlights shall be private, and the CC&Rs shall indicate operation and maintenance of the streetlights shall be the responsibility of the Homeowners Association. The County Engineer and the District Attorney's Office shall determine compliance with this condition.
- n. A 20' setback is required between the back of the sidewalk and the front of the garage.
- o. Traffic calming measures over project roadways 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 cushions, bulb outs, neck downs, chicanes and mini roundabouts.
- p. With the approval of the first final map, a left turn lane on the northbound Red Rock Road shall be designed and constructed.
- q. Silver Hills Drive shall be designed to residential collector standards with no median curb permitted.
- r. With each final map adjacent to Red Rock Road, additional Red Rock Road right-of-way shall be granted to Washoe County to provide a total right-of-way width of 98 feet (existing width is 80 feet).

**Washoe County Engineering and Capital Projects – Utilities (County Code 422 & Sewer Ordinance)**

**DISCUSSION**

Wastewater treatment is being proposed at Reno Stead Water Reclamation Facility. Washoe County cannot provide any comment or condition related to this facility.

4. The following utility conditions are requirements of Washoe County Engineering and Capital Projects Division, which shall be responsible for determining compliance with these conditions.  
**Contact Information:** Tim Simpson, P.E. (775) 954-4648

- a. The applicant shall obtain an intent to serve letter from the City of Reno.
- b. The applicant shall conform to all conditions imposed by intergovernmental agreements required to provide sewer service to the subject project, and, if required, be a party to any such agreements.
- c. All sanitary sewer connection fees shall be paid to the City of Reno. Receipt of payment shall be provided to Washoe County.
- d. Improvement plans shall be submitted and approved by Washoe County 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.
- e. 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.
- f. The applicant 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 Washoe County.

Subject: Silver Hills Phase 1, WTM21-006 (358 Lots)  
Date: May 21, 2021  
Page: 6

- g. Approved improvement plans shall be used for the construction of on-site and off-site sanitary sewer collection system. Washoe County will be responsible to inspect the construction of the sanitary sewer collection system.
- h. The sanitary sewer collection system must be offered for dedication to Washoe County along with the recordation of each final map unless a different policy is established by interlocal agreement.
- i. 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 unless a different policy is established by interlocal agreement.
- j. 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.
- k. No Certificate of Occupancy will be issued until all the sewer collection facilities necessary to serve each final map have been completed, accepted and engineer prepared as-built drawings are delivered to the utility. As-built drawings must be in a format acceptable to Washoe County.
- l. No permanent structures (including rockery or retaining walls, building's, etc.) shall be allowed within or upon any County maintained utility easement.
- m. 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.
- n. A minimum 12-foot wide all weather sanitary sewer access road shall be constructed to facilitate access to off-site sanitary sewer manholes.
- o. The developer will be responsible to fund the design and construction of major infrastructure such as pump structures, controls, telemetry and appurtenances, lift stations, force mains, sewer mains, interceptor and wastewater treatment facilities necessary to accommodate the project. However, the actual design will be the responsibility of Washoe County. Prior to initiation of design the Developer shall pay the estimated design costs to Washoe County. Washoe County may either provide such design in-house or select an outside consultant. When an outside consultant is to be selected, Washoe County and the Developer shall jointly select that consultant.
- p. Washoe County shall reserve the right to over-size or realign the design of infrastructure to accommodate future development as determined by accepted engineering calculations.
- q. Interceptors built to serve this development shall be approved by Washoe County and the City of Reno.



**WASHOE COUNTY**  
PLANNING & ENGINEERING DEPARTMENT  
Engineering and Planning Services

1000 EAST 8<sup>TH</sup> STREET  
RENO, NEVADA 89502  
PHONE (775) 328-3600  
FAX (775) 328-3699

Date: June 4, 2021

To: Roger Pelham, Senior Planner

From: Walter West, P.E., Licensed Engineer

Re: **Silver Hills Phase 1, WTM21-006 (358 Lots)**

Please modify Engineering's memo dated May 21, 2021, to revise condition of approval 3r as follows:

To support the full buildout of this project, roadway capacity improvements are required along Red Rock Road to a minor arterial standard. Prior to the approval of the first final map, a preliminary roadway design for Red Rock Road in the vicinity of the Silver Hills development with sufficient detail to establish preferred location of roadway, left turn lanes, etc., shall be approved by Washoe County and RTC and the resulting additional right-of-way dedication which may be needed to support the future improvement shall be granted on each final map located adjacent to Red Rock Road.

All other conditions remain unchanged.

**From:** [Rosa, Genine](#)  
**To:** [Pelham, Roger](#)  
**Cc:** [Restori, Joshua](#)  
**Subject:** Agency Review Memo II  
**Date:** Monday, May 24, 2021 4:50:35 PM

---

Tentative Subdivision Map Case Number WTM21-006 (Silver Hills, Village 1)  
Dust Control Permit will be required prior to breaking ground, failure to do so may result in enforcement action resulting in a Notice of Violation with associated fines. For Dust Control Permit questions call AQMD at 775-784-7200 or visit [www.OurCleanAir.com](http://www.OurCleanAir.com).  
Link to application: [Dust Control Permit Application](#)

**Genine Rosa**

Environmental Engineer II | Air Quality Management Division | Washoe County Health District  
[grosa@washoecounty.us](mailto:grosa@washoecounty.us) | O: (775) 784-7204 | C: (775) 420-9185 | 1001 E. Ninth St., Bldg. B, Reno, NV 89512

\*My schedule is 4 x 10's M-Th 7-5:30 off on Fridays.

[www.OurCleanAir.com](http://www.OurCleanAir.com)





**WASHOE COUNTY  
HEALTH DISTRICT**

ENHANCING QUALITY OF LIFE

May 25, 2021

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

RE: Silver Hills, Village 1; 087-390-10  
Tentative Subdivision Map; WTM21-006 (amended)

Dear Mr. Pelham:

The Washoe County Health District, Emergency Medical Services (EMS) Oversight Program, has reviewed the above referenced project. Based on the proposed development packet, there may be impacts regarding EMS responses to the area, particularly during peak hours. Additionally, the addition of 358 dwellings may increase the use of the healthcare system in the region. The traffic study states 3,408 average daily trips, with 267 in the am and 357 in the pm, will be generated from this project, though there are mitigation measures included with the project.

Advanced Life Support (ALS) fire 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. For the parcel location, REMSA's Franchise response requirement for life-threatening calls is 15 minutes: 59 seconds for 90 percent of calls. Washoe County population and franchise map response zones are evaluated annually.

The closest hospital is Saint Mary's Regional Medical Center, which is approximately 15.5 miles away from the parcel, should individuals require such services. There are also several other acute care hospitals and healthcare resources available in Washoe County.

It is recommended that the address number is clearly marked on the curb and the structure(s) so the individuals can be quickly located by public safety agencies. Additionally, please ensure that all structures meet ADA requirements, as appropriate.

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

Sincerely,

*Julie D Hunter*

Julie Hunter  
EMS Program Coordinator  
[jdhunter@washoecounty.us](mailto:jdhunter@washoecounty.us)  
(775) 326-6043

EPIDEMIOLOGY AND PUBLIC HEALTH PREPAREDNESS  
1001 East Ninth Street | P.O. Box 11130 | Reno, Nevada 89520  
EPHP Office: 775-326-6055 | Fax: 775-325-8130 | [washoecounty.us/health](http://washoecounty.us/health)  
Serving Reno, Sparks and all of Washoe County, Nevada. Washoe County is an Equal Opportunity Employer.



**From:** [Heather Manzo](#)  
**To:** [Pelham, Roger](#)  
**Cc:** [Jeffrey Borchardt](#)  
**Subject:** WTM21-006 - City of Reno no comment  
**Date:** Thursday, April 22, 2021 11:30:13 AM

---

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

Good Morning Roger,

Thank you for the opportunity to review the above referenced request and its potential impacts to the City of Reno. The proposed request appears to be consistent with the Silver Hills Development Standards Handbook. The overall project density, and potential impacts to existing and future infrastructure were considered at the time the Development Standards Handbook was adopted. The City of Reno Planning Division does not have any comments nor concerns with the requested project.

Sincerely,



**Heather Manzo** - Associate Planner

**Community Development Department**

**e.** [manzoh@reno.gov](mailto:manzoh@reno.gov) **w.** [www.reno.gov](http://www.reno.gov)

**a.** One East First Street, Reno NV 89501

**o.** (775) 334-2668 | **c.** (775) 741-2981

**From:** [Rodela, Brett A](#)  
**To:** [Pelham, Roger](#)  
**Cc:** [Baxley, Randy](#); [Freund, Sandy](#)  
**Subject:** Development Review: WTM21-006 (Silver Hills, Village 1)  
**Date:** Tuesday, May 25, 2021 10:15:46 AM  
**Attachments:** [Washoe County School District Facilities Plan 2020-2039.pdf](#)

---

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

Hello, Mr. Pelham,

Silver Hills, Village 1 proposing 358 single-family residential units is zoned for Desert Heights Elementary, Cold Springs Middle, and North Valleys High School. The project is calculated to generate 71, 40, and 37 students respective of each school.

The following table outlines current and future-projected enrollment capacity percentages for each school:

School	2020/21	2025/26	2030/31
Desert Heights ES	69%	76%	85%
Cold Springs MS	65%	53%	69%
North Valleys HS	93%	100%	117%

The school district remains the beneficiary of multiple permanent sources of public revenue against which debt may be issued to accelerate investments of new educational facilities infrastructure as warranted. The school district monitors the enrollment capacity usages of all of its properties constantly and mitigates overcrowding in as timely of fashion as possible, evaluating anticipated facilities needs at least annually.

The school district anticipates the construction of a brand new high school in the Cold Springs area approximately somewhere in the timeframe of 2027-2029. That school will directly relieve enrollments at North Valleys High School. At their May 11<sup>th</sup> Regular Meeting the school district's Board of Trustees approved an enrollment boundary adjustment of North Valleys High School relieving it of up to 5% of enrollments for the foreseeable future beginning in the 2022/2023 school year. Those numbers are reflected in the table above.

For further information as to the school district's facilities plans, please feel free the reference the attached Facilities Plan. It has been approved for conformance with the Truckee Meadows Regional Planning Agency's 20 Year Plan and describes the future anticipated school facility referenced above.

Thank you for the opportunity to comment. Please reply with any further comments and/or requests pertaining to WTM21-006 (Silver Hills, Village 1).

*Brett A. Rodela*



**From:** [Thomason, Jennifer C.CIV.USARMY.CESPK \(USA\)](#)  
**To:** [Pelham, Roger](#)  
**Subject:** Tentative Subdivision Map Case Number WTM21-006 (Silver Hills, Village 1)  
**Date:** Tuesday, May 18, 2021 4:54:42 PM  
**Attachments:** [image001.png](#)  
[image002.png](#)  
[image003.png](#)  
[image004.png](#)  
[image005.png](#)  
[Agency Review Memo I.pdf](#)

---

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

This project may not require a permit under Section 404 of the Clean Water Act. This Silver Lake basin is generally known as a closed basin that is not known to flow to a traditionally navigable water and as such would not be federally jurisdictional. However, our office has not processed a jurisdictional determination for this project or any other projects in the area under the Navigable Waters Protection Rule that became effective in June 2020 so I don't have a specific determination that covers this area that allows me to make that definitive statement. It is the project proponent's responsibility to document the jurisdiction on their property and to coordinate with our office as needed to determine the need for a permit. Please let me know if you need anything more.

Thank you,

Jennifer C. Thomason  
Senior Project Manager  
Nevada-Utah Regulatory Section  
300 Booth Street, Room 3050  
Reno, Nevada 89509

Ph: 775-784-5304

Cell: 775-686-9622- Primary number during COVID-19 Response



Roger Pelham, Senior Planner  
Washoe County – Community Services Department  
1001 E. Ninth St  
Reno, NV 89512  
775.328.3627

May 30, 2021

Re: WTM21-006 (Silver Hills, Village 1) – Conditions of Approval

**Truckee Meadows Fire Protection District (TMFPD)**

The following conditions are requirements of the Truckee Meadows Fire Protection District, which shall be responsible for determining compliance with these conditions. Unless otherwise stated, these conditions shall be met prior to the issuance of any building or grading permit or on an ongoing basis (phased development) as determined by TMFPD.

Any future development of a single, multiple, or all parcels will be subject to currently adopted Fire and Wildland-Urban Interface Codes at the time of development on the specific parcel.

Contact Name – Dale Way / Brittany Lemon, 775.326.6000, [dway@tmfpd.us](mailto:dway@tmfpd.us) / [blemon@tmfpd.us](mailto:blemon@tmfpd.us)

**Fire Apparatus Access Roads**

1. Fire apparatus access roads shall be in accordance with *International Fire Code* Appendix D and all other applicable requirements of the IFC. (IFC 503.1 / D101.1)
2. Approved fire apparatus access roads shall be required for every facility, building, or portion of a building hereafter constructed or moved into or within the jurisdiction. The fire apparatus access roads shall comply with the requirements of IFC Section 503 and Appendix D and shall extend to within 150 feet of all portions of the facility and all portions of the *exterior walls* of the first story of the building as measured by an *approved* route (as the hose lays around obstructions) around the exterior of the building or facility. (IFC 503.1.1)
3. Fire apparatus access roads shall have an all-weather surface and be capable of supporting the weight of TMFPD apparatus (80,000 pounds). (IFC 503.2.3 / D102.1)
4. Fire apparatus access roads shall have a minimum width of 20 feet (with no parking), 26 feet (one side parking), and 32 feet (parking on both sides), exclusive of shoulders, and an unobstructed vertical clearance of not less than 13 feet 6 inches. (IFC 503.2.1 / D103.6.1 / D103.6.2)



5. Where a fire hydrant is located on a fire apparatus access road, the minimum road width shall be 26 feet (7925 mm), exclusive of shoulders (see Figure D103.1). (IFC D103.1)
6. Fire apparatus access roads less than the width required for parking on both sides shall be marked and/or signed in accordance with Section 503.3 and Appendix D103.6 to identify such roads or prohibit the obstruction thereof. The means by which fire lanes are designated shall be maintained in a clean and legible condition at all times and be replaced or repaired when necessary to provide adequate visibility. (IFC 503.3 / D103.6)
7. Fire apparatus access roads shall not exceed 10 percent in grade. Angles of approach and angles of departure must not exceed 6 percent for 25 feet before or after the grade change. (IFC D103.2 / 503.2.8)
8. Fire apparatus access roads shall have a minimum inside turning radius of 28 feet, and a minimum outside turning radius of 52 feet. (IFC D103.3)
9. Dead-end fire apparatus access roads in excess of 150 feet shall be provided with width and turnaround provisions in accordance with Table D103.4. (IFC D103.4)
10. Developments of one- or two-family *dwelling*s where the number of *dwelling units* exceeds 30 shall be provided with two separate and *approved* fire apparatus access roads. (IFC D107.1)

#### Fire Protection Water Supplies

1. An approved water supply capable of supplying the required fire flow for fire protection shall be provided to premises on which facilities, buildings or portions of buildings are hereafter constructed or moved into or within the jurisdiction. (IFC 507.1)
2. The number of fire hydrants available to a building shall be not less than the minimum specified in Table C102.1. (IFC C102.1)
3. Fire hydrant systems shall comply with Washoe County Standard Detail W-23 and IFC Sections 507.5.1 through 507.5.6. (IFC 507.5 / Washoe County Code)
4. Fire hydrants must be spaced at a maximum separation of 500 feet along the required apparatus access lane in residential areas and 1,000 feet where not required for structures to provide for transportation hazards. Hydrant spacing may be increased by 125 feet if all structures within the development are provided with fire sprinkler protection. There is no allowable increase for hydrants installed for transportation hazards. (IFC Table C102.1)
5. In developments with R-3 occupancies, where a portion of the facility or building hereafter constructed or moved into or within the jurisdiction is more than 600 feet (122 m) from a hydrant on a fire apparatus access road, as measured by an approved route around the exterior of the facility or building, on-site fire hydrants and mains shall be provided where required by the fire code official. (IFC 507.5.1)





6. Unobstructed access to fire hydrants shall be maintained at all times. The fire department shall not be deterred or hindered from gaining immediate access to fire protection equipment or fire hydrants. (IFC 507.5.4)
7. A 3-foot minimum clear space shall be maintained around the circumference of fire hydrants, as measured from the furthest edge of a fire hydrant in any direction. (IFC 507.5.5)
8. Fire hydrants shall not be located within six feet of a driveway, power pole, or light standard. (IFC 507.5.6)
9. Fire hydrants shall be located adjacent to apparatus access lanes and a minimum of four feet and a maximum of seven feet from back of curb. Provide a detail on the plans. (IFC 507.5.6)
10. Fire hydrants shall have a concrete pad around the base in accordance with Washoe County Standard Detail W-23.

#### **International Wildland-Urban Interface Code**

1. All parcels located in other than a Low Hazard WUI Rating shall comply with all provisions of the IWUI as adopted and amended by TMFPD and Washoe County Building.
2. The IWUI Fire Hazard designation for your project is available on the provided Washoe Regional Mapping System link. (<https://gis.washoecounty.us/wrms/firehazard>). After you have found your property using the address search feature, the color of the background area will indicate your wildland fire risk.
3. When you have determined your Fire Risk Rating use the link provided, to determine the IWUIC construction and defensible space requirements. ([https://www.washoecounty.us/building/Files/Files/2012%20WUI%20CODE%20GUIDE\\_rev%2011-25-13.pdf](https://www.washoecounty.us/building/Files/Files/2012%20WUI%20CODE%20GUIDE_rev%2011-25-13.pdf)).



**WASHOE COUNTY**  
**COMMUNITY SERVICES**  
INTEGRITY COMMUNICATION SERVICE

1741 South 111<sup>th</sup> Street  
Reno, Nevada 89509-0027  
Phone: (775) 326-3600  
Fax: (775) 326-3689

April 21, 2021

**TO:** Roger Pelham, Senior Planner, CSD, Planning & Development Division  
**FROM:** Vahid Behmaram, Water Rights & Water Resources Consultant, CSD  
**SUBJECT:** Tentative Subdivision Map Case Number WTM21-006 (Silver Hills, Village 1)

**Project description:**

For hearing, discussion and possible action, to approve a tentative subdivision map to allow a 358-lot, singlefamily residential, common open space subdivision, with lots ranging in size from 5,000 square feet to 8,072 square feet.

Project located at West side of Red Rock Road, approximately  $\frac{3}{4}$  of a mile north of its intersection with Silver Knolls Boulevard. Assessor's Parcel Number(s): 087-390-10.

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

**Comments:**

The application indicates that Municipal water service will be provided by the Truckee Meadows Water Authority (TMWA). The application indicates that a discovery process has been completed by TMWA. The TMWA discovery also indicates the water resources to be based on Fish Springs Ranch water importation project.

**Conditions:**

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





**WASHOE COUNTY**  
**COMMUNITY SERVICES**  
INTEGRITY COMMUNICATION SERVICE

P.O. Box 11130  
Reno, Nevada 89520-0027  
Phone: (775) 328-3600  
Fax: (775) 328-3699

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



**From:** [Wines-Jennings, Tammy L](#)  
**To:** [Pelham, Roger](#)  
**Cc:** [Schull, Shyanne](#)  
**Subject:** WTM21-006 (Silver Hills, Village 1)  
**Date:** Monday, April 19, 2021 1:42:08 PM  
**Attachments:** [image001.png](#)  
[image002.png](#)  
[image003.png](#)  
[image004.png](#)  
[image005.png](#)

---

Good Afternoon,

We see no issues from a WCRAS perspective.

Thank you,



**Tammy Wines-Jennings**

Assistant Director | Washoe County Regional Animal Services

[twines-jennings@washoecounty.us](mailto:twines-jennings@washoecounty.us) | Office: 775-353-8945 | Dispatch 775-322-3647

2825 Longley Lane, Suite A, Reno, Nv 89502



**From:** [Gil, Donald](#)  
**To:** [Pelham, Roger](#)  
**Subject:** FW: April Agency Review Memo I  
**Date:** Friday, May 7, 2021 2:48:39 PM  
**Attachments:** [image001.png](#)  
[image002.png](#)  
[image003.png](#)  
[image004.png](#)  
[image005.png](#)  
[April Agency Review Memo I.pdf](#)  
**Importance:** High

---

Roger,

I reviewed a similar item in 2019 and am assuming item #2 may be a related. The previous review was for 1,872 residential units. Either way in this review for these 358 residential units in the Silver Knowles area, I will provide a similar response from 2019. From the perspective of the Washoe County Sheriff's Office Patrol Division, the continued addition of so many residential houses will undoubtedly create a burden on existing law enforcement resources to respond to calls for service at homes, for traffic accidents, investigations, and other related issues to include possibly impacting the Detention Facility. Unlike the Fire Department which has its own tax districts to collect funds to staff their needs as growth occurs, law enforcement staffing is not necessarily increased and rarely increased upon new development.

For reference, our farthest North patrol beats are 1 and 2.

Beat 1 is staffed with one deputy and has been for the past 20+ years and it covers Cold Springs, Rancho Haven, and Red Rock (Silver Knowles). Beat 2 is staffed with one deputy and has been for the past 20+ years and it covers Lemmon Valley, Golden Valley, and Old North Virginia areas to include Horizon Hills and Grand View Estates.

As you can see, an increase in homes to the Silver Knowles area of such a magnitude would most likely require an additional North unit to assist with their area of responsibility. I know tables and appendix's were provided, which show the increased revenues to the County. I did not see where that would automatically increase patrol staffing to provide services to that area in general over and above what is already there.

I know the Sheriff's Office also had some interest with the developers of this project to possibly have some ability to stand up a small remote substation within the development. I am not sure if there is still options or the appetite for such a collaboration (if I have the developer correct).

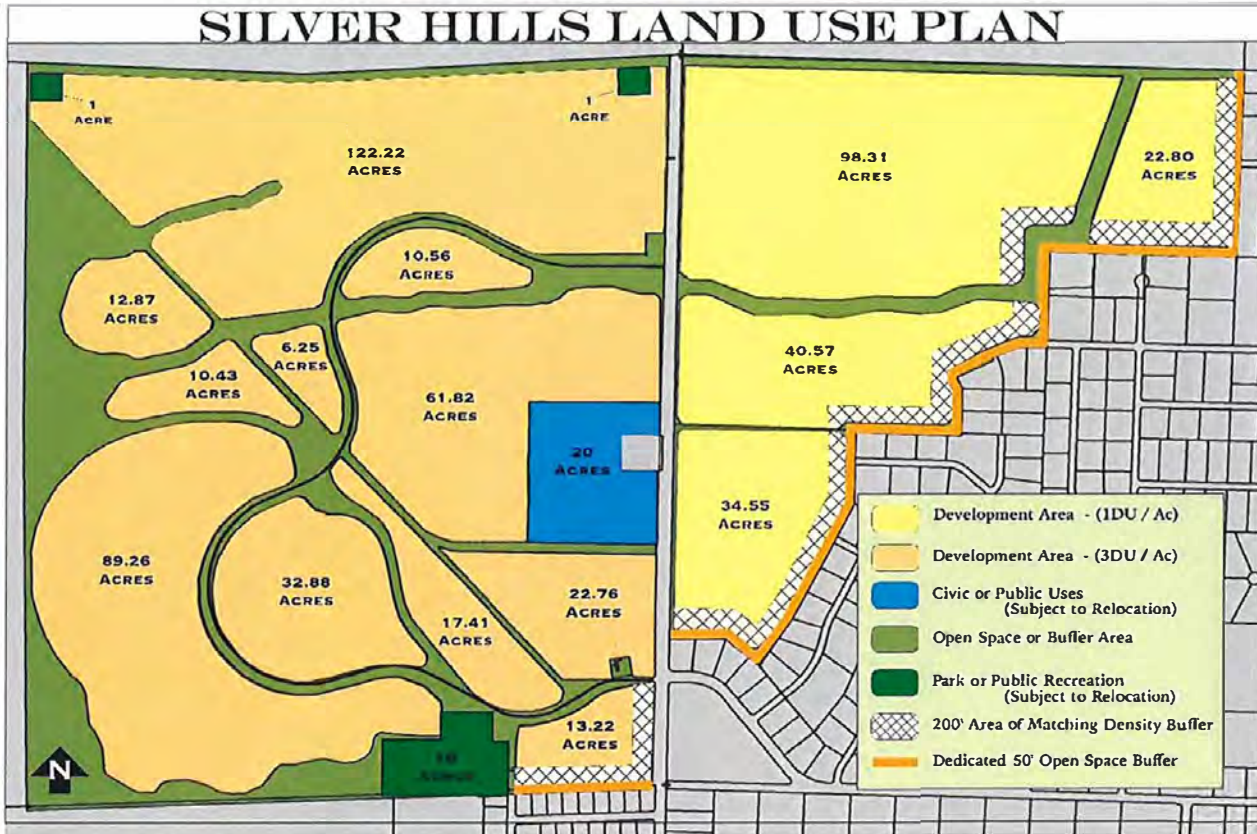
Thanks much,

Don



# SILVER HILLS

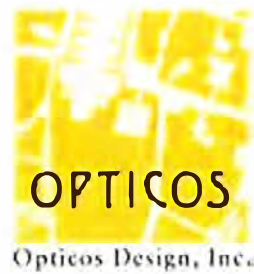
## SPECIFIC PLAN DEVELOPMENT STANDARDS



Prepared By:



With Input From:



June 17, 2019

Job # 315-01

# **SILVER HILLS**

## **DEVELOPMENT STANDARDS HANDBOOK**

**Prepared for:**

Lifestyle Homes TND, LLC  
4790 Caughlin Parkway, Suite 519  
Reno, Nevada 89519

**Prepared by:**

Rubicon Design Group, LLC  
1610 Montclair Avenue, Suite B  
Reno, Nevada 89509  
(775) 425-4800

**Updated June 17, 2019**

---

# SILVER HILLS – SPECIFIC PLAN DEVELOPMENT STANDARDS

---

## TABLE OF CONTENTS

<b>CHAPTER 1 – INTRODUCTION .....</b>	<b>1-1</b>
1.1 Specific Plan Area .....	1-1
1.2 Statement of Purpose and Plan .....	1-2
1.3 Community Theme and Vision.....	1-3
1.3.1 Agrihood Benefits .....	1-3
1.3.2 Sense of Place .....	1-4
1.3.3 Neighborhood Diversity .....	1-5
1.3.4 Missing Middle.....	1-5
1.3.5 Implementation .....	1-5
1.4 Relationship to Existing Plans .....	1-6
1.5 Silver Hills Land Use Plan .....	1-7
1.6 Site Suitability .....	1-8
1.6.1 Site Analysis .....	1-8
1.6.2 Development Code Analysis.....	1-11
1.7 Handbook Provisions .....	1-13
1.7.1 General Provisions .....	1-13
1.7.2 Binding Effect of Handbook .....	1-13
1.7.3 Individual Project Approvals .....	1-13
1.7.4 Deviations from Handbook Standards .....	1-14
1.7.5 Modifications to Handbook .....	1-14
1.7.6 Density .....	1-14
1.7.7 Permitted Unit Transfers.....	1-14
<b>CHAPTER 2 – DEVELOPMENT STANDARDS .....</b>	<b>2-1</b>
2.1 Purpose and Compliance .....	2-1
2.2 Land Use Development Standards.....	2-1
2.2.1 Silver Hills Land Use Plan .....	2-1
2.2.2 Land Use Descriptions.....	2-2
2.2.3 Density Matching .....	2-5
2.2.4 Density/Intensity Standards.....	2-6
2.3 Permitted and Conditional Uses .....	2-17
2.3.1 Supplemental Use Standards .....	2-19
2.4 Streetscape Development Standards .....	2-23
2.4.1 Circulation Plan .....	2-23
2.4.2 Roadway Design .....	2-23
2.4.3 Access Standards.....	2-25
2.4.4 Silver Hills Parkway Streetscape.....	2-25
2.4.5 Red Rock Road Streetscape.....	2-26

---

---

## SILVER HILLS – SPECIFIC PLAN DEVELOPMENT STANDARDS

---

### CHAPTER 2 (continued):

2.4.6	Street Lighting .....	2-28
2.4.7	Collectors and Local Streets .....	2-29
2.4.8	Entries .....	2-31
2.4.9	Neighborhood Entries .....	2-35
2.5	Signs .....	2-37
2.5.1	Wayfinding Signs .....	2-37
2.5.2	Commercial Signs .....	2-39
2.6	Trails .....	2-40
2.7	Parks .....	2-44
2.7.1	Community/Regional Park .....	2-44
2.7.2	Neighborhood Parks .....	2-44
2.7.3	Trailheads .....	2-45
2.7.4	Agrihood Farm .....	2-45
2.8	Urban/Wildland Interface .....	2-46
2.9	Mailboxes .....	2-47

### CHAPTER 3 – SITE DESIGN AND ARCHITECTURAL STANDARDS ..... 3-1

3.1	Overview .....	3-1
3.2	Site Planning Standards and Guidelines .....	3-1
3.2.1	Site Planning and Development Standards .....	3-1
3.3	Architecture Standards and Guidelines .....	3-11
3.3.1	Background .....	3-11
3.3.2	Architectural Theme .....	3-11
3.4	Single Family Architectural Standards .....	3-12
3.4.1	Building Mass and Form .....	3-12
3.4.2	Roof Form .....	3-12
3.4.3	Materials and Colors .....	3-14
3.4.4	Building Articulation .....	3-14
3.4.5	Accessory Structures and Uses .....	3-14
3.5	Non-Residential Standards .....	3-17
3.5.1	Non-Residential Supplemental Standards .....	3-17

### CHAPTER 4 – PHASING AND INFRASTRUCTURE ..... 4-1

4.1	Phasing .....	4-1
4.2	Open Space, Trails, and Parks .....	4-1
4.3	Utilities/Infrastructure .....	4-2
4.3.1	Sanitary Sewer .....	4-2
4.3.2	Water .....	4-8
4.3.3	Effluent .....	4-10

---



---

## SILVER HILLS – SPECIFIC PLAN DEVELOPMENT STANDARDS

---

### CHAPTER 4 (continued):

4.3.4	Storm Water Management .....	4-9
4.3.5	Roadways .....	4-13
4.3.6	Natural Gas .....	4-13
4.3.7	Cable and Telephone .....	4-13
4.3.8	Electric.....	4-15
4.4	Site Grading .....	4-15
4.5	Fire Protection .....	4-15
4.6	Police Protection.....	4-18

### CHAPTER 5 – CONSTRUCTION OPERATION, AND MAINTENANCE ..... 5-1

5.1	Clean Job Site.....	5-1
5.2	Protection of Vegetation During Construction .....	5-1
5.3	Temporary Protective Fencing.....	5-1
5.4	Erosion Control Plan and Storm Water Pollution Prevention Plan (SWPP) .....	5-1
5.5	Temporary Structures and Signs.....	5-1
5.6	Model Home Complexes .....	5-2
5.7	Construction Yards and Hours .....	5-3
5.8	General Construction Standards.....	5-4
5.9	Common Area Maintenance.....	5-4
5.9.1	General Maintenance Standards .....	5-4
5.9.2	Private Open Space and Common Areas .....	5-5
5.9.3	Agrihood Farms and Facilities .....	5-6

### List of Figures:

Figure 1-1	Specific Plan Area .....	1-1
Figure 1-2	Silver Hills Land Use Plan.....	1-7
Figure 1-3	Slope Analysis.....	1-9
Figure 1-4	Opportunities and Constraints Analysis .....	1-10
Figure 2-1	Land Use Plan .....	2-1
Figure 2-2	Typical Low-Density Neighborhood.....	2-7
Figure 2-2A	Typical Low-Density Neighborhood .....	2-8
Figure 2-3	Typical Mid-Range Single-Family Neighborhood.....	2-10
Figure 2-4	Typical Suburban Single-Family Prototypes .....	2-13
Figure 2-5	Typical Suburban Single-Family Prototypes .....	2-14
Figure 2-6	Typical Suburban Single-Family Prototypes .....	2-15
Figure 2-7	Typical Neighborhood Center.....	2-21
Figure 2-8	Typical Retail Concept .....	2-22
Figure 2-9	Silver Hills Parkway Section .....	2-24

## SILVER HILLS – SPECIFIC PLAN DEVELOPMENT STANDARDS

---

### List of Figures (continued):

Figure 2-10	Typical Light Fixtures .....	2-30
Figure 2-11	Primary Entry Concepts .....	2-32
Figure 2-12	Primary Entry Concepts .....	2-33
Figure 2-13	Primary Entry Concepts .....	2-34
Figure 2-14	Neighborhood Entry Concepts .....	2-36
Figure 2-15	Wayfinding Sign Concepts .....	2-38
Figure 2-16	Typical Commercial Signage .....	2-39
Figure 2-17	Typical Multi-Use Trail .....	2-41
Figure 2-18	Silver Hills Master Trails Plan.....	2-43
Figure 3-1	Typical “Home Forward” Design.....	3-2
Figure 3-2	Garage Integrated Elevations .....	3-3
Figure 3-3	Mixed Residential Neighborhood Concepts .....	3-4
Figure 3-4	Cottage Court Concept .....	3-5
Figure 3-5	Silver Hills Parkway Fencing Concept .....	3-8
Figure 3-6	Privacy Fencing Concepts .....	3-9
Figure 3-7	Open Fencing Concepts .....	3-10
Figure 3-8	Typical Roofline Variation.....	3-13
Figure 3-9	Typical Accessory Dwelling.....	3-15
Figure 3-10	Multi-Generational Housing Concept.....	3-16
Figure 3-11	Commercial Architecture/Scale.....	3-18
Figure 3-12	Typical Agrihood Building Concepts .....	3-19
Figure 3-13	Typical Agrihood Greenhouse Concepts.....	3-20
Figure 3-14	Typical Non-Residential Structure .....	3-22
Figure 4-1	Sewer Alternative 1 .....	4-5
Figure 4-2	Sewer Alternative 2 .....	4-6
Figure 4-3	Sewer Future Alternative.....	4-7
Figure 4-4	Potable Water .....	4-9
Figure 4-5	Detention Pond Schematic .....	4-12
Figure 4-6	Dry Utilities .....	4-14
Figure 4-7	Slope Analysis .....	4-16
Figure 4-8	East Side Slope Analysis.....	4-17

### List of Tables:

Table 1-1	– Silver Hills Land Use Summary .....	1-8
Table 2-1	– Land Use Summary .....	2-5
Table 2-2	– Allowed Uses .....	2-18
Table 2-3	– Silver Hills Streetscape Standards.....	2-28
Table 2-4	– Streetscape Lighting Standards .....	2-31
Table 4-1	– Sewer Design Criteria for City of Reno and Washoe County .....	4-4

---

# SILVER HILLS – SPECIFIC PLAN DEVELOPMENT STANDARDS

## CHAPTER 1 – INTRODUCTION

### 1.1 Specific Plan Area

The Silver Hills Specific Plan area consists of 780.32± acres located within the North Valleys Areas Plan. Specifically, Silver Hills (APN #'s 087-390-10, 087-390-13, 086-232-31, and 086-203-05) is located on the east and west sides of Red Rock Road, north of Silver Knolls. The project site is separated from the Cold Springs Valley by a large ridgeline that runs along the western boundary of the project. Figure 1-1 (below) depicts the Specific Plan Area covered by this Handbook.

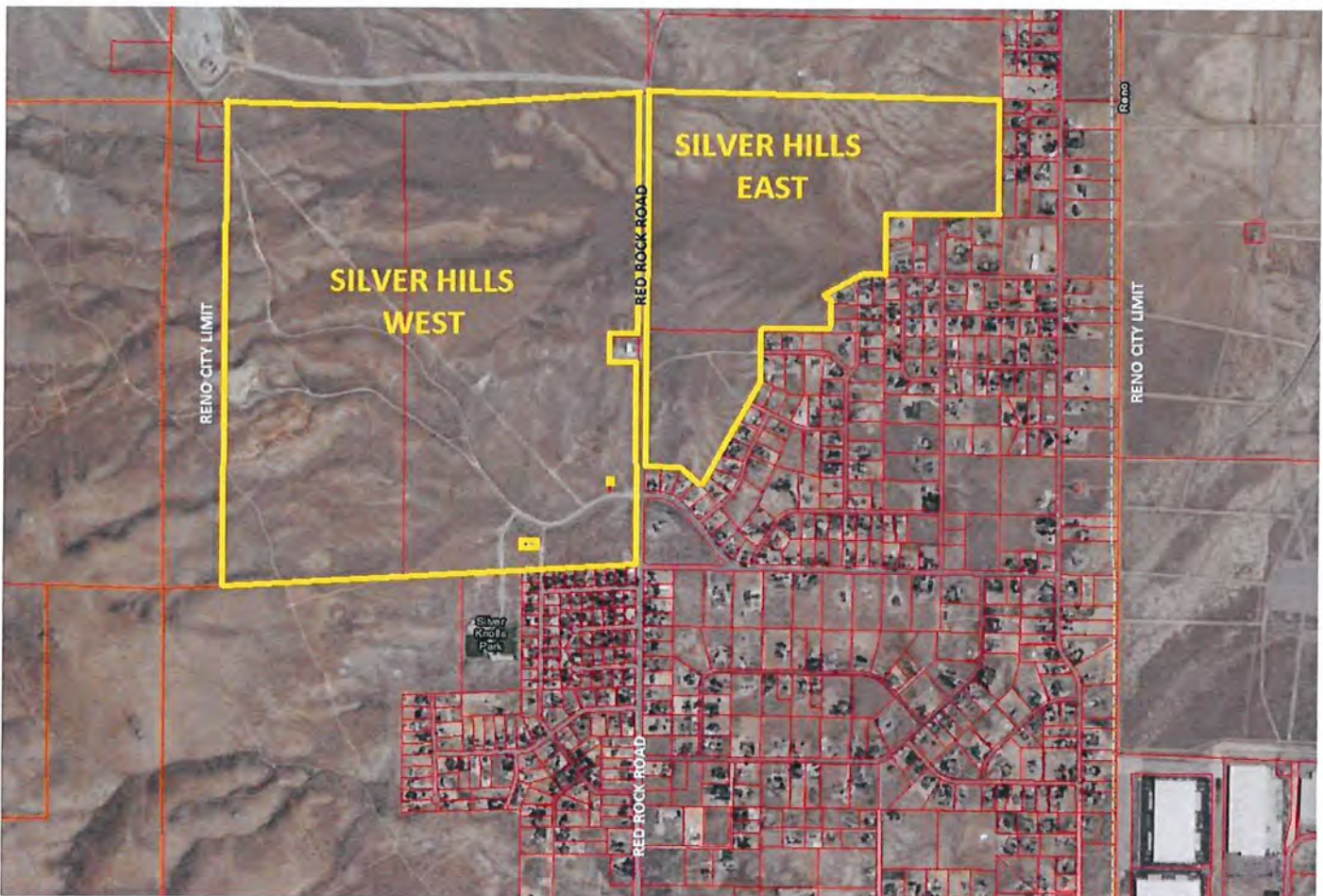


Figure 1-1 – Specific Plan Area





## SILVER HILLS – SPECIFIC PLAN DEVELOPMENT STANDARDS

---

### 1.2 Statement of Plan and Purpose

The purpose of this Development Standards Handbook (Handbook) is to provide for the orderly development of the Silver Hills Specific Plan Area (Specific Plan) and ensure that the high-quality development contemplated with this Handbook is carried forward through all phases of the project. This is accomplished through the implementation of the uses, design standards, and improvements defined within this Handbook.

Since implementation of public and private improvements will occur in multiple phases, over many years, the standards and guidelines contained herein establish a common framework to guide future tentative maps and improvement plans. Development of Silver Hills is ultimately controlled and restricted by these development standards as well as the applicable policies of the North Valleys Area Plan and requirements of the Washoe County Development Code.

Upon adoption, Washoe County shall review future tentative map and/or development requests in context with the uses and regulations provided herein. The purpose of this Handbook is not intended to limit creativity or prevent variation necessary to respond to unique site conditions, etc. Instead, the Handbook ensures consistency and quality throughout Silver Hills. Additionally, the Handbook includes enforceable standards to ensure that all new development within Silver Hills properly relates to the surrounding uses and existing conditions.

The Silver Hills Specific Plan and this Handbook have been developed to meet the ever-growing need for housing within the North Valleys. Specifically, the plan provides for a wider mix of housing opportunities to meet the needs of a broad range of the area's population. The North Valleys is, and is planned to be, one of the largest employment centers in the region. As such, Silver Hills will serve to provide a jobs/housing balance within the North Valleys. The benefits to this planning approach are numerous and include:

- The opportunity to reduce commute times and commuter trips.
- The ability to live in close proximity to jobs, schools, parks, and open space.
- Creating a sense of community through common design elements.
- The ability to provide housing for multiple segments of the market.
- Preservation of key natural features.
- Provision of parks, open space, public facilities, and community amenities that can be enjoyed by all residents.
- Implementation of "smart growth" concepts and standards.
- Ensuring that new development properly relates to existing uses.
- Providing a high-quality community that residents and Washoe County can be proud of.

Most importantly, the purpose of the Silver Hills Specific Plan is to provide housing that results in a higher quality of life for its residents and those living within the area.



## **SILVER HILLS – SPECIFIC PLAN DEVELOPMENT STANDARDS**

---

### **1.3 Community Theme and Vision**

This Handbook serves to adopt a general overall theme for the Silver Hills community which includes unique development standards and the opportunity for innovative concepts such as an agrihood, varied single family housing types, etc. The Specific Plan area is characterized by rolling terrain that afford views across the valley, past Reno-Stead Airport. Although the majority of the property is less than 15% slope, topography varies from flat to steep terrain along the western ridgeline, creating the opportunity to incorporate a “mountain ranch” theme. It is planned to incorporate numerous evergreen plantings along with unique landscape and open space treatments that may include fruit orchards, gardens, ponds, and natural open spaces that accentuate the views, natural terrain, and site features. The use of wood/timbers, stone accents, evergreens, craftsman style architecture, and rustic detailings serve to reinforce a mountain feel within the project. Once again, standards are included later in this Handbook that serve to implement the project theme.

#### **1.3.1 Community Benefits**

The Silver Hills Specific Plan establishes guidelines that provide opportunity for unique single family housing types and community amenities. As Silver Hills develops in multiple phases over a 15 to 20 year period, the opportunity to incorporate innovative amenities such as community gardens may occur. As the rapidly growing popularity of concepts such as agrihoods demonstrates, families are eager to reimagine these collaborative efforts in a new setting, with a variety of price points to meet the needs of various life stages. This Handbook establishes the ability to remove the pressure of seeking family-oriented activities outside of the community and invest in community lifestyle, through the provision of parks, open space, trails, and various other community amenity options. This creates a sense of place and community and provides a better quality of life for residents.

There are numerous positive “side-effects” of a master-planned community. By providing community amenities and neighborhood retail opportunities, residents are more likely to recreate and socialize within the community which can also reduce traffic impacts. Additionally, this can reduce crime naturally as neighbors feel connected to where they live and invest in caring about their community.

A central feature of the Silver Hills plan is the provision of significant open space and recreational opportunities. The standards contained herein provide opportunity for open spaces that perhaps could be planted with ancient grains which provide good low water use soil cover/stabilization and can be either harvested or cut and left to regrow the following season. This results in a clean, environmentally respectful design that utilizes precious resources with far greater efficiency by encouraging joint use, reducing overall home maintenance, providing pedestrian access to resident needs, and making an adaptable community. Resident lives can be simplified giving them more time to enjoy friends and family.

## SILVER HILLS – SPECIFIC PLAN DEVELOPMENT STANDARDS

---

Open space and landscaping standards are designed to incorporate smart water recycling and responsible development practices in addition to neighborhood-supporting commercial and the potential for mini-farms or orchards, while placing an emphasis on a walkable neighborhood concept. The Silver Hills Specific Plan respects the surrounding environment by creating housing density with less sprawl, where resources are focused around low maintenance yards, passive solar lot placement (as feasible), solar options, and emphasis on activities within the community. The resource emphasis is placed at the center of the community where the benefit is used and enjoyed by all community members.

With full buildout estimated at 10 - 15+ years, Silver Hills will grow as the need of good community-oriented housing is required. Within Silver Hills land design practices will create retention basins that act also as a green environment for residents with high density plantings and places for children to safely explore. Concepts like a tractor park, a bike and skate park, and natural “mini- parks” such as those placed at the end of cul- de-sacs that invite rather than cut off the sense of community are all envisioned for Silver Hills.

Rather than a bedroom community or suburb of disconnected neighborhoods, Silver Hills will embody the desire for residents to feel a sense of place and community pride. Plantings that use recycled water (to the extent possible) will not only impact the question of how to manage waste water but will reduce soil erosion and transpiration by returning the water into trees, shrubs, and ground cover. The Silver Hills Specific Plan emphasizes recycled water use for common area landscape, natural pathways and potentially “micro” orchards, grapes, berries, and beneficial insect habitat plantings.

### 1.3.2 Sense of Place

Creating a sense of place is one of the key components in creating a vibrant and balanced community. A sense of place will be developed within Silver Hills through the creation of human-scale environments in which residents will feel both comfortable and safe. Open space and trail connections will tie the community together, encouraging residents to get out and explore their community, interacting with their neighbors. Uniform design standards tie the community together and provide for amenities that encourage both active and passive recreation.

## **SILVER HILLS – SPECIFIC PLAN DEVELOPMENT STANDARDS**

---

The east side of Silver Hills (east of Red Rock Road) is characterized by a more rural development pattern. This area is envisioned to “blend” with the established homes and development that exists within Silver Knolls to the south. Thus, larger lots are planned in this area creating a more rural atmosphere. Consistent with existing development patterns, open space areas will primarily consist of buffers and trails allowing for larger homesites. This not only complements existing development within Silver Knolls but will serve as a transition between existing neighborhoods and new neighborhoods within the west side of Silver Hills.

### **1.3.3 Neighborhood Diversity**

Silver Hills provides for neighborhood diversity by allowing varied residential dwelling designs and densities in order to support niches of different lifestyle and life stages. The variety in housing options encourages a mix of product types that are ultimately tied together through the incorporation of the design standards adopted within this Handbook. Overall density within the western portion of Silver Hills is maintained at 3 dwelling units per acre but allows for clustering of density in order to encourage flexibility in design and provide for a wider range of housing options that appeal to a variety of resident lifestyles. This concept provides opportunities for residents regardless of their stage in life and serves to support the surrounding employment centers and emerging commercial nodes within the North Valleys.

Neighborhoods east of Red Rock Road will be designed with a more rural theme that complements existing neighborhoods within Silver Knolls. Overall density east of Red Rock Road will be maintained at 1 dwelling unit per acre. Thus, overall density for Silver Hills will be approximately 2.5 dwelling units per acre.

### **1.3.4 Missing Middle**

The housing market within Washoe County has what is often referred to as a “Missing Middle.” The Missing Middle is a range of compact and clustered housing types that are compatible in scale with single-family homes that help meet the ever-growing demand for affordable-by-design housing. Unlike the stereotypes commonly associated with affordable housing (poor quality, less desirable locations, etc.), the Missing Middle’s affordable-by-design concept allows a builder to maintain higher quality craftsmanship, enhanced architectural design, amenities, etc. by developing a quality project with a smaller overall footprint. This can be achieved in numerous ways such as reducing yard sizes in exchange for shared common areas and recreational amenities, through clustering which maximizes infrastructure efficiency, etc.

Missing Middle housing types are designed to meet specific needs of shifting demographics and the new market demand for walkable communities and resident amenities. This approach to housing is considered “missing” because very few of these housing types have been built since the early 1940’s due to regulatory constraints, restrictive development codes that prevent flexibility in design, the shift to an automobile-dependent growth pattern, etc. In Washoe County, the need for more affordable housing has reached an all time high with many residents simply being pushed out of the market due to rising home prices. A Missing Middle concept directly addresses this need.

## **SILVER HILLS – SPECIFIC PLAN DEVELOPMENT STANDARDS**

---

### **1.3.5 Implementation**

The vision for Silver Hills will be implemented through the adoption and enforcement of the design standards and requirements included within this Handbook. The Washoe County Department of Planning and Building will use this Handbook as a guide for reviewing projects (i.e. tentative maps, special use permits, etc.) proposed within Silver Hills. All new development shall comply with the standards and requirements listed herein, as applicable. In cases where a specific standard is not addressed, the provisions/requirements of the Washoe County Development Code shall be applied.

### **1.4 Relationship to Existing Plans**

Silver Hills is located within the North Valleys Area Plan, an element of the Washoe County Master Plan. This Handbook and the standards contained herein are designed for compatibility with the goals, policies, and character management statement of the Silver Hills Suburban Character Management Area, as adopted concurrently with this Handbook, and incorporates input from the community as expressed at numerous community meetings and visioning workshops. The Silver Hills land use plan is consistent with both goals and policies of the North Valleys Area Plan and Truckee Meadows Regional Plan in that it provides for a jobs/housing balance within the area and serves to address the housing needs of the community as a whole through diversification in housing size, style, and density.

Consistent with the Area Plan, the overall density within Silver Hills will not exceed 2.5-dwelling units per acre. Clustering of density will occur within the boundaries of the Specific Plan to accommodate a variety of housing styles and products. However, consistent with the provisions of the Washoe County Development Code, no individual project within Silver Hills (i.e. tentative map area) may exceed the maximum dwelling units per acre permitted within the Specific Plan zone. Furthermore, multi-family housing shall not be permitted within Silver Hills. Attached single-family products such as duplexes, town homes, etc. shall be permitted in areas designated for such on the Land Use Plan adopted with this Handbook and are subject to density limitations outlined in the Washoe County Development Code. Consistent with the Truckee Meadows Regional Plan, the Silver Hills Specific Plan does not increase density on areas of slope in excess of 30%.

Silver Hills provides for consistency with the Conservation Element of the North Valleys Area Plan through the conservation and preservation of open space and prominent ridgelines within the Specific Plan boundaries. Additionally, this Handbook includes standards to address any applicable natural hazards that may arise including, but not limited to geologic hazards, flood zones, etc. The plan also preserves and implements provisions related to utility corridors contained in the Washoe County Master Plan, Development Code, and Truckee Meadows Regional Plan.

A complete traffic impact analysis has been completed for Silver Hills. Improvements triggered by new development within the Specific Plan have been identified and standards included to ensure that improvements are made at the appropriate time and that specific triggers for the improvements are defined. This ensures full compliance with transportation plans adopted by Washoe County and the Regional Transportation Commission.



## SILVER HILLS – SPECIFIC PLAN DEVELOPMENT STANDARDS

Upon final adoption and recordation, this Handbook and its associated content, standards, and requirements shall be deemed consistent with the North Valleys Area Plan as well as with the Truckee Meadows Regional Plan. The Washoe County Board of Commissioners shall be the authoritative body to determine compliance with conformance review by the Truckee Meadows Regional Planning Agency, as applicable.

### 1.5 Silver Hills Land Use Plan

Silver Hills includes a land use plan that allows for single family detached and attached housing at various densities. Consistent with the Suburban Master Plan designation of the Specific Plan Area, overall density within the plan boundaries will not exceed 2.5 dwelling units per acre. Thus, **the maximum number of residential units within Silver Hills is capped at 1,872.**

Figure 1-2 (below) depicts the land use plan for Silver Hills. Land use designations and development standards associated with them are fully defined in the following chapter.

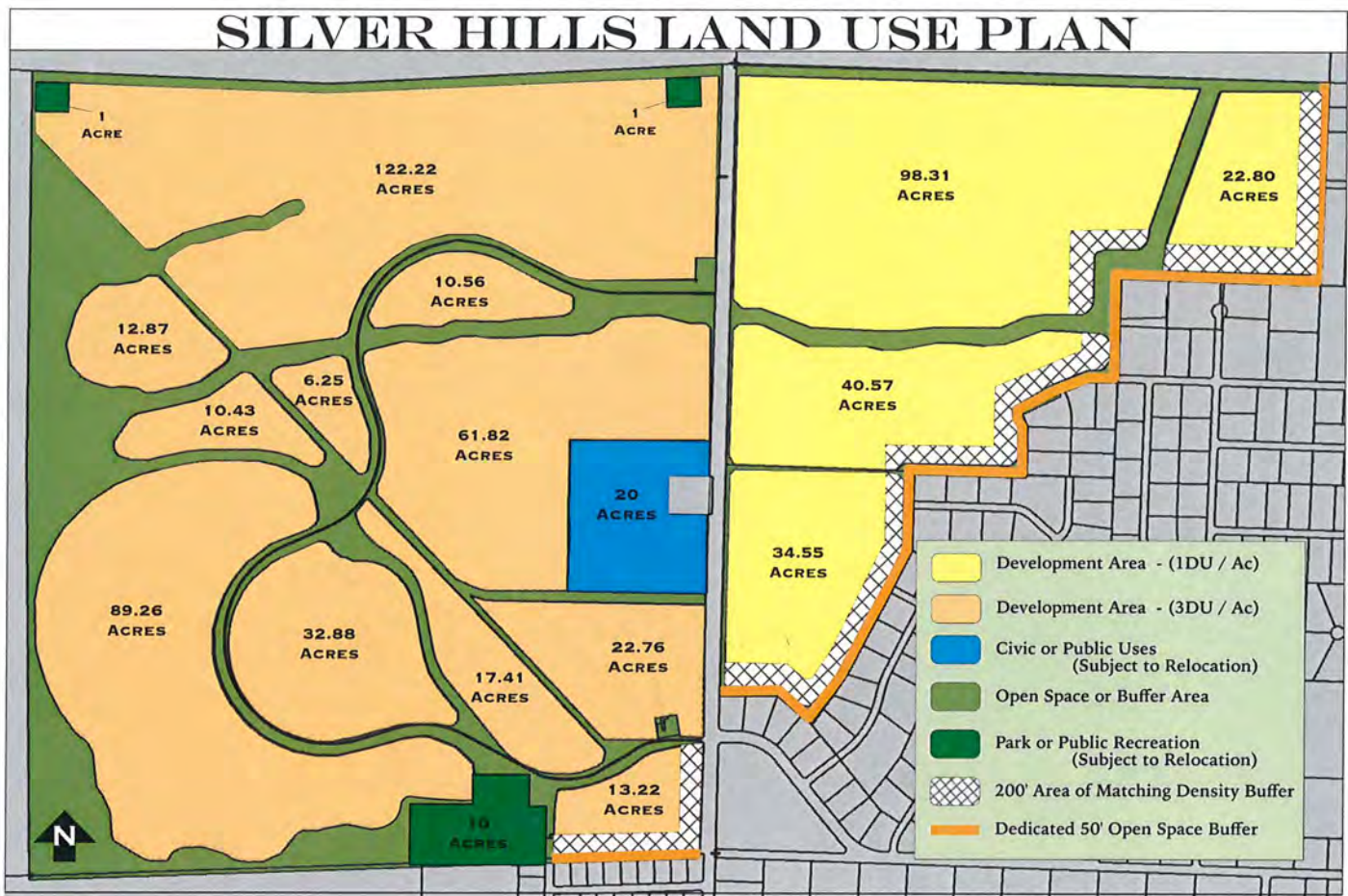


Figure 1-2 – Silver Hills Land Use Plan

## SILVER HILLS – SPECIFIC PLAN DEVELOPMENT STANDARDS

---

The Silver Hills land use plan takes on an uncomplicated approach by identifying development areas based on overall suitability. Rather than creating multiple land use categories for residential areas, simplified categories are created based on community character. Specific densities are not designated for development areas. Instead, individual project densities are regulated through the provisions of the Silver Hills Development Standards as defined in Chapter 2, along with site-specific conditions. An exception to this are areas within the Specific Plan located east of Red Rock Road. This area will maintain an overall density of 1 dwelling unit per acre, subject to the provisions included in Chapter 2.

The Development Standards include specific requirements that were derived based on the development suitability analysis. Overall project density is capped at a maximum of 2.5 dwelling units per acre and total units shall not exceed 1,872. Densities within individual projects (i.e. tentative maps) are subject to the standards of the Washoe County Development Code and the requirements for Common Open Space Development, along with supplemental requirements of this handbook.

Open Space, Public Facility/Civic, and Parks/Recreation use categories are defined on the land use plan as well and are also subject to the development standards included within Chapter 2.

Table 1-1 (below) summarizes the Silver Hills land use plan.

**Table 1-1 – Silver Hills Land Use Summary**

Land Use Designation	Area (acres)	Land Use Concept
Residential Development Areas	595.91±	Provides for single-family residential uses at varying densities (as allowed per the Common Open Space Standards) along with limited community-oriented commercial uses, as regulated in Chapter 2.
Public Facility/Civic Use	20±	Reserved for public community facilities such as schools, libraries, fire station, etc.
Open Space	152.41±	Dedicated open or common areas. No development shall be permitted with the exception of recreational facilities, utilities, etc. May be public or private.
Park	12± <sup>1</sup>	Reserved for public park facilities.
<b>TOTAL</b>	<b>780.32±</b>	-----

1 – Excludes interior neighborhood parks.

### 1.6 Site Suitability

The Silver Hills land use plan was developed based on a complete and thorough analysis of site conditions including topography, access, significant site features, availability of utilities, surrounding conditions, etc.







# SILVER HILLS – SPECIFIC PLAN DEVELOPMENT STANDARDS



Figure 1-4 – Opportunities and Constraints Analysis

## SILVER HILLS – SPECIFIC PLAN DEVELOPMENT STANDARDS

---

### 1.6.2 Development Code Analysis

Section 110.442.30(2) of the Washoe County Development Code requires a site analysis of the Specific Plan area to determine areas of constraint and common open space, as completed with Figure 1-4. Also, each of the individual considerations from the Development Code is addressed below:

- (a) **Adjacent Land Use** – Adjoining land use includes a mix of vacant, residential, and public facility uses. The Specific Plan area is bordered by public lands to the north and vacant land to the west (within the City of Reno). There is a large BLM parcel to the south along with Silver Knolls Park and approximately 10 developed single-family lots (approximately ½ acre in size) that adjoin the project at the southeast corner of the Specific Plan area. A volunteer fire station also lies adjacent to the plan area along the Red Rock Road frontage. Open space surrounds the entire perimeter of the western Specific Plan area, including a dedicated 50-foot buffer adjacent to existing homes to the south. The east side of the Specific Plan includes vacant land to the north with developed lots to the south and east, averaging approximately one acre in size. As detailed later in this Handbook, density matching standards along with a 50-foot open space buffer are included at the perimeter of Silver Hills in areas that adjoin existing development.
- (b) **Existing Structures** – There are no existing onsite structures. There are two outparcels located internal to the Specific Plan area that include utility infrastructure and structures. However, these parcels are excluded from the Specific Plan.
- (c) **Existing Vegetation** – Existing onsite vegetation is typical of the Nevada high desert and includes a mix of grasses and brush, including sagebrush, rabbit brush, etc. There are no mature trees located within the Specific Plan boundary. There is significant disturbance to native vegetation within Silver Hills that has resulted from off road vehicles, bicyclists, motorcycles, etc. including trails, berms, etc.
- (d) **Prevailing Winds** – Generally, winds blow down the eastern slope of Peavine Mountain and across the site. It is also not uncommon for winds to blow across from the north. Prevailing winds will be a consideration with the design and placement of building envelopes with future tentative map design. As detailed later, there are no uses proposed for the Specific Plan that would generate fumes or foul odors, thus ensuring no downwind impacts. All development must comply with Washoe County District Health Department requirements to ensure proper dust control/mitigation is in place during construction periods.
- (e) **Topography** – As depicted in Figure 1-5, Silver Hills is relatively flat with nearly 91% of the site containing slopes that are 15% or less. Thus, per Washoe County standards, the property is well suited for development. The terrain does rise to the west as it approaches the adjoining ridgeline. The Silver Hills land use plan accounts for the increased slope and incorporates the vast majority of steeper slopes into dedicated open space. Also, no density intensification occurs in areas where slopes are 30% or greater.

## SILVER HILLS – SPECIFIC PLAN DEVELOPMENT STANDARDS

---

- (f) Soil – A preliminary geotechnical investigation has been included as an attachment to the Specific Plan and does not identify any soil conditions that would preclude development at the densities permitted within this Handbook.
- (g) Natural Drainageways – As a relatively flat site, there are no large defined drainageways within the Specific Plan boundaries that constitute a significant natural feature. There are smaller drainages that convey runoff from the west across the site. The Silver Hills Specific Plan along with the Washoe County Development Code establish standards in terms of providing drainage facilities and onsite detention and/or retention. In fact, as detailed later in this Handbook, Silver Hills includes standards that exceed Washoe County code by requiring a net reduction in runoff from new development within the Specific Plan.
- (h) Wetlands and Water Bodies – There are no identified wetlands or water bodies onsite.
- (i) Flood Hazards – FEMA has mapped the Silver Hills Specific Plan area as unshaded zone X. Unshaded X is defined by FEMA as an area of minimum flood hazard, outside the Special Flood Hazard Area (SFHA) or 100-year flood (1% annual-chance storm event), and also higher than the elevation of the 500-year flow (0.2% annual-chance flood).
- (j) Seismic Hazards – The preliminary geotechnical report identifies a potential fault within the plan area. The fault is included within open space and will also be addressed (per Washoe County code) with future tentative maps. As detailed in the geotechnical investigation, the standards included within this Handbook serve to properly address any new construction that will occur in the immediate vicinity of these areas.
- (k) Avalanche and Landslide Hazards – There are no landslide or avalanche hazard areas located within the Specific Plan boundaries.
- (l) Sensitive Habitat and Migration Routes – There are no known sensitive habitats located onsite. However, the site does have the potential for wildlife and deer to traverse the property. To ensure this can continue with the development of Silver Hills, open space corridors are provided throughout the Specific Plan area.
- (m) Significant Views – Silver Hills enjoys views across the valley to the east towards Reno-Stead Airport along with views of Peavine Mountain to the south and the various ranges that surround the area.
- (n) Appropriate Access Points – Access points for Silver Hills were determined based on existing development patterns in the area along with recommendations derived from a comprehensive traffic impact analysis.



## **SILVER HILLS – SPECIFIC PLAN DEVELOPMENT STANDARDS**

---

### **1.7 Handbook Provisions**

#### **1.7.1 General Provisions**

This Silver Hills Development Standards Handbook describes in general terms when, where and how development will occur within the Silver Hills Specific Plan area. It provides ample specificity to establish base qualitative standards for all of phases of the project along with design parameters to which each individual project built within Silver Hills must conform. It is intended to offer design flexibility while at the same time maintaining minimum standards. Chapter 2 of the Handbook contains standards and regulations relative to development, which establish the development standards for Silver Hills. Chapter 3 contains standards and parameters relative to design and architecture which establish the theme and quality of new development within the Specific Plan area.

#### **1.7.2 Binding Effect of Handbook**

Pursuant to NRS 278A.520, NRS 278A.570 and the Washoe County Development Code, this Handbook cannot be modified or otherwise impaired by the action of the County without the consent of the Master Developer (Lifestyle Homes TND, LLC) and any required landowner, except as specified in NRS 278A.410. Similarly, pursuant to NRS 278.0201, the ordinances, resolutions or regulations applicable to Silver Hills and governing the permitted uses in it, the density and standards for design, improvements and construction on it are those in effect at the time of adoption of this Specific Plan and Handbook.

The standards set forth in this Handbook shall, in accordance with NRS 278A.570, supersede any zoning and subdivision statutes that may otherwise apply. In case of a conflict, this Handbook and any associated modifications/conditions required by the Washoe County Board of Commissioners at the time of adoption shall control. When not addressed by this Handbook, the provisions of the Washoe County Development Code shall control.

#### **1.7.3 Individual Project Approvals**

Individual projects within Silver Hills shall be subject to review and approval as outlined in the Washoe County Development Code. This includes tentative subdivision maps, special use permits, variances, etc. Although new development shall be reviewed in context with the standards and requirements of this Handbook, all statutory public review requirements set forth in NRS and the Washoe County Development Code shall remain in full effect and shall be applied to new development requests within Silver Hills.

## **SILVER HILLS – SPECIFIC PLAN DEVELOPMENT STANDARDS**

---

### **1.7.4 Deviations from Handbook Standards**

All projects within Silver Hills shall comply with the standards and requirements of this Handbook. However, it is recognized that unusual or unique circumstances may arise from time to time. Therefore, deviations from standards contained herein, not to exceed 20%, may be granted on a case by case basis with the approval of the Director of the Department of Planning and Building. Additionally, any deviation from the standards of this handbook must also be approved by the Silver Hills Design Review Committee (DRC). The Design Review Committee, and its organizational characteristics, shall be established with the Silver Hills covenants, conditions, and restrictions (CC&R's) as proposed by the Master Developer and approved by the Washoe County District Attorney's Office.

### **1.7.5 Modifications to Handbook**

Upon adoption and recordation, the standards and requirements outlined within this handbook shall take full effect. Any modification to these standards, land uses, densities, etc. that exceed 20% (refer to section 1.6.4) shall require the review and approval of the Washoe County Planning Commission and Washoe County Board of Commissioners. Modifications to this Handbook or the Specific Plan boundary shall be subject to the review of a Regulatory Zone Amendment (RZA) and the associated requirements and public review defined within the Washoe County Development Code.

### **1.7.6 Density**

Gross density within the Silver Hills Specific Plan area shall not exceed 2.5 dwelling units per acre. Density within any one planning area may not exceed that allowed with Common Open Space Development, as defined in the Washoe County Development Code Article 408 or as further restricted through provisions/requirements of this handbook. The maximum number of units within the Silver Hills Specific Plan may not exceed 1,872. The Master Developer shall be responsible for providing a running-total of units to be provided with each individual tentative map request in order to demonstrate compliance with this standard.

### **1.7.7 Permitted Unit Transfers**

The Silver Hills land use plan, depicted in Figure 1-2, designates several "bubble" areas for residential uses at varying densities (through Common Open Space Development). The number of dwelling units allowed within any specific land use area is calculated by multiplying the gross acreage for such area by the maximum allowed density for the land use designation for that area.

Permitted units may be transferred from one land use area to another under the following conditions:

- (1) Permitted units may be transferred from one land use area to another within the Silver Hills Specific Plan area. No such transfers will be allowed to or from development areas outside of the Specific Plan.

## **SILVER HILLS – SPECIFIC PLAN DEVELOPMENT STANDARDS**

---

- (2) Before and after each transfer, the total permitted units for all land use areas shall not exceed 1,872; densities for residential uses may not be exchanged with or converted to non-residential uses.
- (3) Unit transfers that result in more than 228 total units east of Red Rock Road shall be prohibited.
- (4) Unit transfers that result in more than 1,644 total units west of Red Rock Road shall be prohibited.
- (5) The number of permitted units transferred to any other land use area shall not exceed the maximum density for such area, as defined within the individual land use category (refer to Chapter 2).
- (6) Any proposed density transfer shall be subject to the approval of the Master Developer.



# SILVER HILLS – SPECIFIC PLAN DEVELOPMENT STANDARDS

## CHAPTER 2 – DEVELOPMENT STANDARDS

### 2.1 Purpose and Compliance

The purpose of Chapter 2 is to set regulatory requirements for the various land uses located within Silver Hills. These requirements include standards for land use, density/intensity, roadway design, landscaping and buffering, trails, fencing, community amenities, etc. All new development within Silver Hills shall comply with the text, policies, standards, and associated tables and exhibits of this Handbook.

The standards contained herein shall supersede those contained within the Washoe County Development Code. However, in instances where this Handbook does not specifically address a standard or remains silent, the requirements of the Washoe County Development Code shall apply.

### 2.2 Land Use Development Standards

#### 2.2.1 Silver Hills Land Use Plan

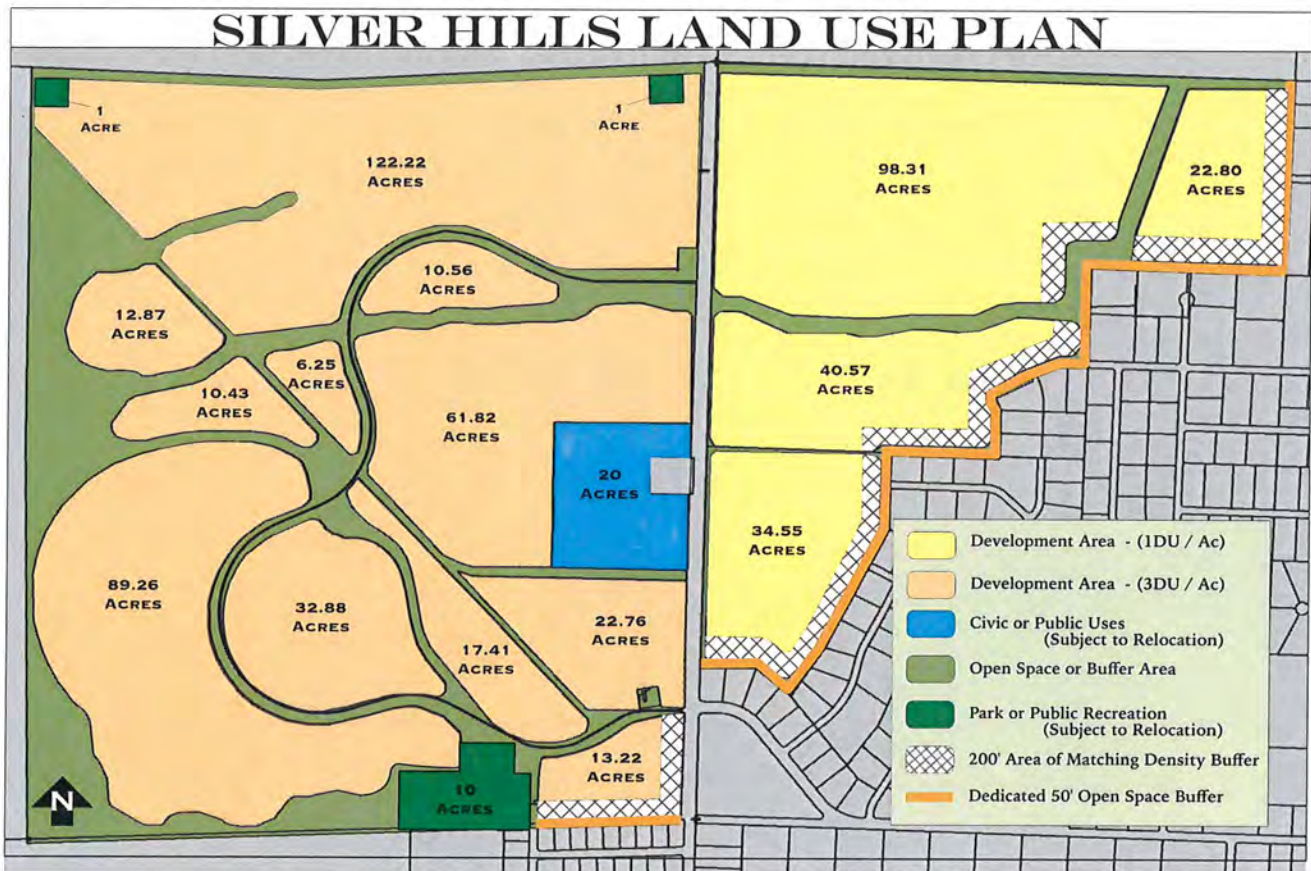


Figure 2-1 – Land Use Plan

## SILVER HILLS – SPECIFIC PLAN DEVELOPMENT STANDARDS

---

### 2.2.2 Land Use Descriptions

Land uses with Silver Hills are identified based on their development suitability. The development suitability was determined based on natural (i.e. slopes, views, etc.) conditions as well as influencing factors such as relationship with existing homes and facilities. Residential development areas have been identified based on this analysis and are intended to provide for a range of single-family housing types.

Density ranges provide flexibility based on market conditions, housing type, etc. Individual projects may be constructed at densities consistent with those permitted under Article 408 (Common Open Space Development) for the Suburban Master Plan Designation. Lot, setback, and design standards contained herein will essentially regulate density and provide for consistency of the envisioned housing within Silver Hills, as defined within this chapter.

The Silver Hills land use plan is essentially separated into two “sides;” west of Red Rock Road and east of Red Rock Road. The overall gross density on the west side shall not exceed 3 dwelling units per acre while the gross density east of Red Rock Road shall not exceed 1 dwelling unit per acre.

In addition to the residential land use/development category, three nonresidential categories are included within Silver Hills. These include Public Facility/Civic Use, Park, and Open Space. Uses such as orchards, community barns, community gardens, recreational facilities, childcare facilities, schools, libraries, utility structures, churches, etc. that are compatible with and oriented towards the needs of residential neighborhoods, may also be allowed (refer to allowed uses – Table 2-2). The following is a description of each of the land use categories included within Silver Hills:

#### Residential Development Areas

The Residential Development Areas identified on the Silver Hills Land Use Plan are intended to provide for a wide range of single family housing types. For example, areas adjacent to existing neighborhoods as well as peripheral areas of the project that may include steeper terrain have the potential for larger lots or custom/semi-custom home sites. In peripheral areas less dense neighborhoods serve to provide a “density transition” between suburban densities and open space areas and/or public lands. The east side of Silver Hills will take on a more rural character and maintains an overall density of 1 dwelling unit per acre. The development areas identified east of Red Rock Road shall include a mix of one-acre and half-acre homesites with half-acre lots not accounting for more than 50% of the total units.

“Mid-range” densities are also permitted within Silver Hills. These areas allow single family detached homes at traditional suburban densities. Lot sizes typically range from 5,000 to 12,000 square feet but may include larger lots in areas adjoining existing development or areas of less intense development. These types of mid-range densities shall generally be located in non-constrained areas with slopes less than 15%.

## **SILVER HILLS – SPECIFIC PLAN DEVELOPMENT STANDARDS**

---

Smaller lot single family uses are also contemplated within the Specific Plan area and may include cluster development, patio homes, attached single-family, etc. serving to diversify the overall housing mix within the project, provide for new and innovative neighborhood design concepts, and appeal to a wider demographic range of the population.

As noted previously, overall residential density within the Specific Plan Area is capped at 2.5-dwelling units per acre (gross density). This is based on an allowed gross density of 3 units per acre west of Red Rock Road and 1 unit per acre east of Red Rock Road. Individual subdivisions may provide for clustering with higher densities in accordance with the Common Open Space Development regulations included within the Washoe County Development Code. Therefore, this Handbook does not establish minimum/maximum densities for the Residential Development Areas. Instead, density within individual subdivisions will be determined based on market factors and overall development opportunities such as terrain, views, relationship to surrounding areas, etc. An exception to this is the area east of Red Rock Road. Clustering east of Red Rock Road may not result in lot sizes smaller than one-half acre. Furthermore, a minimum of 50% of the total lots on the east side of Silver Hills shall be a minimum of one-acre. This flexibility will allow new housing within Silver Hills to respond to market demands and provide for new and innovative housing options. It also provides a unique ability to internally self-regulate the housing market by meeting actual demands within the marketplace and does not simply provide for a cookie-cutter approach to land development.

The development standards set forth in this Handbook serve to ensure that development within the Residential Development Areas properly relates to both the built and future environments and includes provisions that will “feather” densities from the internal core of the Specific Plan Area to the project periphery. This is achieved through site design standards, provisions for open space, trails, etc.

As mandated by the Washoe County Master Plan, Development Code, and Truckee Meadows Regional Plan, for development areas west of Red Rock Road the minimum lot size within Silver Hills will be 3,700 square feet and the overall unit count may not exceed 3 units per gross acre for a total of 1,644 units. For development areas east of Red Rock Road, the minimum lot size shall be 21,780± square feet and the overall unit count may not exceed 1 dwelling unit per gross area for a total of 228 units. Total units within the Silver Hills Specific Plan shall not exceed 1,872. Multi-family development within the Residential Development Areas shall be prohibited.

### **Public Facility/Civic Uses**

This area consists of 20± acres and generally surrounds the existing volunteer fire station on Red Rock Road. The area is envisioned for public uses that could include an elementary or middle school, expansion of the fire station, a library, etc. There is no residential land use associated with the Public Facility/Civic Use area. However, should no public use be established (or in a formal planning stage) at the 80%-buildout stage of the project, this area may be developed consistent with the Residential Development Area. Additionally, Public Facility/Civic Use areas may be relocated throughout the Specific Plan area in order to address specific community needs, better serve the public, or more properly relate to development patterns, subject to the provisions of this Handbook.



## **SILVER HILLS – SPECIFIC PLAN DEVELOPMENT STANDARDS**

---

### **Park**

Land designated as Park provides solely for public parks and recreation, including trailheads, and consists of 12± acres. Based on meetings with the Washoe County Regional Parks and Open Space Department, 10± acres of park land will be provided at the southwest portion of the Specific Plan area in order to allow for the expansion of the existing Silver Knolls Park. Additionally, two public trailheads (approximately 1 acre each) will be provided within the western portion of the Specific Plan, providing staging areas and public access to the Silver Hills trail network and adjoining public lands. The Park designation is depicted on the land use plan in schematic format. Final locations will be influenced based on individual projects within the Specific Plan boundaries, input from the Washoe County Regional Parks and Open Space Department, and the surrounding community. The 12 acres established is a minimum and may be increased as the project develops over time.

The 10± acres of Park use adjacent to the existing Silver Knolls park at the southwest boundary of the Specific Plan area may include recreational equipment, sports fields, equestrian staging areas, etc. (subject to Washoe County Regional Parks and Open Space Department input/needs). Trailheads will provide parking and/or staging areas that allow public access to the Silver Hills trail system and adjoining BLM land(s).

As Silver Hills develops, additional park space and developed parks may be provided. Park projects will be presented to the Washoe County Regional Parks and Open Space Department for review. Smaller park facilities such as neighborhood parks may be constructed by the Master Developer and maintained by the Silver Hills Master Homeowners Association (or sub-association), and shall be available for public use. Thus, Park use is permitted within all land use categories within the Silver Hills Specific Plan.

Note: An adequate construction, operation, and maintenance agreement between Washoe County and the Master Developer must be established prior to the construction of park facilities within Silver Hills.

### **Open Space**

The Open Space area includes no development and serves to provide trail corridors, wildlife corridors, community aesthetic enhancement, passive recreation opportunities, and buffers between land uses. Open Space land use is located throughout the Specific Plan area including a dedicated 50-foot (minimum) open space buffer along the exterior boundary of the Specific Plan that shall include a public trail (except on the far west side where steeper terrain exists), suitable for equestrian use (as defined later in this Handbook). Open Space land use may include public or private ownership and may also include orchards, community gardens and barns, drainage channels, public infrastructure, utility corridors, etc.

## SILVER HILLS – SPECIFIC PLAN DEVELOPMENT STANDARDS

---

Table 2-1 (below) summarizes the land use categories within the Silver Hills Specific Plan:

**Table 2-1 – Land Use Summary**

LAND USE	GROSS AREA
<b>RESIDENTIAL</b>	
Residential Development Area <sup>1</sup>	595.91± acres
<b>NONRESIDENTIAL</b>	
Public Facility/Civic Use (PFC)	20± acres <sup>2</sup>
Park (P)	12± acres
Open Space (OS)	152.41± acres
<b>TOTAL</b>	<b>780.32± acres</b>

1 – Note: Limited Neighborhood Commercial uses shall be permitted within Residential Development Areas. Refer to Section 2.3.

2 – If no public use is planned or established at the 80% build out stage of the Specific Plan, this area shall revert to residential.

### 2.2.3 Density Matching

In areas where new residential development adjoins an existing neighborhood or platted subdivision density matching shall occur. This shall include comparable lot sizes or increased buffers to ensure that privacy of existing homes and community character is retained. Areas subject to density matching are identified with hatching on the land use plan (refer to Figure 2-1). The required 50-foot exterior open space buffer may not be counted towards density matching requirements. At a minimum, the density match area adjoining existing subdivisions shall extend 150-feet from the open space buffer internal to the Specific Plan area.

Development areas east of Red Rock Road have a more extensive density match requirement. As depicted on the land use plan (Figure 2-1), a 50-foot buffer shall be provided along the perimeter of the Specific Plan boundary. No structures shall be erected within this buffer area. Trails, public facilities such as drainage channels/basins, utility easements, etc. may be located within the buffer area. Additionally, all future residential parcels that abut the 50-foot buffer along the southern and eastern boundary of the Specific Plan area (east of Red Rock Road) shall be a minimum of one-acre in size. All new homes located adjacent to the 50-foot buffer, within the density match area, shall be limited to single story design.

## SILVER HILLS – SPECIFIC PLAN DEVELOPMENT STANDARDS

### 2.2.4 Density/Intensity Standards

Development Density and Intensity standards for each land use suitability area within Silver Hills are defined herein. For residential uses, minimum standards are established based on Washoe County Development Code requirements but are purposely flexible in order to encourage a wide range of single-family home types and promote new and innovative design concepts.

- Residential Development Areas

TYPE/DESCRIPTION	Lower Density Neighborhoods	
	Lower density single family neighborhoods provide single family detached homes in areas where comparable densities adjoin and in peripheral areas of Silver Hills. These areas may include custom/semi-custom home sites. Detached accessory dwellings are permitted but shall not exceed 1,200 square feet or 50% of primary residence, whichever is larger.	
	<b>SINGLE FAMILY DETACHED</b>	<b>NOTES</b>
<b>BUILDING INTENSITY</b>		
Typical Lot Sizes	15,000 square feet to 1 acre	If clustering of units with lot sizes less than 15,000 square feet, a minimum of 5% common open space shall be provided. Lots 1 acre or larger may include horses.
Minimum Lot Width	100 feet	
Building Height	35 feet maximum	
<b>BUILDING SETBACKS</b>		
Front Yard	30 feet	
Side Yard	10 feet	
Rear Yard	30 feet	
<b>BUILDING PROJECTIONS</b>	Refer to Washoe County Development Code (LDS standards)	
<b>ACCESSORY USES</b>		
Accessory uses shall be permitted pursuant to Washoe County Development Code Article 306		
<b>NOTES</b>		
1 – With Common Open Space		
2 – Lots east of Red Rock Road shall be a minimum of 21,780 square feet		
3 – A minimum of 50% of lots located east of Red Rock Road shall be a minimum of 1 acre in size.		



## SILVER HILLS – SPECIFIC PLAN DEVELOPMENT STANDARDS

---



Figure 2-2 – Typical Low-Density Neighborhood (West of Red Rock Road)

## SILVER HILLS – SPECIFIC PLAN DEVELOPMENT STANDARDS

---



Figure 2-2A – Typical Low-Density Neighborhood (East of Red Rock Road)



## SILVER HILLS – SPECIFIC PLAN DEVELOPMENT STANDARDS

---

- **Mid-Range Single Family Neighborhood**

TYPE/DESCRIPTION	<b>Mid-Range Single Family Neighborhood</b>	
	Mid-range density subdivisions provide single family detached dwellings at typical suburban densities. Densities within these areas shall provide appropriate transitions between adjoining projects. Pedestrian connections (i.e. trails or sidewalks) shall be provided in order to provide community connectivity.	
	<b>SINGLE FAMILY DETACHED</b>	<b>NOTES</b>
<b>BUILDING INTENSITY</b>		
Maximum Net Density (du/ac)	Per the Common Open Space Development standards allowed within Article 408	5% of gross project area shall be dedicated to common open space.
Typical Lot Sizes	5,000 to 15,000 square feet	
Minimum Lot Width	50 feet	
Building Height	35 feet maximum	
<b>BUILDING SETBACKS</b>		
Front Yard	15 feet <sup>1</sup>	
To Front Load Garage	20 feet	
To Side Load Garage	15 feet <sup>1</sup>	
To Alley Load Garage	5 feet	
Front Yard	15 feet	
Side Yard	5 feet	
Rear Yard	15 feet	
<b>BUILDING PROJECTIONS</b>	Refer to Washoe County Development Code (HDS standards)	
<b>ACCESSORY USES</b>		
Accessory uses shall be permitted pursuant to Washoe County Development Code Article 306		
<b>NOTES</b>		
1 – Minimum driveway depth shall be 20 feet along public rights-of-way. Setback to dwelling area may be reduced to 15 feet in order to provide building elevations that are not garage dominant.		

# SILVER HILLS – SPECIFIC PLAN DEVELOPMENT STANDARDS

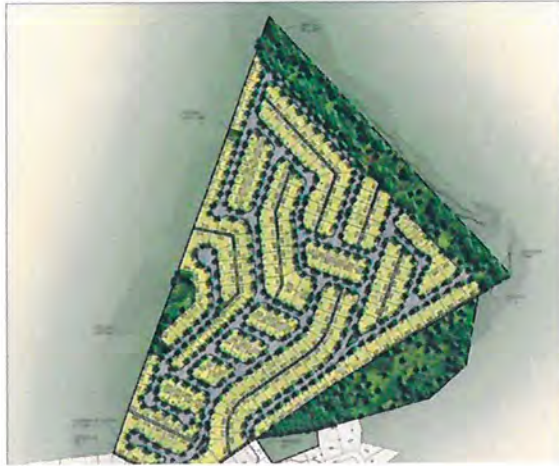


Figure 2-3 – Typical Mid-Range Single Family Neighborhood



## SILVER HILLS – SPECIFIC PLAN DEVELOPMENT STANDARDS

---

- **Suburban Single-Family Neighborhoods**

TYPE/DESCRIPTION	Suburban Single-Family Neighborhoods		
	Suburban Single-Family Neighborhoods are intended to provide a range of single family detached and single family attached products and may include small-lot patio homes, the use of alleyways and community greens, townhomes, and/or duplexes. These neighborhoods are located internal to the Silver Hills Parkway loop road.		
	SF – DETACHED	SF - ATTACHED	NOTES
BUILDING INTENSITY			
Maximum Net Density (du/ac)	Per the Common Open Space Development standards allowed within Article 408	Per the Common Open Space Development standards allowed within Article 408	Single Family attached projects shall include a sub-homeowner’s association responsible from common area maintenance, including maintenance of private streets (if any).
Lot Size	4,000 square feet <sup>1</sup>	3,700 square feet	
Minimum Lot Width	30 feet	20 feet	
Building Height	35 feet	40 feet	
LANDSCAPING			
Landscape Requirement		20% of total project area	Landscaped front yard areas maintained by HOA may be included in overall landscape requirement
BUILDING SETBACKS FROM PROPERTY LINES			
FRONT YARD SETBACKS			
To Main Structure w/ Front Entry Garage	10 feet	10 feet	
To Porch	10 feet	10 feet	
To Front Entry Garage (from public ROW)	20 feet	20 feet	
To Side Entry Garage	10 feet	10 feet	



## SILVER HILLS – SPECIFIC PLAN DEVELOPMENT STANDARDS

<b>BUILDING SETBACKS FROM PROPERTY LINES</b>			
To Main Structure w/ Alley Loaded Garage	10 feet	10 feet	
<b>SIDE YARD SETBACKS</b>			10ft. min. bldg. separation
Interior Side Yard	0 or 5 feet	0 or 5 feet	
Side yard to Adjacent Street	10 feet	10 feet	
<b>REAR YARD SETBACKS</b>			* 10 feet min for cluster SFD
To Main Structure	15 feet *	10 feet	
To Alley Loaded Garage	5 feet	5 feet	
To Deep Recessed Garage	10 feet	10 feet	
<b>BUILDING PROJECTIONS</b>	Refer to Washoe County Development Code (LDU standards)		
<b>ACCESSORY USES</b>			
Accessory uses shall be permitted pursuant to Washoe County Development Code Article 306			
<b>NOTES</b>			
1 – May be reduced to 3,700 square feet for patio/cluster homes that share common vehicle courts, alleys, etc.			

It is recognized that future innovative concepts may not necessarily fit within the standard “mold” in terms of design/layout. Therefore, the residential development standards included within Section 2.2.4 may be varied by up to 20% subject to approval by the Master Developer. However, minimum lot size (3,700 square feet), maximum density (14 du/ac with Common Open Space) and required open space may not be varied.

# SILVER HILLS – SPECIFIC PLAN DEVELOPMENT STANDARDS



Figure 2-4 – Typical Suburban Single-Family Prototypes



## SILVER HILLS – SPECIFIC PLAN DEVELOPMENT STANDARDS

---



Figure 2-5 – Typical Suburban Single-Family Prototypes



**SILVER HILLS – SPECIFIC PLAN DEVELOPMENT STANDARDS**



Figure 2-6 - Typical Suburban Single-Family Prototypes

## SILVER HILLS – SPECIFIC PLAN DEVELOPMENT STANDARDS

---

- **Public Facility/Civic Use**

TYPE	Public Facility/Civic Use
<b>DESCRIPTION</b>	The Public Facility/Civic Use designation provides for public facilities such as schools, libraries, utility structures, fire stations, sheriff substations, etc.
<b>BUILDING INTENSITY</b>	
Building/Facility Height	40 feet maximum
Building Separation	0 feet, or 20 feet minimum
<b>LANDSCAPING</b>	
Landscape Requirement	Minimum of 20% development area <sup>1</sup>
<b>BUILDING SETBACKS</b>	
Front	20 feet minimum
Side	15 feet minimum
Rear	20 feet minimum
<b>NOTES</b>	
1 – Requirement may be reduced to 10% for Washoe County School District facilities.	
2 – Land use may be relocated/reconfigured at the discretion of the Master Developer.	

- **Park**

TYPE	Park
<b>DESCRIPTION</b>	The Park designation provides for the development of active and passive public recreational facilities. <sup>1</sup>
<b>BUILDING INTENSITY</b>	
Minimum Size	10 acres
Building/Facility Height	35 feet maximum
Building Separation	0 feet, or 20 feet minimum
<b>LANDSCAPING</b>	
Landscape Requirement	Site specific to use.
<b>BUILDING SETBACKS</b>	
Collector Roads	20 feet minimum
Internal Local and Private Roads	15 feet minimum
Property Line <sup>2</sup>	10 feet minimum
<b>NOTES</b>	
1 – Park locations may be relocated as development occurs, subject to approval by the Department of Parks and Open Space.	
2 – This includes all property lines within Silver Hills that do not border arterial or collector roads.	



## SILVER HILLS – SPECIFIC PLAN DEVELOPMENT STANDARDS

---

- **Open Space**

<b>TYPE</b>	<b>Open Space</b>
<b>DESCRIPTION</b>	The Open Space designation allows for passive recreation, landscape buffers, trails and trail corridors, wildlife corridors, utility corridors, drainage facilities, infrastructure, and undisturbed areas.
<b>BUILDING INTENSITY<sup>1</sup></b>	
Building/Facility Height	20 feet maximum
Building Separation	0 feet, or 20 feet minimum
<b>LANDSCAPING</b>	
Landscape Requirement	Site specific to use.
<b>BUILDING SETBACKS</b>	
Collector Roads	20 feet minimum
Internal Private Roads	15 feet minimum
Property Line <sup>1</sup>	10 feet minimum

### 2.3 Permitted and Conditional Uses

Permitted uses, and those requiring an Administrative Review or Special Use Permit within Silver Hills are provided in Table 2-2 - Allowed Uses table (following page). This table organizes potential uses within the land use categories presented within the Silver Hills Land Use Plan.

The following symbols are used in the matrix to indicate whether a proposed use is permitted, or whether an Administrative Review or Special User Permit may be required.

A – Permitted by right.

AR – Administrative Review required

S – Special Use Permit required

AN – Ancillary Use – Uses only allowed when ancillary to a permitted primary use

Empty Cell – Not permitted

The Washoe County Director of Planning and Building shall be responsible for determining the appropriate review board for uses requiring a Special Use Permit (i.e. Board of Adjustment vs. Planning Commission). Any subdivision of a parcel resulting in the creation of more than 4 lots shall be subject to the review and approval of a Tentative Subdivision Map.

Note: The Washoe County Department of Planning and Zoning shall define which residential land use designation to apply to a specific tentative map based on the lot sizes proposed, as defined in the previous tables.

## SILVER HILLS – SPECIFIC PLAN DEVELOPMENT STANDARDS

Uses not listed in Table 2-2 are not permitted within the Specific Plan area. However, in an instance where a proposed use is not listed within Table 2-2 or within Table 110.302.05.01 of the Washoe County Development Code, the Director of Planning and Building may permit such use with the approval of an Administrative Review if such use is found to be complementary to and consistent with the allowed uses and standards contained within this Handbook. Any such use shall also require the consent and approval of the Master Developer and Design Review Committee.

Note: All uses shall be defined per the definitions contained within Article 902 of the Washoe County Development Code. Home-based businesses, as defined and permitted through the Washoe County Business License Division, shall be permitted. Uses noted with an asterisk (\*) shall be subject to the supplemental use standards contained in section 2.3.1 of this handbook

**Table 2-2 – Allowed Uses**

LAND USE DESIGNATIONS	LDSF	MRSF	SFS	PFC	P	OS
<b>RESIDENTIAL USE TYPES</b>						
<b>Single Family Residential Uses</b>						
Attached Accessory Dwelling	A	A	A			
Detached Accessory Dwelling*	A	A				
Detached Accessory Structure	A	A				
Duplex			A			
Group Home	A	A	A			
Model Home Complex	AN	AN	AN			
Single Family, Attached			A			
Single Family, Detached	A	A	A			
<b>CIVIC USE TYPES</b>						
Active Recreation	A	A	A	A	A	A
Administrative Services				AR		
Child Daycare	A	A	A			A
Community Barn	A	A	A	A	A	A
Community Center				AR	AR	AR
Community Farms and Orchards	A	A	A			A
Community Garden	A	A	A	A	A	A
Convalescent Services	AR	AR	AR			
Cultural and Library Services				A		
Education				S		
Family Daycare	AR	AR	AR			
Group Care Facility	AR	AR	AR			
Large-Family Daycare	S	S	S			
Major Public Facilities	S	S	S	S	S	S
Nature Center					A	A
Passive Recreation	A	A	A	A	A	A
Postal Services				S		
Public Service Yard				S		
Religious Assembly	S	S	S			
Safety Services				S		
Utility Services	S	S	S	S	S	S
<b>COMMERCIAL USE TYPES</b>						
Administrative Offices				AR		
Commercial Antennas				S	S	S



## SILVER HILLS – SPECIFIC PLAN DEVELOPMENT STANDARDS

LAND USE DESIGNATIONS	LDSF	MRSF	SFS	PFC	P	OS
Continuum of Care Facilities - Seniors	S	S	S			
Eating and Drinking Establishments – Convenience*						
Eating and Drinking Establishments – Full Service*			S			
Financial Services			S			
Indoor Sports and Recreation				S	AR	
Neighborhood Centers*			S			
Outdoor Entertainment*				A	A	
Outdoor Sports and Recreation				A	A	A
Personal Storage*			S	S		
Retail Sales – Convenience*			S			
Retail Sales – Specialty Stores*			S			
Satellite Dishes	Refer to Article 324 of WDCD					
Storage of Operable Vehicles*			S			
Wireless Communication Facilities	Refer to Article 324 of WDCD					

### 2.3.1 Supplemental Use Standards

Several of the uses listed in Table 2-2 include an asterisk (\*). These uses, while allowed (subject to applicable entitlements) have additional restrictions defined in this section that are above and beyond the requirements of the Washoe County Development Code. Restrictions on these uses are listed below:

**Agrihood Facilities** – Agrihood facilities, as described throughout this handbook and including components such as barns, greenhouses, orchards, etc. shall be permitted within all land use categories with the exception of PFC and P but shall require the approval of the Design Review Committee unless included concurrent with a tentative map request approved by Washoe County.

**Detached Accessory Dwelling** – Detached accessory dwellings constructed as part of the original house floor plan (i.e. detached casitas, mother-in-law quarters) shall be permitted and may not exceed 1,200 square feet.

**Eating and Drinking Establishments – Convenience**– Coffee shops, delis, or similar, up to 4,000 square feet may be permitted within Neighborhood Centers (see below) with the approval of a Special Use Permit. Establishments operating outside the hours of 6:00 am to 11:00 pm are not permitted.

**Eating and Drinking Establishments – Full Service** – Restaurants, including restaurants with alcohol service, up to 4,000 square feet may be permitted within Neighborhood Centers (see below) with the approval of a Special Use Permit. Free-standing bars, or establishments operating outside the hours of 6:00 am to 11:00 pm, are not permitted.

## SILVER HILLS – SPECIFIC PLAN DEVELOPMENT STANDARDS

**Neighborhood Centers** – The Silver Hills Specific Plan recognizes that small neighborhood commercial uses can be beneficial and can serve to create a stronger sense of community. For that reason, support retail services, up to 45,000 square feet may be located within the Silver Hills Parkway loop road (defined in Table 2-2 as the SFS zone). Individual commercial uses in excess of 5,000 square feet are prohibited. Neighborhood centers shall incorporate the architectural standards included herein and shall include clustering of smaller buildings rather than a large “strip” building structure (refer to Figure 2-8).

**Outdoor Entertainment** – Outdoor entertainment such as school events, community concerts and performance, and the like are permitted within the Public Facility and Parks land uses and shall not extend past 10:00 pm. More than 2 events per month at any given facility shall require the approval of a Special Events Permit by Washoe County.

**Personal Storage** – Personal storage shall be limited to the storage of boats, recreational vehicles, and the like. These areas shall be screened with a 6-foot minimum solid sight obscuring fence. Additionally, a minimum of 15% of the total site area shall be landscaped, including the use of evergreen trees in order to provide year-round screening. Personal storage uses do not count towards the 45,000 square foot limitation on neighborhood commercial/retail use. Personal storage use shall be limited to no more than 15 acres.

**Retail Sales - Convenience** – Convenience retail is permitted within Neighborhood Centers and may not exceed 5,000 square feet. Additionally, hours shall be limited to 6:00 am to 11:00 pm only. Freestanding convenience stores and service stations are prohibited.

**Retail Sales – Specialty Stores** – Specialty stores such as boutiques, personal services, salons, and the like shall be permitted within neighborhood centers and shall not exceed 5,000 square feet.

**Storage of Operable Vehicles** – Storage of operable vehicles shall be limited to the storage of boats, recreational vehicles, and the like and shall be for the exclusive benefit of Silver Hills residents. These areas shall be located behind a minimum 6-foot sight-obscuring solid fence. Storage uses do not count towards the 45,000 square foot limitation on neighborhood commercial/retail use. Operable vehicle storage shall be limited to no more than 15 acres.

### **Additional Use Restrictions:**

Total commercial area may not exceed 45,000 square feet. Refer to Figure 2-7 for typical neighborhood center concept. Live/work residential units and storage facilities shall not count towards the 45,000 square foot limitation.

Standards of the Neighborhood Commercial (NC) zone shall be applied to any commercial use standard not addressed herein.

Neighborhood commercial uses shall be located within the Silver Hills Parkway “ring” central to the Specific Plan area and shall not extend into peripheral areas of the project boundaries.



**SILVER HILLS – SPECIFIC PLAN DEVELOPMENT STANDARDS**

---



**Figure 2-7 – Typical Neighborhood Center**

**SILVER HILLS – SPECIFIC PLAN DEVELOPMENT STANDARDS**

---



**Figure 2-8 – Typical Retail Concept**



### 2.4 Streetscape Development Standards

#### 2.4.1 Circulation Plan

Silver Hills will be accessed through an extension of Silver Knolls Boulevard that will circle through the west side of the Specific Plan Area, connecting back to Red Rock Road at the northern end of the project boundary. This roadway, known as Silver Hills Parkway, will be constructed to a collector roadway standard and will include two lanes with a center turn lane at intersections. At the two primary entries along Red Rock Road, the center turn lane will include a landscape island that will include evergreen plantings and shrubs.

As Silver Hills develops with future tentative maps, local roadways will connect with Silver Hills Parkway, providing access to individual neighborhoods. Neighborhoods within the project may be interconnected with local streets but all residential traffic will be directed towards Silver Hills Parkway for primary access in and out of the Specific Plan area.

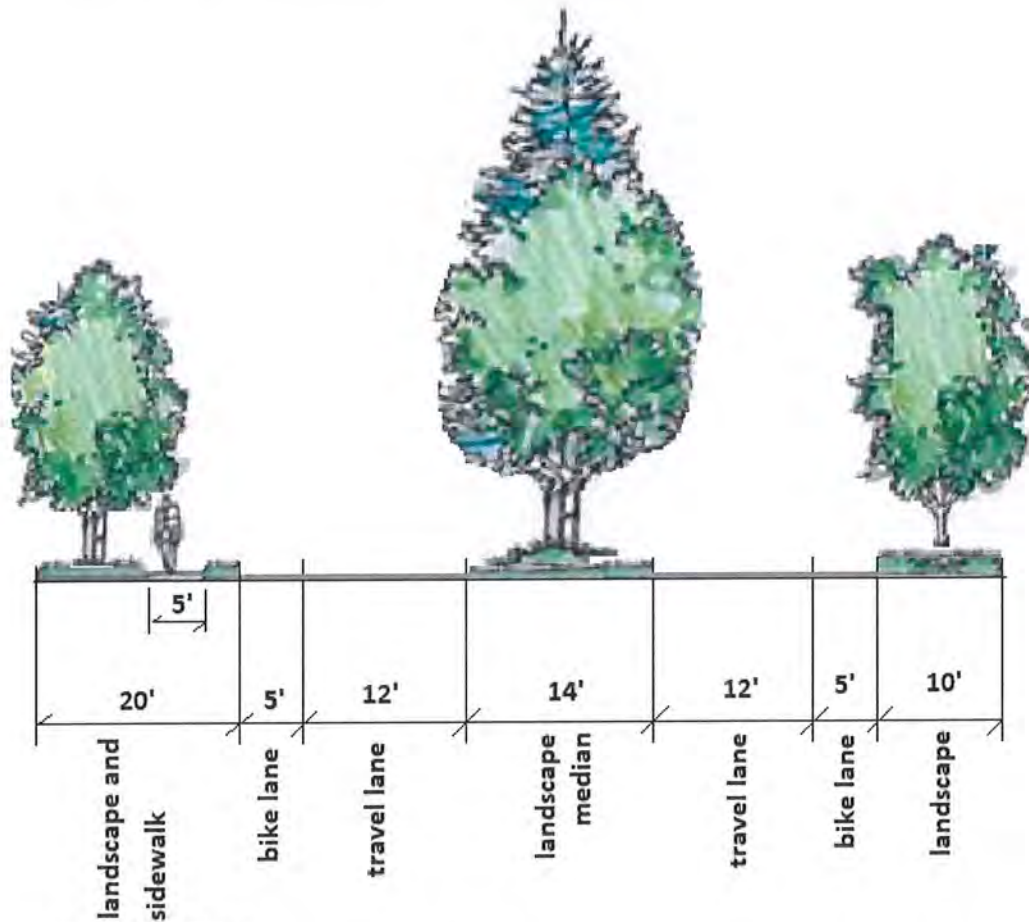
#### 2.4.2 Roadway Design

Development of roadways within Silver Hills will generally conform to the standards defined in the Washoe County Development Code. However, as noted previously, Silver Hills Parkway will include a 100-foot landscape median at its two intersections with Red Rock Road, identifying the project to residents and visitors with distinct entry monumentation (as described later). A cross section of the proposed Silver Hills Parkway is depicted in Figure 2-9 on the following page. The right-of-way section includes two 12-foot travel lanes along with a 5-foot bike lane on each side. A 14-foot center turn lane is provided (with the exception of the 100-foot entry landscape median). Additionally, a 10-foot landscaped common area will be included on one side, with 20-feet on the other (this may vary from side to side depending on site conditions). The 20-foot landscape common area shall include a 5-foot (attached or detached) asphalt or concrete pedestrian path. Roadways east of Red Rock Road shall conform to standard Washoe County standards/details.

As an alternative to Washoe County local street standards, individual builders within Silver Hills may wish to incorporate a modified local street section. Examples include provisions sidewalk on one side of the street, allowing the use of rolled curbs, etc. Any deviation from Washoe County Development Code standards for roadway design must be reviewed and approved by the Washoe County Engineering and Capital Projects Division on a case by case basis at the time of tentative map and/or final design and shall also be approved by the Truckee Meadows Fire Protection District.

## SILVER HILLS – SPECIFIC PLAN DEVELOPMENT STANDARDS

Landscaping and a 5-foot pedestrian path will be provided along Silver Hills Parkway in its entirety. The pathway shall be paved or constructed of concrete and will be located within the common area that will parallel Silver Hills Parkway. The path may be attached or detached from back of curb and may cross from side to side depending on location and site conditions. A striped pedestrian crosswalk shall be required at all crossing points of the 5-foot pedestrian path.



Note: Landscape median length is 100-feet.  
Section includes center turn lane for remainder of roadway section.

Figure 2-9 – Silver Hills Parkway Section



## SILVER HILLS – SPECIFIC PLAN DEVELOPMENT STANDARDS

---

### 2.4.3 Access Standards

RTC access management standards and the Washoe County Public Works design standards shall be used to direct the design of access and layouts for individual projects within Silver Hills at the time of development. Accesses and layouts will be reviewed and approved by the Silver Hills Design Review Committee (DRC) and the Washoe County Department of Planning and Building.

Alleys are an allowed alternative within single-family residential areas of Silver Hills. An alley is a private roadway that is intended to provide access to an abutting property such as a garage or rear yard. Alleys are not intended for general traffic circulation or primary emergency access routes. Alleys shall meet the width requirements per sections 110.436.105 and 110.436.110 of the Washoe County Development Code and shall be maintained by the adjoining property owner (through an easement agreement) or by a sub-association established by an individual builder with the approval of the Silver Hills Master Developer.

### 2.4.4 Silver Hills Parkway Streetscape

Silver Hills Parkway shall be designed to promote a sense of community through the incorporation of a landscaped median at the project entries as well as landscaping along both sides of the roadway. Additionally, a 5-foot paved pedestrian path will run adjacent to the roadway, within the landscaped common areas. The path may be detached from the roadway section and may cross over to the opposite side of Silver Hills Parkway where topography or engineering requirements dictate.

A project identifying entry feature may be permitted at the primary access points of the Silver Hill Specific Plan area along Red Rock Road. The entry feature serves to help establish the project theme and is expected to be reminiscent of a historic ranch entry. The entry may utilize a mix of timber and stone accents and will include signage to identify the project. Additional details on project entries are included later in this Handbook. A 100-foot long landscaped median shall be located at each access point along Red Rock Road. The median shall be set back from the intersection to provide proper sight distance for drivers. In areas that the landscape median does not occur, a 14-foot center turn lane shall be provided in areas where turning movements occur.

The pedestrian path along Silver Hills Parkway shall be installed with the construction of the adjacent roadway. This applies to landscaping along Silver Hills Parkway as well. Landscaping located within the right-of-way and the landscape buffer adjacent to Silver Hills Parkway shall be maintained by the Silver Hills master homeowner's association (HOA). Additionally, the HOA shall be responsible for the 5-foot pedestrian path that parallels the Silver Hills Parkway right-of-way. Washoe County shall be responsible for the maintenance of the public right-of-way areas.

The following landscape standards apply to Silver Hills Parkway:

- Landscaped common areas shall occur adjacent to both sides of Silver Hills Parkway. At a minimum, one side shall be 10 feet with the other at 20 feet. The 20-foot landscape common area shall include a 5-foot paved (or concrete) pedestrian path.

## SILVER HILLS – SPECIFIC PLAN DEVELOPMENT STANDARDS

---

- A 100-foot landscape median shall be provided at the primary entries along Red Rock Road. The median shall be setback a minimum of 15-feet from the intersection in order to allow proper site distance for drivers.
- Evergreen trees shall be 6' minimum height with deciduous trees at a minimum 1.5" caliper, at time of planting.
- Landscaped common areas adjacent to Silver Hills Parkway may include a mix of xeriscape materials such as decomposed granite, rock mulch, etc. rather than turf.
- At time of planting, all groundcover and shrub areas must have 100% coverage with organic, rock and/or bark mulch, to protect the soil.
- Slope banks shall utilize native and/or adapted species to reduce maintenance and irrigation requirements. Adapted species refers to non-native or exotic plant species that are non-invasive and well adapted to the local climate and growing conditions.
- Large trees shall be defined as those that exceed 40 feet in height and 40 feet canopy diameter at maturity.
- Medium trees shall be defined as those that range from 20 feet to 40 feet in height and 10 feet to 40 feet in canopy diameter at maturity.
- Small trees shall be defined as those ranging from 8 feet to 20 feet in height and 6 feet to 20 feet in canopy diameter at maturity.
- Formal groupings refer to the linear or patterned arrangement of plants at a regular spacing interval.
- Informal and clustered groupings refer to the random or irregular arrangement of plants in groups of 3 or more and spaced a maximum of 60 feet between clusters.

### 2.4.5 Red Rock Road Streetscape

A 25-foot landscape buffer will be provided along Red Rock Road as it traverses the project area. This 25-foot will include enhanced native landscape in order to provide an aesthetically pleasing streetscape and will incorporate elements common to the overall project design, reinforcing a project sense of place. While trees will be included within the buffer, much of it may remain natural. The Red Rock Road frontage (west side) will include a 6-foot-decomposed granite (or similar) path that connects the north and south intersections of Silver Hills Parkway. The path may meander but shall be detached from the right-of-way by a minimum of 5 feet.

## SILVER HILLS – SPECIFIC PLAN DEVELOPMENT STANDARDS

---

The path along Red Rock Road shall be installed with the first phases of development. This applies to landscaping within the Red Rock streetscape as well. The Red Rock Road streetscape/landscape buffer shall be maintained by the Silver Hills master homeowner's association (HOA). Additionally, the HOA shall be responsible for maintenance of the 4-6-foot (west side) and 6-foot multi-purpose path (east side) that lie within the landscaped common area. Washoe County shall be responsible for the maintenance of the public right-of-way areas.

The 25-foot landscape buffer located on the east side of Red Rock Road shall include native vegetation. Formal plantings within the east side buffer are discouraged. Any new trees shall be planted to protect privacy of existing or new homes and shall not include formal clustering of plant material.

The following landscape standards apply to the west side of Red Rock Road:

- Landscaped common areas (minimum of 25-feet in width) shall occur adjacent to Red Rock Road.
- Located within the 25-foot streetscape shall be a detached 4-6-foot decomposed granite or similar path. These facilities shall be setback a minimum of 5-feet from the Red Rock Road right-of-way.
- Evergreen trees shall be 6' minimum height with deciduous trees at a minimum 1.5" caliper, at time of planting.
- Landscaped common areas adjacent to Red Rock Road may include xeriscape materials such as decomposed granite or rock mulch rather than turf.
- At time of planting, all groundcover and shrub areas must have 100% coverage with organic, rock and/or bark mulch, to protect the soil.
- Large trees shall be defined as those that exceed 40 feet in height and 40 feet canopy diameter at maturity.
- Medium trees shall be defined as those that range from 20 feet to 40 feet in height and 10 feet to 40 feet in canopy diameter at maturity.
- Small trees shall be defined as those ranging from 8 feet to 20 feet in height and 6 feet to 20 feet in canopy diameter at maturity.
- Formal groupings refer to the linear or patterned arrangement of plants at a regular spacing interval.
- Informal and clustered groupings refer to the random or irregular arrangement of plants in groups of 3 or more and spaced a maximum of 60 feet between clusters.

# SILVER HILLS – SPECIFIC PLAN DEVELOPMENT STANDARDS

---

**Table 2-3- Silver Hills Streetscape Standards**

Roadway	Landscape Buffer	Required Landscape	Pedestrian Amenities
<b>Silver Hills Parkway</b>	10 feet/20 feet	<p style="text-align: center;"><b>Tree Type:</b> Mix of Evergreen and Deciduous</p> <p style="text-align: center;"><b>Pattern/Spacing:</b> Average of 50' on Center</p> <p style="text-align: center;"><b>Other:</b> 60% shrub/40% ground cover mix</p>	5-foot attached or detached asphalt or concrete path <sup>1</sup>
<b>Red Rock Road (applies to west side only)</b>	25 feet/25 feet	<p style="text-align: center;"><b>Tree Type:</b> Mix of Evergreen and Deciduous</p> <p style="text-align: center;"><b>Pattern/Spacing:</b> Average of 70' on Center</p> <p style="text-align: center;"><b>Other:</b> Native ground cover mix</p>	6-foot detached multi-purpose path <sup>2</sup>

1 – Pedestrian path to be located within 20-foot landscape buffer.

2 – Design to be consistent with Washoe County Green Book standards.

## 2.4.6 Street Lighting

Lighting within Silver Hills is designed to enhance the quality and safety of the streetscape corridors while maintaining dark skies standards. Lighting located within the right-of-way of collector roads, local streets, and other public common areas will be installed by the Master Developer or individual builders and maintained by NV Energy or Washoe County (for standard poles/fixtures). Lighting located within alleys, associated with commercial or privately maintained parking lots, or non-NV Energy standards, shall be the responsibility of the property owner or a sub-homeowner’s association (subject to approval by the Master Developer and Design Review Committee). Any street lights that do not meet Washoe County standards shall be private, and the CC&R’s shall indicate operation and maintenance of street lights shall be the responsibility of the homeowner’s association or NV Energy (as applicable).



## SILVER HILLS – SPECIFIC PLAN DEVELOPMENT STANDARDS

---

This section provides lighting standards for collectors and local streets, as well as pedestrian, landscape and sign lighting within Silver Hills.

The goals of the Silver Hills lighting standards are to:

- (1) Provide a safe level of illumination for both motorists and pedestrians;
- (2) Reinforce the pedestrian scale of the community;
- (3) Provide appropriate lighting in context with the surrounding built environment; and
- (4) Allow for quality lighting design that reflects the theme of the community

### 2.4.7 Collectors and Local Streets

The following standards apply to collector and local streets within of Silver Hills:

- Any street lights that do not meet Washoe County standards shall be private, and the CC&R's shall indicate operation and maintenance of street lights shall be the responsibility of the homeowners association or NV Energy (as applicable).
- Lighting fixture types shall be of a consistent scale, design and color along street corridors
- Street lighting shall be directionally shaded to reduce spill-over and glare and include "dark skies" standards.
- Light fixture height shall not exceed 20 feet.
- Refer to Table 2-4 for additional lighting standards.
- Street lights shall be maintained by NV Energy or Washoe County. Non-NV Energy standard fixtures and lights within private parking lots or alleyways shall be maintained by individual property owners or a sub-HOA (to the approval of the Master Developer and Design Review Committee).
- All street lights shall incorporate dark skies technologies and fixtures.
- All collector and local roadways shall include NV Energy "decorative" light fixtures (refer to Figure 2-10).
- For local streets, individual builders may utilize non-NV Energy standard fixtures. These fixtures shall be maintained by the HOA (or a sub-HOA) and must be approved by the Master Developer/Design Review Committee.
- Individual projects east of Red Rock Road may reduce required street lighting by up to 50% (based on Washoe County code standards) in order to complement existing adjoining neighborhoods.



NV Energy Decorative Head Light Fixture

Figure 2-10 – Typical Light Fixtures

# SILVER HILLS – SPECIFIC PLAN DEVELOPMENT STANDARDS

**Table 2-4 – Streetscape Lighting Standards**

Roadway Designation	Roadway	Location	Standards		
			Model (Luminaire, mast arm and pole)	Placement	Spacing
Collector	Silver Hills Pkwy.	NV Energy Standards <sup>1</sup>	NV Energy approved decorative fixture (see Figure 2-9) <sup>3</sup>	Alternating <sup>1</sup>	Spaced at regular intervals
Neighborhood Local	All public streets within a parcel or subdivision	NV Energy Standards <sup>1</sup>	NV Energy approved decorative fixture (see Figure 2-9) <sup>2,3</sup>	Alternating <sup>1</sup>	Spacing Varies

1 – Placement and Spacing of street lighting is subject to approval by NV Energy and Washoe County, as specified in the Washoe County Development Code.

2 – Non-NV Energy fixtures may be used subject to the approval of the Master Developer/Design Review Committee and shall be maintained by the HOA or approved sub-HOA.

3 - Any street lights that do not meet Washoe County standards shall be private, and the CC&R's shall indicate operation and maintenance of street lights shall be the responsibility of the homeowner's association or NV Energy (as applicable).

## 2.4.9 Entries

The consistent treatment of neighborhood entries will help establish a consistent community character within Silver Hills. Two primary entries will occur along the west side of Red Rock Road and will include a formal entry feature that spans the roadway, providing project identification. The entry feature is expected to be modeled after a traditional ranch gate entry and shall include the use of timbers with stone base accents.

The following standards shall apply to primary entry monuments:

- Maximum height of any roadway span shall be 20 feet. Roof structures may be incorporated into spans (refer to Figures 2-11-2-13) but are not required.
- Decorative lighting such as lanterns or similar may be included on primary entry features.
- Project signage, including the project name and/or logo may be included on the span structure and side base structures.
- All signage shall include internal or indirect illumination. Up-lighting of entries is permitted only when spill-over past the Specific Plan boundary does not occur.
- A formal entry(s) shall not be required for areas east of Red Rock Road.



## SILVER HILLS – SPECIFIC PLAN DEVELOPMENT STANDARDS

---

- Project entry structures and all non-County maintained items (signs, landscaping, paths, etc.) constructed within the Washoe County rights-of-way will require a revocable occupancy permit and shall comply with AASHTO clear zone requirements.



Figure 2-11 – Primary Entry Concepts



## SILVER HILLS – SPECIFIC PLAN DEVELOPMENT STANDARDS

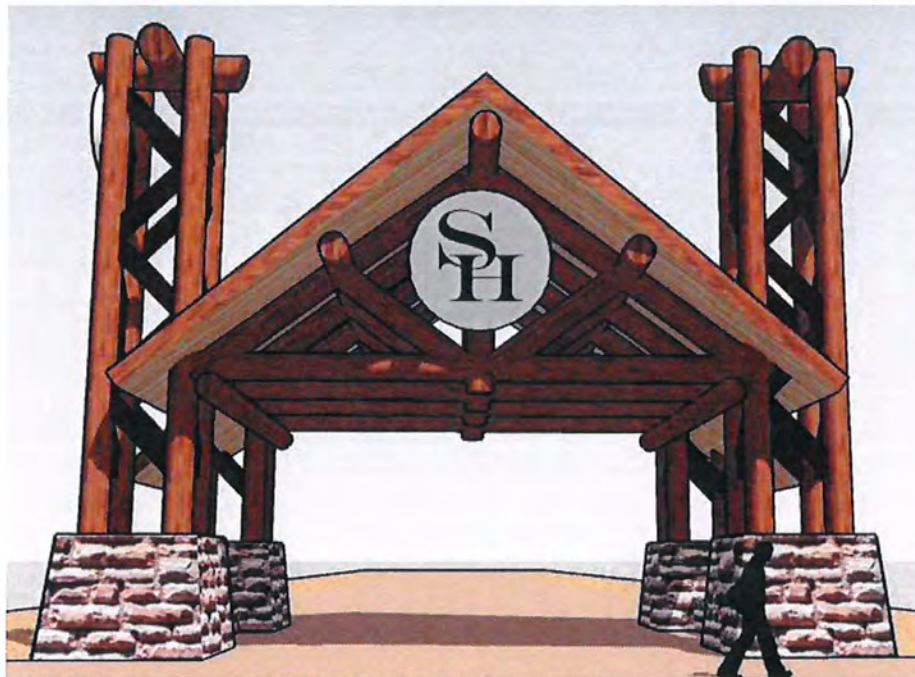
---



Figure 2-12 – Primary Entry Concepts

## SILVER HILLS – SPECIFIC PLAN DEVELOPMENT STANDARDS

---



Note: Roof structures (as depicted above) are allowed as an option for project entries.

Figure 2-13 – Primary Entry Concepts



## **SILVER HILLS – SPECIFIC PLAN DEVELOPMENT STANDARDS**

---

### **2.4.9 Neighborhood Entries**

Silver Hills will incorporate entry monumentation for all individual neighborhoods within the Specific Plan area. The following standards shall apply to neighborhood entry signs:

- Project entry structures and all non-County maintained items (signs, landscaping, paths, etc.) constructed within the Washoe County rights-of-way will require a revocable occupancy permit and shall comply with AASHTO clear zone requirements.
- A neighborhood entry treatment shall be placed at the primary entrance to each neighborhood.
- Entry monuments shall be located outside the sight visibility triangle of the road intersection.
- Neighborhood entry treatments shall be designed with similar characteristics to that of primary entries, but on a smaller scale. Entry monuments may incorporate the use of stone, timbers, barn wood, etc. in order to carry on the Silver Hills theme.
- Entry monuments shall be located within dedicated common area and not within individual lots.
- Landscaping adjacent to neighborhood entries shall incorporate native materials, predominantly designed to look natural and wild, with some manicured ornamental landscaping where necessary.
- Neighborhood entry landscape treatments shall be reviewed and approved by the Design Review Committee as well as Washoe County (with associated tentative map, Special Use Permit, etc.).
- Neighborhood entries shall not exceed 6 feet in height.
- Up-lighting or indirect lighting of monument signs shall be permitted.
- Neighborhood/project entry signs shall have a consistent design within each project.
- Monument signs shall be maintained by the homeowner's association or a sub-homeowner's association (with the approval of the Master Developer).
- Neighborhood entries are optional for neighborhoods east of Red Rock Road.

## SILVER HILLS – SPECIFIC PLAN DEVELOPMENT STANDARDS

---



Figure 2-14 – Neighborhood Entry Concepts



## SILVER HILLS – SPECIFIC PLAN DEVELOPMENT STANDARDS

---

### 2.5 Signs

Signage within Silver Hills shall be limited to project entries (refer to section 2.4), internal wayfinding signs, and limited commercial signage within the MR zone. The following general standards apply to all signs within the Specific Plan area:

- Signs within Silver Hills shall comply with the regulations governing signs contained within the Washoe County Development Code. Where a conflict exists between these development standards and the Development Code, the standards contained herein shall apply.
- Monument signs shall have a maximum height of six (6) feet. No additional freestanding signs shall be permitted with the exception of directional wayfinding signs or traffic control signs. Pylon or pole signs are specifically prohibited.
- Internally lit signs shall not result in spill-over or glare upon adjoining properties.
- Refer to section 2.5.2 for non-residential sign standards.

#### 2.5.1 Wayfinding Signs

A wayfinding sign is a sign that directs the flow of pedestrians or vehicles to community elements such as neighborhoods, parks, schools, etc. The following standards apply to wayfinding signs within Silver Hills:

- Wayfinding signs shall have a maximum height of 6 feet.
- Wayfinding signs shall not be placed within 100 feet of an intersection or nearer than 50 feet from a required regulatory sign (i.e. traffic control sign) on collector roadways.
- Wayfinding signs will be maintained by the Silver Hills homeowner's association and shall be approved by the Master Developer prior to installation.
- Temporary wayfinding signs may be used to identify individual projects, model home complexes, etc. within Silver Hills.
- Wayfinding signs shall be consistent with the concepts/examples presented in Figure 2-15.

## SILVER HILLS – SPECIFIC PLAN DEVELOPMENT STANDARDS

---

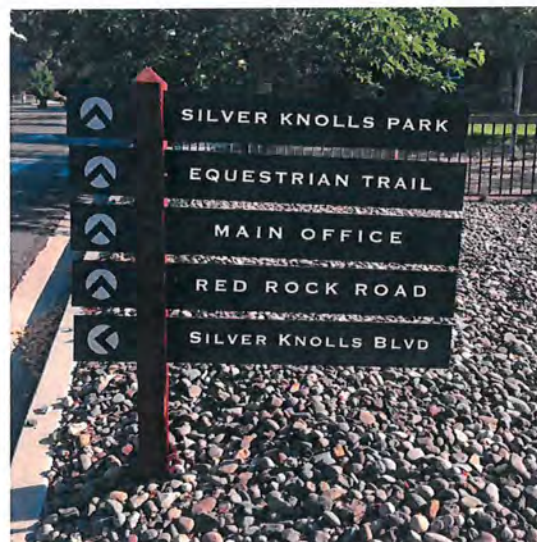


Figure 2-15 – Wayfinding Sign Concepts

## SILVER HILLS – SPECIFIC PLAN DEVELOPMENT STANDARDS

---

### 2.5.2 Commercial Signs

Limited commercial areas are permitted within residential development areas as detailed previously in this Handbook. It is the intent that commercial areas not be dominated with signage. Rather, signs will be used for business identification and shall be incorporated with building architecture. The following standards apply to commercial uses within Silver Hills:

- Unless specifically addressed within this handbook, signage area shall comply with the standards included in the Washoe County Development Code for the Neighborhood Commercial zone.
- For retail uses, a common monument sign, not to exceed 8 feet in height, shall be permitted with up to 10 individual tenant panels. This sign may be internally illuminated if faced away from residential uses.
- Building signs shall be downlit or indirectly lit. Internal illumination shall be prohibited.
- Roof signs shall be prohibited.
- The use of flashing signs, reader boards, or scrolling message signs shall be prohibited.
- Refer to Figure 2-16 for examples of sign character for limited commercial uses within Silver Hills.



Figure 2-16 – Typical Commercial Signage



## SILVER HILLS – SPECIFIC PLAN DEVELOPMENT STANDARDS

---

### 2.6 Trails

Trails are provided throughout the Silver Hills Specific Plan area and serve to provide pedestrian and equestrian links within the community. Trails are located within open space areas and shall be constructed in phases as adjoining development occurs. There are two primary trail types within Silver Hills; pedestrian trails and multi-use trails. To provide clarification, “pedestrian” shall refer to individuals (walking, running, etc.), and other non-motorized forms of transportation, including equestrian use (as applicable).

Pedestrian trails are intended solely for pedestrian and bicycle use and are located to provide links to neighborhoods and community facilities such as parks and schools. Multi-use trails are located within the perimeter open space buffer and are intended for use by pedestrians/hikers, bicyclists, and equestrian users. Specifically, multi-use trails provide access to public lands that surround Silver Hills and allow for horseback riders to access these lands through the Silver Hills Specific Plan area.

Figure 2-18 provides a backbone trail plan for Silver Hills. It is anticipated that as individual neighborhoods within the Specific Plan develop, links to the primary trail network will be provided within common open space. The intent is to provide pedestrian connections from within individual neighborhoods to the overall trail network, allowing residents to access various parts of the community without interaction with automobiles.

The following trail standards shall apply within the Silver Hills Specific Plan

- Trails shall comply with Washoe County Green Book Standards. Any deviation from such shall be subject to the review and approval of the Washoe County Regional Parks and Open Space Department.
- A 6-foot multi-use trail (decomposed granite or similar) shall be located within the open space buffer on the northern and southern perimeters of the Specific Plan area. This trail shall allow for both pedestrian and equestrian traffic.
- A minimum of two developed public trailheads (approximately 1-acre in size) shall be located west of Red Rock Road within the Specific Plan boundaries. Final trailhead locations shall be determined with input from the Washoe County Regional Parks and Open Space Department.
- A 5-foot paved pedestrian trail shall be located within the utility corridor open space, connecting the western and eastern sides of the project. A continuation of this trail shall provide a connection to Silver Knolls Park located south of the Specific Plan area.
- Refer to sections 2.4.4 and 2.4.5 for trail/pathway standards along Silver Hills Parkway and Red Rock Road.
- Trails shall be constructed in phases as development occurs by the Master Developer or individual project builder.

## SILVER HILLS – SPECIFIC PLAN DEVELOPMENT STANDARDS

---

- Trails shall be maintained by the Silver Hills homeowner’s association.
- As development occurs, the Washoe County Department of Planning and Building shall require trail connections to the master trail system, as applicable in order to provide for neighborhood connectivity.
- An equestrian route through the Specific Plan area shall be maintained during construction.
- Multi-use trails/paths shall be constructed of decomposed granite (or similar) and utilize either a concrete or solid border to define the limits of the trail. Refer to Figure 2-17 below.
- A minimum of one undercrossing, capable of accommodating equestrian users, shall be provided under Red Rock Road, linking the east and west sides of the Specific Plan Area.



Figure 2-17 – Typical Multi-Use Trail

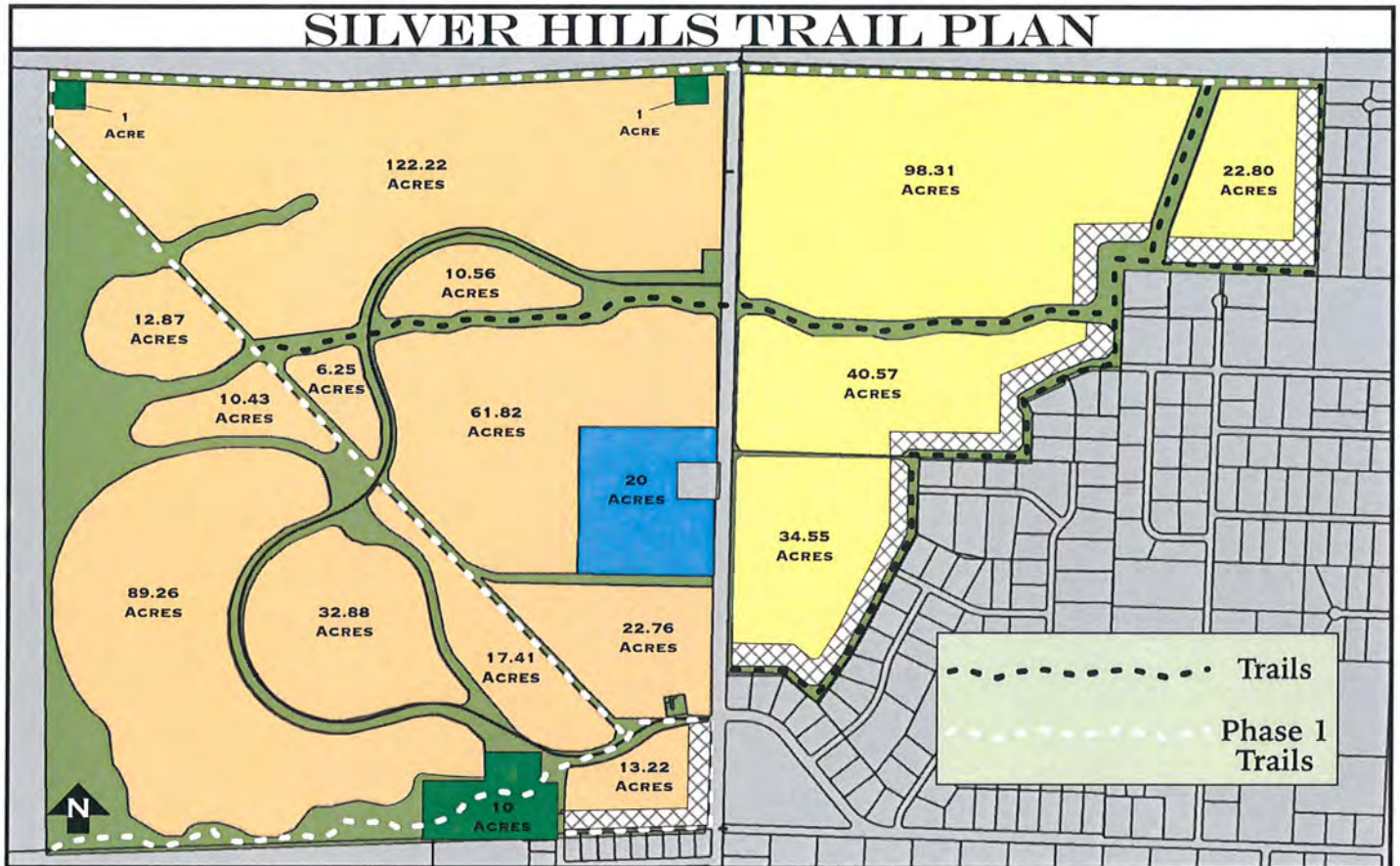
## SILVER HILLS – SPECIFIC PLAN DEVELOPMENT STANDARDS

---

- Trails occur within areas of natural landscape. However, plantings of evergreen and deciduous trees, at the Master Developer's discretion, shall be permitted.
- Access points to the trail system shall include barriers such as bollards, gates, or similar to prevent motorized vehicles from accessing the trail network. Use of trails within Silver Hills by motorized vehicles shall be prohibited. Vehicles necessary for trail and common area maintenance are exempt from this standard.
- Trailheads may incorporate access for off-highway vehicles to access public lands but shall prohibited motorized access on trails within the Specific Plan boundary (subject to approval by the Washoe County Regional Parks and Open Space Department).
- Trailheads shall be constructed by the Master Developer and maintained by the Silver Hills Homeowners Association or similar (subject to approval by the Washoe County Department of Regional Parks and Open Space).
- Connections to the trail system from future subdivisions including trail access points shall be reviewed and approved by the Master Developer or Design Review Committee.
- All trails shall be located within dedicated common areas.
- Bollard lighting may be used to illuminate trail access points, at the discretion of the Master Developer.
- Trails located within park areas dedicated to Washoe County shall be maintained by Washoe County.
- Neighborhoods shall be required to consider trail access in their design and provide efficient links to existing BLM trailheads, where applicable.
- A trail head parking area (site to be determined) shall be provided adjacent to public lands and provide adequate area for parking, trailers, and the loading/unloading of off-road vehicles.
- Refer to Figure 2-18 for a master trail system map.



SILVER HILLS – SPECIFIC PLAN DEVELOPMENT STANDARDS



Trails identified in white (Phase 1 Trails) shall be constructed with initial phase of development for respective development area (i.e. east and west sides).

Note: Trails shown are in addition to pedestrian pathways and multi-use pathways that adjoin major roadways, as detailed in in Table 2-3.

Figure 2-18 – Silver Hills Master Trails Plan

## **SILVER HILLS – SPECIFIC PLAN DEVELOPMENT STANDARDS**

---

### **2.7 Parks**

Silver Hills will provide new park facilities to the benefit of the whole community. A minimum of 12 acres of developed park facilities shall be provided in Silver Hills. This includes 10± acres at the southwest portion of the Specific Plan area, adjoining Silver Knolls Park, along with two 1-acre trailheads. Final trailhead locations and park configuration shall be determined with input from the Washoe County Regional Parks and Open Space Department.

#### **2.7.1 Community/Regional Park**

A minimum of 10 acres are reserved at the southern portion of the Specific Plan area, immediately adjacent to the existing Silver Knolls Park. It is envisioned that this area will serve as an extension of the existing community park and provides for expansion of the facilities for both active and passive recreation, and possibly allow Washoe County to develop Silver Knolls Park to a regional park standard. Additionally, this area has the potential to provide equestrian staging facilities including horse trailer parking, access to equestrian trail heads, etc.

Final design of the park and its associated facilities will be subject to input and direction from the Washoe County Regional Parks and Open Space Department. The park facilities will be constructed by the Master Developer with construction of the 500<sup>th</sup> unit within the Silver Hills Specific Plan and will be reimbursed with park tax funds collected by Washoe County. The community park site will be dedicated to Washoe County for public use and maintained by Washoe County. Any relocation of park area shall be subject to the review and approval of the Washoe County Regional Parks and Open Space Department.

#### **2.7.2 Neighborhood Parks**

Neighborhood parks may be constructed within the Silver Hills Specific Plan area. Neighborhood Parks shall generally be 2 to 3 acres. Construction of neighborhood parks shall be at the discretion of the Master Developer. Maintenance of neighborhood parks shall be provided by the Silver Hills Homeowners Association or sub-association. Park facilities not dedicated to Washoe County may be private and for the use of Silver Hills residents only, at the discretion of the Master Developer.

There is no limit to the amount of neighborhood parks permitted within Silver Hills.

## SILVER HILLS – SPECIFIC PLAN DEVELOPMENT STANDARDS

---

### 2.7.3 Trailheads

A minimum of two (2) public trailheads shall be constructed within the Silver Hills Specific Plan area, west of Red Rock Road. Trailheads will be constructed by the Master Developer and maintained by the Silver Hills Homeowners Association. Trailhead facilities shall be a minimum of 1-acre in size and subject to review and approval of the Washoe County Regional Parks and Open Space Department.

Final location and configuration of trailheads, including amenities (i.e. parking, staging areas, etc.) shall be determined with input from the Washoe County Regional Parks and Open Space Department. The first trailhead shall be constructed at or prior to the construction of the 150<sup>th</sup> residential unit west of Red Rock Road, with the second trailhead constructed at or before the 500<sup>th</sup> residential unit west of Red Rock Road.

### 2.7.4 Agrihood Farm

The standards contained herein contemplate an agrihood/community farm concept as a possible community amenity within open space and common areas. Should this occur, the following standards shall be applied:

- Membership to the community farm may be offered to non-residents of Silver Hills through a Community Supported Agriculture (CSA) program.
- The farm shall include a designated Farm Manager who shall be responsible for the daily operations, planting of crops, and as an advisor to community/farm members. This position shall be appointed and funded by the Silver Hills homeowner's association.
- The HOA may choose to appoint an Activities Director to work with the Farm Manager to provide classes/activities for community/farm members and to coordinate volunteer activities, events, etc.
- The farm may include a greenhouse(s) for resident farm basket production as well as Community Supported Agriculture (CSA)
- Excess crops shall be donated to local food banks or sold to a coop that benefits reinvestment into agrihood facilities.
- The Agrihood Farm may provide a Children's Farm that shall include a small beginning garden environment that includes raised beds, tools, a shared garden shed, and weekly classes for families (may be subject to fees).
- The Agrihood Farm may include a large fruit orchard along with mini-orchards or mini-gathering parks. These facilities may be located outside of the main farm such as at the end of cul-de-sacs within the Specific Plan Area.



## **SILVER HILLS – SPECIFIC PLAN DEVELOPMENT STANDARDS**

---

- An edible, low water, and beneficial insect and wildlife habitat emphasis shall be placed in all common area landscaping.
- Orchard production within the Silver Hills Agrihood Farm shall benefit the homeowner's association community improvement fund.
- A central pavilion and/or barn is permitted to be located within the farm and may provide a commercial kitchen, meeting rooms, etc. that can be used or rented by residents.
- The use of alternative energy sources such as solar and wind turbine is highly encouraged.
- A "tractor park" that incorporates farm equipment and play areas for children may be incorporated into the Agrihood Farm.

### **2.8 Urban/Wildland/Public Lands Interface**

The Silver Hills Specific Plan area is located within an urban/wildland interface area subject to wildfires. As such, the following standards shall apply:

- New development that abuts open space and/or natural areas shall provide a minimum of 20-feet of defensible open space consistent with standards adopted by the Truckee Meadows Fire Protection District (TMFPD).
- With individual tentative maps, TMFPD shall have the ability to condition site specific fire mitigation requirements such as increased defensible space, specific plant palettes, etc.
- The Silver Hills Homeowners Association shall be responsible for the maintenance of common areas outside of individual lots to ensure weeds and other combustibles are removed in order to maintain a minimum of 20-feet of defensible space from the property line of an abutting unit.
- With new development, access to open space areas shall be coordinated with TMFPD to allow for fire equipment to access open space/common areas during a wildfire event.
- A fire hydrant shall be located at each trailhead adjacent to public lands.
- A vehicular access, for emergency purposes, shall be provided at each adjacent BLM trailhead. These access points should align with existing trails, to the extent possible and may include gates and/or barriers to prevent non-emergency access.
- A vehicle parking and staging area shall be colocated with a trailhead at the border of Silver Hills with BLM/public lands and shall provide ample area for loading/unloading of off road vehicles. Location shall be determined with input from BLM and Washoe County.

## **SILVER HILLS – SPECIFIC PLAN DEVELOPMENT STANDARDS**

---

### **2.9 Mailboxes**

Individual mailboxes, if allowed by the United States Postal Service (USPS), shall be paired at driveways to serve adjacent homes. The style of the mailboxes, including address numbers shall be compatible with the architectural styles of the homes and shall be consistent throughout each project within Silver Hills. Mailbox designs shall be approved by the Silver Hills Design Review Committee and the USPS. Mailboxes shall be provided and installed by individual builders prior to the issuance of certificates of occupancy for the individual homes.

When individual mailboxes are not permitted, clustered boxes shall be located in convenient areas conducive to temporary on-street parking. Placement of cluster boxes shall not be near intersections and shall not conflict with individual driveways or utilities. Locations shall be approved by the USPS and the Silver Hills Design Review Committee.

The United States Postal Service (USPS) shall be responsible for the maintenance of mailboxes/mailbox cluster boxes within Silver Hills.

## CHAPTER 3 – SITE DESIGN AND ARCHITECTURAL STANDARDS

### 3.1 Overview

The purpose of this chapter is to establish base standards and design parameters for which future development within Silver Hills shall follow. These standards will guide the development of the Specific Plan area by providing specific design criteria for grading, building orientation, landscaping, lighting, signs, walls and fences, and other design elements that tie the community together, and helping to create the sense of place discussed in Chapter 1.

Architectural standards and guidelines are provided to ensure projects within Silver Hills are attractive, relate to one another, and reinforce the project theme. The pictures contained in this chapter are provided to convey “imagery” of the standards and guidelines but are not intended to require the specific design style depicted. Alternative themes with respect to design and architecture are encouraged in order to promote diversity of housing styles within Silver Hills as a whole.

As new projects (i.e. tentative maps) move ahead within Silver Hills, they shall be reviewed in context with the standards included within this chapter. This includes review by the Silver Hills Design Review Committee (DRC) and Washoe County to determine consistency with site design and architectural standards.

### 3.2 Site Planning Standards and Guidelines

The purpose of the site planning standards and guidelines is to address general provisions of site development which include building orientation, grading and drainage, parking areas, landscape, lighting, signs, walls and fences, and service areas. Site planning controls the proper placement of buildings and internal roads that service and access the various uses in the community. It addresses the linkages and land use relationships at a human-scale, in order to create a stimulating and visually pleasant community. The goal is to promote pedestrian activity and safety, create visual compatibility with surrounding neighborhoods and minimize negative impacts on the natural environment.

#### 3.2.1 Site Planning and Development Standards

Site planning, architectural design, and landscape design shall be consistent throughout Silver Hills in order to encourage neighborhoods that fully integrate with one another. There are a variety of methods to accomplish this including the use of consistent fencing, landscape treatments, design elements such as neighborhood entries, etc.



## SILVER HILLS – SPECIFIC PLAN DEVELOPMENT STANDARDS

---

Individual neighborhoods within Silver Hills shall promote visual diversity and avoid monotonous development patterns. Methods to achieve this include, but are not limited to: not repeating floor plans/elevations directly next to each other, providing for a minimum of three distinct elevations for each home plan, designing homes so that the garages are integrated into front elevations, varying setbacks within the neighborhood, including design elements such as porches, overhangs, etc.

### Site Design

The following standards and guidelines promote visual diversity within individual neighborhoods:

- “Home forward” architecture shall be encouraged in the design of new home elevations. This includes integrating the garage into the elevation or placing home elements such as porches, entries, and windows to the front, as depicted in Figure 3-1.



Figure 3-1 – Typical “Home Forward” Design

## SILVER HILLS – SPECIFIC PLAN DEVELOPMENT STANDARDS

---

- To the extent practical, mirroring of facades shall occur between lots so that garages and entries are adjacent to each other. This creates variations in setback, providing for a more visually diverse streetscape. The pattern shall include breaks so that it creates variation with patterns across the street and does not become overly repetitious. This standard shall not apply to zero lot line products.
- Front elevations that face the street shall integrate garages to the extent possible. Methods to achieve this include off-setting the garage (refer to Figure 3-1), matching the garage architecturally with the primary façade, or incorporating alternatives such as side load or split garages (i.e. two car front load with a separate one car side load garage), alleys, etc. Refer to Figure 3-2.



Figure 3-2 – Garage Integrated Elevations



## SILVER HILLS – SPECIFIC PLAN DEVELOPMENT STANDARDS

---

- Setbacks shall be varied to the extent possible in order to eliminate a monotonous appearance along the street.
- Neighborhoods that border the community trail system shall provide for a point of connection with final neighborhood design. Connection points can occur at the end of cul-de-sacs or within dedicated public access easements located within common open space. Trail connection points shall be a minimum of 8 feet in width and include a 4-foot multi-purpose path (decomposed granite or similar) that provides a link to the community trail.
- Neighborhoods with smaller lot sizes are encouraged to utilize alleys and provide homes that open up on a community green in order to promote walkability and encourage interaction between neighbors. Refer to Figure 3-3.



Figure 3-3 – Mixed Residential Neighborhood Concepts



## SILVER HILLS – SPECIFIC PLAN DEVELOPMENT STANDARDS

---

- Alleys within single-family residential developments shall have a minimum width of 20 feet with no parking. Alleys shall not be used as an emergency access road.
- Alleys shall be maintained by the adjoining property owner through an easement agreement or by a sub-association to be set up by an individual builder with the approval of the Master Developer.
- Single family lots that abut common areas and open space shall utilize open rear yard fencing. This is intended to provide a sense of openness within common areas and avoids a “walled off” appearance. A solid 3-base with open top may be permitted as an alternative to open fencing with approval by the Design Review Committee.
- Cottage Court design (as depicted in Figure 3-4) may be incorporated into areas of smaller homesites. This building type consists of smaller, detached structures, providing multiple units arranged to define a shared court which takes the place of a private rear yard. Units shall front onto and be accessed from the shared court.



Figure 3-4 – Cottage Court Concept

## SILVER HILLS – SPECIFIC PLAN DEVELOPMENT STANDARDS

---

### Grading

- Design of residential neighborhoods shall be sensitive to the natural terrain. Structures shall be located in such a manner so as to minimize necessary grading and preserve natural site features including drainageways, rock outcroppings, etc.
- Grading of subdivisions or pad sites shall be designed to blend the edges of development with the adjoining natural terrain. This may be accomplished through the use of rockery walls in order to reduce the length of man-made slopes, etc.
- Landscaping and native revegetation shall be the preferred method of slope stabilization as opposed to rip rap on all manmade slopes.
- Graded slopes shall be rounded resulting in smooth, harmonious transitions between the man-made terrain and the natural terrain.
- Graded slopes shall be revegetated prior to the issuance of a certificate of occupancy for new homes. This standard may be phased with the phased development of individual projects (i.e. slopes shall be revegetated concurrently with development within any given phase). If climatic conditions or other circumstances prevent planting at the time of occupancy, a bond shall be provided for landscaping during the subsequent growing season to the satisfaction of the Washoe County Department of Planning and Building.
- Drought tolerant plant species and native reseeding shall be utilized to help minimize erosion.
- Slopes contained within individual lots as a result of terracing shall be maintained by the property on the down slope side.

## SILVER HILLS – SPECIFIC PLAN DEVELOPMENT STANDARDS

---

### Landscaping

- Individual builders or homeowners shall be responsible for landscaping the front yards of new homes within Silver Hills and shall be completed within one year from the issuance of the final certificate of occupancy.
- Homeowners shall be required to submit front yard landscape designs to the Design Review Committee for review and approval.
- Front yard landscaping, shall include an automatic irrigation system.
- At a minimum, each individual front yard shall include one tree per 400 square feet of yard area.
- Neighborhoods with common yards (i.e. community greens) shall provide trees at intervals not to exceed 30 feet.
- Landscape character may vary from neighborhood to neighborhood. Each neighborhood may use a unique plant palette with the approval of the Design Review Committee. Project entries shall retain a common theme, as previously described in Chapter 2.
- As an alternative to turf, natural xeriscaping and low-water plant materials may be used for front yards and common yards with the approval of the Design Review Committee.

### Lighting

- Single family residences shall incorporate exterior lighting that is compatible with the architectural design of the home and includes fixtures that eliminate spill-over of light to adjoining parcels.
- Projects with community greens or common yards may choose to include bollard lighting. Bollards shall not exceed 4-feet in height.
- As detailed in Chapter 2, street lights shall include NV Energy approved fixtures and shall be spaced per Washoe County standards. Neighborhoods with community greens, alleyways, etc. may vary fixture standards with the approval of the Design Review Committee. Non-standard light fixtures may be used with Design Review Committee approval and shall be maintained by the Silver Hills homeowner's association or a sub-homeowner's association.



## SILVER HILLS – SPECIFIC PLAN DEVELOPMENT STANDARDS

---

### Walls and Fencing

- A 6-foot wood or vinyl fence with decorative pilasters (spaced at an average of 150-feet) shall be located at the rear yards of homes that back to Silver Hills Parkway. Final material and pilaster design shall be approved by the Design Review Committee and shall remain consistent throughout the Specific Plan area. Refer to Figure 3-5.
- Fencing along Silver Hills Parkway shall be placed on the property line and shall be maintained by the homeowner's association (exterior) and the adjoining property owner (interior). Fence replacement shall be the responsibility of the homeowner.



Figure 3-5 – Silver Hills Parkway Fencing Concept

## SILVER HILLS – SPECIFIC PLAN DEVELOPMENT STANDARDS

- Wood privacy fencing may be used for individual lots and shall not exceed 6-feet in height. Refer to Figure 3-6.
- Rear yards adjoining open space may utilize open fencing. Open fencing may include split-rail, wrought iron, or similar and shall be consistent within the entire development. A solid 3-foot base with open fencing above may be permitted with Design Review Committee approval. This standard shall not apply to side yards that abut open space/common area in order to protect resident privacy. Refer to Figure 3-7. No rear yard gates are permitted directly abutting public (BLM) lands.
- Projects with common yards or community greens may include privacy walls, such as courtyard or patio walls, and shall not exceed 4 feet in height. These walls shall incorporate materials and colors consistent with the architecture of the homes.
- A 6-foot solid screen wall or fence may be used to separate any non-residential use from single family homes.
- All walls and fences associated with a project shall be installed concurrently with the project. Fences within residential lots shall be maintained by the lot owner.
- Chain link fencing shall only be permitted with temporary construction yards and is prohibited within individual lots.
- No fencing in excess of 3-feet (split-rail or picket) shall occur within the required front yard setback.

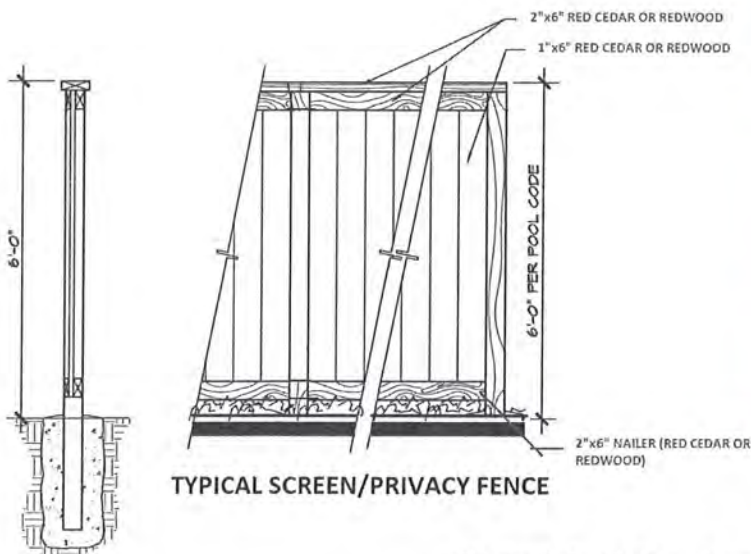


Figure 3-6 – Privacy Fencing Concepts



# SILVER HILLS – SPECIFIC PLAN DEVELOPMENT STANDARDS

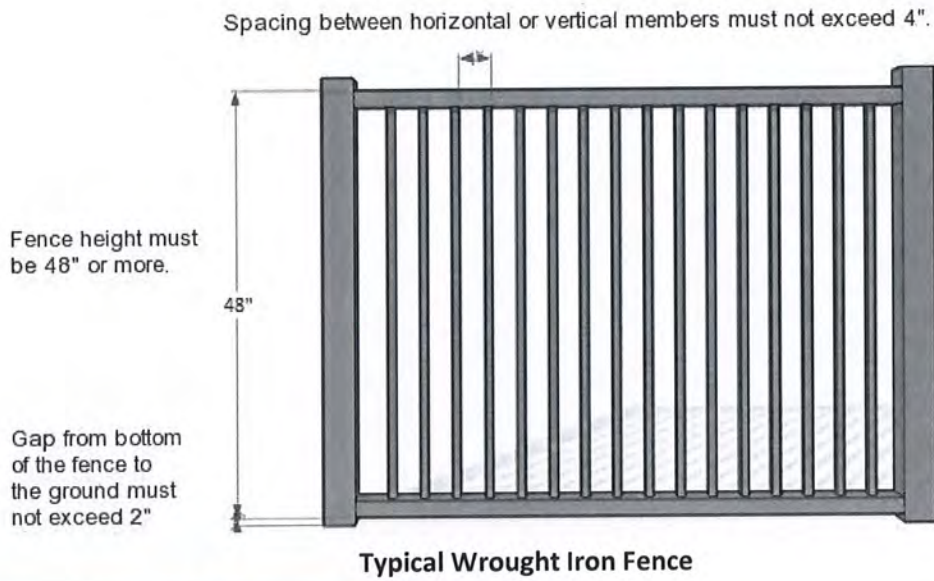


Figure 3-7 – Open Fencing Concepts



## **SILVER HILLS – SPECIFIC PLAN DEVELOPMENT STANDARDS**

---

- Fencing for non-residential uses including neighborhood commercial, public facility, etc. shall conform with fencing standards contained in the Washoe County Development Code.
- Schools and Washoe County park facilities, may incorporate the use of chain link fencing with the approval of the Design Review Committee.

### **3.3 Architecture Standards and Guidelines**

#### **3.3.1 Background**

The purpose of these architectural guidelines is to provide general design criteria and guidance for the development of the neighborhoods within Silver Hills. The guidelines are not intended to be restrictive, but rather promote both visual compatibility and variety within the Specific Plan area by utilizing complementary traditional architectural styles. The intended result is a high level of design direction and quality.

#### **3.3.2 Architectural Theme**

As discussed in Chapter 1, Silver Hills evokes an overall mountain ranch theme which is also consistent with the agrihood concept. The theme is reinforced with evergreen plantings that will occur along Silver Hills parkway, etc. Traditional ranch and craftsman architectural styles will reinforce the overall theme and feel of the project and are complementary to the existing environment that surrounds Silver Hills. In order to allow for variety, deviations to the architectural theme, including farmhouse or more eclectic designs, shall be permitted and can complement differing styles through the inclusion of common design elements. The ultimate goal of these standards is to create a high quality, attractive community that provides diverse housing choices to suit the variable tastes and needs of future residents.

The application of these architectural guidelines and standards to individual development projects will be reviewed and approved by the Design Review Committee (DRC) and the Washoe County Design Review Committee. New interpretations of these classic combinations of materials are encouraged as they relate to a general feeling of neighborhood unity. The following sections provide guidelines and standards that will aid in the creation of a community of which residents can be proud to call home.

### 3.4 Single Family Architectural Standards

A key element of the Silver Hills architectural guidelines is to create a streetscape possessing both function and visual variety. The guidelines are intended to provide variety in appearance as well as a sense of individuality for each structure. Projects where identical buildings line the streets without variation in form and mass are prohibited.

It is recognized that all architectural styles are open to interpretation in design. Therefore, these standards are not intended to limit creativity or prevent certain types of design. Instead, they should be viewed as a baseline for review in terms of quality, general theme, etc. Deviations may be permitted with the review and approval of the Silver Hills Design Review Committee and Washoe County Design Review Committee.

#### 3.4.1 Building Mass and Form

- Facades of buildings styles shall make use of expressive structural elements such as brackets and columns, variable window types, a mixture of materials and distinctive porches.
- A minimum of three (3) distinctive floor plans shall be used within each individual subdivision within Silver Hills. A subdivision with twenty (20) or less lots may have less than three (3) distinctive floor plans.
- The architectural detailing similar to that of the front elevations may be utilized on all sides of the home.
- Any building addition or additional building(s) (over 200 square feet) on a property shall match the main structure in building design, materials, roof pitch and architectural character.
- The exterior mass and form of residential architecture should be varied within neighborhoods to improve the streetscape. This can be accomplished through (but is not limited to) varied setbacks, floorplans, facade detailing, massing and rooflines.

#### 3.4.2 Roof Form

- Roofs shall include variations in plane. This can be achieved with the use of elements such as hipped roofs, gables, dormers, porches, etc. Flat roofs are highly discouraged unless incorporated as an element to the overall architectural scheme of the building. Refer to Figure 3-8.
- Acceptable roof materials include concrete tile or architectural grade asphalt shingles. Metal roofing may be used to accent architectural features but shall not be the prominent roofing material.

**SILVER HILLS – SPECIFIC PLAN DEVELOPMENT STANDARDS**



Figure 3-8 – Typical Roofline Variation



## SILVER HILLS – SPECIFIC PLAN DEVELOPMENT STANDARDS

---

### 3.4.3 Materials and Colors

- Changes in materials and color are encouraged to provide visual interest and shall logically related to one another in order to avoid abrupt changes or conflicting architectural styles.
- Building materials and color schemes shall be consistent with a ranch theme and include the use of wood siding, cement fiber board, and/or stucco with accents such as stone or brick.
- The use of wood beams and/or timbers is encouraged on elevations and is reflective of the overall “upscale rustic” type of ranch style architecture.
- Color palettes for new homes shall include muted earth tones such as browns, beiges, whites, pale yellows, light greens, etc. reflective of a typical ranch style.
- The use of bright and vivid colors is prohibited.

### 3.4.4 Building Articulation

- Front elevations and those facing streets shall include significant articulation in order to avoid the appearance of flat planes. Methods for providing articulation include porches, dormers, bay windows, building offsets, recessed entryways, etc.

### 3.4.5 Accessory Structure and Uses

- Rain gutters shall be colored and/or painted to match the roof trip so that they are not visibly obtrusive to the main elevation. This standard may be waived with the approval of the Design Review Committee if the gutters serve as a distinctive architectural element of the home.
- Solar panels located on roofs shall either be architecturally integrated (i.e. solar tiles) or located to not be visibly obtrusive from the street.
- Patio covers and shade structures shall be approved by the Design Review Committee and shall be painted/colored to complement the primary structure. Such structures shall meet the minimum setbacks for the zone in which they are located. Refer to Chapter 2 for setback standards.
- Mounting of satellite dishes and/or antennas on the front elevation of homes shall be prohibited.
- Detached structures (where allowed – refer to Chapter 2) shall be painted to match the primary structure and are subject to the setback standards for that district.

## SILVER HILLS – SPECIFIC PLAN DEVELOPMENT STANDARDS

---

- Sheds that extend above the fence line and are visible from the street shall be prohibited. Sheds extending above the fence line shall be screened from view of adjoining residences and approved by the Design Review Committee.
- Parking of recreational vehicles, boats, and the similar may only be permitted within side yards if fully screened behind a 6-foot minimum fence.
- Accessory dwelling units (as permitted within Chapter 2) shall be integrated with the overall design of the primary structure such as the example included in Figure 3-9.
- Multi-generational single-family housing that includes an attached accessory dwelling shall be permitted per the standards included in Chapter 2. Refer to Figure 3-10.



Figure 3-9 – Typical Accessory Dwelling

# SILVER HILLS – SPECIFIC PLAN DEVELOPMENT STANDARDS



Figure 3-10 – Multi-Generational Housing Concept



## SILVER HILLS – SPECIFIC PLAN DEVELOPMENT STANDARDS

---

### 3.5 Non-Residential Standards

Non-residential uses within Silver Hills are fairly limited and include limited neighborhood commercial uses, personal storage (intended to benefit residents of the Specific Plan area), schools, and public facilities. In general, the site planning and architectural standards provided in the Washoe County Development Code shall pertain to all non-residential uses within the Specific Plan boundary. However, the following supplemental standards shall also apply.

#### 3.5.1 Non-Residential Supplemental Standards

- Neighborhood commercial uses shall be broken into a series of smaller buildings rather than grouped into larger structures. Refer to Figure 3-11.
- Commercial buildings shall be limited in size and location based on the supplemental use standards described in section 2.3.1.
- Elevations for commercial buildings shall be residential in nature and incorporate elements as detailed in section 3.2. Refer to Figure 3-11.
- Commercial architecture shall be consistent with the residential standards included in section 3.2.
- In areas where non-residential uses adjoin residential uses, a 6-foot solid wall or fence shall be installed at the property line.
- Personal storage facilities and outdoor storage, subject to the supplemental standards and restrictions called out in section 2.3.1, shall be screened with a solid masonry wall. The wall shall incorporate colors earth tone colors and include decorative pilasters (as approved by the Design Review Committee) approximately every 40 feet for expanses visible from a public right-of-way.
- Agrihood facilities (if incorporated) such as barns shall be incorporated with the overall architectural theme and include common elements such as batt and board siding, rock accents, or similar rustic farm feel. Refer to Figure 3-11 for typical barn/agrihood concepts.
- Greenhouses associated with the agrihood “commons” shall be exempt from the architectural standards but shall be limited to no more than 5,000 square feet. Refer to Figure 3-13 for greenhouse concepts.
- Metal barn structures may be permitted within agrihood areas subject to approval by the Design Review Committee.

**SILVER HILLS – SPECIFIC PLAN DEVELOPMENT STANDARDS**

---



**Figure 3-11 – Commercial Architecture/Scale**



## SILVER HILLS – SPECIFIC PLAN DEVELOPMENT STANDARDS

If agrihood facilities are developed within Silver Hills, Figures 3-12 and 3-13 depict facilities that are consistent with the standards contained herein.



Figure 3-12 – Typical Agrihood Building Concepts



## SILVER HILLS – SPECIFIC PLAN DEVELOPMENT STANDARDS

---



Figure 3-13 – Typical Agrihood Greenhouse Concepts

## SILVER HILLS – SPECIFIC PLAN DEVELOPMENT STANDARDS

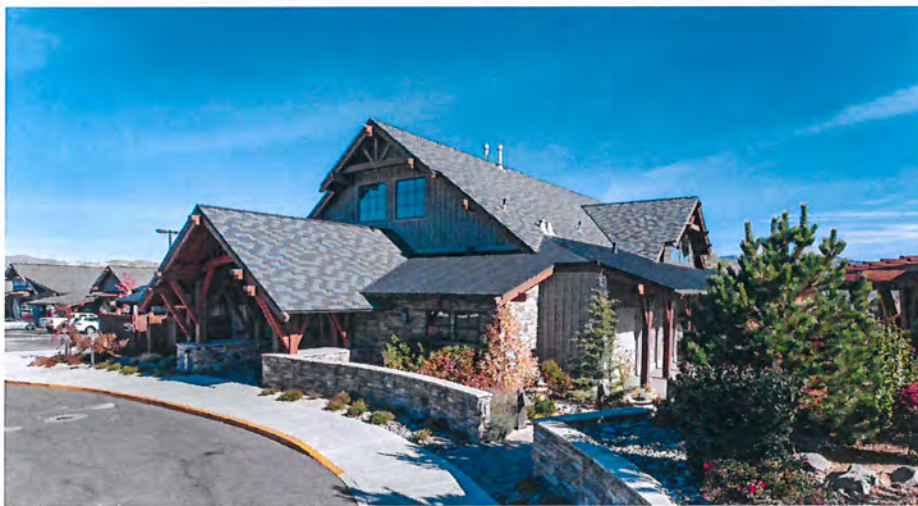
---

- All non-residential building elevations must be reviewed and approved by the Silver Hills Design Review Committee.
- School and public park facilities/structures shall be exempt from the architectural guidelines and shall conform with the standards included in the Washoe County Development Code.
- When reviewing public facilities (i.e. schools, libraries, etc.), the Washoe County Design Review Committee shall consider the requirements of this chapter in making recommendations on project architecture.
- Non-reflective metal roofing may be permitted on commercial and agrihood buildings with the approval of the Design Review Committee. Refer to Figure 3-12 for an example of acceptable metal roofing.
- Buildings such as churches and community centers shall incorporate elements of the design guidelines contained herein in order to reinforce the project theme. This includes elements such as earth tone colors, acceptable roofing materials and pitches, use of stone, brick, or similar, etc. Refer to Figure 3-12.
- Facades of non-residential buildings shall include articulation to avoid long monotonous planes. Methods of articulation include, but are not limited to the use of faux windows, overhangs, trellises, awnings, pilasters, columns, etc.
- The use of pre-engineered metal buildings may be permitted with the approval of the Design Review Committee. Any metal building must comply with the roof standards contained within section 3.2 and include at a minimum a brick or stone wainscoting along with non-metal accents such as stucco, EIFS, etc. Refer to Figure 3-14 for example.
- Church steeples shall be subject to the design provisions (i.e. height) of the Washoe County Development Code.



**SILVER HILLS – SPECIFIC PLAN DEVELOPMENT STANDARDS**

---



**Figure 3-14 – Typical Non-Residential Structure**



**CHAPTER 4 – PHASING AND INFRASTRUCTURE**

**4.1 Phasing**

It is anticipated that Silver Hills will develop over the course of many years and may take 15 to 20 years for complete buildout. There are a variety of factors that will contribute to the ultimate timing of construction within the Specific Plan area. These include, but are not limited to; market conditions, timing of infrastructure and improvements, subsequent review and entitlements, etc.

Generally, phasing is anticipated to commence along the Red Rock Road frontage, moving east and west into the Specific Plan Area. Final phasing will be determined based on market demands.

Although market conditions will ultimately dictate phasing, it is anticipated that Silver Hills will develop in up to 20 individual phases. Each phase will include up to 150 units with an estimated buildout of 15 to 20 years for the entire project.

**4.2 Open Space, Trails and Parks**

Much of the open space within the Specific Plan area is natural open space, drainageways, etc. that will remain undisturbed with the exception of areas which will be developed with the Agrihood concept as further outlined in Chapter 2 of this handbook. Improvements such as trails will follow the same development pattern as other infrastructure elements. As development projects are constructed adjacent to areas where trails and/or other improvements are planned/called out, the segments of these improvements adjacent to the development areas will occur.

Silver Hills will provide new park facilities to the benefit of the whole community. A minimum of 12 acres of developed park and trailhead facilities are planned. This includes a 10-acre addition to Silver Knolls Park as well as two 1-acre trail heads west of Red Rock Road. Park areas are subject to relocation (subject to Washoe County Regional Parks and Open Space Department approval) based on final community design/layout, input from reviewing agencies, etc.

A minimum of 10 acres are reserved at the southern portion of the Specific Plan area, immediately adjacent to the existing Silver Knolls Park. It is envisioned that this area will serve as an extension of the existing community park and provides for expansion of the facilities for both active and passive recreation. Additionally, this area has the potential to provide equestrian staging facilities including horse trailer parking, access to equestrian trail heads, etc.

## **SILVER HILLS – SPECIFIC PLAN DEVELOPMENT STANDARDS**

---

Final design of the park and its associated facilities will be subject to input and direction from the Washoe County Regional Parks and Open Space Department. The park facilities will be constructed by the Master Developer with construction of the 500<sup>th</sup> unit within the Silver Hills Specific Plan and will be reimbursed with park tax funds collected by Washoe County. The community park site will be dedicated to Washoe County for public use and maintained by Washoe County.

A total of two public trailheads shall be constructed west of Red Rock Road. Trailheads will be a minimum of 1 acre in size and shall be coordinated with the Washoe County Regional Parks and Open Space Department in terms of amenities and facilities. The first trailhead shall be constructed at or prior to the 150<sup>th</sup> residential unit west of Red Rock Road with the second trailhead constructed at or prior to the 500<sup>th</sup> unit west of Red Rock Road.

### **4.3 Utilities/Infrastructure**

#### **4.3.1 Sanitary Sewer**

All new units and uses within the Silver Hills Specific Plan area will require connection to sanitary sewer facilities. Sanitary sewer service for the Silver Hills Specific Plan is somewhat unique in that it will be provided by a mix of future County sewer facilities and existing and future City of Reno sewer facilities. The design peak flow rates for the various development types differ between entities as shown on the attached table of flows (refer to Table 4-1).

The City of Reno, operates and maintains the nearest available public sanitary sewer system to the project. The terminus of these facilities is an existing 12" diameter sanitary sewer trunk line located at the existing western terminus Echo Avenue.

Note that sewer designs are preliminary and will be refined with subsequent tentative maps. All improvements are subject to the review and approval of the Washoe County Engineering and Capital Projects Division. The use of pump stations and force mains may be permitted as necessary within the Specific Plan area.

## SILVER HILLS – SPECIFIC PLAN DEVELOPMENT STANDARDS

---

### ▪ Alternative 1

Future county gravity sewer mains will be constructed from the eastern project limits to the City facilities at two different locations, necessitated by the topography of the site and the future proposed grading.

- Alignment Number 1 - The first alignment will be from the northeast midpoint of the project along Blackhawk Road to Osage thence south along Osage to the extension of Echo Avenue and then east to the point of connection to the existing City of Reno sewer system (refer to Figure 4-1).

This alignment will consist of approximately 9,000 lineal feet of gravity sewer main. All but the portion within the future extension of Echo Avenue is located in public right of way and the extension of Echo encompasses property owned by the Applicant.

The peak flow for the first 5,600 lineal feet of this main from the Blackhawk-boundary to the Osage – Silver Hills intersection is estimated at 1.64 MGD. This rate includes both estimates of future development areas on vacant land and anticipated hookups from residences currently served by septic systems adjacent to the alignment. From the Silver Hills intersection to the south the injection of an additional 0.63 MGD will be placed into the main resulting in the last 4,200 feet of the main needing a capacity of approximately 2.27 MGD (peak capacity).

- Alignment Number 2 - The second alignment will commence at the southeast boundary of the project and follow Silver Knolls Boulevard to its intersection with Osage Road where it will intersect with alignment number 1 a length of approximately 4,870 feet (refer to Figure 4-2). The peak flow for this segment is anticipated to be 0.63 MGD. The phasing of the project will determine which of these alignments will be constructed first.

The design of both of these alignments will be required to take into consideration future sewer hookups of adjacent properties shown as outlined areas on attached Figure 4-3. Methods of reimbursement will be left to future negotiations with the affected parties.

### ▪ Alternative 2

Alternative 2 would require the securing of rights of way from Osage Road to the east along the projection of both Blackhawk Road and Silver Hills Boulevard to the Reno-Stead airport property. This alignment would then parallel the western Airport boundary for which a right of way would have to be obtained. To date, the applicant has been unable to secure these accesses from either the airport or the private property owners.

If these rights of way were to be secured, the major portion of the facility would be constructed within the City of Reno on airport property requiring approximately 9,700 feet of main (refer to Figure 4-3). This portion of the infrastructure would be designed and constructed using City of Reno standards and flow rates. Once again, all sewer facility design can potentially incorporate oversizing based upon future negotiations with the public entities and private property owners.



## SILVER HILLS – SPECIFIC PLAN DEVELOPMENT STANDARDS

---

Future county sewer mains will connect to an existing City of Reno 12" diameter trunk main stubbed off the west end of Echo Avenue. The portion of the existing City of Reno sanitary sewer system that will provide service to the project consists of an 18" sewer interceptor in Moya Blvd. (from Lear Blvd. to Echo Ave.), the existing City of Reno Lear Boulevard Pump Station located at the northeast corner of the intersection of Lear Boulevard and Moya Boulevard, the force main extending from the Lear Pump Station to the east, and existing gravity sewer pipes further to the east. The existing City of Reno sanitary sewer system currently conveys sewer from the west end of the Stead Industrial area in an easterly direction to the existing Reno/Stead Water Reclamation Facility (RSWRF) located at 4250 Norton Street near the intersection of Military Road and Lear Boulevard. An analysis of the existing City facilities including mains, the Lear Pump Station and associated force main may be required in order to ensure capacity for the proposed Silver Hills Development. It is assumed for the purposes of this summary that the Reno/Stead Water Reclamation Facility (RSWRF) will have or will be able to increase its capacity to serve the proposed project.

The proposed on-site sanitary sewer system for the Silver Hills Development will consist of 8" to 12" mains and manholes in accordance with Washoe County standards.

**Table 4-1 - Sewer Design Criteria for City of Reno and Washoe County**

Design Criteria	City of Reno	Washoe County
Peak Flow in Mains (8" to 10")	350 gallons per capita per day	
Peak Flow in Trunks (>10" <18")	250 gallons per capita per day	
Average Daily Residential Flow		270 gallons per day (A)
Peak Flow - Single Family Residential for Mains (8" to 10" pipe)	1,050 gallons per day	810 gallons per day (A)
Peak Flow - Single Family Residential Flow for Trunks (>10" <18")	750 gallons per day	810 gallons per day (A)

# SILVER HILLS – SPECIFIC PLAN DEVELOPMENT STANDARDS

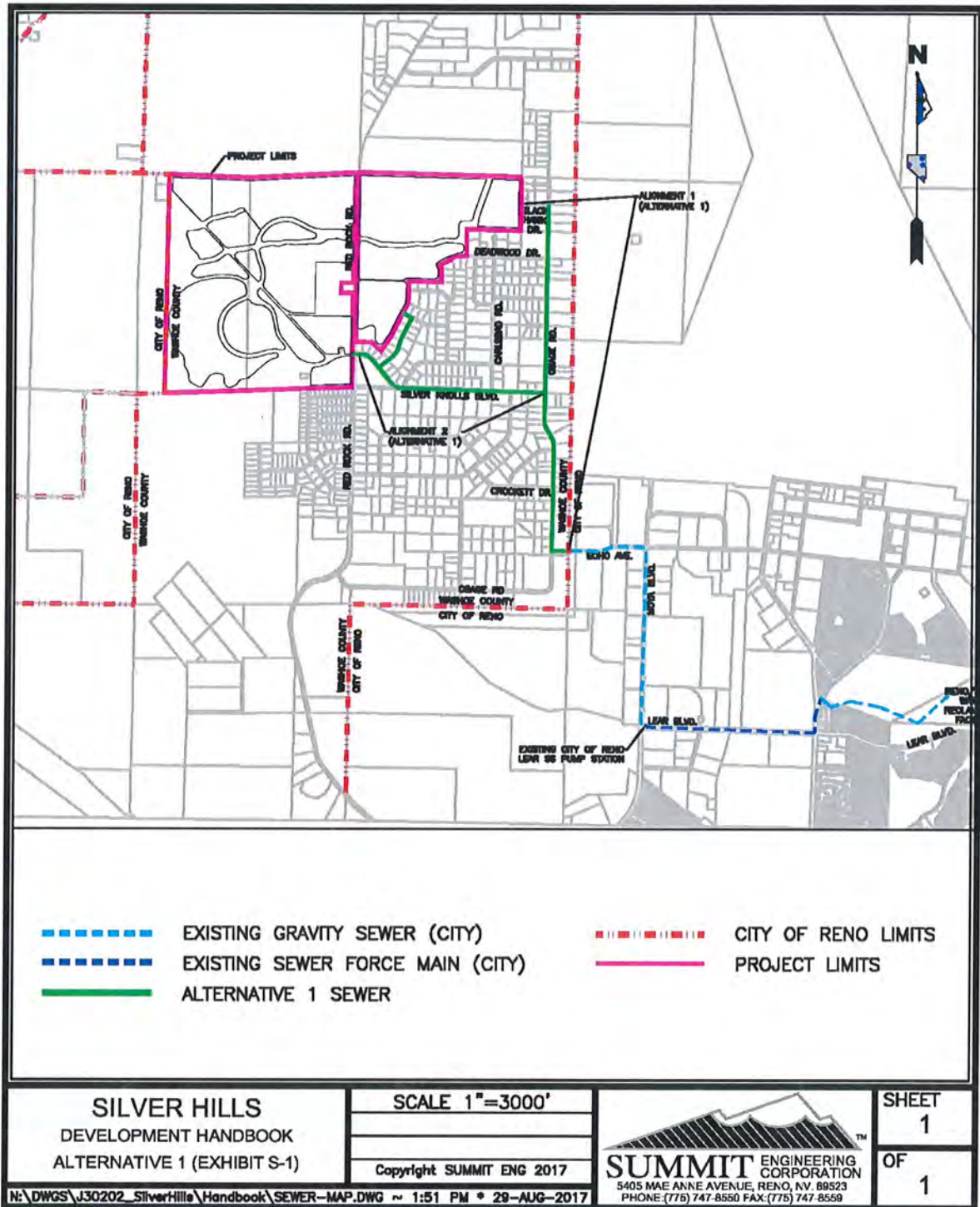


Figure 4-1 – Sewer Alternative 1



# SILVER HILLS – SPECIFIC PLAN DEVELOPMENT STANDARDS

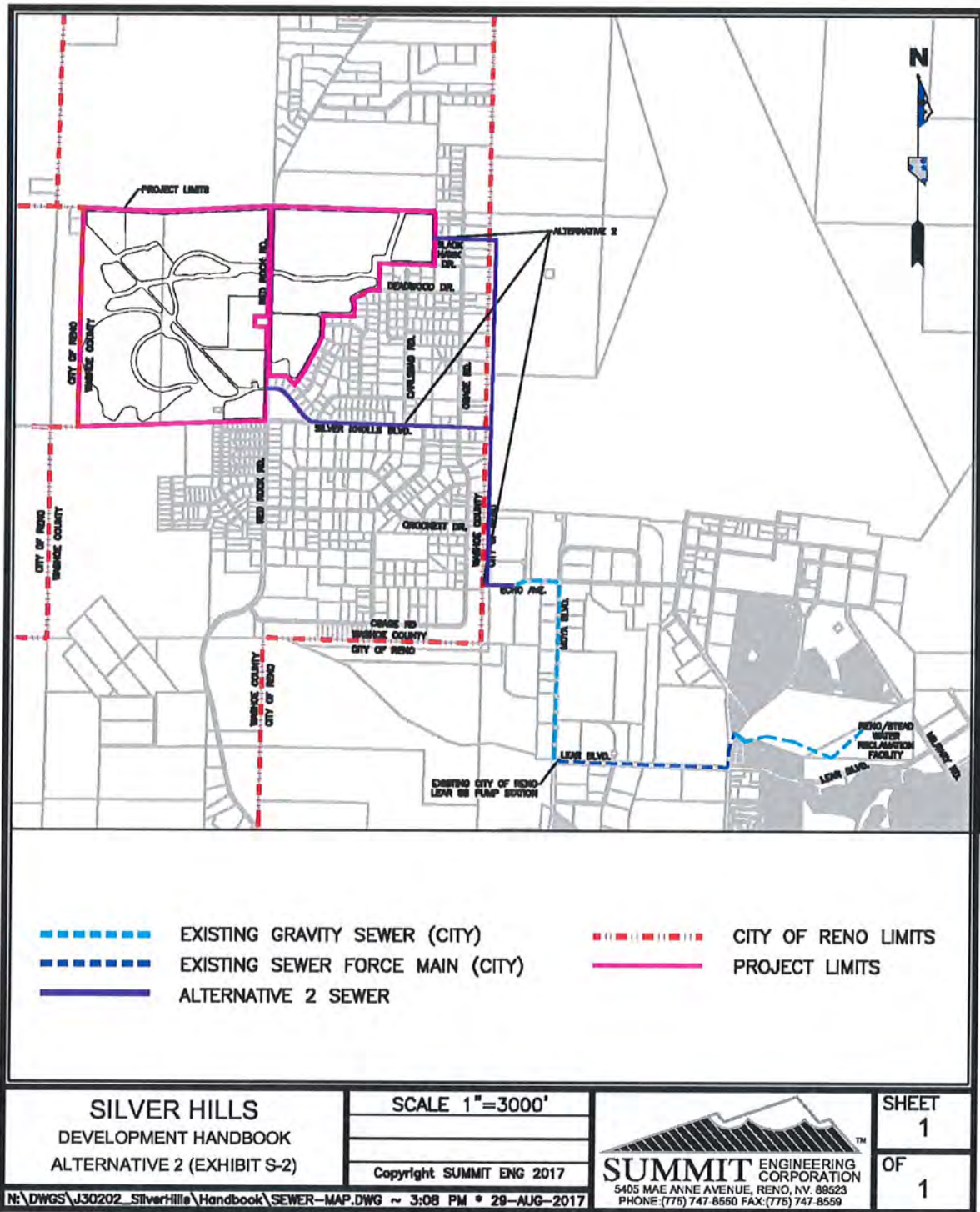


Figure 4-2 – Sewer Alternative 2



# SILVER HILLS – SPECIFIC PLAN DEVELOPMENT STANDARDS

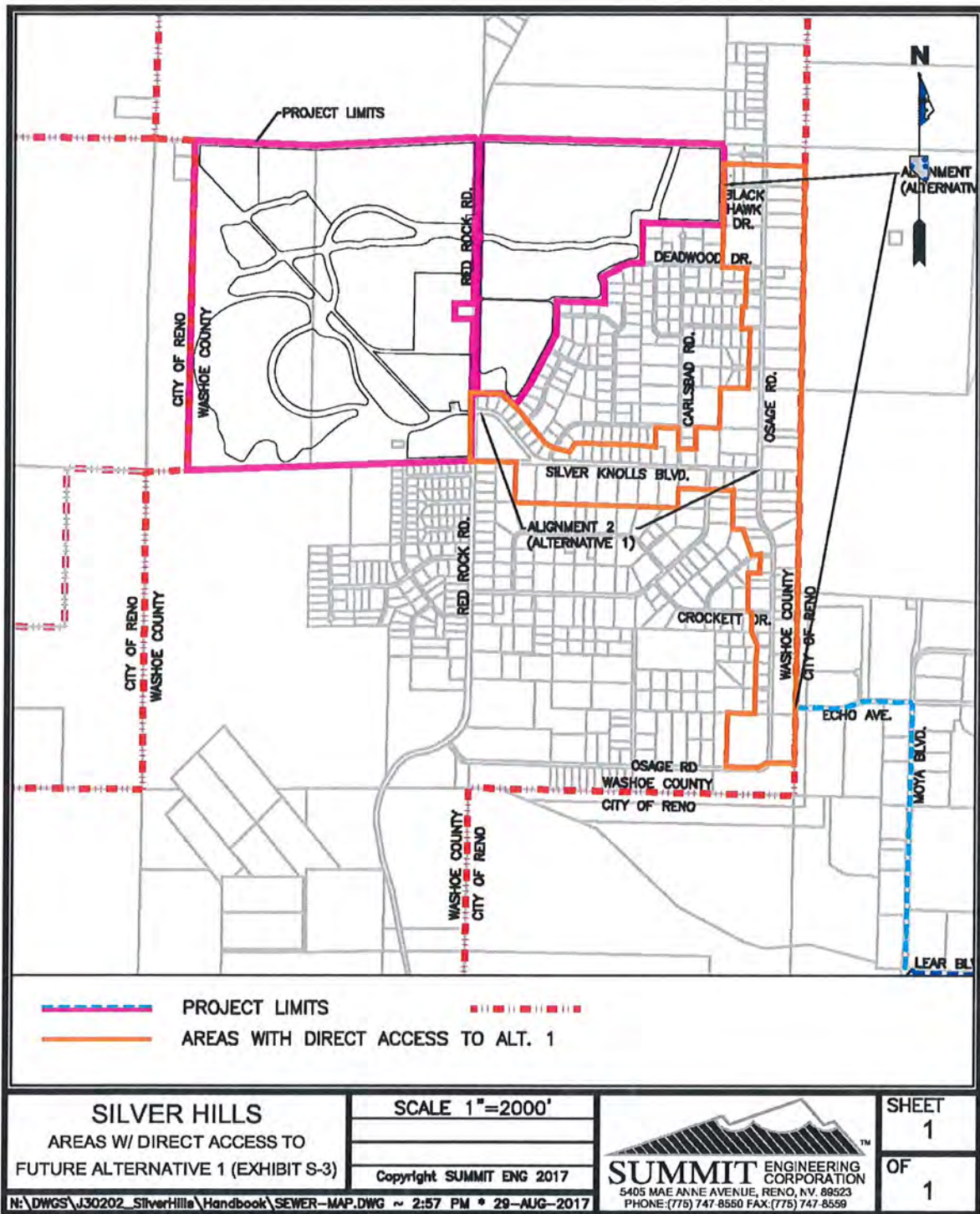


Figure 4-3 – Sewer Future Alternative 1

## SILVER HILLS – SPECIFIC PLAN DEVELOPMENT STANDARDS

---

### 4.3.2 Water

The nearest existing water facilities to the project site is the Silver Knolls Water Company. There are existing Silver Knolls Water Company facilities within and adjacent to the project limits. However, the Silver Knolls Water Company is a small water system that is not capable of providing service to the Silver Hills project. The Silver Hills Development shall be annexed into the service territory of the Truckee Meadows Water Authority (TMWA) which currently exists to the southeast of the site. A TMWA Discovery will need to be prepared to provide service planning and an initial estimate of the required backbone water facilities necessary to provide service to the project.

In 2015, a TMWA discovery was prepared for a smaller project located on the same property. Although prepared for a different project, it is assumed for this purpose that many of the same requirements with oversizing will be necessary for the current proposal. The nearest TMWA facility to the site is a 12" diameter main located adjacent to the Army Aviation well to the east of the site within the confines of the Reno Stead Airport property (refer to Figure 4-4). From this location, a 3,500-foot main will need to be constructed to the boundary of the property.

An on-site booster pump station will need to be constructed in the northeastern portion of the site along the eastern boundary. From the booster station site and depending on the ultimate layout of the project, a parallel feeder main will need to be constructed to the northwest corner of the site.

A tank (or tanks) will be required and to obtain the elevation necessary will need to be located off-site. A suitable location for the tank (APN 556-120-07) is owned by the Developer and is adjacent to dedicated right of way. Naturally, due to terrain and the elevation of the tank, various pressure reducing stations will need to be incorporated into the ultimate design.

Water rights dedication will be required for the project, the amount of which cannot be anticipated at this time but will be one of the results of a future TMWA discovery application. The dedication rates will be based upon Rule 7 or a modification thereof when final demands are determined.

All improvements and plans are subject to the review and approval of the Washoe County Engineering and Capital Projects Division and Department of Water Resources.

# SILVER HILLS – SPECIFIC PLAN DEVELOPMENT STANDARDS

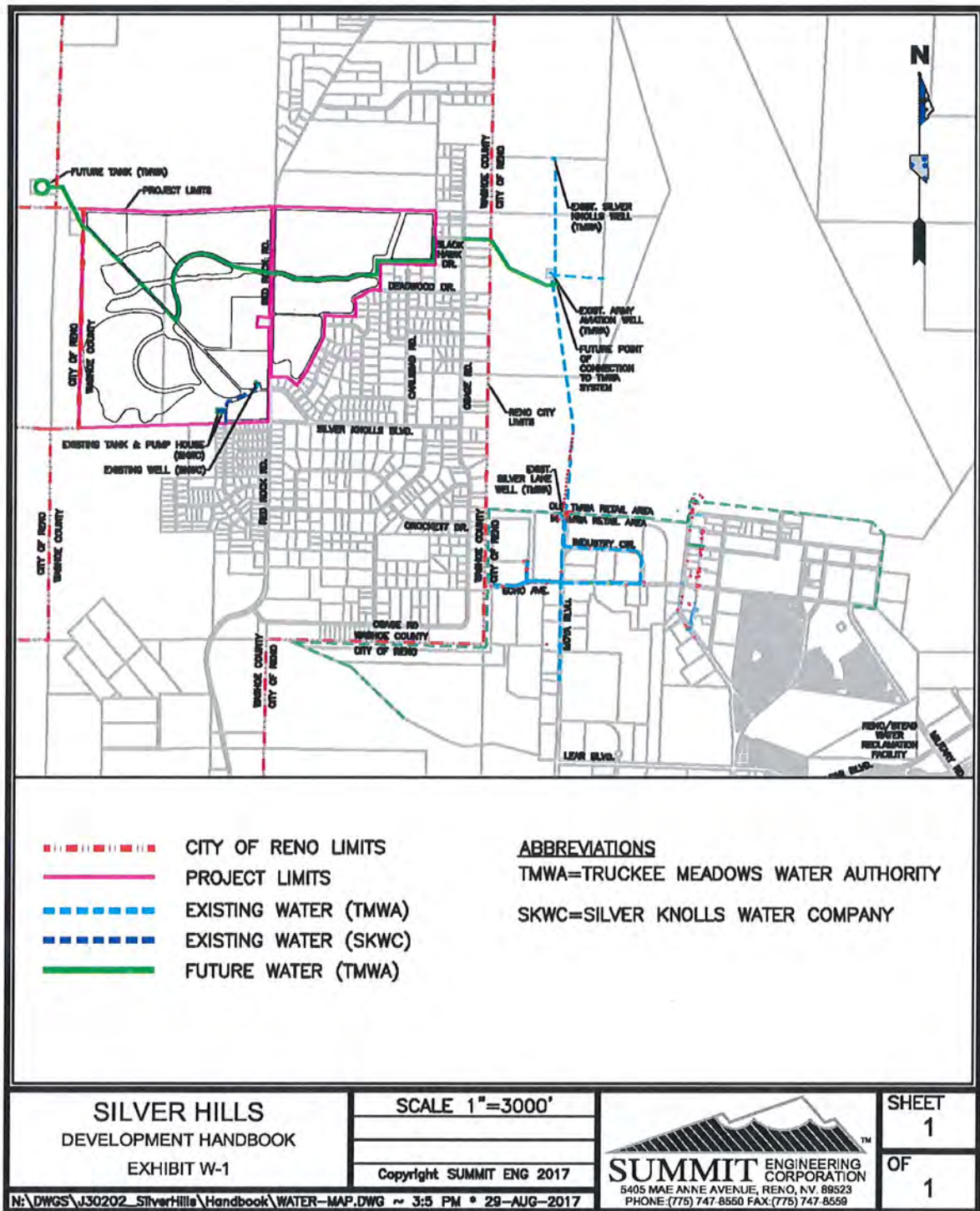


Figure 4-4 – Potable Water



## **SILVER HILLS – SPECIFIC PLAN DEVELOPMENT STANDARDS**

---

### **4.3.3 Effluent**

The Silver Hills Specific Plan area shall be allowed to utilize treated effluent for watering of common areas, parks, etc. Use of effluent shall be subject to applicable agreements with Washoe County, City of Reno, and the Truckee Meadows Water Authority.

At the time of adoption of this Specific Plan, infrastructure related to effluent use is not in place in the Red Rock/Silver Knolls area. Any use of effluent within the Silver Hills Specific Plan area shall be subject to separate agreements and/or improvements. This Specific Plan shall not limit or restrict the use of effluent for irrigation in any way. The Silver Hills project as well as various adjacent sites intend to use, at a minimum, all effluent generated on a yearly basis. The use of the effluent for allowed irrigation purposes is critical for the development of the parks, open space and Agrihood areas proposed as part of this plan. It is understood by all parties that effluent reuse is part and parcel to the development of a sustainable project. Not only will the use of the effluent reduce the need for storage in the existing surface water storage facilities (therefore reduce future flooding possibilities) but it will reduce the requirement for potable water sources for irrigation.

It must also be understood that the delivery of the effluent will be subject to the construction of a return flow pipeline to the vicinity of the site. Such a facility could very feasibly be constructed to remove excess effluent from the overtaxed storage facilities currently existing in the area. A proposal for a dam to the north of the Silver hills site has been discussed with City staff as a method to reduce flooding concerns currently existing.

## SILVER HILLS – SPECIFIC PLAN DEVELOPMENT STANDARDS

---

### 4.3.4 Storm Water Management

The Silver Hills Development will include the construction of an on-site storm drain system to collect and convey runoff in accordance with Washoe County standards. A trail system will be incorporated into the open space corridors to provide recreation opportunities and to provide pedestrian connectivity within the project and to the existing adjacent Silver Knolls Park (ref. Trail Plan). The open space corridors will also serve as storm water management areas including adequate area for both conveyance of offsite and on-site runoff through the site as well as adequate areas for both detention and retention to assure that a minimum of 125 percent of the increased stormwater from the site will be either retained or detained onsite thus lessening the current peak discharges at completion of construction.

When a specific phase of the project is being developed, it must incorporate any adjacent trails or open space as indicated on the trail plan which will necessarily include required storm drainage facilities.

The on-site storm drain system will include a combination of the following: drainage channels, detention or retention basin as required, culverts, catch basins, manholes, and pipes. The on-site storm drain system will be designed to maintain the rate of runoff leaving the site to a level that is at or below pre-development conditions.

The site in the pre-development condition, along with a larger watershed to the west of the site, drains in an easterly direction. There are various ephemeral drainages that cross through the project site that convey runoff in an easterly and southeasterly direction. There are no known existing seeps or springs within the limits of the project. Runoff from the Silver Hills Development, and other properties to the west and east of the project, is eventually discharged to Silver Lake. Storm water retention basins will be required in order to maintain runoff rates below pre-development rates. The project shall incorporate Low Impact Development (LID) design in accordance with Washoe County Development Code requirements, to the satisfaction of the Engineering and Capital Projects Division.

# SILVER HILLS – SPECIFIC PLAN DEVELOPMENT STANDARDS

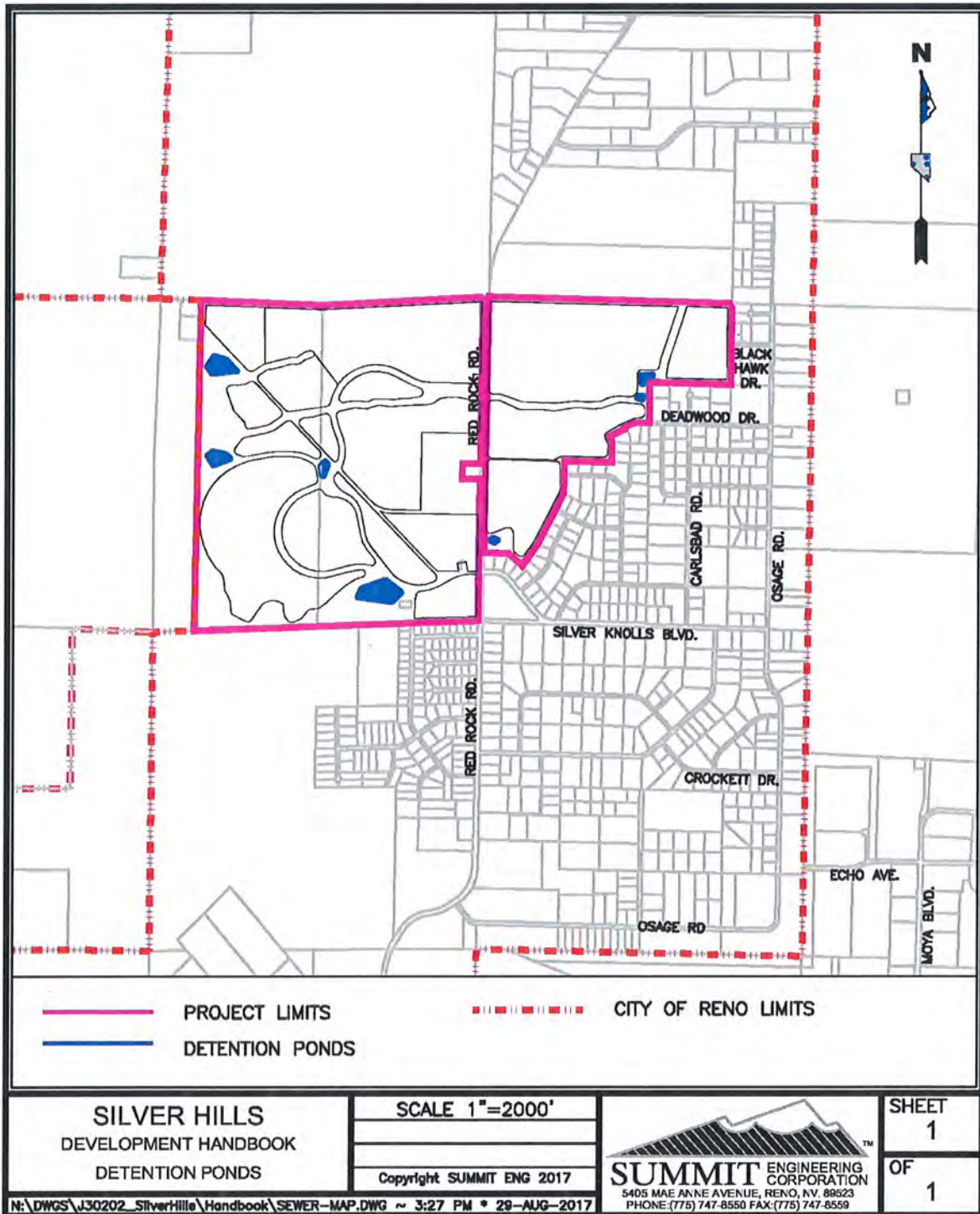


Figure 4-5 – Detention Pond Schematic



## SILVER HILLS – SPECIFIC PLAN DEVELOPMENT STANDARDS

---

### 4.3.5 Roadways

Silver Hills will include a hierarchy of roadways including arterials (Red Rock Road), Collectors (Silver Hills Parkway), residential collectors, and local streets. Standards for arterials and residential collectors shall follow the adopted road sections specified in the Washoe County Development Code and Public Works Design Manual. Standards for Silver Hills Parkway (collector) are defined in Chapter 2. Similarly, individual builders within Silver Hills may choose to utilize standard Washoe County details for local roadways or utilize the modified standard detailed in Chapter 2.

Regional roadway improvements called out in the Silver Hills Traffic Impact Analysis dated September 15, 2017, along with conditions placed on improvements by the Washoe County Board of Commissioners shall be implemented per the recommendations and stipulations of those documents.

### 4.3.6 Natural Gas

As shown on the attached Figure 4-6, an existing 8" high pressure gas line currently traverses the entire portion of the site west of Red Rock Road. Although no application for service has been submitted to NV Energy because of the preliminary nature of the development, this line will be able to serve the first phases of the development. During the progression of the phased development, if the line must be upsized or somehow looped, it will be accomplished as required by the utility at that time.

### 4.3.7 Cable and Telephone

Telephone and cable services will be provided by AT&T. The main supply of the service will be from a fiber optic line which currently runs along Red Rock Road and also traverses the western portion of the project (refer to Figure 4-6). Based upon contact with Mr. Lyles of AT&T the following information was received:

*"We (AT&T) will have enough fiber capacity to serve this development, however everything beyond the intersection at Red Rock and Silver Knolls will require new infrastructure. How we go about building this will largely depend on what NVE has existing in the area, where their tie in point is, and how they intend to serve the new development."*

Extensions from the existing line which is currently in existence on the west side of Red Rock Road has always been anticipated and will be incorporated into the various phases of the development as they come on line.

Spectrum (Charter) also provides cable and television service within the region and may serve the Specific Plan area in addition to AT&T, allowing residents additional options.

# SILVER HILLS – SPECIFIC PLAN DEVELOPMENT STANDARDS

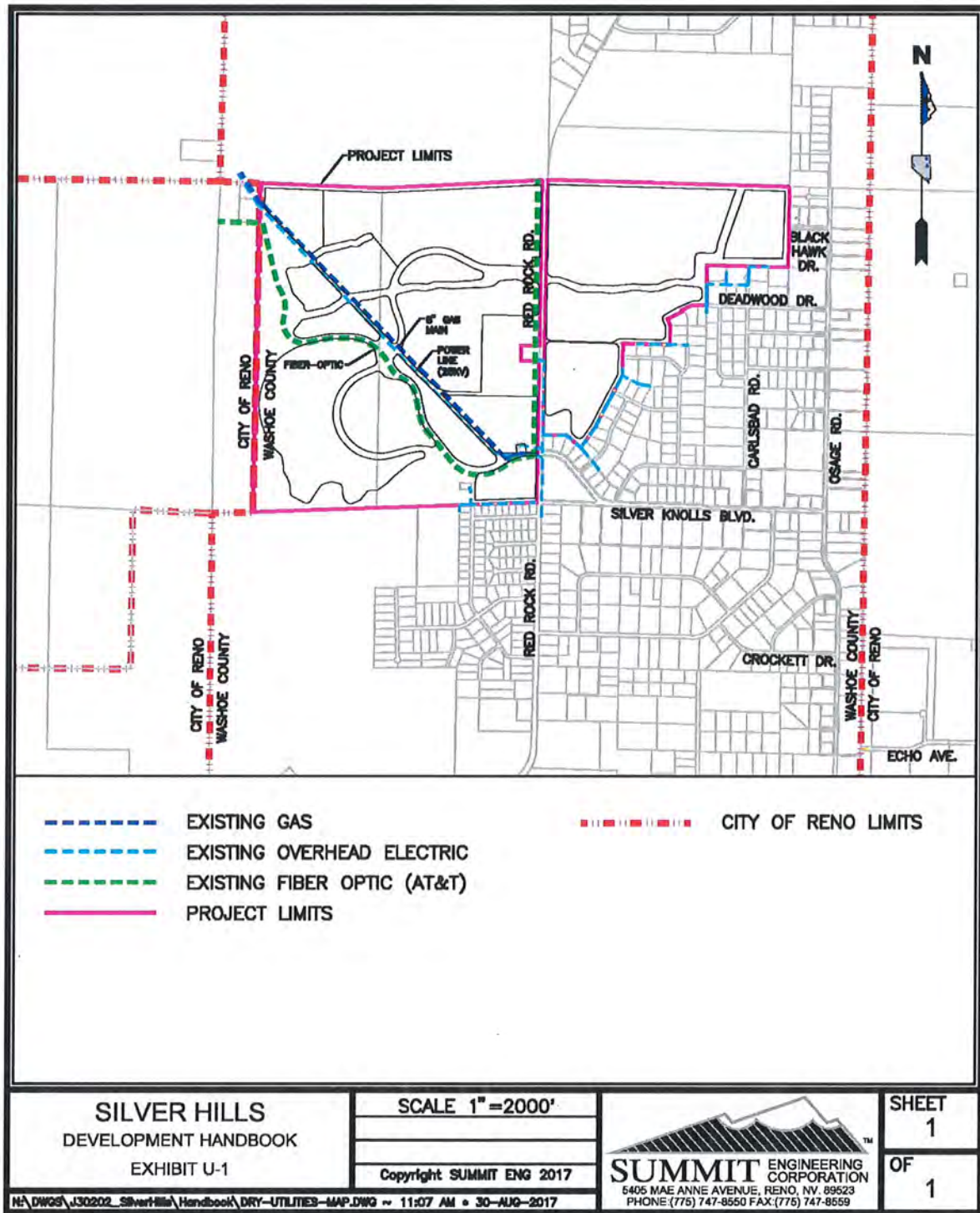


Figure 4-6 – Dry Utilities

## **SILVER HILLS – SPECIFIC PLAN DEVELOPMENT STANDARDS**

---

### **4.3.8 Electric**

As with other public utilities, no specific plan for electric utilities has been developed. An application for service must be submitted to NV Energy which has not been done. Numerous electrical facilities currently exist both on and surrounding the site as shown on the attached area layout from NV Energy

### **4.4 Site Grading**

As shown on the attached slope map, the site is highly developable with over 90% of the total site having slopes between 0% and 15%. The majority of the areas with slopes over 30% are small pockets located along drainages which will be left as undeveloped open space. There will be no reason to attempt to develop the site outside the grading standards allowed in Washoe County Code 110.438.

Site grading plans for this phased development shall be provided with each Tentative Subdivision Map as required by Washoe County Code. All grading (in combination with landscaping) will be done to accommodate the unit types anticipated and, in a method, as sensitive as possible to the protection the resulting views from the surrounding areas.

### **4.5 Fire Protection**

The Silver Hills Specific Plan area lies close to midway between two existing Truckee Meadows Fire Protection District stations; Cold Springs located at 3680 Diamond Peak Drive and Stead located at 10575 Silver Lake Drive. Additionally, there is an existing volunteer fire station located immediately adjacent and central to the Specific Plan area on the west side of Red Rock Road.

Current response times are consistent with TMFPD policy. Additionally, the Specific Plan dedicates 25 acres of Public Facility land use immediately adjacent to the current volunteer station on Red Rock Road. It is anticipated that up to 5 acres could be dedicated to Washoe County in order to transition the volunteer station to a full-time manned facility. Timing and demand for improvements to the Red Rock volunteer station is dependent on a variety of factors including the phasing of new development within Silver Hills as well as approved projects to the north and south. Therefore, the Master Developer shall work with TMFPD to determine if and when new improvements are required and shall enter into any agreements necessary as a supplement to this Development Standards Handbook.

TMFPD shall have reviewing authority over new development, including tentative maps within the Specific Plan Area. Therefore, if an individual project is not within a satisfactory emergency response time, TMFPD shall have the ability to condition supplemental mitigation measures such as fire sprinklers.



SILVER HILLS – SPECIFIC PLAN DEVELOPMENT STANDARDS

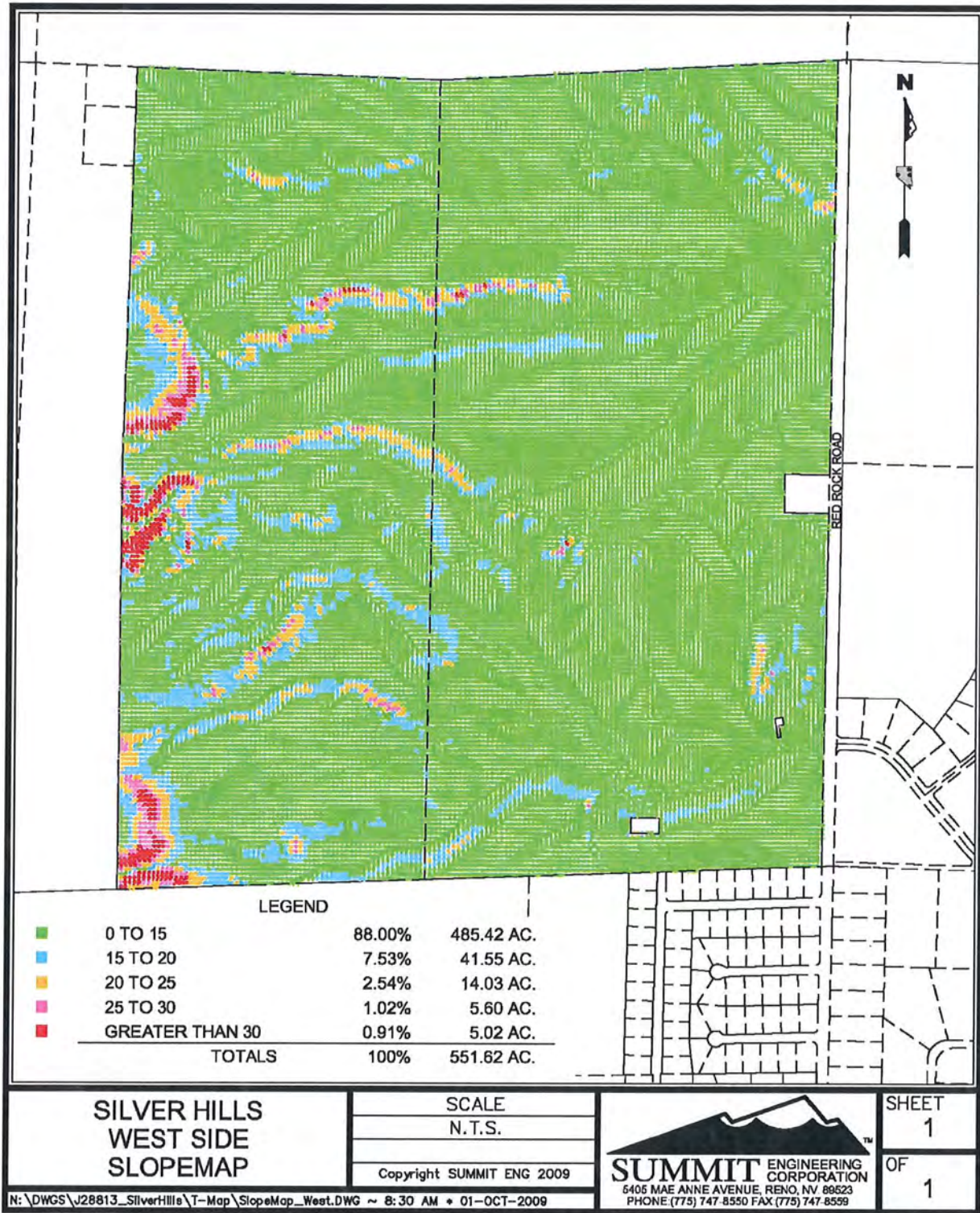


Figure 4-7 – West Side Slope Analysis



# SILVER HILLS – SPECIFIC PLAN DEVELOPMENT STANDARDS

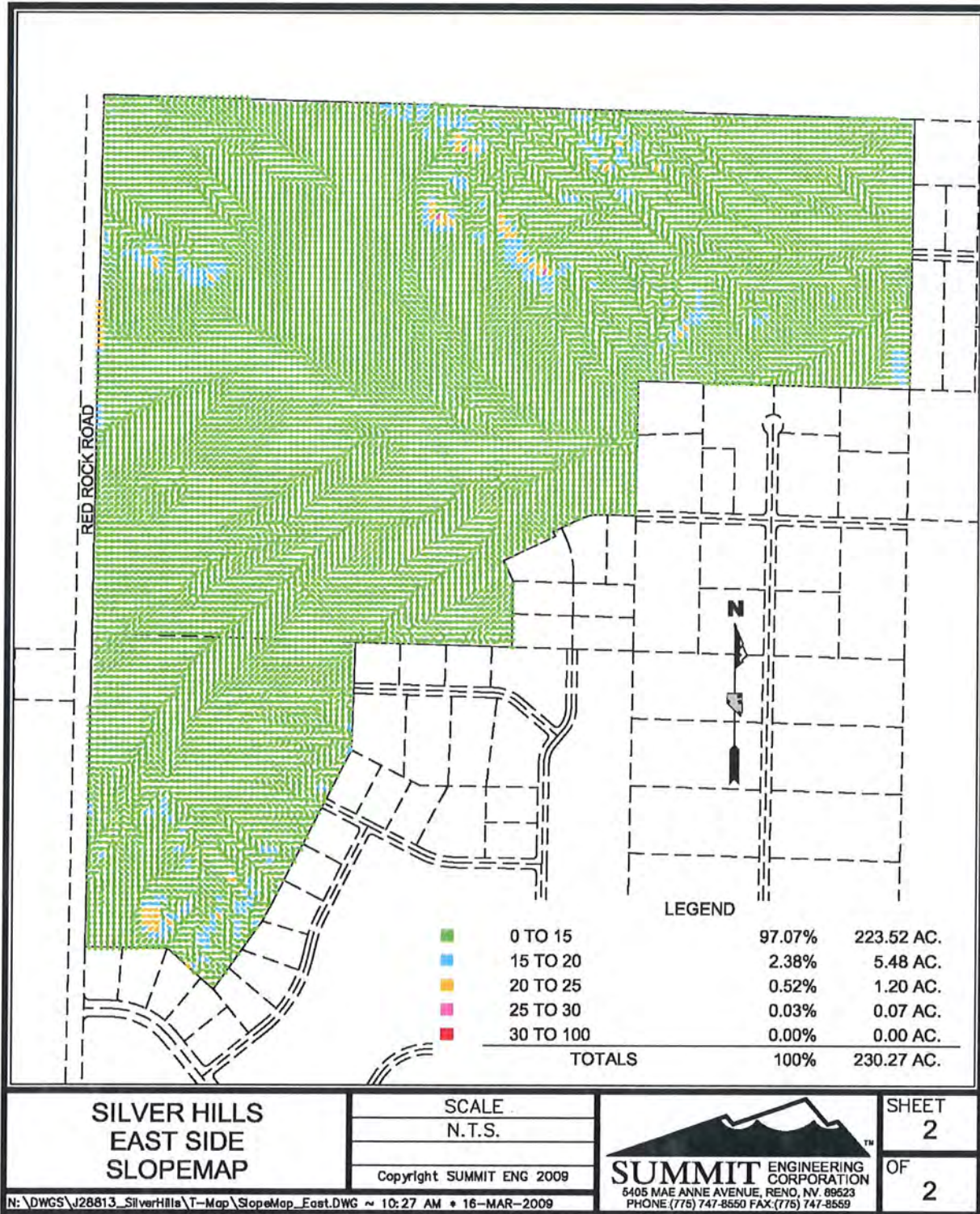


Figure 4-8 – East Side Slope Analysis

## **SILVER HILLS – SPECIFIC PLAN DEVELOPMENT STANDARDS**

---

### **4.6 Police Protection**

The Washoe County Sheriff's Office provides police services in the area of Silver Hills. Existing patrols are already occurring within the area. As Silver Hills and the surrounding approved projects are constructed, it may be possible to co-locate a Sheriff substation within the Public Facility zone. This would have to be coordinated with other projects of regional significance in the area such as Evans Ranch, Stonegate, etc.



**CHAPTER 5 – CONSTRUCTION, OPERATION, AND MAINTENANCE**

**5.1 Clean Job Site**

As construction occurs within Silver Hills, individual developers/builders shall ensure that construction sites, including standing and storage areas, are maintained in a clean and orderly fashion. Any hazardous materials shall (i.e. gasoline, paints, etc.) shall be stored in proper OSHA approved containers and in accordance with all applicable County, State, and Federal standards/permits.

**5.2 Protection of Vegetation During Construction**

Natural vegetation outside of the limits of grading for any given project within the Silver Hills Specific Plan area shall be protected from damage during construction. Any common or open space areas that are disturbed during construction (i.e. extension of utilities, construction access, etc.) shall be fully restored. This means open space areas will be revegetated with native vegetation and developed/improved common areas shall be returned to their prior (or better) level (i.e. landscaping, irrigation, etc.).

**5.3 Temporary Protective Fencing**

Construction that is adjacent to any open space areas, areas of public activity (i.e. trails, parks, etc.) or adjacent to significant natural features shall be required to erect temporary protective fencing to ensure that these areas are not disturbed and that public safety is upheld.

**5.4 Erosion Control Plan and Storm Water Pollution Prevention Plan (SWPPP)**

Per Washoe County Development Code and Nevada Division of Environmental Protection (NDEP) policy/regulation, all construction projects are required to have an Erosion Control Plan and Storm Water Pollution Prevention Plan (SWPPP) in place prior to all grading activities. The Erosion Control Plan(s) shall be reviewed and approved by the Washoe County Department of Planning and Building and the Washoe County District Health Department while, the SWPPP shall be approved by the NDEP. This standard applies for any and all land-disturbing activities that occur within the Specific Plan area.

**5.5 Temporary Structures and Signs**

Temporary structures such as construction trailers, portable offices, temporary sales offices, etc. shall be reviewed by the Master Developer and/or the Design Review Committee as to their location, hours of operation, etc. To the extent possible, construction trailers shall be located away from public rights-of-way, trails, and active common areas. All temporary structures shall be removed within 30 days of the completion of work or issuance of final certificate of occupancy (as applicable).

## **SILVER HILLS – SPECIFIC PLAN DEVELOPMENT STANDARDS**

---

Individual projects within Silver Hills shall be permitted two 32 square foot temporary project identification sign. The purpose of this sign is to identify the project and may include builder name, selling price, contact information, phasing announcements, financing source, etc. This sign may not replace the required project entry monument (refer to Chapter 2) and shall be removed concurrently with the sale of the final home within that particular neighborhood. All temporary signs shall be reviewed and approved by the Master Developer or the Silver Hills Design Review Committee.

Security fencing associated with temporary structures and construction is permitted. This includes the use of chain link and barbed wire fencing on a temporary basis. Fencing shall be limited to no more than 6 feet in height and shall be removed concurrently with the temporary structure.

### **5.6 Model Home Complexes**

Model Home Complexes shall comply with the following standards:

- The location of model home complexes and details regarding parking, lighting, landscaping, fencing, signing and hours of operation shall be reviewed and approved by Master Developer and the Washoe County Department of Planning and Building.
- Model home complexes/sales offices shall operate between the hours of 7:00 am to 6:00 pm, 7 days per week.
- Any temporary sales office and/or model home complex shall cease operation with the sale of the final home in the subdivision. Additionally, all temporary signs, etc. shall be removed concurrently.
- Accessible parking shall be provided per Washoe County Development Code standards for all model home complexes.
- Temporary parking lots, subject to ADA standards shall be permitted with new model home complexes and shall be removed concurrently with the sale of the final unit within the subdivision.
- Temporary open view fencing is permitted within the front yard setbacks of model home complexes and shall be removed with the sale of the final unit within the subdivision. Acceptable fencing includes wrought iron or split rail and shall not exceed 4 feet in height.
- Lighting for model home complexes may be provided for safety and security purposes and shall be approved by the Master Developer and/or the Design Review Committee. Temporary security lighting shall be removed with the sale of the final unit within the subdivision.

## **SILVER HILLS – SPECIFIC PLAN DEVELOPMENT STANDARDS**

---

- Lighting of temporary parking lots, other than bollard lighting limited to 4 feet in height, shall be prohibited.
- Temporary flags and flag poles shall be permitted within model home complexes subject to review and approval of the Master Developer and/or Design Review Committee. All flags and flag poles shall be removed with the sale of the final unit within the subdivision.

### **5.7 Construction Yards and Hours**

As construction commences within Silver Hills, construction yards will be necessary. A construction yard is a temporary area used for the storage of materials, supplies, tools, equipment, etc. The following requirements will apply to all projects within the Silver Hills Specific Plan area:

- Construction hours, including activity within construction yards, shall be limited to 7:00 am to 8:00 pm weekdays and 9:00 am to 6:00 pm on weekends.
- To the greatest extent possible, new construction yards shall be located away from existing residences.
- Construction yard location shall be reviewed and approved by the Master Developer and/or the Design Review Committee.
- Construction yards shall be subject to applicable Washoe County permits, including a Washoe County District Health Department dust control permit.
- Construction yards shall be removed and sites returned to a natural or developed state with issuance of the final certificate of occupancy within the subdivision(s) they serve.
- All construction yards shall be kept in a neat and orderly fashion. All materials, equipment, etc. shall be kept behind a 6-foot minimum fence. Acceptable fencing includes wood or chain link and may include barbed wire.
- Temporary pole lighting is permitted within construction yards for security purposes. All fixtures shall be shielded to ensure spill-over and glare does not occur on adjoining properties.
- An onsite resident may be permitted within temporary living quarters (modular unit or recreational vehicle) within active construction yards for security purposes.
- The project contractor shall be responsible for obtaining applicable permits and enforcement of these standards.



## SILVER HILLS – SPECIFIC PLAN DEVELOPMENT STANDARDS

---

### 5.8 General Construction Standards

- Construction hours shall be limited to 7:00 am to 8:00 pm weekdays and 9:00 am to 6:00 pm on weekends.
- Individual builders shall be responsible for obtaining all required permits such as dust control, SWPP, etc.
- Roadways within construction areas shall be kept free of debris such as scrap materials, nails, etc. and shall be swept on a regular basis.
- Adequate dumpsters shall be provided within construction areas to ensure debris does not spill over into streets or blow off-site.
- Builders shall designate to the Master Developer and Washoe County a project contact person responsible/authorized to correct problems regarding the project on a 24-hour/7 days a week basis.
- Fencing may be erected around construction sites on a temporary basis. This may include chain link at a maximum of 6-feet.
- The Master Developer and subsequent Homeowners Association(s) shall include the implantation of Best Management Practices to prevent the spread of noxious weeds during construction activities.

### 5.9 Common Area Maintenance

Silver Hills will include a significant amount of common area and open space. This includes both private and public common areas. In general, private common areas will be located within individual subdivisions and may include neighborhood greens, private recreational amenities, private streets, etc. Public common areas include dedicated open space, trails, drainageways, utility corridors, etc.

#### 5.9.1 General Maintenance Standards

- Concurrent with the approval of the first tentative map or development permit (i.e. road construction), the Master Developer shall submit a final Three-Year Maintenance Plan to the Washoe County Department of Planning and Building for review and approval. The plan shall fulfill the requirements of Section 110.442.35(2) of the Washoe County Development Code. The maintenance plans shall be reviewed and updated, as necessary, by the Washoe County Department of Planning and Building every 3 years.
- Prior to or concurrent with the issuance of the first building permit, the Master Developer shall demonstrate that a master homeowner's association has been formed and articles of incorporation are filed with the Nevada Secretary of State.

## **SILVER HILLS – SPECIFIC PLAN DEVELOPMENT STANDARDS**

---

- The Silver Hills Homeowners Association shall be responsible for the ongoing maintenance of all public common areas within the Specific Plan Area. This includes vegetation, preservation of watersheds, debris and litter removal, trail maintenance, maintenance of community signs and amenities, landscape maintenance, maintaining public access where applicable, noxious weed abatement, etc.
- The Silver Hills Homeowners Association shall be responsible for the permanent maintenance of public common/open spaces.
- As an alternative to a Homeowner’s Association, an alternative legal instrument may be formed to provide for the ongoing permanent maintenance of common/open space areas and community amenities. Acceptable instruments include a Landscape Maintenance Association (LMA) or Landscape Maintenance District (LMD) subject to the approval of the Master Developer and Washoe County.
- The Silver Hills Homeowner’s Association or any subsequent entity charged with the task of maintenance shall comply with the regulations set forth in NRS 278A.120 through 278A.190.
- Except for dedicated public parks within the Specific Plan area, Washoe County shall not be responsible for common or open space areas within Silver Hills.
- The Master Developer and subsequent Homeowners Association(s) shall include the implantation of Best Management Practices to prevent the spread of noxious weeds during construction activities.

### **5.9.2 Private Open Space and Common Areas**

- Private Open Space and common areas such as neighborhood greens, private streets, etc. shall be maintained by a sub-homeowner’s association specific to an individual neighborhood.
- Sub-homeowner’s associations must comply with all applicable rules and regulations, including any adopted covenants, conditions, and restrictions (CC&R’s), included within the Specific Plan and shall require approval from the Master Developer and Washoe County.
- The Silver Hills Homeowners Association may choose to maintain private common areas through an agreement with a sub-HOA or individual builder. This shall be subject to approval of the Master Developer and/or Silver Hills Homeowners Association Board of Directors.
- The Master Developer and subsequent Homeowners Association(s) shall include the implantation of Best Management Practices to prevent the spread of noxious weeds during construction activities.

## **SILVER HILLS – SPECIFIC PLAN DEVELOPMENT STANDARDS**

---

### **5.9.3 Agrihood Farms and Facilities**

- Agrihood facilities (i.e. orchards, barns, greenhouses, etc.) and common areas shall be maintained by the master homeowner's association.
- As an alternative to a typical homeowner's association, Silver Hills may incorporate its own advisory board that will oversee agrihood operations and maintenance.
- The Master Developer and subsequent Homeowners Association(s) shall include the implantation of Best Management Practices to prevent the spread of noxious weeds during construction activities.





# SILVER HILLS - VILLAGE 1

## TENTATIVE SUBDIVISION MAP



Prepared by:



**REVISED - MAY 10, 2021**

# SILVER HILLS – VILLAGE 1

## TENTATIVE SUBDIVISION MAP

**Prepared for:**

Lifestyle Homes TND, LLC  
4790 Caughlin Parkway, Suite 519  
Reno, Nevada 89519

**Prepared by:**

Christy Corporation, Ltd.  
1000 Kiley Parkway  
Sparks, Nevada 89436  
(775) 502-8552

**Revised - May 10, 2021**



## Table of Contents

Introduction .....1  
 Project Location .....1  
 Existing Conditions .....4  
 Project Description .....5  
 Specific Plan Compliance .....13  
 North Valleys Area Plan .....20  
 Tentative Map Findings .....22

### List of Figures:

Figure 1 – Vicinity Map .....1  
 Figure 2 – Silver Hills Land Use Plan .....2  
 Figure 3 – Tentative Map Area .....3  
 Figure 4 – Existing Conditions .....4  
 Figure 5 – Preliminary Site Plan .....6  
 Figure 6 – Phase 1 Trailhead .....7  
 Figure 7 – Village 1 Trail Plan .....8  
 Figure 8 – Entry Monument .....9  
 Figure 9 – Neighborhood Entry Monument .....10  
 Figure 10 – Wayfinding Signage .....10  
 Figure 11 – Typical Setback Variation .....14  
 Figure 12 – Typical Building Elevations .....16  
 Figure 13 – Typical Front Yard Landscaping .....19  
 Figure 14 – Fencing .....20  
 Figure 15 – Typical Silver Hills Parkway Fencing .....21

### Appendices:

- Washoe County Development Application
- Owner Affidavit
- Tentative Subdivision Map Application
- Request to Reserve Street Names
- Property Tax Verification
- Washoe County Assessor’s Office Map





**Attachments:**

- Preliminary Engineering Plans
- Preliminary Engineering Reports
- Preliminary Landscape Plan
- Traffic Impact Analysis
- Truckee Meadows Water Authority Discovery Report/Will-Serve
- Preliminary Title Report
- Preliminary Geotechnical Investigation



## Introduction

This application includes the following request:

A **Tentative Subdivision Map** to allow for a 358 unit single family subdivision with common open space within the Silver Hills Specific Plan.

## Project Location

The Silver Hills Specific Plan (APN #'s 087-390-10, 087-390-13, 086-232-31, and 086-203-05) consists of 780.32± acres located within the North Valleys Areas Plan, contiguous to the City of Reno on the west. The Specific Plan encompasses land on the east and west sides of Red Rock Road, north of Silver Knolls. Village 1 (included with this application) is located at the northern portion of the Specific Plan area, west of Red Rock Road. Figure 1 (below) depicts the location of the overall Silver Hills Specific Plan, as well as Village 1.

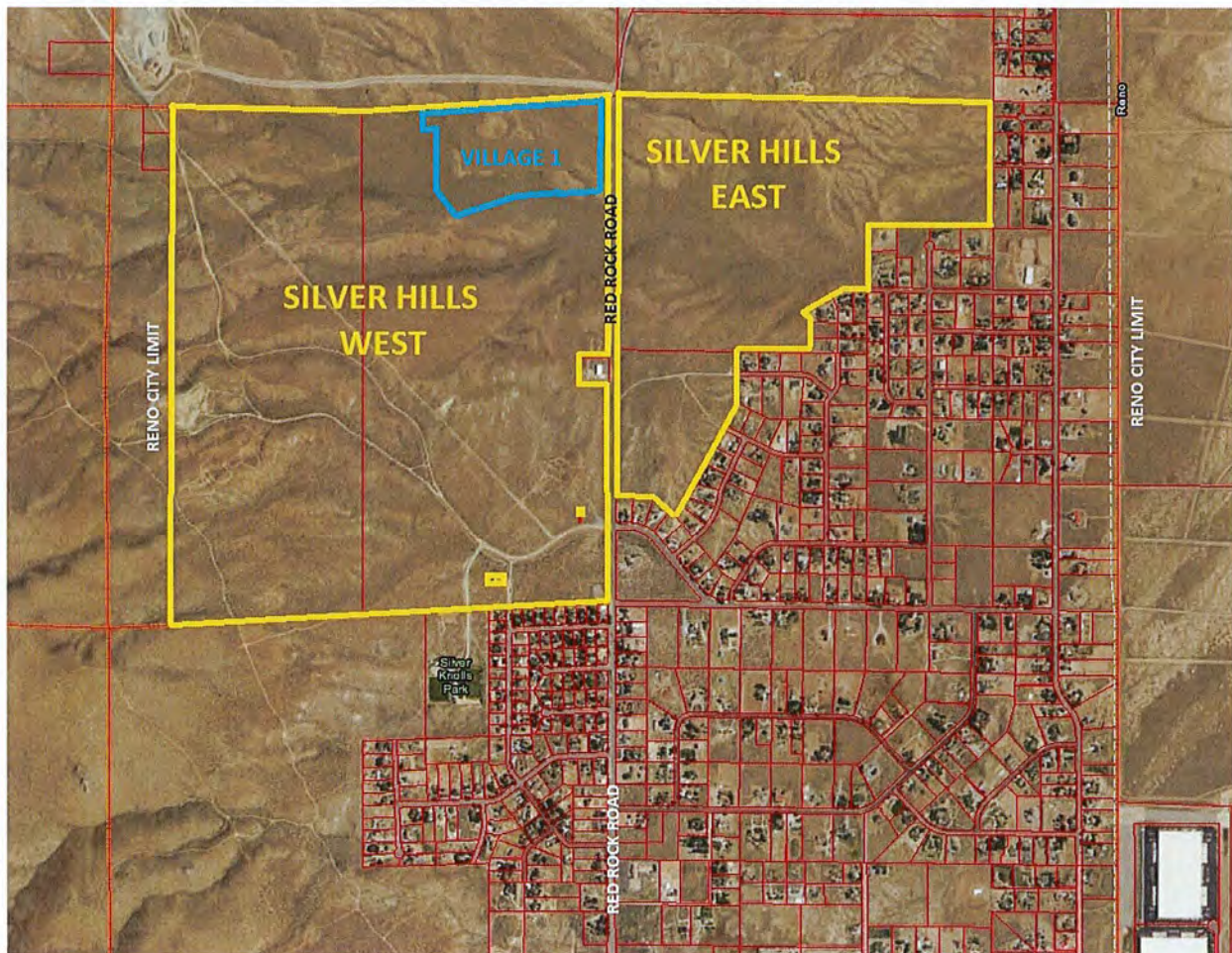


Figure 1 – Vicinity Map





Village 1 includes 120.48± acres of which 65.96± acres will be developed within a portion of APN # 087-390-10. The portion of the project site proposed for development is identified as a residential development area on the Silver Hills Land Use Plan, subject to the standards contained in the Silver Hills Specific Plan Development Standards Handbook (Handbook). The Silver Hills Land Use Plan indicates a 1-acre trailhead location in the area of Village 1. The plan clearly indicates that park and public recreation facilities (including trailheads) are subject to relocation. However, the Handbook requires that a 1-acre trailhead be constructed concurrently with the first phase of development. As such, a trailhead is incorporated into the Village 1 design and has only been slightly relocated from what is depicted on the Land Use Plan (as described later in this report).

Figure 2 (below) depicts the location of new development within Village 1 (in context of the Silver Hills Land Use Plan) while Figure 3 (following page) depicts all land included within the tentative map boundary.

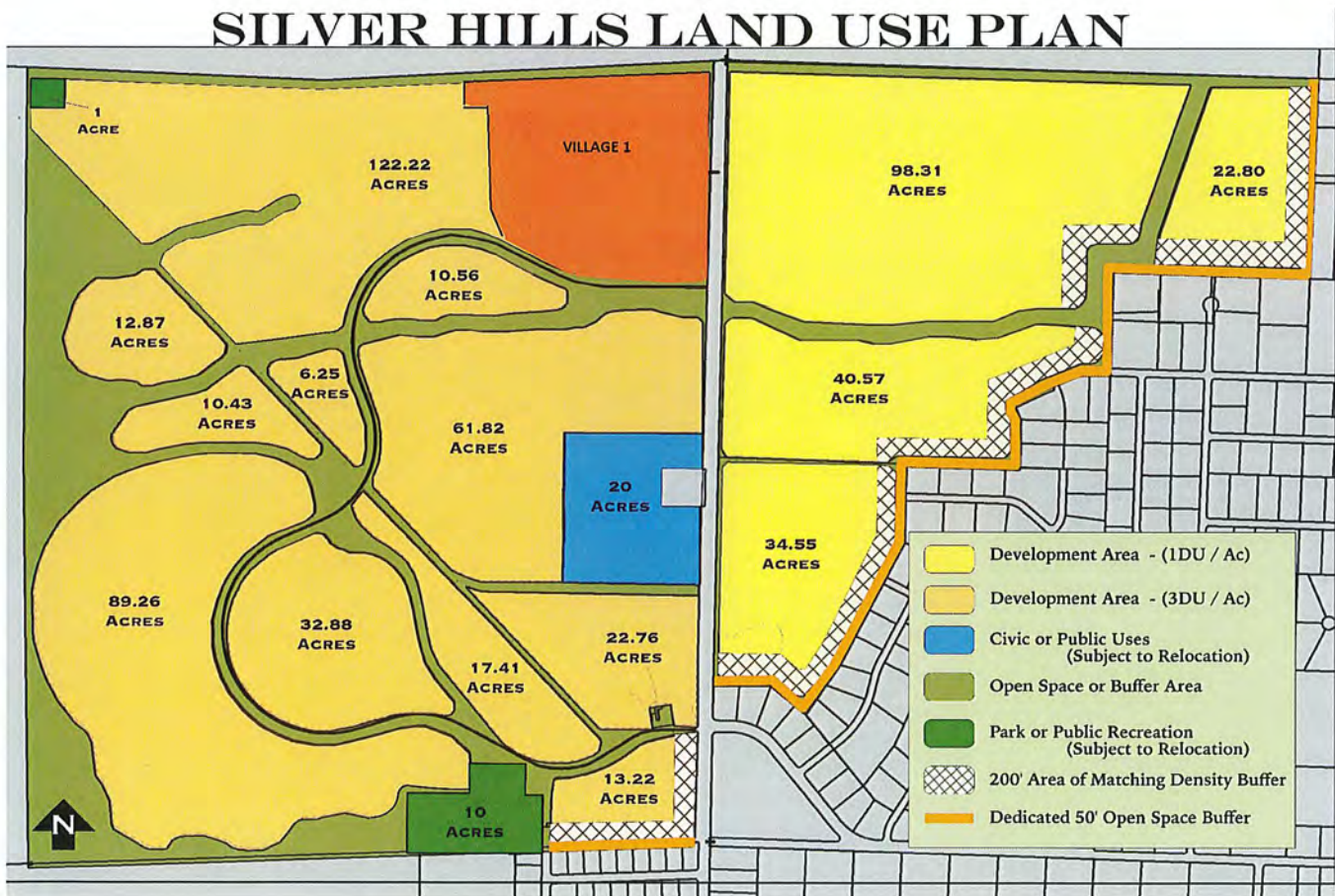


Figure 2 – Silver Hills Land Use Plan





Figure 3 – Tentative Map Area



**Existing Conditions**

The Village 1 area proposed for development is currently vacant and generally includes flat to slightly rolling terrain. Site elevations increase as you move westward across the property with steeper terrain included at the west side of the tentative map area. Red Rock Road forms the eastern project boundary with public lands to the north (BLM). Property to the west and south are located within the Silver Hills Specific Plan and are identified as future development areas. The Truckee Meadows Fire Protection District Silver Knolls Volunteer Fire Station is located just south of the Village 1 area on the west side of Red Rock Road. Figure 4 (below) depicts the existing onsite conditions.



**Figure 4 – Existing Conditions**





Silver Hills is located within the Silver Hills Suburban Character Management Area adopted in the North Valleys Area Plan. The Area Plan designates the property as Suburban Residential with Specific Plan (SP) zoning. The SP zoning requires that the standards and requirements of the Silver Hills Specific Plan Development Standards Handbook be implemented for all projects within the Specific Plan Area.

### **Project Description**

This application includes a Tentative Subdivision Map request for the first village of the overall Silver Hills master-planned community. Village 1 consists of 120.48± acres and is proposed to include 358 single family units. Access to the project will be from the first segment of Silver Hills Parkway which connects to Red Rock Road. As shown in the Silver Hills Land Use Plan, Silver Hills Parkway will ultimately loop through the Specific Plan area, connecting again to Red Rock Road to the south.

The Village 1 design is consistent with the requirements and theme described in the Handbook. This includes the implementation of the design standards related to Red Rock Road, exterior buffers, and the Silver Hills Parkway streetscape. The Red Rock Road frontage is designed to include a 25-foot landscape buffer that incorporates an enhanced natural landscape. A 6-foot meandering path is included along the Red Rock frontage as well.

A 50-foot open space buffer is incorporated on the north side of the project and will include an equestrian path, as described in the Handbook. This path will connect to a trailhead located adjacent to Village 1 development area at the northern portion of the tentative map boundary. This trailhead can be accessed by vehicles through Village 1 (along with future villages) and provides designated parking for vehicles and trailers with sufficient area to load/unload horses. Per the Specific Plan, this trailhead will be constructed concurrently with Village 1 and will be maintained by the Silver Hills Homeowners Association (HOA). The trailhead is 1.03± acres in size and will be open to the public, allowing all area residents safe and convenient access to public lands and the Silver Hills trail network, including that within Village 1 and future village extensions. A backbone trail network (detailed later) will also be completed with Village 1 per Handbook requirements.

Neighborhood connectivity is a key element of the Silver Hills master plan. The overall Specific Plan is tied together through a series of trails, sidewalks, and greenbelts. Ultimately, community amenities such as an agrihood, community facilities (i.e. school, community center, etc.), and support retail services will be located central to the Specific Plan and linked to the community through trails and open space corridors. Village 1 commences implementation of this design approach by incorporating a north/south linear open space corridor central to the project. This will include a trail that connects residents with the trail that parallels the northern boundary, providing connection to the Red Rock path as well as future trail extensions. The linear park/open space will include informal landscape but leads to a formally developed pocket park that provides recreational opportunities for residents. East/west streetscape improvements are located central to the site, connecting with the pocket park. These improvements are in addition to the sidewalks located along the internal roadways and promote a safe walking/bicycling environment for residents, especially children. The lineal open space, streetscape improvements, and pocket park will be maintained by the Silver Hills HOA.





Figure 5 (below) depicts the overall Village 1 site plan while Figure 5 (following page) depicts the trailhead to be completed concurrently with Village 1.



**PLANT LEGEND**

- FLOWERING TREE
- DECIDUOUS SHADE TREE
- EVERGREEN TREE
- COMMON AREA LANDSCAPE INCLUDES:
  - POCKET PARK AREA
  - TRAIL HEAD PARKING AREA

**LANDSCAPE DATA**

SITE AREA - 15,440 SF (351 SQUARE FEET)

ZONE: SILVER HILLS SPECIFIC PLAN

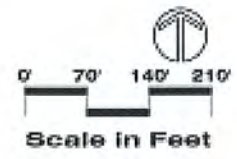
REQUIRES LANDSCAPE AREA 3% OF DEVELOPED AREA INCLUDES:

- 1 FRONT YARD
- 2 STREET SIDE LANDSCAPE

MINIMUM REQUIRED:

- 1 TREE 300 SQ FT FOR COMMON AREA LANDSCAPE
- 1 TREE 300 SQ FT FOR DEVELOPED AREA OF 3000 SQUARE FEET
- 1 TREE 300 SQ FT FOR DEVELOPED AREA OF 6000 SQUARE FEET
- 1 TREE 300 SQ FT FOR DEVELOPED AREA OF 9000 SQUARE FEET
- 1 TREE 300 SQ FT FOR DEVELOPED AREA OF 12000 SQUARE FEET

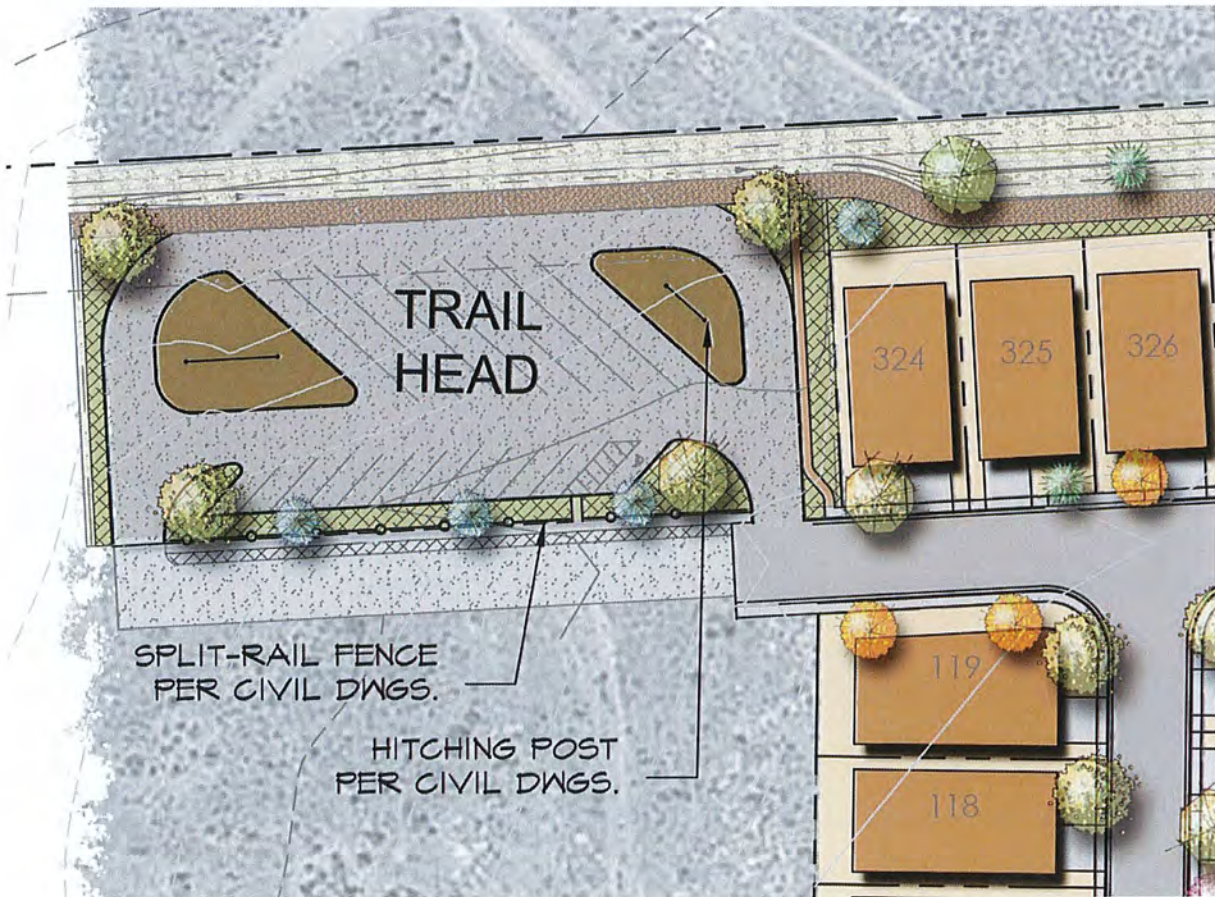
DATE: 08/14/2014



Note: Building pads depicted for illustrative purposes. Final plot plans to include staggered setbacks per Handbook standards and further detailed herein. Refer to attached Preliminary Setback Plans.

Figure 5 – Preliminary Site Plan





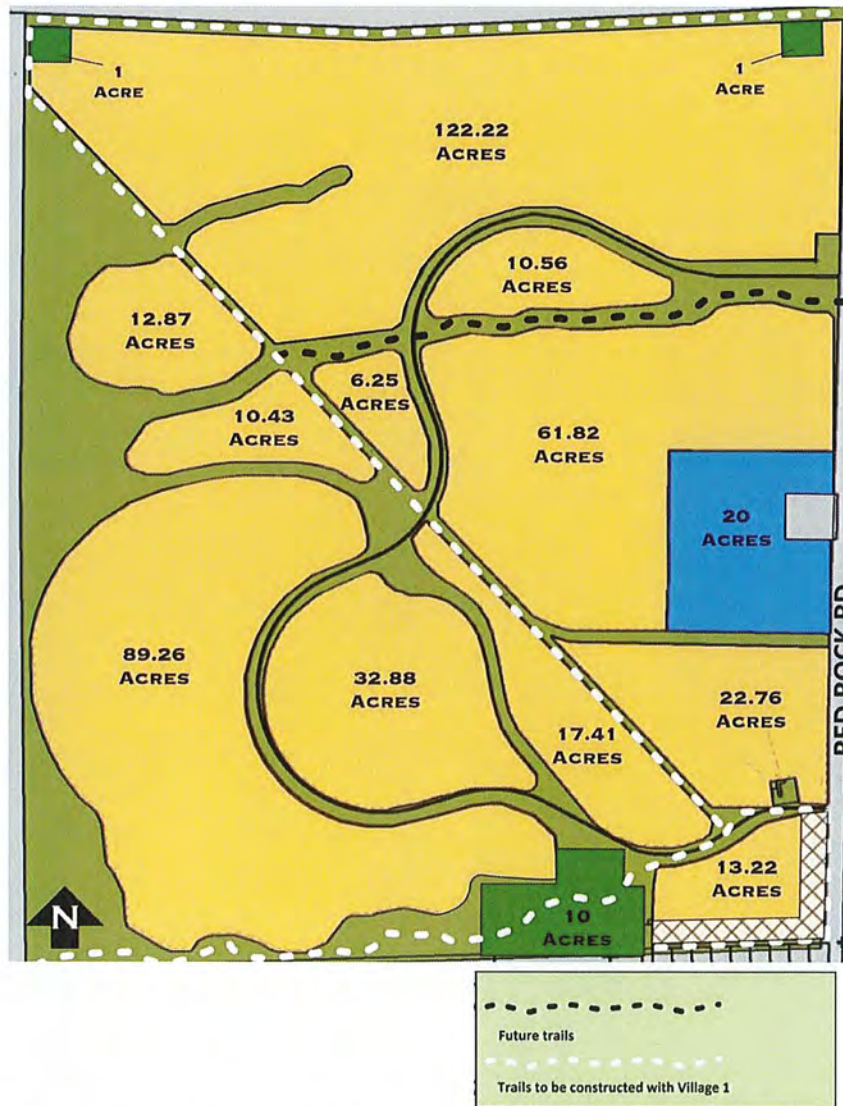
Note: Building pads depicted for illustrative purposes. Final plot plans to include staggered setbacks per Handbook standards and further detailed herein. Refer to attached Preliminary Setback Plans.

Figure 6 – Village 1 Trailhead



The Silver Hills Master Trails Plan included in the Handbook identifies a backbone trail network to be constructed with the initial phase of development. Thus, concurrent with Village 1 the trails depicted in white in Figure 7 (below) will be constructed as part of this tentative map request. This includes the northern and southern perimeter trails along with a “connector” trail that follows the existing power line that traverses the west side of the Specific Plan area. The northern trail will be included within common area to be dedicated with Village 1 with the remaining trails to be located within easements which may be relocated to common areas with future villages (provided they are consistent with the approved Trails Plan).

### Silver Hills Village 1 – Trail Plan



Note: Trails to be constructed concurrently with first final map. Final location may vary but shall be consistent with that presented above.

Figure 7 – Village 1 Trail Plan





Silver Hills Parkway will provide the primary access in and out of the Village 1 neighborhood. Silver Hills Parkway is designed to the residential collector standard adopted with the Specific Plan and includes a 14-foot landscape median along with streetscape landscaping and a detached sidewalk. The Village 1 neighborhood is accessed via two north/south connections to Silver Hills Parkway. A secondary emergency access (to be gated) is located at the northeast corner of Village 1, ensuring proper emergency access during and after construction.

Per Handbook standards, an entry monument will be installed along Silver Hills Parkway with development with the initial phase of development. The Handbook provided several design options, including that depicted in Figure 8 (below). This entry monument will be constructed at the Silver Hills Parkway/Red Rock Road intersection and shall be located outside of the right-of-way and positioned as to not block sight distance for motorists.



Note: Final entry monument may include slight variations in materials, height, etc. but shall be substantially compliant with that depicted above.

**Figure 8 – Entry Monument**





Similar to the entry monument, the Handbook also provides options for neighborhood entry monumentation. Figure 9 (below) depicts the typical entry monument for Village 1. The tentative map plan includes additional common area at the entries to accommodate the entry features. Entry monuments will be located per Handbook standards and shall not conflict with motorist sight triangles. Final entry materials may vary slightly but shall substantially conform to that depicted below.



**Figure 9 – Neighborhood Entry Monument**

Wayfinding signs will be provided throughout the community to guide pedestrians and motorists to individual neighborhoods, community amenities, etc. Like other signage, concepts for wayfinding signs were included in the Handbook. Figure 10 (below) reflects the concept to be implemented with Village 1 and carried forth throughout the Specific Plan area. It should be noted that the signage concepts included with this tentative map will establish the overall theme for the community and will be carried forward with future villages.



**Figure 10 – Wayfinding Signage**





The tentative subdivision map is consistent with the “Mid-Range Single Family Neighborhood” (MRSF) standards defined in the Handbook. MRSF includes typical lot sizes ranging from 5,000 square feet to 15,000 square feet. As proposed, the Village 1 plan is consistent with these requirements and includes lots sizes ranging from 5,000 square feet minimum to over 8,000 square feet. As anticipated in the Handbook, neighborhoods within Silver Hills will be developed utilizing Washoe County’s common open space subdivision provisions. This is true for Village 1. The MRSF standards require a minimum of 5% of the total project area be dedicated to common open space. Village 1 includes 7.15± acres of common area (11%) within the development area which primarily consists of linear open space and pocket park area. The 7.15± acres of common area within the developed portion of Village 1 are coupled with the 1.03± acre trail head and an additional 54.42± acres of dedicated open space/common area (as depicted in Figure 3). This results in a total 62.6± acres of common area/open space, a total project area of 120.48± acre, and an overall density of 2.97 dwelling units per acre. It should be noted that an excess of 1.15± acres of common area above that necessary to maintain 3 dwelling units per acre is provided and may be applied to future tentative maps within the Specific Plan.

The Handbook highly encourages the clustering of units to provide a mix of housing types and densities. As presented, the developed area of Village 1 includes an approximate density of 5.42 units per acre. However this is a clustered density that will be averaged with other villages within the project. The Master Developer is required to provide Washoe County with a “running total” of units to ensure that the maximum unit count of 1,872 units is not exceeded. The west side of Red Rock Road is allocated 1,654 units. With 358 units proposed, 1,296 available units remain available west of Red Rock Road with 1,514 remaining for the entire Specific Plan area.

The tentative map conforms to the Handbook in terms of roadway sections, including the first segment of Silver Hills Parkway and project entry standards. Internal local streets are designed to conform with Washoe County Development Code standards. Street lighting is dark skies compliant with overhead lights provided only at intersections to ensure pedestrian and vehicle safety while maintaining views of the night sky.

Fencing within Village 1 will include a mix of solid and open fencing per the Handbook design guidelines. Internal lots will include a 6-foot privacy fence. Homes backing to the internal north/south linear open space and pocket park will incorporate open rear yard fencing per the Handbook. Homes that abut the northern property line will not be permitted to have rear gates that access BLM land. No homes will take direct access from Silver Hills Parkway. However, for those with rear yards facing Silver Hills Parkway, a 6-foot solid fence will be installed with decorative pilasters installed at 150-foot intervals (on average). The exterior face of fences (along Silver Hills Parkway) will be maintained by the HOA to ensure long-term condition and aesthetics. Additional fencing details are provided later in this report.

Village 1 is anticipated to include up to four individual phases (final maps). Per the Handbook, no more than 150 units may be constructed on an annual basis until construction commences on the NDOT US Highway 395 North Valleys Project – Phase 1B. Therefore, the proposed phasing plan ensures conformance with the Handbook requirement.





The following table provides an overall development summary for Silver Hills Village 1.

<b>Silver Hills Village 1 - Development Summary</b>	
<b>Project Component</b>	<b>Proposed with Village 1</b>
Project Area	120.48± acres
Area to be Developed	65.96± acres
Total Units	358 single family homes
Remaining Permitted Units (west of Red Rock Rd.)	1,296
Remaining Permitted Units (cumulative Specific Plan)	1,514
Net Project Density (Village 1 – Development Area)	5.42 units per acre
Gross Project Density (Tentative Map Area)	2.97 units per acre
Smallest Lot Size	5,000± square feet
Largest Lot Size	8,072± square feet
Average Lot Size	5,326± square feet
Total Lot Area	43.77± acres
Public Right-of-Way Area	14.01± acres
Common Area	62.69± acres <sup>1</sup>

<sup>1</sup> – Includes 7.15 acres within developed area.

As part of the Specific Plan approval process, a facilities plan is required concurrent with tentative map approval. Included within the appendices of this report are various engineering plans and reports that address this requirement. This includes a preliminary drainage study/hydrology report, preliminary sewer design report and wastewater generation analysis, and comprehensive traffic impact analysis. Emergency access to the site is facilitated via two connections to Silver Hills Parkway into the proposed neighborhood. Additionally, a secondary emergency-only access to Red Rock Road is provided at the northeast corner of the site. Roadways within Village 1, including Silver Hills Parkway and interior local streets, will be extended with future villages, providing internal connectivity and additional emergency access routes. As Truckee Meadows Water Authority (TMWA) service is extended into Silver Hills, water infrastructure will be extended to Silver Knolls Park (with adjoining village(s)) to address existing water service issues identified within the park during the Specific Plan review process. An acknowledgement of water service from TMWA will be forwarded to Washoe County prior to the approval of this tentative map request.

A traffic impact analysis has been prepared for Village 1 by Solaegui Engineers to evaluate the impacts to area roadways that will occur with the addition of Village 1. The project is anticipated to generate 3,408 average daily trips, with 267 am peak hour trips and 357 pm peak hour trip. The report identifies the need for improvements at the Red Rock Road/US 395 interchange to the south and includes potential mitigation measures that can be implemented to maintain acceptable levels of service. A left turn lane will be added to northbound Red Rock Road at the Silver Hills Parkway intersection, providing a dedicated lane for vehicles entering the project from the south. The project will also be subject to Regional Road Impact Fees for each unit constructed within the project. Additionally, the North Valleys Area Plan requires that a level of service (LOS) "C" or better be maintained for roadways within the plan boundary, exceeding the LOS "D" standards adopted regionally.



As detailed in the attached drainage report, stormwater is retained at a rate of 1:1.5. As a result, stormwater flows from the Village 1 site will be reduced from pre-development conditions. This ensures that increased runoff to Swan and Silver Lakes will not occur. Additionally, common areas within all of Silver Hills will include infrastructure to accept effluent water for irrigation and will implement effluent reuse once available. This will occur through coordinated efforts between the Master Developer, Washoe County, and the City of Reno.

### **Specific Plan Compliance**

The adopted Handbook establishes standards and policies that guide and regulate new development within the Silver Hills Specific Plan. Village 1 will establish many of the underlying design concepts for the entire project such as the entry monuments previously presented. While all of the standards included in the Handbook do not pertain to Village 1, there are a handful of requirements that will be applied at the final map stage. The purpose of this section is to demonstrate how these standards will be implemented and provide Washoe County staff with a mechanism to condition this map, as they feel necessary, to ensure that the intent of the design standards is upheld.

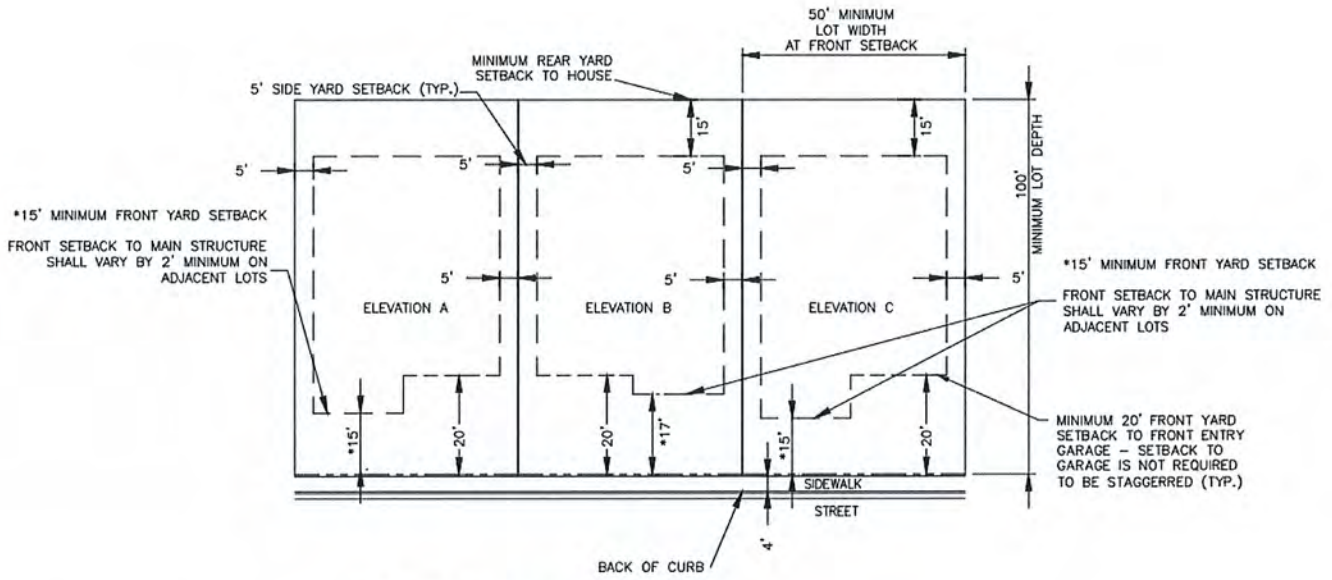
- **Setback Variation**

The Village 1 tentative map depicts building envelopes for each proposed lot. Final setbacks for each individual home will be determined at the time of final map and plot plans. As defined in the Handbook section 3.2.1, there are a variety of ways this can be achieved. Typically, the individual home footprints will vary based on architectural design and floorplans. Architectural features such as porches, garage type (i.e. side load vs. front load) allow for varied home setbacks along the streetscape. The handbook mandates that identical elevations cannot be mirrored next to each other within the subdivision. This further reinforces varied setbacks.

As a measurable standard, a condition can be added to this tentative map that identical elevations/floorplans may not be located next to each other and that no two adjacent lots may include identical setbacks. Homes must have a 20-foot garage setback per Handbook standards (for front loaded garages). However, features such as porches, side-load garages, building projections, etc. may extend within 15 feet of the front property line. Therefore, a condition requiring that a minimum home footprint offset of at least 2 feet, excluding garages, shall occur between adjoining lots to be demonstrated with final plot plans.

Included with the tentative map are Preliminary setback plans that depict how setbacks can be varied at the time of construction. Additionally, setback specific notes and standards are called out on the tentative map plans and are included in Figure 11 (following page).





TYPICAL INTERIOR LOTS

## VARIABLE SETBACK NOTES

BUILDING FOOTPRINTS DEPICTED IN THIS PLAN SET ARE FOR ILLUSTRATIVE PURPOSES AND SUBJECT TO CHANGE.

STAGGERING OF FRONT YARD SETBACKS SHALL OCCUR WITH FINAL BUILDING FOOTPRINTS. A MINIMUM 2-FOOT FRONT YARD SETBACK DEVIATION SHALL BE PROVIDED FROM ALL ADJOINING PARCELS (AS MEASURED TO BUILDING FAÇADE). FRONT-LOAD GARAGES SHALL INCLUDE A MINIMUM SETBACK OF 20- FEET AND ARE NOT SUBJECT TO THE 2-FOOT OFFSET. FINAL PLOT PLANS SHALL DEPICT ADJOINING PARCELS TO DEMONSTRATE COMPLIANCE WITH THIS STANDARD AND SHALL BE CERTIFIED BY THE MASTER DEVELOPER AND PROFESSIONAL ENGINEER LICENSED IN THE STATE OF NEVADA.

MASTER DEVELOPER SHALL CONFIRM COMPLIANCE WITH ALL APPLICABLE SPECIFIC PLAN STANDARDS AT THE TIME OF FINAL PLOT PLANS. UPON REQUEST BY WASHOE COUNTY, THE MASTER DEVELOPER SHALL PROVIDE SUPPLEMENTAL MATERIALS (AS APPROPRIATE) TO DEMONSTRATE COMPLIANCE WITH THE SILVER HILLS SPECIFIC PLAN DEVELOPMENT STANDARDS. THIS SHALL NOT RESULT IN DELAYS TO PROCESSING AND/OR CONSTRUCTION REVIEW.

LANDSCAPE AND GRADING PLANS DEPICT BUILDING PADS ONLY FOR ILLUSTRATIVE PURPOSES. FINAL LANDSCAPING PLANS AND PLOT PLANS ARE SUBJECT TO STAGGERING STANDARDS.

A MINIMUM OF THREE BUILDING ELEVATIONS FOR EACH FLOORPLAN WITHIN VILLAGE 1 WILL BE PROVIDED AT THE TIME OF FINAL MAP/PLOT PLANS. MASTER DEVELOPER SHALL DEMONSTRATE THAT IDENTICAL ELEVATIONS ARE NOT LOCATED ON ADJOINING LOTS WITH FINAL PLOT PLANS.

Figure 11 – Typical Setback Variation





- **Building Articulation**

Building articulation and standards are defined in Section 3.4.4 of the handbook. Front elevations or those facing streets shall avoid the use of flat planes and include articulation. This can be accomplished through the use of porches, dormers, bay windows, building offsets, recessed entries, etc. This will be demonstrated with final elevations.

The handbook does not mandate that elevations for individual homes be submitted concurrently with tentative maps and provides visual examples of home elevations that comply with the standards. The following tentative map condition is recommended:

*“With plan review for any new dwelling unit within Silver Hills, building elevations shall be submitted to the Master Developer and Washoe County Department of Planning and Zoning for verification that elevations are consistent with the articulation standards defined in Section 3.4.4 of the Handbook Design Standards.”*

While final building elevations have not been developed for Village 1, Figure 12 (following page) provides sample elevations that fulfill Handbook requirements and can be used for comparative evaluation at the time of final map(s).



Figure 12 – Typical Building Elevations





- **Article 408 – Common Open Space Development**

The Handbook provides a comprehensive site analysis that determined allowed land uses and the location of areas to be developed within the Specific Plan boundary. The Village 1 tentative map fully complies with the allowed uses defined in the Mid-Range Single Family land use category and is consistent with the Silver Hills Land Use Plan.

Section 110.408.00 of the Washoe County Development Code states that the purpose of Common Open Space Development “ *is to set forth regulations to permit variation of lot size, including density transfer subdivisions, in order to preserve or provide open space, protect natural and scenic resources, achieve a more efficient use of land, minimize road building, and encourage a sense of community.*” The Village 1 tentative map is consistent with the purpose of Common Open Space Development, as defined by Washoe County in that it provides for usable open space that can be accessed by the public (trails and community greens) as well as preservation of hillside areas/steeper terrain on the west side of the site. Open space provided with Village 1 also establishes a buffer between the project and undeveloped/public lands to the north.

Section 110.408.20 of the Development Code defines density and intensity within Common Open Space Developments as follows:

*“Residential. The total number of dwelling units in the proposed common open space development shall not exceed the total number of dwelling units allowed by the underlying regulatory zones(s). The gross site area may include more than one (1) parcel.”*

Village 1 includes a net density of 5.42 units per acre within the developed portion of the tentative map boundary and is consistent with the density/intensity standards included in the Handbook. However, with the dedication of 54.52± acres of common area outside of the developed area, a gross density of 2.97 dwelling units per acre results, providing full compliance with Article 408 requirements. It should also be noted that excess open space (that which reduces gross density to less than 3 units per acre) may be applied to future tentative maps in determining overall gross density within the Specific Plan.

As noted in the Specific Plan, density is assigned through the tentative map process. Thus, all areas outside of the tentative map boundary are potentially common area until a tentative map is approved. Per the handbook standards (and included in the submitted application), the Master Developer is required to provide a running total of units to Washoe County to ensure that the maximum number of units permitted west of Red Rock Road (1,654) is not exceeded. This is provided in the previous table located on page 12 of this report.





- **Subsequent Review**

During the establishment of the Specific Plan and Handbook, Washoe County staff indicated the need for a County review committee to ensure that new subdivisions were compliant with the Handbook. The concern was that the Master Developer initially controls the Design Review Committee (DRC) and thus a “second set of eyes” was needed to reaffirm compliance. It was agreed that this would be reviewed administratively. As a result, the Washoe County Design Review Committee was added. Since the time of Handbook adoption, the Washoe County Design Review Committee has been dissolved. To ensure full compliance with Handbook standards, it is recommended that a condition be added that the Department of Planning and Zoning shall review final building plans, plot plans, and elevations to determine substantial compliance with the Handbook and any conditions placed on this tentative map request. This is entirely consistent with the intent of the Handbook requirement and ensures that the DRC cannot grant project approvals without concurrence from Washoe County.

- **Parks and Trails**

As presented, a 1-acre trailhead and backbone trail network will be provided concurrent with the development of Village 1. The Washoe County Department of Regional Parks and Open Space has reviewed the trailhead location and does not have objection. It is recommended that the Bureau of Land Management (BLM) be consulted to ensure that the trailhead and planned trails do not conflict with any future BLM plans for a trail system, etc. This coordination can be included as a condition of approval on the tentative map.

The trailhead proposed fully complies with the Handbook requirements in terms of size and amenities. Regional Parks and Open Space staff has indicated the need for a kiosk and/or wayfinding signs at the trailhead facility. A wayfinding sign, similar to that depicted in Figure 10, can be added within the trailhead site. Provisions for restrooms are not a requirement for the trailhead as outlined in the Handbook and are not proposed to be included. Although the trailhead is open for public use, it will be included in dedicated common area that is owned and operated by the Silver Hills Homeowner’s Association (HOA) and is not subject to Washoe County design requirements (i.e. restrooms).

A linear open space corridor and pocket park are included in the Village 1 design. As noted, this will provide residents with passive and active recreational opportunities. The park will be private (open to general public) and maintained by the HOA. The Handbook establishes no minimum or maximum size for private park facilities.

A Red Rock Road undercrossing is required as part of the Silver Hills master trail plan. However, only the trails identified in Figure 7 are required with the initial phase of development (Village 1). Thus, the undercrossing connection will occur with the initial phase of Silver Hills East and will be coordinated with a site specific plan. This is entirely consistent with the Handbook requirements and standards. With improvements and upgrades to Red Rock Road, the undercrossing may be added prior to development within Silver Hills East but is not mandated with this village.



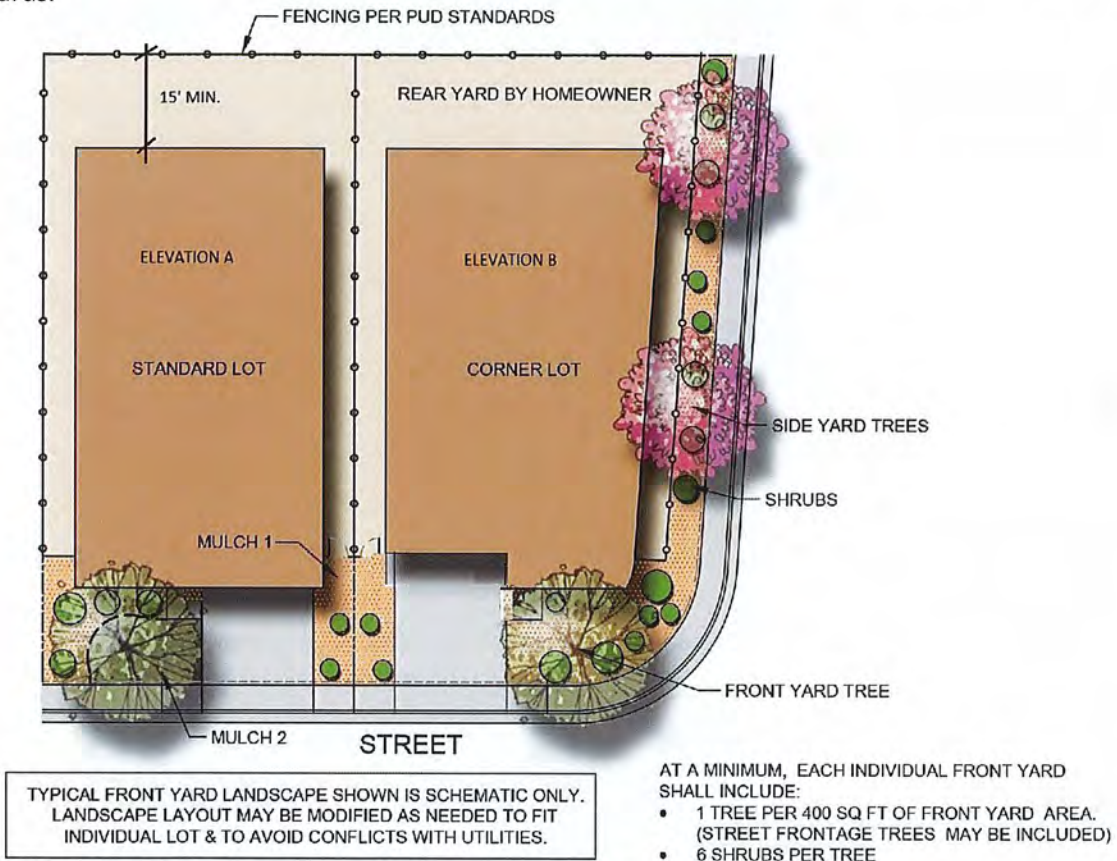
Per Handbook requirements and standards, all trails will be constructed in conformance with Washoe County Greenbook standards.

- **Mailboxes**

As noted in Section 2.9 of the Handbook, the United States Postal Service will determine the final location of mailboxes and whether individual or group boxes will be required. As standard for all subdivisions, final plans will be routed to the USPS for final mailbox location.

- **Front Yard Landscaping**

The Handbook states that front yard landscaping will be installed by the builder or individual homeowner (with DRC approval). This will be determined with final map. However, typical front yard landscape concepts have been developed for Village 1 and are included on the updated landscape plan (attached) and depicted in Figure 13 (below). A xeriscape option is encouraged and subject to DRC approval per Handbook standards.



## TYPICAL FRONT YARD LAYOUT

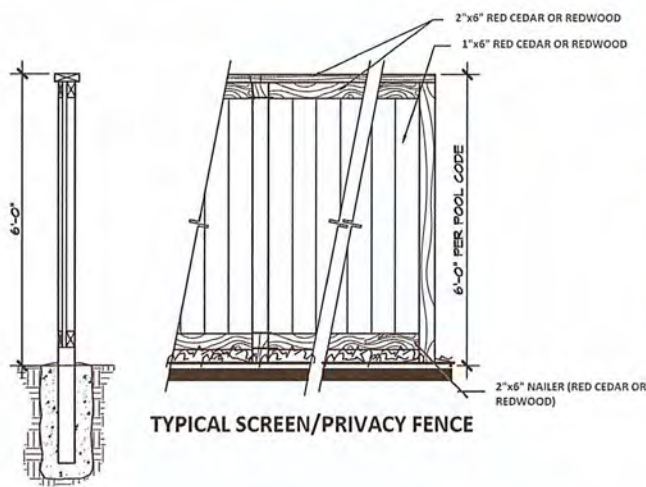
Figure 13 – Typical Front Yard Landscaping





- Fencing

The Handbook clearly defines allowed fencing types within the Specific Plan boundaries. As noted previously, a combination of solid and open fencing will be included within Village 1. Solid fencing will include 6-foot wood screen fence for internal lots and lots adjoining common area at the rear yards will include open fencing consistent with Handbook standards (to be selected by builder). Figure 14 (below) depicts the acceptable fencing types that may be used within Village 1. Final fencing type shall be applied consistently throughout Village 1. For example, if split-rail is chosen for open fencing, it shall be used uniformly throughout Village 1 and not combined with wrought-iron fencing or vice versa.



Spacing between horizontal or vertical members must not exceed 4".

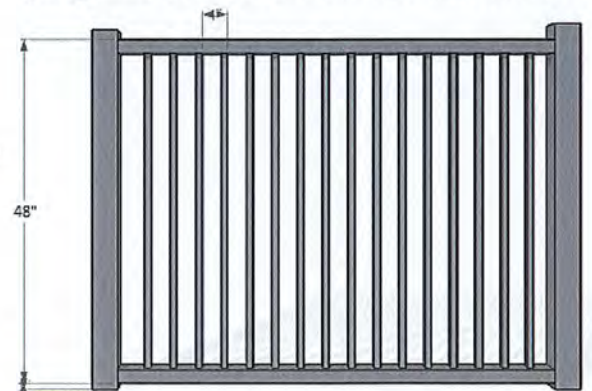


Figure 14 - Fencing





A 6-foot wood or vinyl fence with decorative pilasters (spaced at an average of 150-feet) shall be located at the rear yards of homes that back to Silver Hills Parkway. Final material and pilaster design shall be approved by the DRC and shall remain consistent throughout the Specific Plan area, per the adopted Handbook.

Fencing along Silver Hills Parkway shall be placed on the property line and shall be maintained by the HOA (exterior) and the adjoining property owner (interior). Figure 15 (below) is the adopted Silver Hills Parkway fencing standard for which Village 1 must comply (for lots backing to the collector right-of-way).



**Figure 15 – Typical Silver Hills Parkway Fencing**

### **North Valleys Area Plan**

The Silver Hills Suburban Character Management Area (SCMA0 was adopted concurrently with the Silver Hills Specific Plan. The Village 1 design and density are fully compliant with Area Plan polices related to new development within Silver Hills. Specifically, the project complies with policies NV.7.3, NV.7.6, NV.7.8, NV.7.10, and NV.7.11. Policies NV.7.1, NV.7.2, NV.7.7, and NV.7.9 are not applicable to this request. Lastly, policies NV.7.4 and NV.7.5 will be implemented with the final map stages as construction of new homes commences.





In addition to the policies noted within the Silver Hills SCMA, the Village 1 plan also conforms with and/or implements several other policies contained within the North Valleys Area Plan, including the following:

*NV.8.1 Washoe County's policy level of service (LOS) for local transportation facilities in the North Valleys planning area is LOS "C." All development proposals must demonstrate how the established level of service on local transportation facilities will be maintained.*

*NV.8.2 The Washoe County Regional Transportation Commission (RTC) sets levels of service on regional roads. Washoe County will advocate for the RTC to establish policy levels of service "C" for all regional roads in the North Valleys planning area.*

*NV.8.3 Washoe County will work with the RTC and neighboring jurisdictions to ensure that the mitigation of potential development impacts in neighboring jurisdictions is consistent with the intent of Policies NV.7.1 and NV.7.2.*

*NV.8.4 The necessary right-of-way and intersection requirements identified in the Regional Transportation Plan will be protected through dedication, setback or other method deemed adequate and appropriate by the Regional Transportation Commission and Washoe County.*

*NV.8.5 Washoe County will ensure that the details of all new road construction that implement the adopted Regional Transportation Plan will be subject to a comprehensive public review and comment process.*

*NV.11.2 New trails will be designed to accommodate equestrian, pedestrian and off-road bicycle traffic, unless technical or severe environmental or economic hardships warrant consideration of a more limited use.*

*NV.11.3 Trails that provide links to the facilities listed in Goal 10 should receive priority for funding, planning, and construction.*

*NV.11.4 Parking will be provided at all trailheads unless technical or safety issues prevent the construction of parking facilities or it is determined that the parking facility cannot be adequately screened or buffered from adjacent residential properties. Points of access other than trailheads may be depicted on the Recreational Opportunities Plan map but do not require parking facilities.*

*NV.11.5 As new residential and commercial properties develop in the North Valleys planning area, the Washoe County Department of Parks and Recreation will review development proposals for potential trail connections.*

*NV.11.6 Access to existing trails will be protected and improved whenever 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 within the North Valleys planning area or connect existing trails or otherwise implement Goal 10.*



*NV.11.7 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.*

*NV.16.1 Development within the North Valleys will conform to Regional Water Plan Policy 3.1.c, "Flood Plain Storage Outside the Truckee River Watershed," as well as locally specific flood control requirements as adopted by Washoe County.*

*NV.17.1 New development shall comply with Regional Water Plan Policy 2.1.a: "Effluent Reuse – Efficient Use of Water Resources and Water Rights."*

*NV.17.2 Development proposals must be consistent with Regional Water Plan Policies 1.3.d, "Water Resources and Land Use," and 1.3.e, "Water Resource Commitments."*

*NV.20.1 Tentative subdivision maps will not be approved for any development until the water resource and infrastructure needs of that development have been evaluated by the Department of Water Resources and found consistent all applicable water and wastewater resources and facilities plan.*

All of the policies listed above are either implemented through the design of the tentative map or will be as final maps are recorded and construction commences.

### **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;

**Silver Hills will be served by municipal water through an extension of existing TMWA facilities. Solid waste disposal options are detailed in the attached engineering reports. This infrastructure will fully comply with all applicable Washoe County standards.**

- (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 will be served by 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. An acknowledgement of water service from TMWA is being forwarded to Washoe County (under a separate cover).**





- (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;

Public services and infrastructure were heavily analyzed during the Silver Hills Specific Plan approval process. As a condition of that approval, all new development within Silver Hills will pay an additional impact fee for fire and police service. That will be fully implemented with Village 1 as construction commences.

As outlined in Chapter 4 of the Specific Plan Handbook, the site lies between the TMFPD Cold Springs and Stead stations. Current response times are consistent with TMFPD policy. There is an existing TMFPD volunteer station just south of Village 1 along Red Rock Road that is literally surrounded by the Specific Plan area. The Handbook requires that the Master Developer work with TMFPD at this tentative map stage to ensure appropriate response times exist and implement any additional mitigation measures that may be needed (i.e. fire sprinklers).

The Specific Plan calls for the potential to dedicate additional land (up to 5 acres) for the expansion of the Red Rock station to a manned station in the future. The Specific Plan further states that the expanded facility could be used to house a sheriff substation as well. Per the Handbook, the developer shall work with service providers as part of this tentative map review process to ensure all proper conditions and mitigation measures are implemented.

Similarly, the Specific Plan has provisions for dedication of a school site and parks. Consistent with the improvement “triggers” mandated in the Handbook, a 1-acre trailhead facility and backbone trail network will be dedicated and constructed concurrently with Village 1. Additionally, Village 1 provides a pocket park facility for residents that will be paid for by the developer and maintained by the HOA. Silver Knolls park is also within walking distance of Village 1.

Upgrades to transportation facilities triggered by the project are outlined in the attached traffic impact analysis. This includes mitigation measures that can be conditioned with the tentative map to ensure proper levels of service are maintained.

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

As outlined in the previous section, the proposed tentative map fully complies with the Specific Plan standards, Silver Hills SCMA policies, and implements a number of other policies included in the North Valleys Area Plan.



- (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 Village 1. 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 area proposed to be developed contains no slope or soil conditions that would preclude development, nor does it contain any significant wildlife habitats, etc. Areas of slope located at the western edge of the tentative map area will be included in dedicated common open space.**

- (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 retention/detention at a rate of 1 to 1.5, far exceeding Washoe County standards. This will result in a reduction in site runoff from that of pre-development conditions. This ensures no additional impacts to Swan or Silver Lakes will occur as a result of development within Silver Hills.**

# 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 Building staff at 775.328.6100.

<b>Project Information</b>		Staff Assigned Case No.: _____	
Project Name: <b>Silver Hills - Phase 1</b>			
Project Description: A tentative subdivision map to allow for the development of 358 single family units within the Silver Hills Specific Plan			
Project Address: West side of Red Rock Road, north of Silver Knolls (see attached map)			
Project Area (acres or square feet): <b>64.93 acres</b>			
Project Location (with point of reference to major cross streets <b>AND</b> area locator): The site is located on the west side of Red Rock Road, north of the TMFPD station and Silver Knolls. Refer to attached map.			
Assessor's Parcel No.(s):	Parcel Acreage:	Assessor's Parcel No.(s):	Parcel Acreage:
087-390-10	308.6		
Indicate any previous Washoe County approvals associated with this application: Case No.(s). Silver Hills Specific Plan 2019			
<b>Applicant Information</b> (attach additional sheets if necessary)			
<b>Property Owner:</b>		<b>Professional Consultant:</b>	
Name: Lifestyle Homes TND, LLC		Name: Christy Corporation, Ltd.	
Address: 4790 Caughlin Pkwy., Suite 519		Address: 1000 Kiley Pkwy.	
Reno, NV	Zip: 89519	Sparks, NV	Zip: 89436
Phone: 775-813-0046	Fax:	Phone: 775-502-8552	Fax:
Email: lshreno@gmail.com		Email: mike@christynv.com	
Cell: 775-813-0046	Other:	Cell: 775-250-3455	Other:
Contact Person: Peter Lissner		Contact Person: Mike Railey	
<b>Applicant/Developer:</b>		<b>Other Persons to be Contacted:</b>	
Name: Same as Above		Name: Lewis Roca Rothgerber Christie	
Address:		Address: 1 E. Liberty St., Suite 300	
	Zip:	Reno, NV	Zip: 89501
Phone:	Fax:	Phone: 775-321-3420	Fax:
Email:		Email: ggordon@lrrc.com	
Cell:	Other:	Cell: 775-762-6765	Other:
Contact Person:		Contact Person: Garrett Gordon	
<b>For Office Use Only</b>			
Date Received:	Initial:	Planning Area:	
County Commission District:		Master Plan Designation(s):	
CAB(s):		Regulatory Zoning(s):	



Community Services Department  
Planning and Building  
TENTATIVE SUBDIVISION MAP  
APPLICATION



Community Services Department  
Planning and Building  
1001 E. Ninth St., Bldg. A  
Reno, NV 89512-2845

Telephone: 775.328.6100



## Tentative Subdivision Map Application Supplemental Information

(All required information may be separately attached)

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

The project site is located on the west side of Red Rock Road, approximately 2,500 feet north of the TMFPD station.

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

**Silver Hills - Phase 1**

3. Density and lot design:

a. Acreage of project site	64.93 acres
b. Total number of lots	358
c. Dwelling units per acre	5.5 (cumulative for this phase only)
d. Minimum and maximum area of proposed lots	5,000 sq.ft. min./8,072 sq.ft. max.
e. Minimum width of proposed lots	50 feet
f. Average lot size	5,326 sq.ft.

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

a. Sewer Service	Connection to Stead Treatment Plant
b. Electrical Service	NV Energy
c. Telephone Service	AT&T or Charter Communications
d. LPG or Natural Gas Service	NV Energy
e. Solid Waste Disposal Service	Waste Management
f. Cable Television Service	AT&T 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:

**7.15 acres**

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

**Not applicable.**

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

**5,000 sq. ft. to 8,072 sq.ft.**

d. Proposed yard setbacks if different from standard:

15' front (20' to garage), 5' side, 15' rear

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

Permitted per Silver Hills Specific Plan

f. Identify all proposed non-residential uses:

1-acre community trail head and interior open space/pocketpark

g. Improvements proposed for the common open space:

Pedestrian and equestrian trails, pocket park, enhanced lineal park/open space.

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

Refer to attached plans for depiction of trails - pedestrian and equestrian.

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

The proposed trails will connect with the overall Silver Hills master trail plan.

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

Not applicable.

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

Yes, per Specific Plan standards. Refer to attached report.

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

The Silver Hills Homeowners 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?

A new trail head will be provided, providing access to public lands to the north.

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

Not applicable.

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

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

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

The project will be served by TMWA with water rights dedicated to serve the project.

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

The project incorporates clustering to reduce overall carbon footprint and homes will utilize energy efficient building materials.

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

Not applicable.

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

Not applicable.

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

Refer to attached report for detailed analysis.

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

The project complies with provisions of the Silver Hills Specific Plan.

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

Up to 4 final maps are anticipated.



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

<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	If yes, include a separate set of attachments and maps.
------------------------------	--	---

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

<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	If yes, include separate attachments.
------------------------------	--	---------------------------------------

## Grading

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

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

Refer to attached engineering plans and reports.
--

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

Site grading will balance onsite. Refer to attached plans.
--

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

No.
-----

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

Temporary irrigation will be used as needed to ensure revegetation is established.
--

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

Not applicable.
-----------------

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

Refer to attached engineering plans.
--------------------------------------

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

Not applicable.

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

Refer to attached landscape plan. Reveg will include seed mix per Washoe Storey Conservation District standards.

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

Temporary irrigation will be provided as needed.

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

The project will incorporate WSCD seed mix recommendations for reveg.

## Tahoe Basin

Please complete the following questions if the project is within the Tahoe Basin:

29. Who is the Tahoe Regional Planning Agency (TRPA) project planner and what is his/her TRPA extension?

--

30. Is the project within a Community Plan (CP) area?

<input type="checkbox"/> Yes	<input type="checkbox"/> No	If yes, which CP?
------------------------------	-----------------------------	-------------------

31. State how you are addressing the goals and policies of the Community Plan for each of the following sections:

- a. Land Use:

--

- b. Transportation:

--

- c. Conservation:

--

- d. Recreation:

--

- e. Public Services:

--

32. Identify where the development rights for the proposed project will come from:

--

33. Will this project remove or replace existing housing?

<input type="checkbox"/> Yes	<input type="checkbox"/> No	If yes, how many units?
------------------------------	-----------------------------	-------------------------

34. How many residential allocations will the developer request from Washoe County?

--

35. Describe how the landscape plans conform to the Incline Village General Improvement District landscaping requirements:

--





Washoe County Treasurer  
 Tammi Davis

Account Detail

[Back to Account Detail](#)

[Change of Address](#)

[Print this Page](#)

CollectionCart			
Collection Cart	Items	Total	
Collection Cart	0	\$0.00	<a href="#">Checkout</a> <a href="#">View</a>

**Pay Online**  
 No payment due for this account.

Washoe County Parcel Information		
Parcel ID	Status	Last Update
08739010	Active	2/8/2021 1:41:06 AM
<b>Current Owner:</b> LIFESTYLE HOMES TND LLC 4790 CAUGHLIN PKWY 519 RENO, NV 89519		<b>SITUS:</b> 11305 RED ROCK RD WASHOE COUNTY NV
<b>Taxing District</b> 4000	<b>Geo CD:</b>	

Tax Bill (Click on desired tax year for due dates and further details)					
Tax Year	Net Tax	Total Paid	Penalty/Fees	Interest	Balance Due
2020	\$2,695.89	\$2,695.89	\$0.00	\$0.00	\$0.00
2019	\$2,567.39	\$2,567.39	\$0.00	\$0.00	\$0.00
2018	\$2,449.80	\$2,449.80	\$0.00	\$0.00	\$0.00
2017	\$2,449.80	\$2,449.80	\$0.00	\$0.00	\$0.00
2016	\$2,449.81	\$2,449.81	\$0.00	\$0.00	\$0.00
<b>Total</b>					\$0.00

**Disclaimer**

- **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 By Check**

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**







October 22, 2020

Bob Lissner  
Lifestyle Homes  
4790 Caughlin Parkway PMB 519  
Reno, NV 89519

Re: **Preliminary Sewer Interceptor Design Summary  
Evans Ranch, Silver Star, and Silver Hills**

Dear Mr. Lissner,

At your request Shaw Engineering is pleased to submit this preliminary design summary of the sewer main extension to serve Evans Ranch, Silver Star, and Silver Hills developments.

**Design Considerations**

After review the existing conditions of the proposed alignment, a preliminary design was developed for a sewer interceptor to serve 9,000 single family units, not exceeding a depth to diameter ratio (d/D) of 0.5 at peak hour flow per City of Reno Design Standards.

The projected average daily flow from Evans Ranch, Silver Star, and Silver Hills was estimated to be 2.25 MGD (1,562.5 GPM). Utilizing a peak factor of 3.0, the calculated peak hour flow is estimated to be 6.75 MGD (4,687.5 GPM) which was utilized for the design of the interceptor

**Critical Design Criteria**

The proposed alignment contains diverse topography with a range of ground slopes from 0.3% to 16.1%. Taking into consideration the range of slopes, it was determined the pipe sizes listed in the table below are required to satisfy City of Reno design standards while being financially conscious. All pipes meet city requirements for 2.0 feet per second flushing velocity while flowing half full. The alignment shown in Attachment 1 shows a route at the north end, following Adobe Drive rather than extending North to the southern border of BLM Section 12. The alignment along Adobe Drive was required due to the topography of Red Rock Road at the southern boundary of section 12.

**Table 1: Sewer Interceptor Sizes and Lengths**

Size	Slope (%)	Section Start	Section End	Approx. Length
24-Inch	0.53-8.39	Silver Star Ranch	Silver Hills	8,900
27-Inch	0.13-5.9	Silver Hills	Silver Knolls Blvd	9,400
30-Inch	0.09-4.89	Silver Knolls Blvd	Bodie Drive	1,750
36-Inch	0.23-2.43	Bodie Drive	Echo Ave	3,300

**Preliminary Cost Estimate**

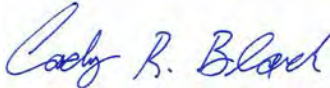
The estimate for the construction of the sewer interceptor to serve Evans Ranch, Silver Star and Silver Hills is approximately \$7 million based on current construction costs. A breakdown of the estimated cost is included in Attachment 2.

### **Concluding Statements**

This design summary is to be used as a planning document only. Further surveying and engineering design will be required to further identify potential construction conflicts/constraints and confirm property ownership and right of way. This report was conducted under the assumption the Reno-Stead Water Reclamation Facility and downstream sewer infrastructure has sufficient capacity to convey and treat the flows from Evans Ranch, Silver Star, and Silver Hills.

If you have any questions regarding the aforementioned design please feel free to contact me at [cody@shawengineering.com](mailto:cody@shawengineering.com) or at (775) 329-5559.

### **SHAW ENGINEERING**

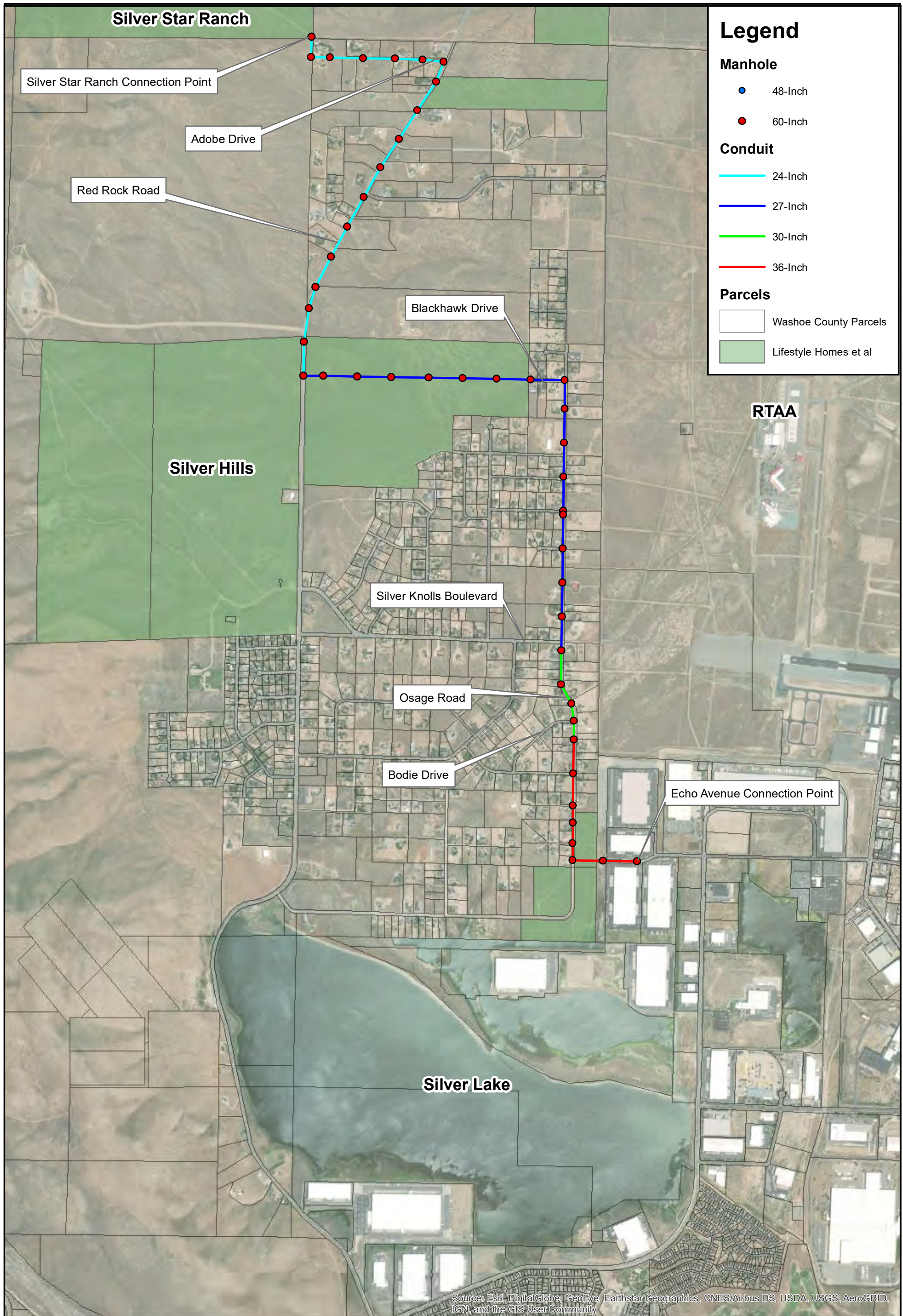


Cody R. Black, P.E.  
Principal Engineer

#### Attachments:

1. Sewer Interceptor Alignment Figure
2. Preliminary Cost Estimate





### Legend

**Manhole**

- 48-Inch
- 60-Inch

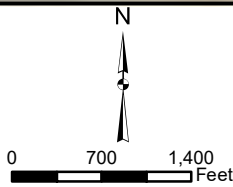
**Conduit**

- 24-Inch
- 27-Inch
- 30-Inch
- 36-Inch

**Parcels**

- Washoe County Parcels
- Lifestyle Homes et al

Maps are for graphical purposes only. They do not represent legal survey. Shaw Engineering cannot assume liability for any damages caused by any errors or omissions in the data and makes no warranty expressed or implied, nor does the fact of distribution constitute such a warranty.



## Evans Ranch, Silver Star, and Silver Knolls Sewer Interceptor

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



Prepared By



Lifestyle Homes TND Osage Road to Red Rock Sewer Interceptor Cost Estimate 22-Oct-20				
Description	Qty	Unit	Unit Cost	Cost
48" Precast Manholes	38	EA	\$ 12,000.00	\$ 456,000.00
60" Precast Manholes	8	EA	\$ 15,000.00	\$ 120,000.00
24" PVC SDR 35 Sewer Main	8900	LF	\$ 150.00	\$ 1,335,000.00
27" PVC SDR 35 Sewer Main	9400	LF	\$ 160.00	\$ 1,504,000.00
30" PVC SDR 35 Sewer Main	1750	LF	\$ 180.00	\$ 315,000.00
36" PVC SDR 35 Sewer Main	3300	LF	\$ 200.00	\$ 660,000.00
Grind and Overlay	182,340	SF	\$ 4.00	\$ 729,360.00
Roadway Patch	91170	SF	\$ 6.00	\$ 547,020.00
Subtotal				\$ 5,666,380.00
Mobilization/Demobilization	10%	LS	-	\$ 566,638.00
Contingency	15%	LS	-	\$ 849,957.00
Preliminary Estimate of Probable Costs				\$ 7,082,975.00



*Table 1. Project Parcel APN and Acreage:*

<b>APN</b>	<b>ACRES</b>
087-390-14	77.66
087-390-13	243.02
086-203-05	38.67
087-390-10	308.6
086-232-31	190.03
<b>Total Acreage</b>	<b>857.98</b>

**ASSUMPTIONS:**

1. The applicant shall be responsible for all application, review, inspection, storage, treatment, permits, easements, and other fees pertinent to the Project as adopted by the TMWA at the time of execution of a water service agreement.
2. The cost opinions contained herein do not include new business fees, cost of water rights and related fees, or contribution to the water meter retrofit fund.
3. The Project includes construction of 680 single family residential units.
4. Demand calculations, and fees based on demands, are estimates; actual fees will be determined at the time of application for service.
5. The assumed fire flow requirement for this project is 1,500 gpm for two hours.
6. Project pressure criteria are:
  - a. Maximum day pressure of at least 45 pounds per square inch (psi) at the ground surface elevation at the service connection with tank level at top of fire storage,
  - b. Peak hour pressure of at least 40 psi at building pad elevation with tank level at top of emergency storage,
  - c. Maximum day plus fire flow pressure of at least 20 psi at center of street elevation with tank level at bottom of fire storage, and
  - d. TMWA does not calculate pressures for multi-story buildings. Confirmation that pressure will be adequate for upper stories is the responsibility of the Applicant.
7. A site grading plan with elevations was provided by the applicant. The project parcel elevations range from 5062 ft to 5330 ft.
8. Facility requirements for the Project are based on the site grading plan elevations, maximum day demand, and fire flow requirements. Changes in these may affect facility requirements.
9. Easements, permits and all pertinent Agency approvals are obtained for the design and construction of the water infrastructure necessary to serve the proposed Project.
10. All cost opinions are preliminary and subject to change. The costs presented in this study are planning level estimates based on the information available. Actual costs will be determined at the time of application for service. Cost opinions do not include on-site improvements made by the applicant.
11. This discovery is based on the current status of TMWA's system. Future development may alter the conclusions of this discovery. Capacity in TMWA's system is available on a first-come, first-served basis, and commitment to provide service is not established until a contract for service is executed and all fees are paid.



**DISCUSSION:**

Proposed Development

The proposed development consists of 680 single family residential units off of Red Rock Rd in Stead Nevada. ACAD drawings were received from Summit Engineering with street and lot layouts and a grading plan. This information was incorporated into TMWA's hydraulic model and was used to identify a Project water service plan in conformance to TMWA design criteria.

Project Improvements

Water service to the project site can be achieved with a connection to TMWA's 12" water main adjacent to the Army Aviation Well.

The major project improvements to serve the project are listed below in Table 1 and shown in Figure 1.

Description	Size	Comment
Tie-in to existing 12" TMWA main	1	<ul style="list-style-type: none"> <li>Tie-in location near TMWA's Army Aviation Well</li> </ul>
Booster Pump Station	1	<ul style="list-style-type: none"> <li>Off-site Improvement</li> <li>Design point of 300' TDH at 1,200 gpm</li> <li>A project pump station will be required. The pump station site includes a dedicated lot within the planned subdivision.</li> <li>Pump station discharge pressure of 275 psi</li> </ul>
Main from TMWA connection to the project site.	3,500 LF	<ul style="list-style-type: none"> <li>3,500 LF of 12" diameter main</li> <li>Subject to TMWA acquiring easements along entire length.</li> </ul>
Parallel tank feeder main	11,500 LF	<ul style="list-style-type: none"> <li>12 inch diameter</li> </ul>
Water Storage Tank	1	<ul style="list-style-type: none"> <li>1.1 MGD</li> <li>Pad elevation = 5430 ft</li> </ul>
Pressure Regulating Stations (PRS)	4	<ul style="list-style-type: none"> <li>2 PRS for both Zone 1 and Zone 2</li> </ul>

To serve the full project area, three pressure zones will be required to maintain service pressures within a range of 100 PSI to 45 PSI. The pressure zone boundaries were developed to maximize looping, to the extent possible. Adequate looping and dead end mains will be an issue with the proposed subdivision layout. The street layout should be redeveloped to conform

to the pump zone boundaries and promote looping and eliminate dead end water mains, greater than 400-500 LF.

### Project Phasing

Phased construction was not included in this Discovery, but is a possibility. With a phased development, the water facility plan could be changed to include a smaller intermediate elevation water storage tank.

### Project Demands

The estimated total project, maximum day demand, is 1149.8 gpm. The demand was calculated for each lot of the 680 single family unit development using the following formula:

$$Y = 1.05 * 0.008607 * \sqrt{X}$$

*Y = maximum day demand in gpm*

*X = lot size in square feet*

Project demands are summarized in Table 2. A more detailed demand table can be found as an attachment.

*Table 2. Estimated Project Demand Summary.*

<b>Demand Type</b>	<b>MDD (gpm)</b>	<b>ADD (gpm)</b>
Residential	1149.8	440.5
Irrigation	-	-
<b>Totals</b>	<b>1149.8</b>	<b>440.5</b>

### Storage Capacity

The project will require a dedicated storage tank of 1.1 MG. The project storage volume was calculated as follows:

$$\begin{aligned} \text{Operating Storage Volume} &= 15\% \text{ of MDD} \\ &= 15\% * 1440 \text{ min/day} * 1152.4 \text{ gpm} \\ &= 248,357 \text{ gallons} \end{aligned}$$

$$\begin{aligned} \text{Emergency Storage Volume} &= 1 \text{ ADD} \\ &= 1440 \text{ min/day} * 441.5 \text{ gpm} \\ &= 634,372 \text{ gallons} \end{aligned}$$

$$\begin{aligned} \text{Fire Storage Volume} &= 1,500 \text{ gpm for 2 hours} \\ &= 1,500 \text{ gpm} * 2 \text{ hours} * 60 \text{ minutes/hr} \\ &= 180,000 \text{ gallons} \end{aligned}$$

$$\text{Total:} \quad = 1,062,729 \text{ gallons}$$

### Supply Capacity

Currently, there is sufficient supply capacity to support the Project's estimated max day demand of 1,149.8 gpm.

### Water Resource

The available water rights owned by TMWA within the Stead area are limited (<100 AF) and are available on a first come, first served basis.

### Project Pressures

Project service elevations range from approximately 5062' to 5330'. Three pressure zones were established to fully serve the project area while maintaining the required service pressure range of 100 psi to 45 PSI. The proposed pressure zone boundaries are shown in Figure 1 and were developed to optimize system looping.

### Dead Ends and Looping

Nevada Administrative Code section 445A.6712 requires systems to be designed, to the extent possible, to eliminate dead ends. This project supply will be considered looped with supply from both the pump station and the water storage tank. Each pressure zone will require a minimum of two supply points. Adequate looping and dead end mains will be an issue with the proposed subdivision layout. The street layout should be redeveloped to conform to the pump zone boundaries and promote looping and eliminate dead end water mains, greater than 400-500 LF.

### Project Fire Flow

Fire flow requirements are established by the local fire authority. The required project fire flow is assumed to be 1,500 gpm for 2 hours.



**Project Cost Opinion**

The cost opinions for the major off-site improvements are presented in Table 3. It is important to note that the on-site 12" dedicated parallel tank feeder main within the development (approx. 11,500 LF) was not included in the offsite improvement cost table below.

*Table 3. Cost Opinion for Major Water Facility Improvements (Charge Area 10, Stead).*

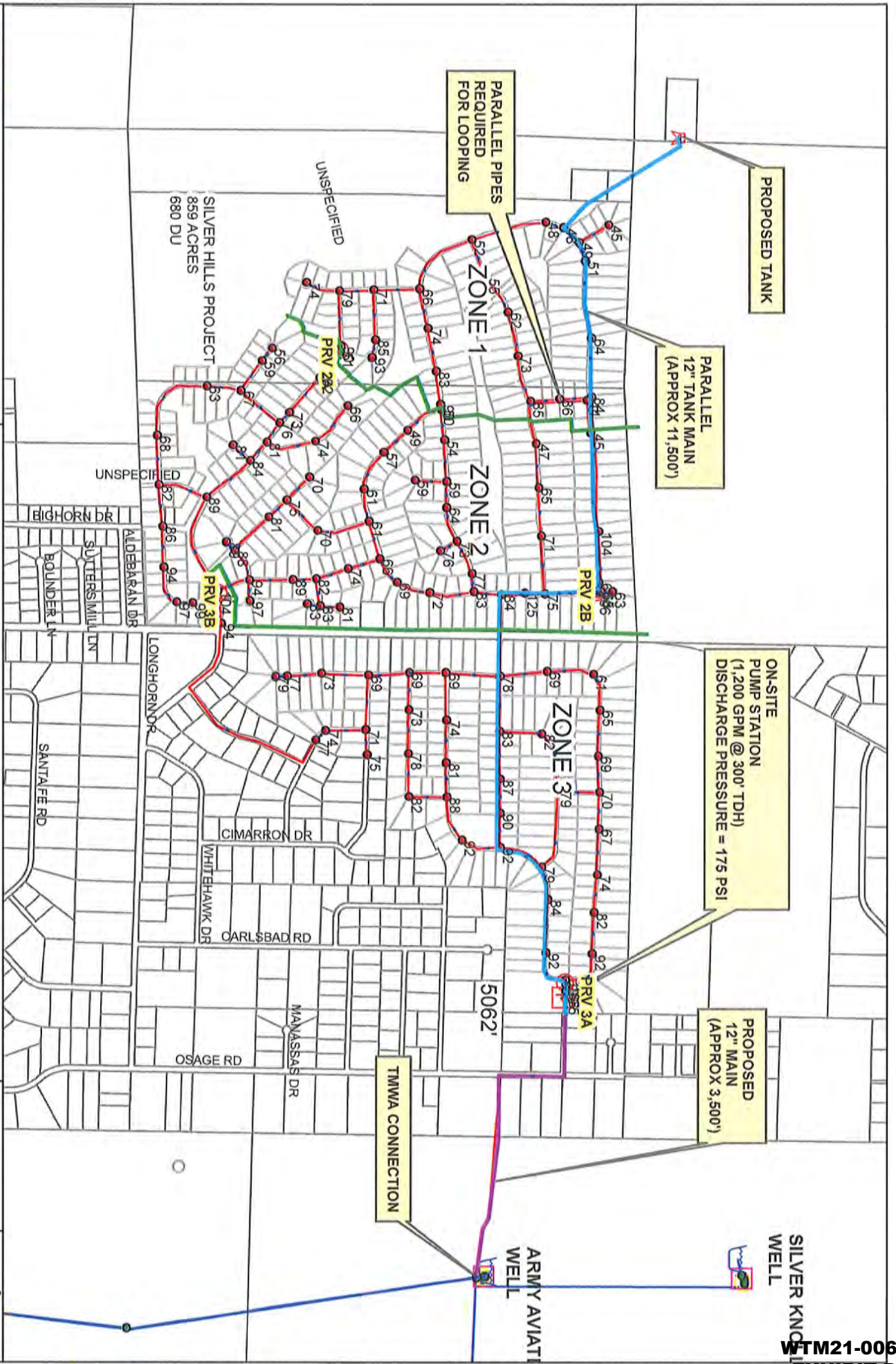
<b>Description</b>	<b>Quantity</b>	<b>Unit</b>	<b>Unit Cost</b>	<b>Total Cost</b>
Supply/Treatment Facility Charge <sup>1</sup>	1149.8	MDD, gpm	0	\$0
Storage Facility Charge	1149.8	MDD, gpm	\$0	\$0
Area 10 Facility Charge <sup>2</sup>	1149.8	MDD, gpm	\$5,623	\$6,465,325
Tie-in to existing 12" TMWA Main	1	L.S.	\$30,000	\$30,000
Booster Pump Station	1	L.S.	\$1,000,000	\$1,000,000
Water Storage Tank	1	L.S.	\$1,100,000	\$1,100,000
Water Main to Project	3,500	L.F.	\$216	\$756,000
<b>Total</b>			<b>\$9,351,325</b>	

<sup>1</sup> For Area 10 services, dedicating Fish Springs resources, TMWA S/T Fee = 0, otherwise = \$4,163

Notes: MDD = Maximum Day Demand

L.F. = Linear Feet

L.S. = Lump Sum



PROPOSED TANK

PARALLEL  
12" TANK MAIN  
(APPROX 11,500')

ON-SITE  
PUMP STATION  
(1,200 GPM @ 300' TDH)  
DISCHARGE PRESSURE = 175 PSI

PROPOSED  
12" MAIN  
(APPROX 3,500')

TMWA CONNECTION

PARALLEL PIPES  
REQUIRED  
FOR LOOPING

ARMY AVIATI  
WELL

SILVER KNOC  
WELL

TRUCKEE MEADOWS WATER  
A U T H O R I T Y  
Quality. Delivered.

LIFESTYLE HOMES @ RED ROCK RD\_DISC  
PROPOSED IMPROVEMENTS  
MAX DAY PRESSURES

DATE	NOV 2015
MAP BY:	BL
WORK ORDER #:	15-4490
SCALE:	1 inch = 1,400 feet

NORTH  
MAD 83 NEVADA STATE  
PLANE WEST FEET



# TENTATIVE SUBDIVISION MAP FOR SILVER HILLS - VILLAGE 1

## A SPECIFIC PLAN DEVELOPMENT

### WASHOE COUNTY, NEVADA

### SECTION 23, TOWNSHIP 21N, RANGE 18E

### MAY 2021

#### APPLICANT/PROPERTY OWNER

LIFESTYLE HOMES TND, LLC  
ATTN: PETER LISSNER  
P.O. BOX 7548  
RENO, NEVADA

#### CIVIL ENGINEER/PLANNER/SURVEYOR

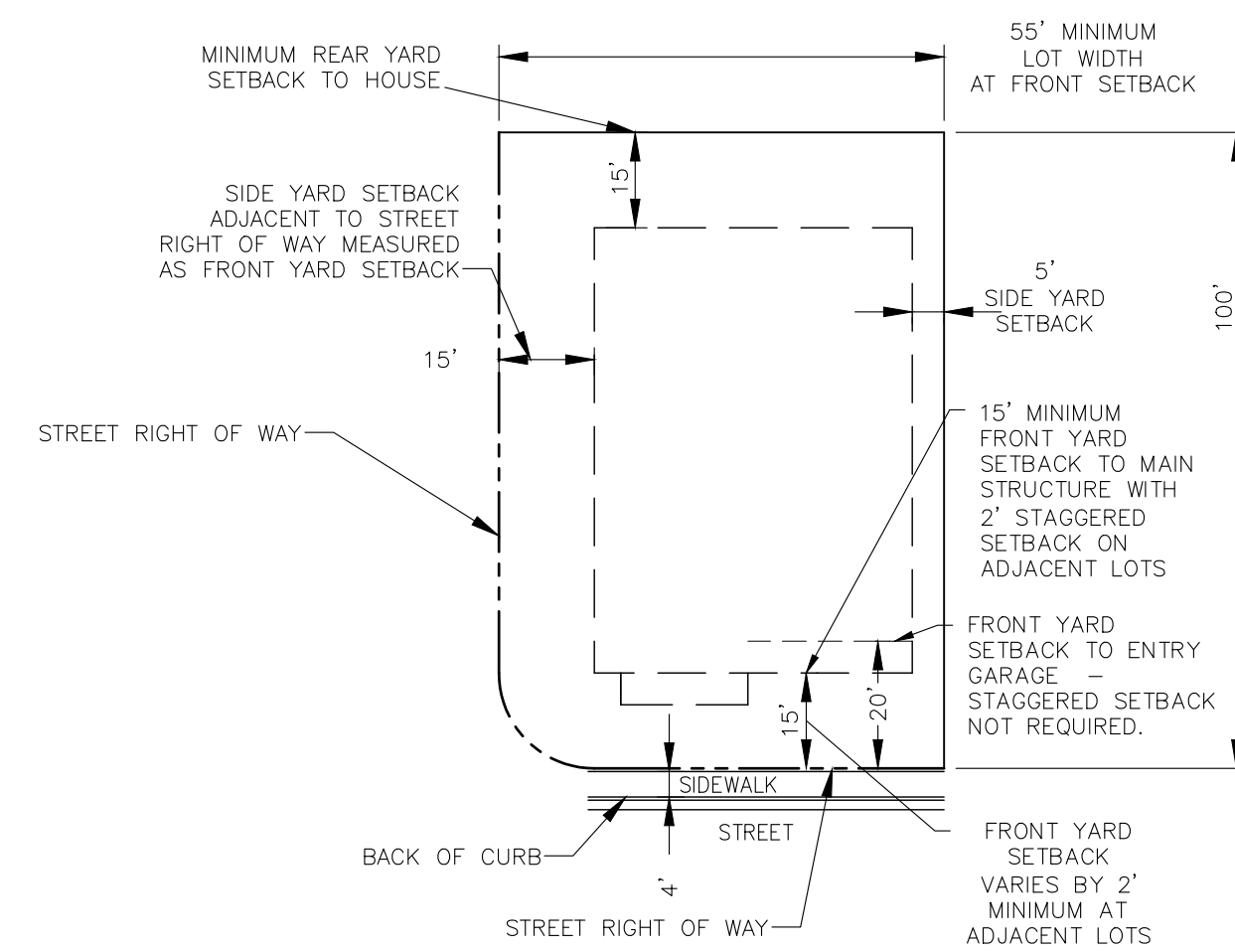
CHRISTY CORPORATION  
ATTN: DOUGLAS BUCK, P.E.  
1000 KILEY PARKWAY  
SPARKS, NV 89436  
(775) 502-8552

#### GEOTECHNICAL ENGINEER

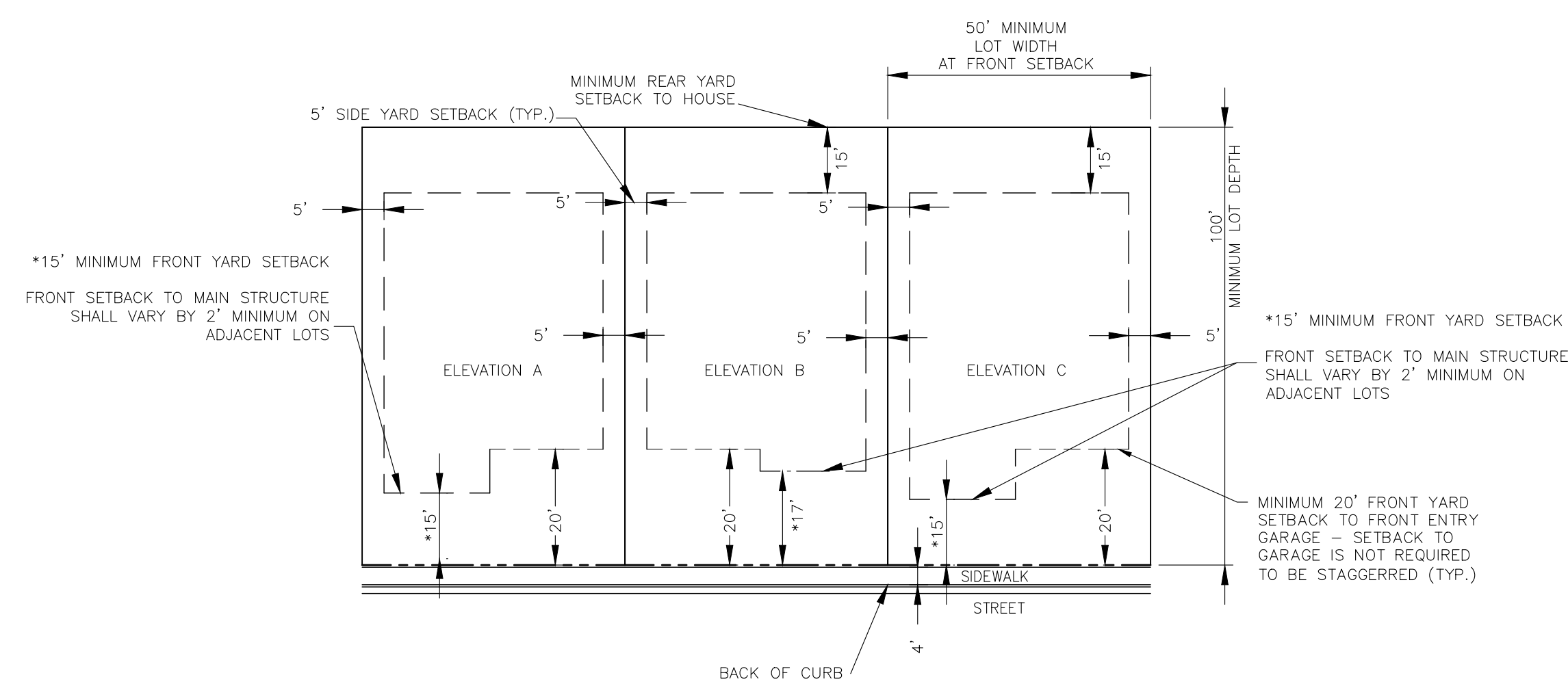
SUMMIT ENGINEERING CORPORATION  
5405 MAE ANNE AVENUE  
RENO, NEVADA 89523  
(775) 747-8550

#### LANDSCAPE ARCHITECT

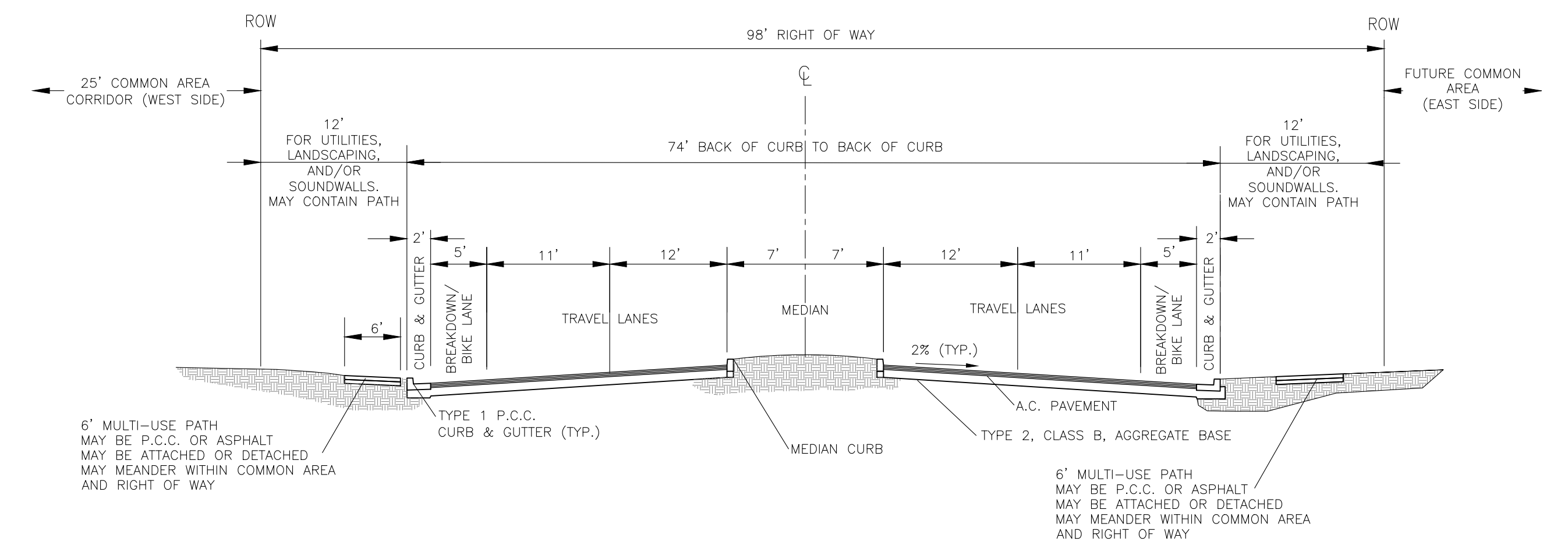
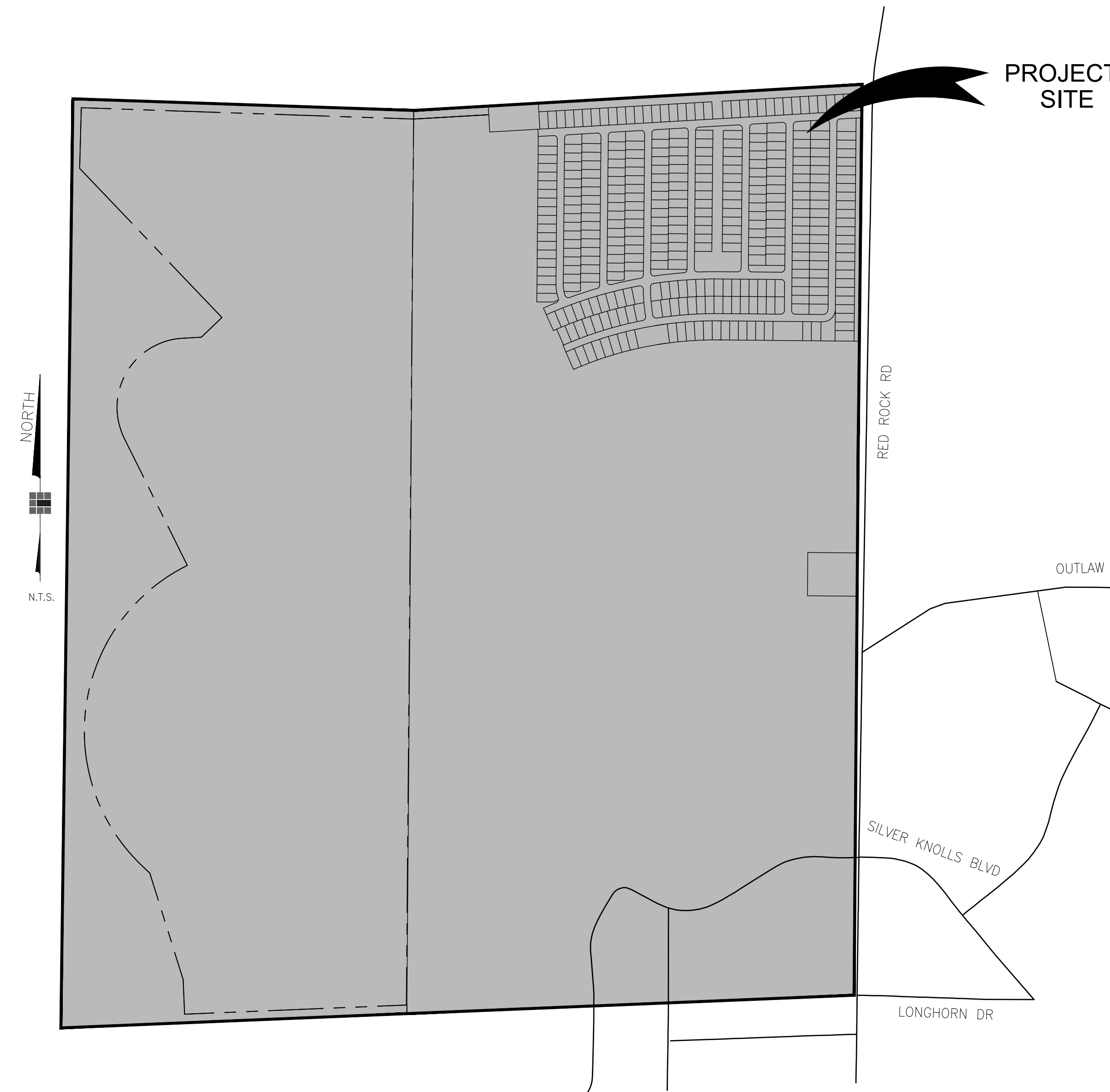
LA STUDIO, LLC  
1552 C STREET  
SPARKS, NV 89431  
(775) 323-2223



TYPICAL CORNER LOT

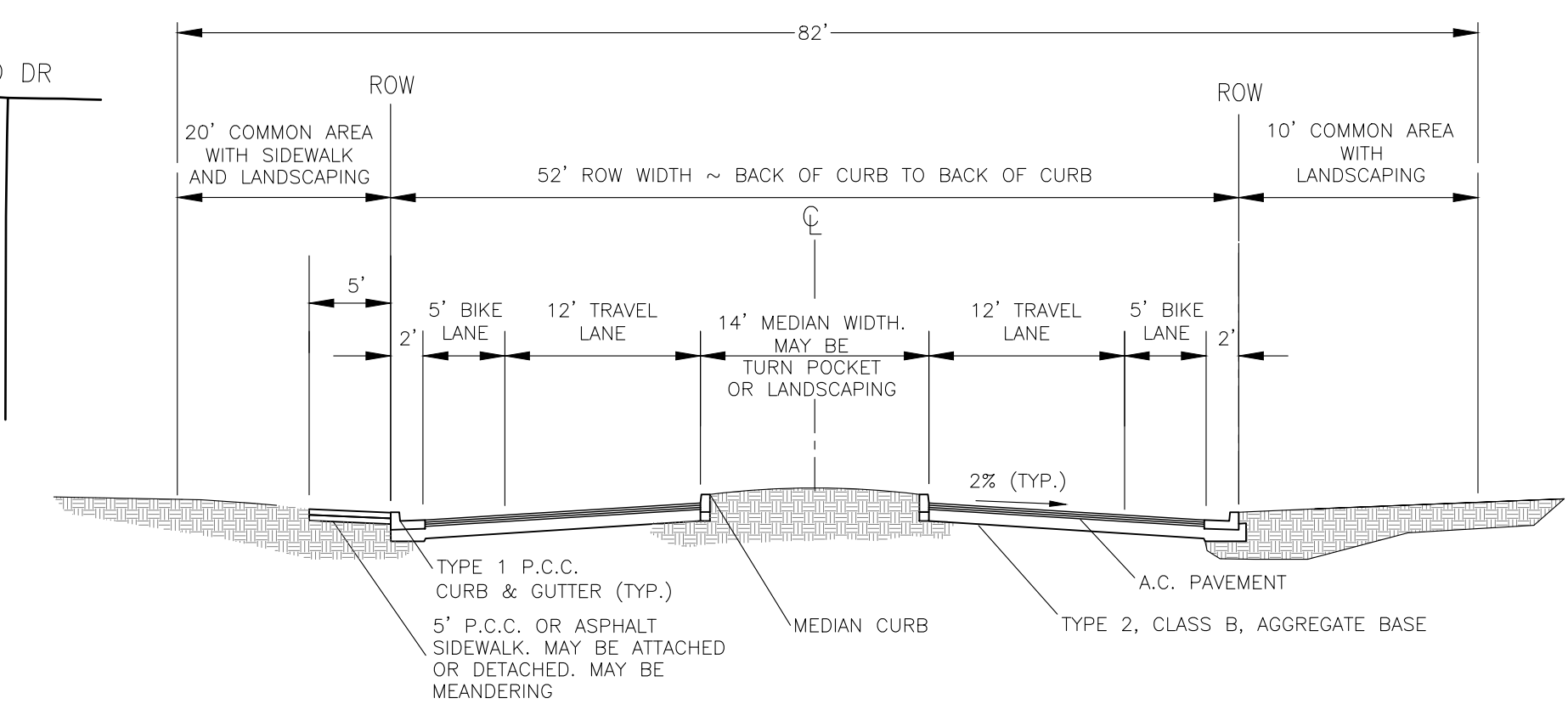


TYPICAL INTERIOR LOTS



FUTURE RED ROCK ROAD RIGHT OF WAY

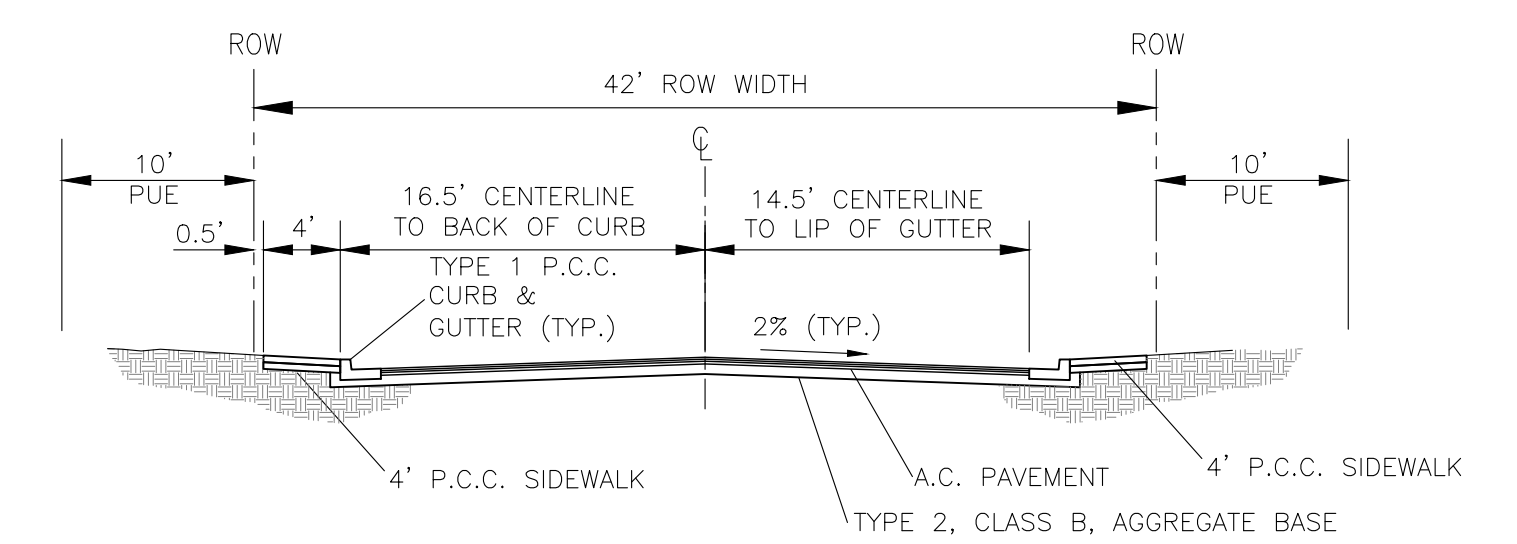
NOT TO SCALE (PUBLIC)



SILVER HILLS PARKWAY (COLLECTOR)

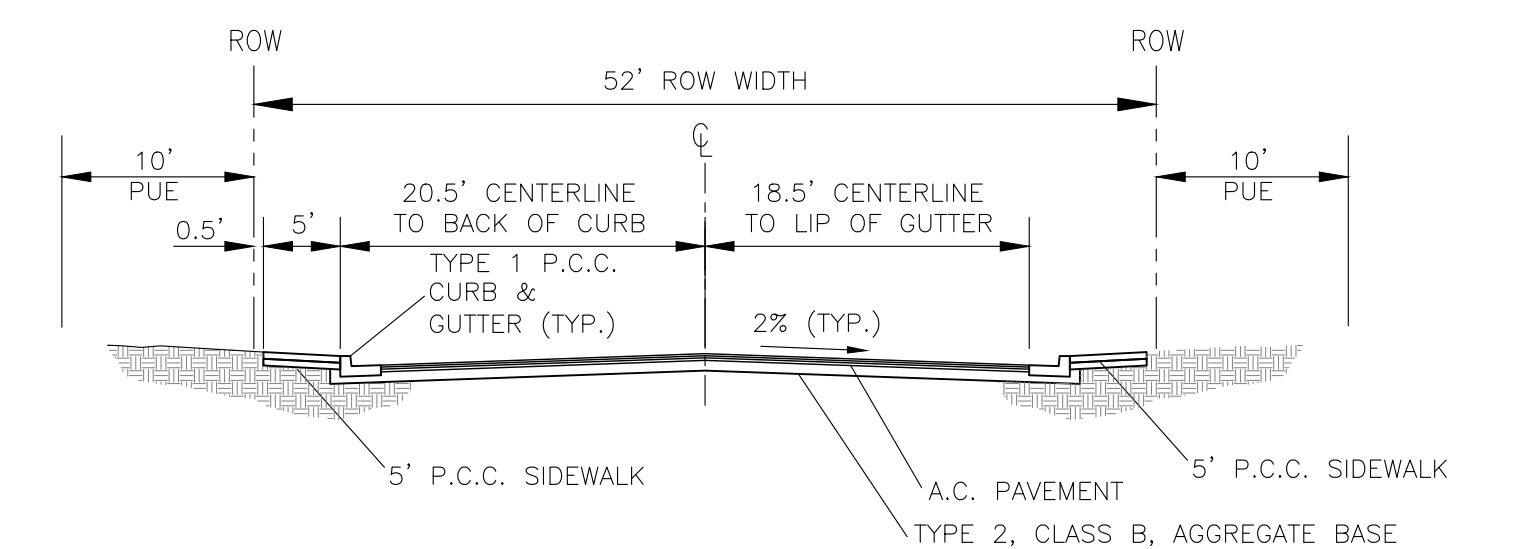
NOT TO SCALE (PUBLIC)

NOTE: LANDSCAPE MEDIAN LENGTH IS 100'. SECTION INCLUDES CENTER TURN LANE FOR REMAINDER OF ROADWAY SECTION.



LOCAL ROAD

NOT TO SCALE (PUBLIC)



ENTRY ROAD

NOT TO SCALE (PUBLIC)

#### SHEET INDEX

SHT NO.	DWG DESCRIPTION
1	TITLE SHEET
2	PRELIMINARY OVERALL SITE PLAN
3	PRELIMINARY SETBACK PLAN
4	PRELIMINARY SETBACK PLAN
5	PRELIMINARY SETBACK PLAN
6	PRELIMINARY SETBACK PLAN
7	PRELIMINARY LOT & BLOCK PLAN
8	PRELIMINARY LOT & BLOCK PLAN
9	PRELIMINARY LOT & BLOCK PLAN
10	PRELIMINARY OVERALL GRADING PLAN
11	PRELIMINARY OVERALL UTILITY PLAN
12	PRELIMINARY CROSS SECTIONS
13	PRELIMINARY LANDSCAPING PLAN

#### SITE INFORMATION

ASSESSOR'S PARCEL NUMBERS 087-390-10 & 087-390-13  
TOTAL PARCEL AREA = 551.62 AC

#### LOT STATISTICS

TOTAL NO. OF LOTS (DU): 358 LOTS  
AVERAGE LOT SIZE: 5,328 SQ. FT. (0.12 ACRE)  
LARGEST LOT SIZE: 8,072 SQ. FT. (0.19 ACRE)  
SMALLEST LOT SIZE: 5,000 SQ. FT. (0.11 ACRE)  
MAXIMUM BUILDING HEIGHT: 35 FT.  
TOTAL AREA TO BE DEVELOPED: 65.96 ACRES  
LOT AREA: 43.77 ACRES  
COMMON AREA: 7.15 ACRES  
PARCEL 1-A (TRAILHEAD): 1.03 ACRES  
RIGHT-OF-WAY AREA: 14.01 ACRES  
COMMON AREA/OPEN SPACE (PARCEL 1-C): 54.52 ACRES  
TOTAL COMMON AREA/OPEN SPACE: 62.69 ACRES  
RESIDENTIAL DENSITY (DEVELOPED AREA): 358 LOTS/65.96 ACRES = 5.42 DU/AC  
RESIDENTIAL DENSITY (DEVELOPED + OPEN SPACE): 358 LOTS/120.48 ACRES = 2.97 DU/AC  
MAXIMUM ALLOWABLE DENSITY = 3.0 DU/AC

COMMON AREA/OPEN SPACE: ANY COMMON AREA OR OPEN SPACE IDENTIFIED ON THIS TENTATIVE MAP IN EXCESS OF THAT REQUIRED TO MEET DENSITY REQUIREMENTS FOR THE DEVELOPED AREA OF THIS MAP MAY BE UTILIZED TO MEET DENSITY REQUIREMENTS FOR FUTURE TENTATIVE MAPS. DEVELOPMENT ON COMMON AREA PARCELS IS RESTRICTED TO RECREATIONAL PURPOSES AND DRAINAGE AND UTILITY FACILITIES. TYPICAL USES MAY INCLUDE BUT ARE NOT LIMITED TO SIDEWALKS, TRAILS, PATHS, TRAIL HEADS, TRAIL HEAD PARKING AREAS, PARKS, PLAYGROUNDS, MISCELLANEOUS RECREATIONAL FACILITIES, RETENTION AND DETENTION BASINS, DRAINAGE CHANNELS, PUBLIC AND PRIVATE UTILITIES INCLUDING STORM DRAIN, SANITARY SEWER, WATER LINE, NATURAL GAS, ELECTRICAL AND COMMUNICATION FACILITIES AND MAINTENANCE ACCESS ROADS FOR RECREATIONAL, DRAINAGE, AND UTILITY FACILITIES.

#### MAINTENANCE OF FACILITIES

PUBLIC IMPROVEMENTS INCLUDING STREETS, SIDEWALKS, STORM DRAIN AND SANITARY SEWER FACILITIES WILL BE MAINTAINED BY WASHOE COUNTY.

COMMON AREA/OPEN SPACE INCLUDING LANDSCAPING AND TRAILS WILL BE OWNED AND MAINTAINED BY THE HOMEOWNERS ASSOCIATION OR LANDSCAPE MAINTENANCE ASSOCIATION.

#### VARIABLE SETBACK NOTES

BUILDING FOOTPRINTS DEPICTED IN THIS PLAN SET ARE FOR ILLUSTRATIVE PURPOSES AND SUBJECT TO CHANGE.

STAGGERING OF FRONT YARD SETBACKS SHALL OCCUR WITH FINAL BUILDING FOOTPRINTS. A MINIMUM 2-FOOT FRONT YARD SETBACK DEVIATION SHALL BE PROVIDED FROM ALL ADJOINING PARCELS (AS MEASURED TO BUILDING FAÇADE). FRONT-LOAD GARAGES SHALL INCLUDE A MINIMUM SETBACK OF 20-FOOT AND ARE NOT SUBJECT TO THE 2-FOOT OFFSET. FINAL PLOT PLANS SHALL DEPICT ADJOINING PARCELS TO DEMONSTRATE COMPLIANCE WITH THIS STANDARD AND SHALL BE CERTIFIED BY THE MASTER DEVELOPER AND PROFESSIONAL ENGINEER LICENSED IN THE STATE OF NEVADA.

MASTER DEVELOPER SHALL CONFIRM COMPLIANCE WITH ALL APPLICABLE SPECIFIC PLAN STANDARDS AT THE TIME OF FINAL PLOT PLANS. UPON REQUEST BY WASHOE COUNTY, THE MASTER DEVELOPER SHALL PROVIDE SUPPLEMENTAL MATERIALS (AS APPROPRIATE) TO DEMONSTRATE COMPLIANCE WITH THE SILVER HILLS SPECIFIC PLAN DEVELOPMENT STANDARDS. THIS SHALL NOT RESULT IN DELAYS TO PROCESSING AND/OR CONSTRUCTION REVIEW.

LANDSCAPE AND GRADING PLANS DEPICT BUILDING PADS ONLY FOR ILLUSTRATIVE PURPOSES. FINAL LANDSCAPING PLANS AND PLOT PLANS ARE SUBJECT TO STAGGERING STANDARDS.

A MINIMUM OF THREE BUILDING ELEVATIONS FOR EACH FLOORPLAN WITHIN VILLAGE 1 WILL BE PROVIDED AT THE TIME OF FINAL MAP/PLOT PLANS. MASTER DEVELOPER SHALL DEMONSTRATE THAT IDENTICAL ELEVATIONS ARE NOT LOCATED ON ADJOINING LOTS WITH FINAL PLOT PLANS.

#### BASIS OF ELEVATIONS

THE BASIS OF ELEVATION IS NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).

#### BASIS OF BEARINGS

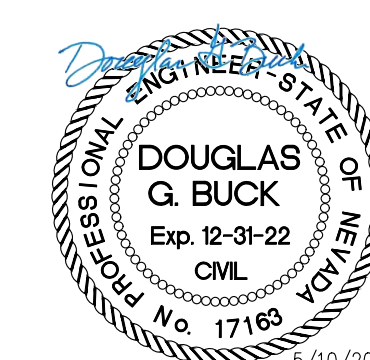
THE BASIS OF BEARINGS AND COORDINATES FOR THIS SURVEY WAS ESTABLISHED USING THE PUBLISHED COORDINATES (NAD 83/94, NEVADA WEST ZONE) FOR NAD POINTS "CHALK BLUES" AND "RENO AIR BASE", MODIFIED BY A COMBINATION FACTOR OF 1.000170937 AND CONVERTING TO THE U.S. SURVEY FOOT. ALL COORDINATES SHOWN HEREON ARE MODIFIED COORDINATES. ALL DIMENSIONS ON THIS MAP ARE GROUND DISTANCES.

#### ENGINEERS STATEMENT

THESE PLANS, SHEETS 1 THROUGH 9, HAVE BEEN PREPARED IN ACCORDANCE WITH ACCEPTED ENGINEERS PROCEDURES AND GUIDELINES, AND ARE IN SUBSTANTIAL COMPLIANCE WITH WASHOE COUNTY DEVELOPMENT CODE, THE SPECIFIC PLAN HANDBOOK, APPLICABLE STATUTES, COUNTY ORDINANCES, STANDARDS, AND DEVELOPMENT HANDBOOK REQUIREMENTS. IN THE EVENT OF A CONFLICT BETWEEN ANY PORTION OF THESE PLANS AND WASHOE COUNTY STANDARDS OR THE SPECIFIC PLAN HANDBOOK, THE STANDARDS OR SPECIFIC PLAN SHALL APPLY.

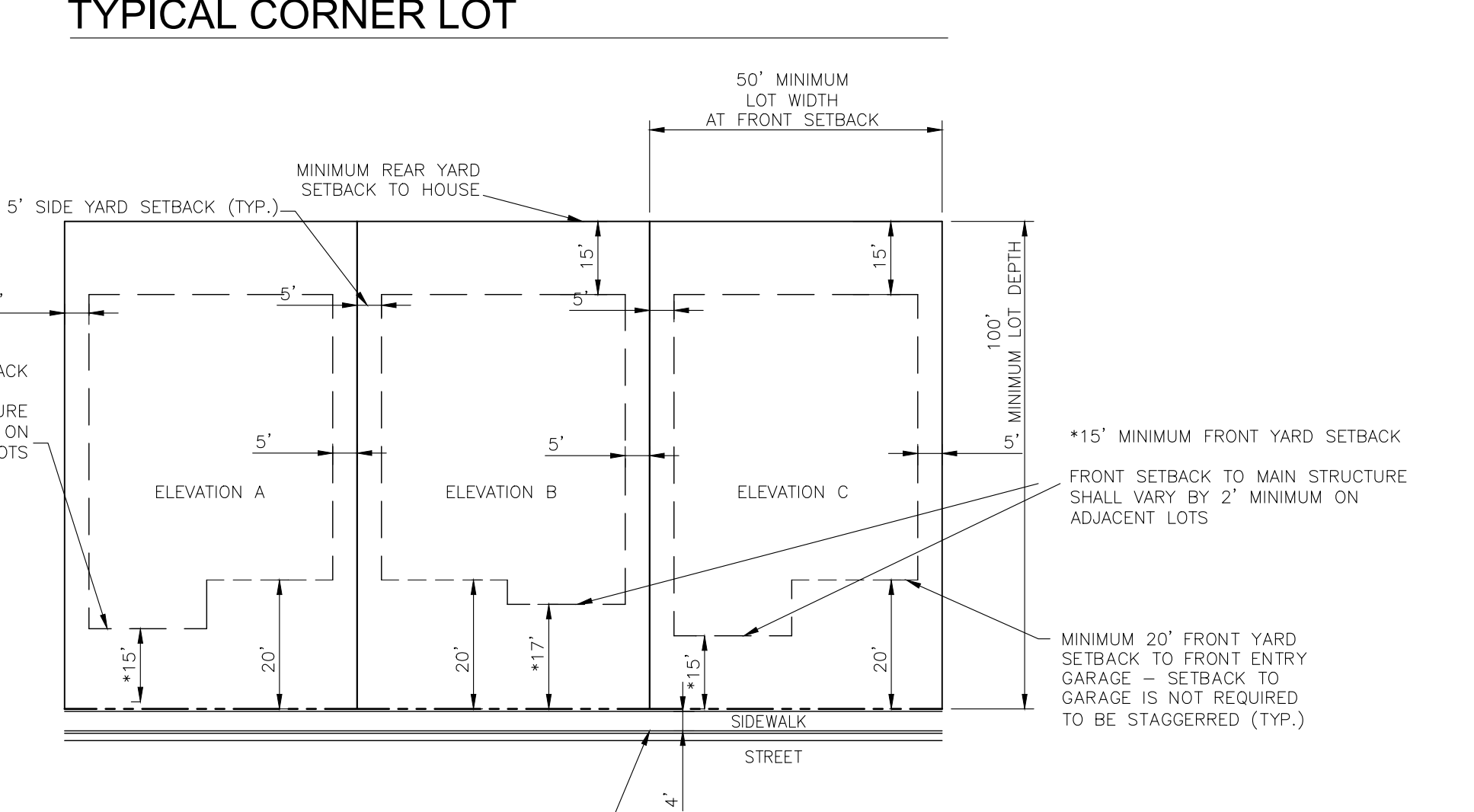
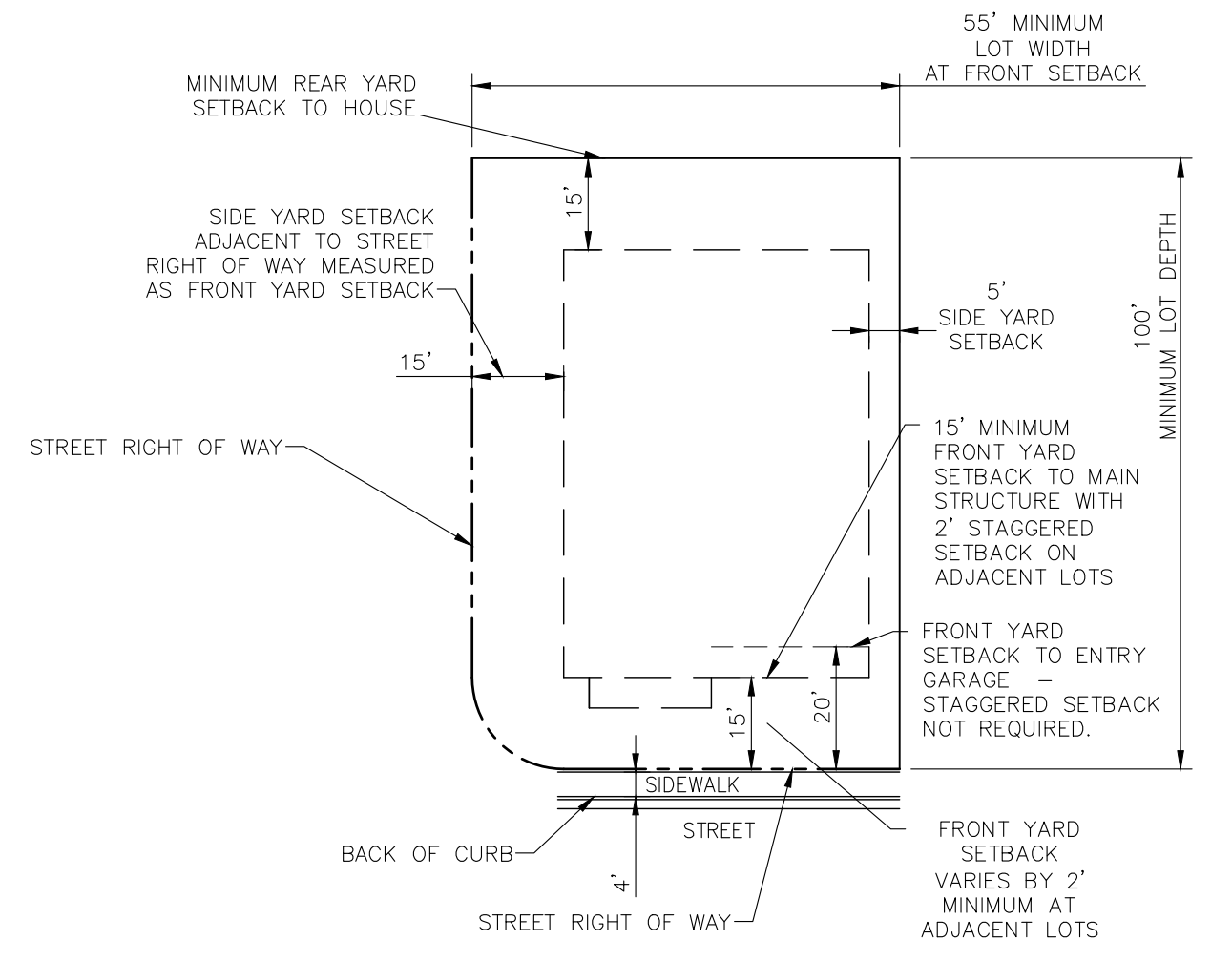
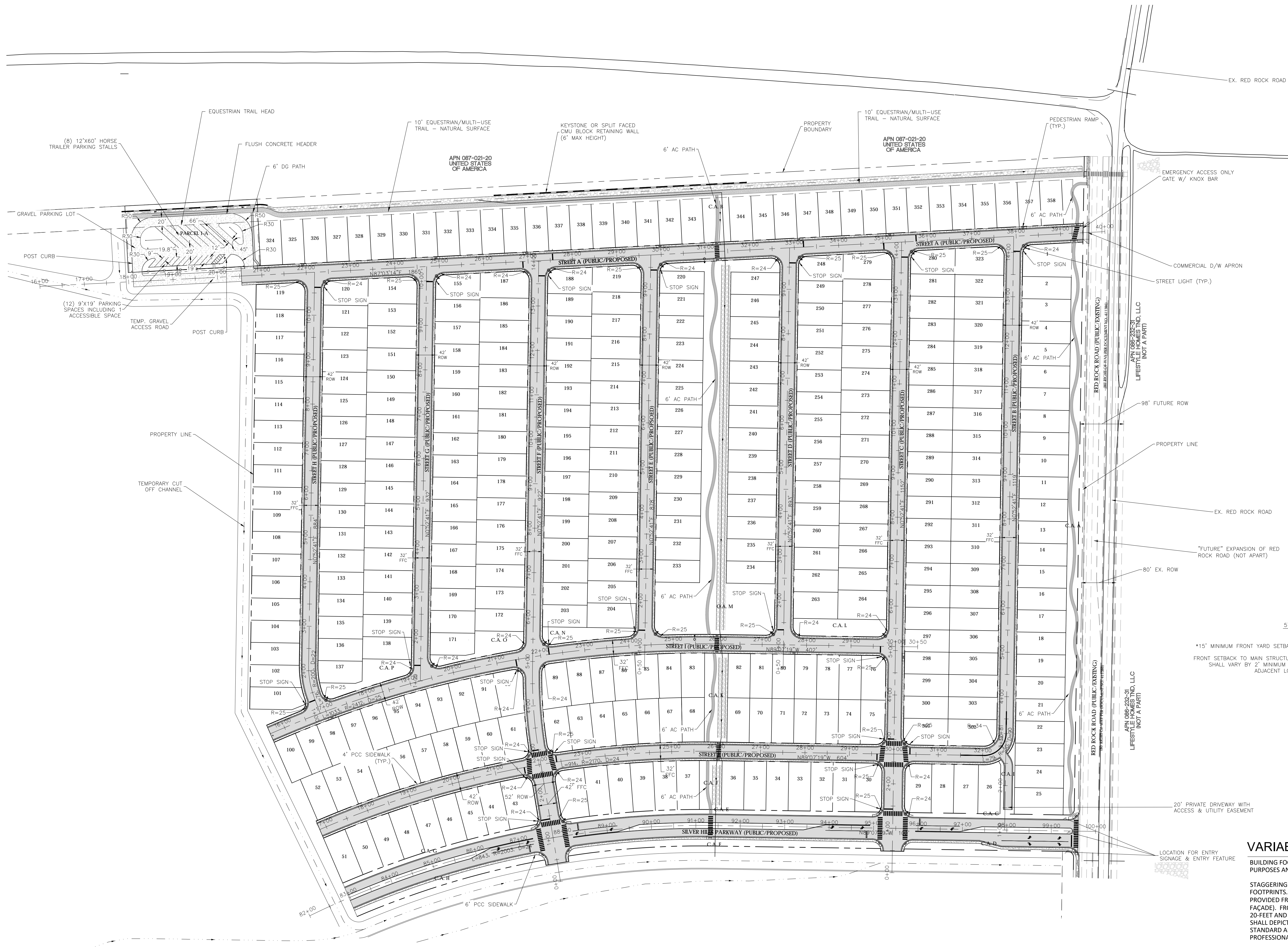
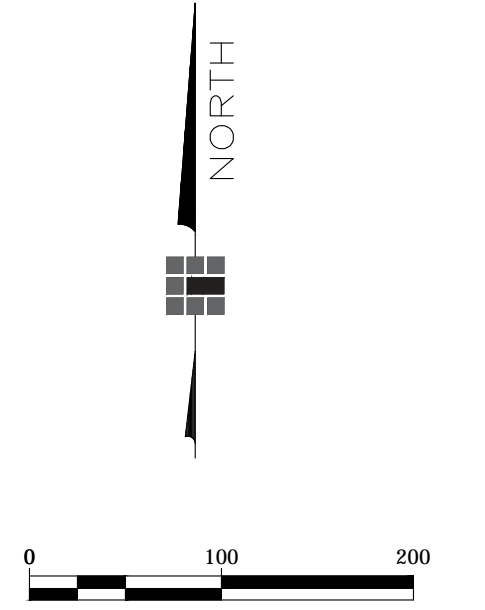
*Douglas G. Buck*

DOUGLAS G. BUCK, P.E. 17163  
CHRISTY CORPORATION





# TENTATIVE SUBDIVISION MAP FOR SILVER HILLS - VILLAGE 1 A SPECIFIC PLAN DEVELOPMENT



### VARIABLE SETBACK NOTES

BUILDING FOOTPRINTS DEPICTED IN THIS PLAN SET ARE FOR ILLUSTRATIVE PURPOSES AND SUBJECT TO CHANGE.

STAGGERING OF FRONT YARD SETBACKS SHALL OCCUR WITH FINAL BUILDING FOOTPRINTS. A MINIMUM 2-FOOT FRONT YARD SETBACK DEVIATION SHALL BE PROVIDED FROM ALL ADJOINING PARCELS (AS MEASURED TO BUILDING FAÇADE). FRONT-LOAD GARAGES SHALL INCLUDE A MINIMUM SETBACK OF 20-FEET AND ARE NOT SUBJECT TO THE 2-FOOT OFFSET. FINAL PLOT PLANS SHALL DEPICT ADJOINING PARCELS TO DEMONSTRATE COMPLIANCE WITH THIS STANDARD AND SHALL BE CERTIFIED BY THE MASTER DEVELOPER AND PROFESSIONAL ENGINEER LICENSED IN THE STATE OF NEVADA.

MASTER DEVELOPER SHALL CONFIRM COMPLIANCE WITH ALL APPLICABLE SPECIFIC PLAN STANDARDS AT THE TIME OF FINAL PLOT PLANS. UPON REQUEST BY WASHOE COUNTY, THE MASTER DEVELOPER SHALL PROVIDE SUPPLEMENTAL MATERIALS (AS APPROPRIATE) TO DEMONSTRATE COMPLIANCE WITH THE SILVER HILLS SPECIFIC PLAN DEVELOPMENT STANDARDS. THIS SHALL NOT RESULT IN DELAYS TO PROCESSING AND/OR CONSTRUCTION REVIEW.

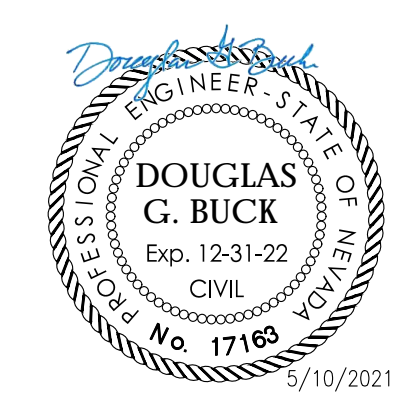
LANDSCAPE AND GRADING PLANS DEPICT BUILDING PADS ONLY FOR ILLUSTRATIVE PURPOSES. FINAL LANDSCAPING PLANS AND PLOT PLANS ARE SUBJECT TO STAGGERING STANDARDS.

A MINIMUM OF THREE BUILDING ELEVATIONS FOR EACH FLOORPLAN WITHIN VILLAGE 1 WILL BE PROVIDED AT THE TIME OF FINAL MAP/PLOT PLANS. MASTER DEVELOPER SHALL DEMONSTRATE THAT IDENTICAL ELEVATIONS ARE NOT LOCATED ON ADJOINING LOTS WITH FINAL PLOT PLANS.

### LEGEND

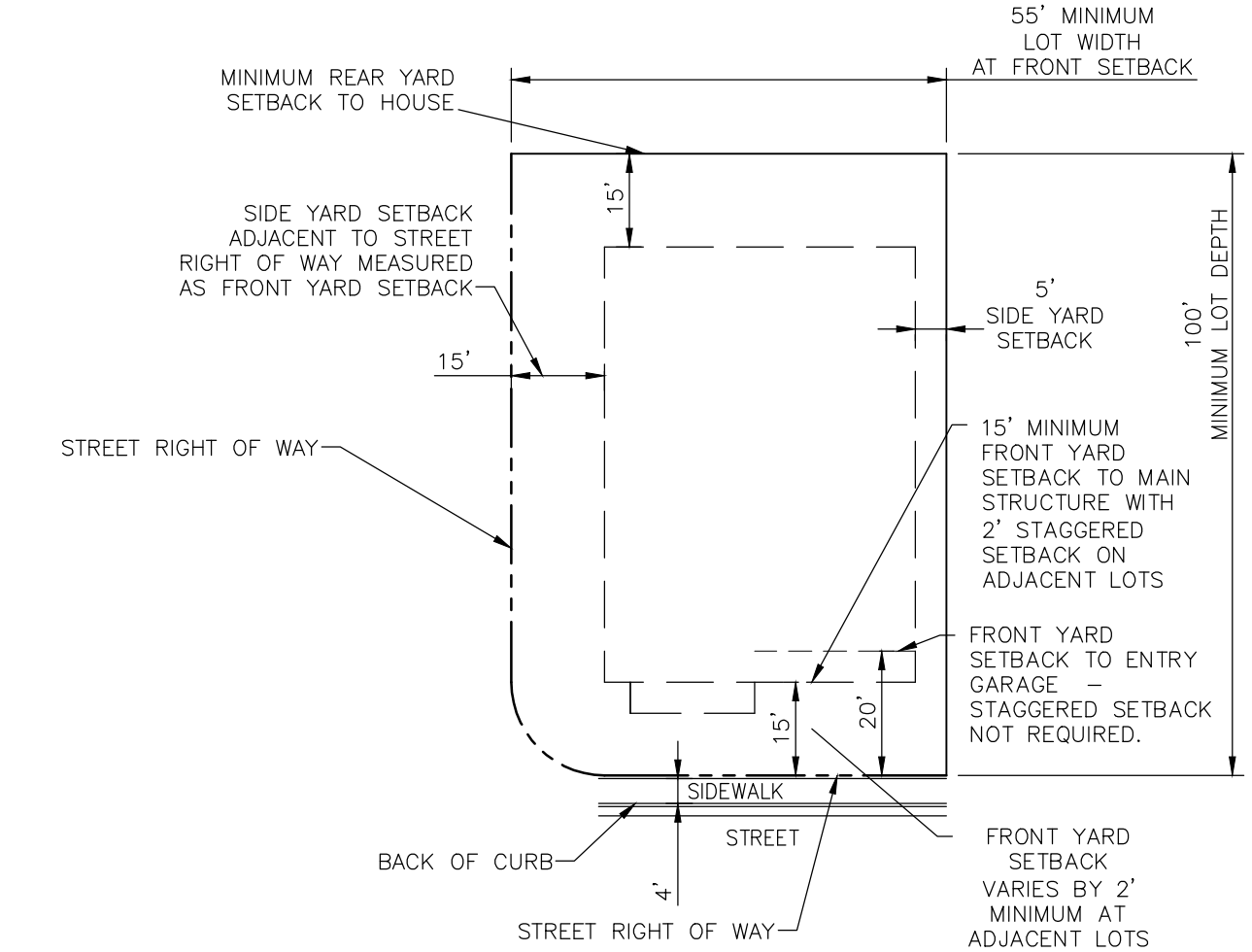
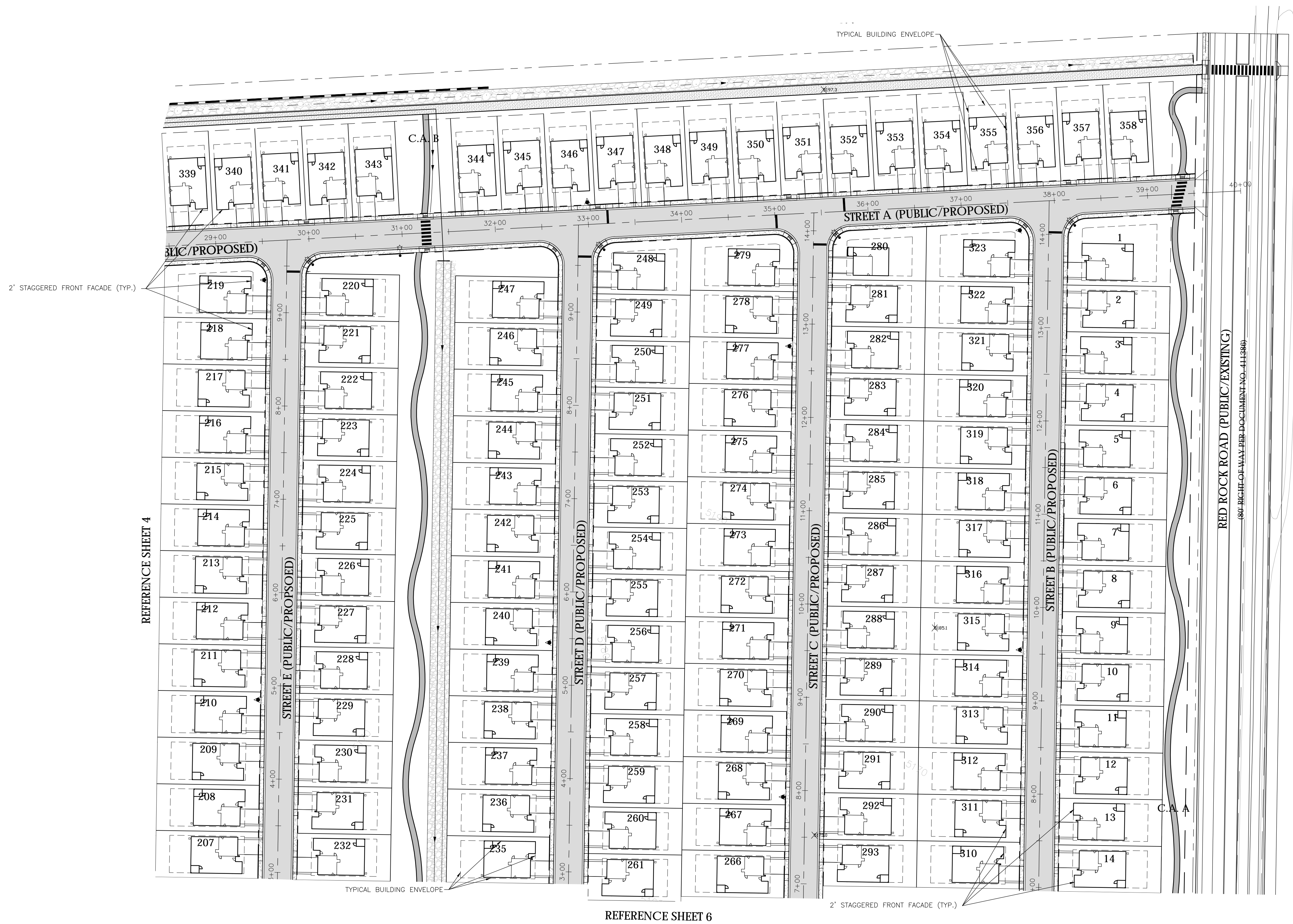
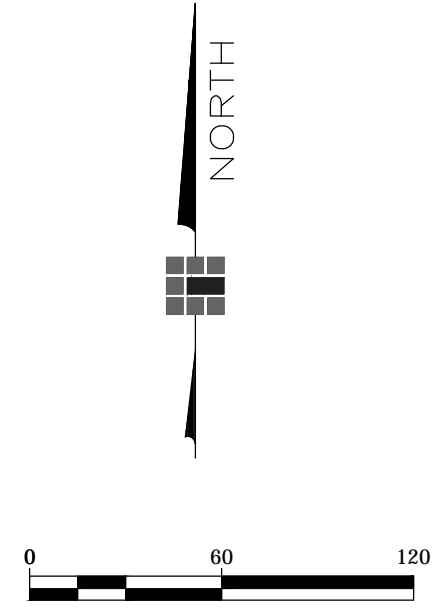
- STREET LIGHT
- ASPHALT PAVEMENT
- PCC CONCRETE
- GRAVEL/DECOMPOSED GRANITE
- RIPRAP

NOTE:  
1. ALL PROPOSED STREETS SHALL BE PUBLIC

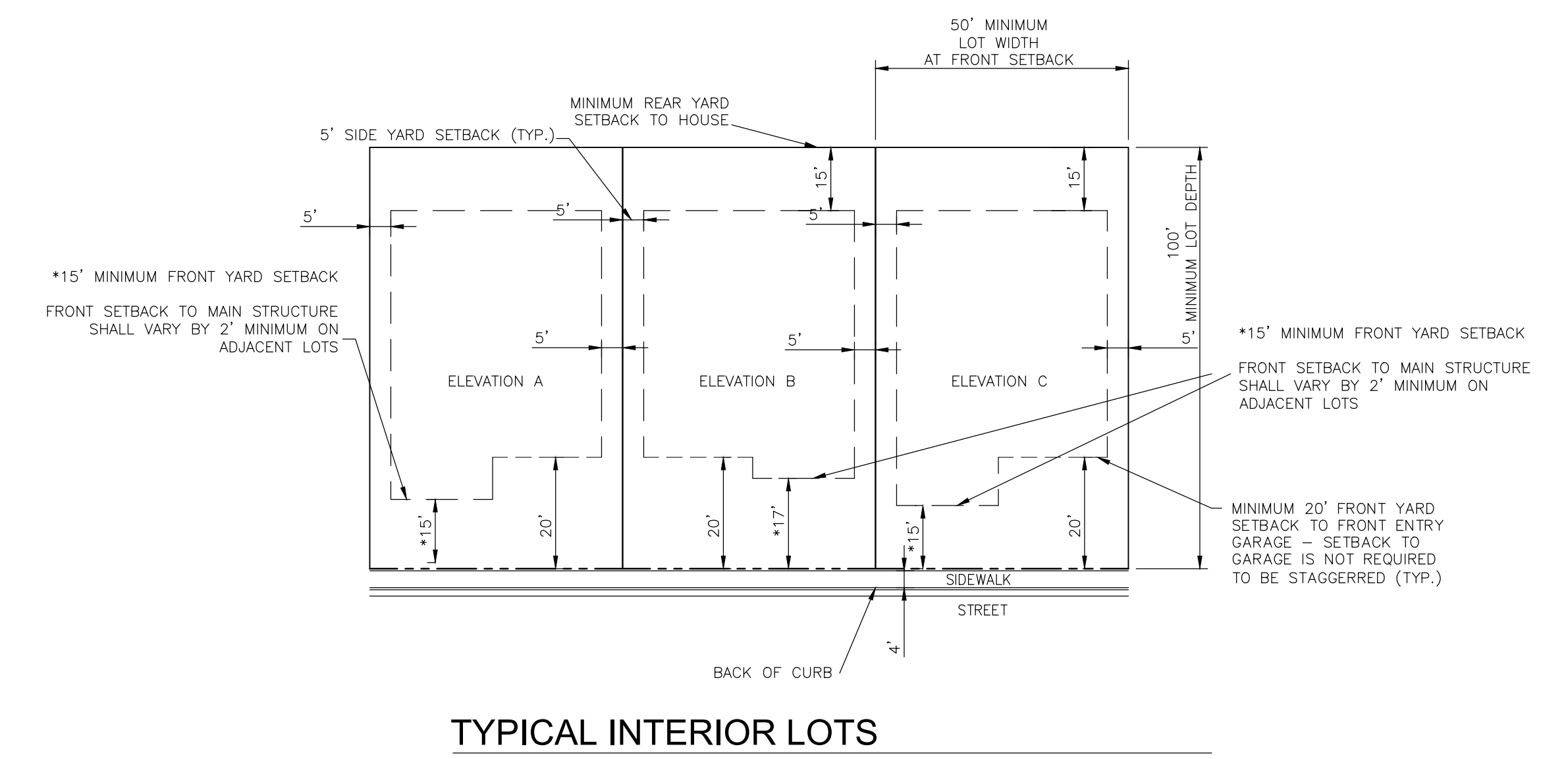




# TENTATIVE SUBDIVISION MAP FOR SILVER HILLS - VILLAGE 1 - VILLAGE 1 A SPECIFIC PLAN DEVELOPMENT



TYPICAL CORNER LOT



TYPICAL INTERIOR LOTS

### VARIABLE SETBACK NOTES

BUILDING FOOTPRINTS DEPICTED IN THIS PLAN SET ARE FOR ILLUSTRATIVE PURPOSES AND SUBJECT TO CHANGE.

STAGGERING OF FRONT YARD SETBACKS SHALL OCCUR WITH FINAL BUILDING FOOTPRINTS. A MINIMUM 2-FOOT FRONT YARD SETBACK DEVIATION SHALL BE PROVIDED FROM ALL ADJOINING PARCELS (AS MEASURED TO BUILDING FAÇADE). FRONT-LOAD GARAGES SHALL INCLUDE A MINIMUM SETBACK OF 20-FEET AND ARE NOT SUBJECT TO THE 2-FOOT OFFSET. FINAL PLOT PLANS SHALL DEPICT ADJOINING PARCELS TO DEMONSTRATE COMPLIANCE WITH THIS STANDARD AND SHALL BE CERTIFIED BY THE MASTER DEVELOPER AND PROFESSIONAL ENGINEER LICENSED IN THE STATE OF NEVADA.

MASTER DEVELOPER SHALL CONFIRM COMPLIANCE WITH ALL APPLICABLE SPECIFIC PLAN STANDARDS AT THE TIME OF FINAL PLOT PLANS. UPON REQUEST BY WASHOE COUNTY, THE MASTER DEVELOPER SHALL PROVIDE SUPPLEMENTAL MATERIALS (AS APPROPRIATE) TO DEMONSTRATE COMPLIANCE WITH THE SILVER HILLS SPECIFIC PLAN DEVELOPMENT STANDARDS. THIS SHALL NOT RESULT IN DELAYS TO PROCESSING AND/OR CONSTRUCTION REVIEW.

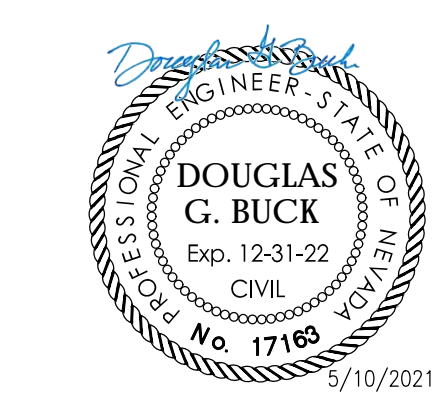
LANDSCAPE AND GRADING PLANS DEPICT BUILDING PADS ONLY FOR ILLUSTRATIVE PURPOSES. FINAL LANDSCAPING PLANS AND PLOT PLANS ARE SUBJECT TO STAGGERING STANDARDS.

A MINIMUM OF THREE BUILDING ELEVATIONS FOR EACH FLOORPLAN WITHIN VILLAGE 1 WILL BE PROVIDED AT THE TIME OF FINAL MAP/PLOT PLANS. MASTER DEVELOPER SHALL DEMONSTRATE THAT IDENTICAL ELEVATIONS ARE NOT LOCATED ON ADJOINING LOTS WITH FINAL PLOT PLANS.

### LEGEND

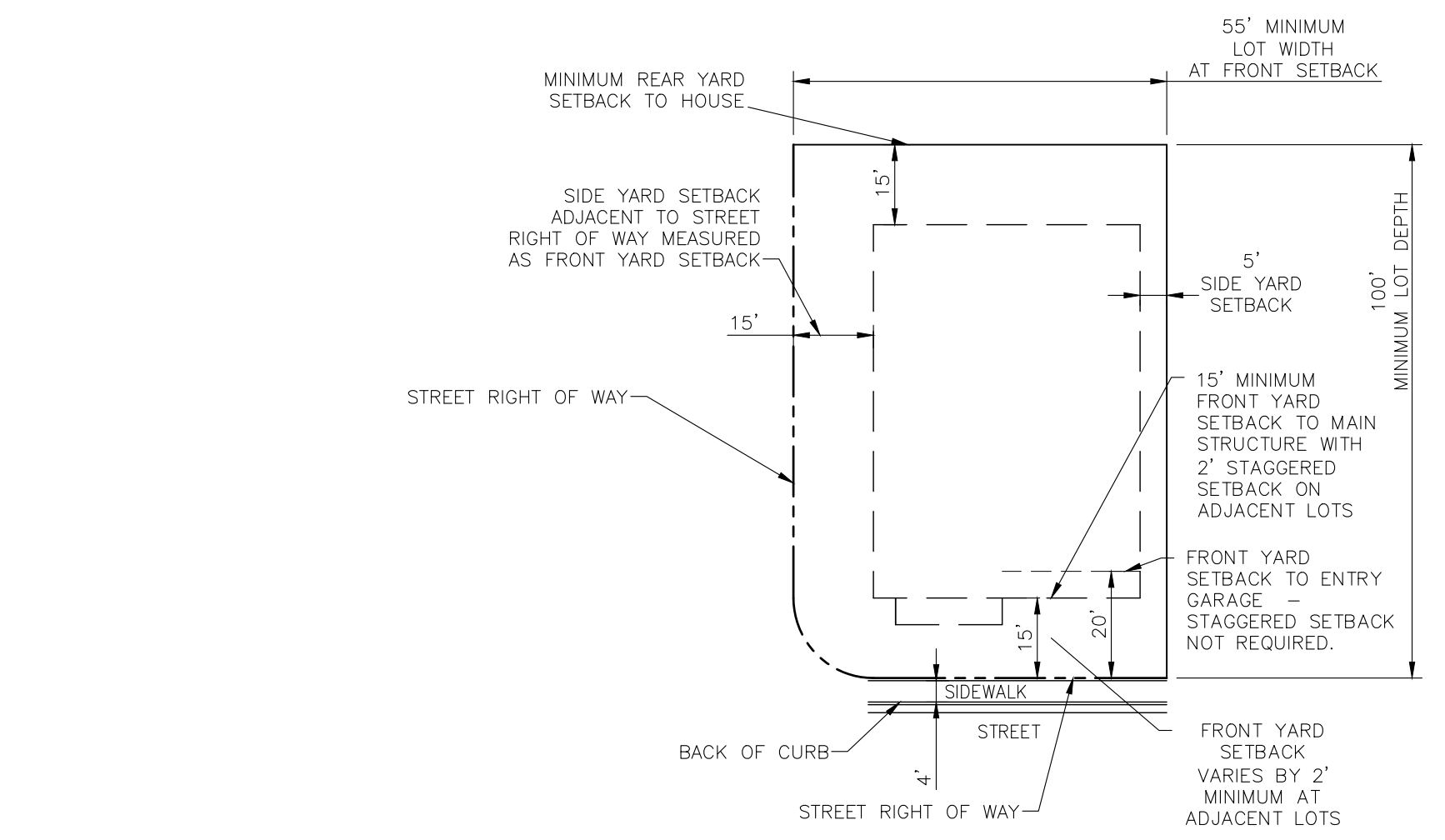
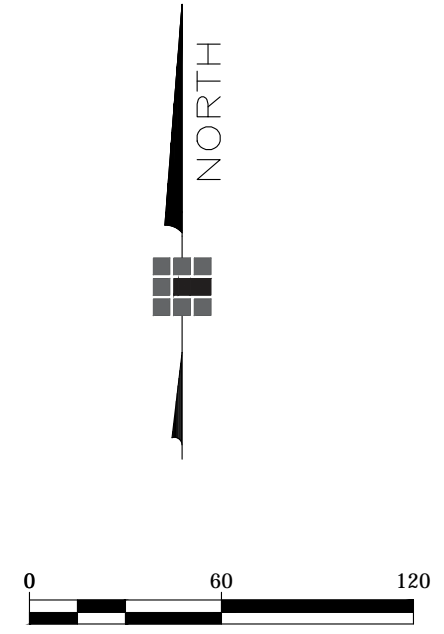
- STREET LIGHT
- ASPHALT PAVEMENT
- PCC CONCRETE
- GRAVEL/DECOMPOSED GRANITE
- RIPRAP

NOTE:  
1. ALL PROPOSED STREETS SHALL BE PUBLIC

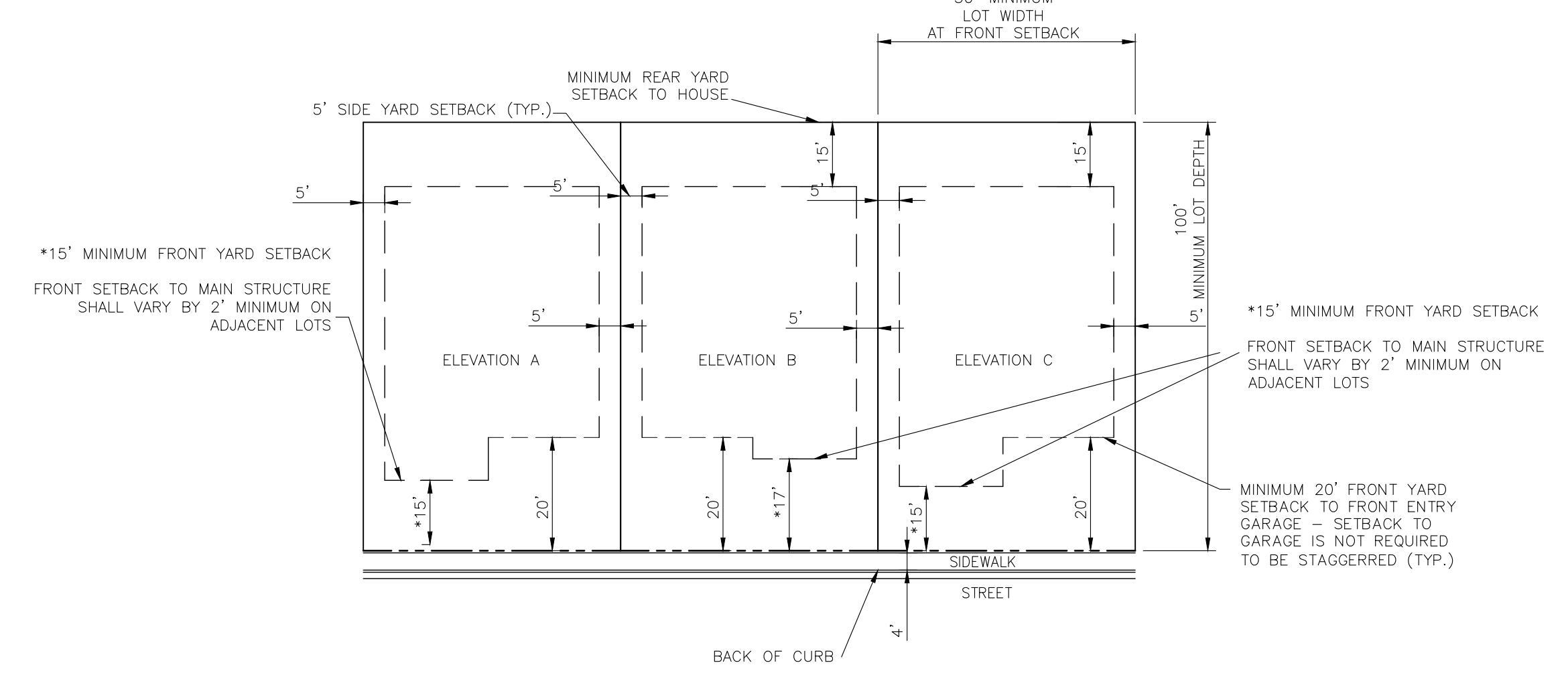




# TENTATIVE SUBDIVISION MAP FOR SILVER HILLS - VILLAGE 1 - VILLAGE 1 A SPECIFIC PLAN DEVELOPMENT



TYPICAL CORNER LOT



TYPICAL INTERIOR LOTS

### VARIABLE SETBACK NOTES

BUILDING FOOTPRINTS DEPICTED IN THIS PLAN SET ARE FOR ILLUSTRATIVE PURPOSES AND SUBJECT TO CHANGE.

STAGGERING OF FRONT YARD SETBACKS SHALL OCCUR WITH FINAL BUILDING FOOTPRINTS. A MINIMUM 2-FOOT FRONT YARD SETBACK DEVIATION SHALL BE PROVIDED FROM ALL ADJOINING PARCELS (AS MEASURED TO BUILDING FACADE). FRONT-LOAD GARAGES SHALL INCLUDE A MINIMUM SETBACK OF 20-FEET AND ARE NOT SUBJECT TO THE 2-FOOT OFFSET. FINAL PLOT PLANS SHALL DEPICT ADJOINING PARCELS TO DEMONSTRATE COMPLIANCE WITH THIS STANDARD AND SHALL BE CERTIFIED BY THE MASTER DEVELOPER AND PROFESSIONAL ENGINEER LICENSED IN THE STATE OF NEVADA.

MASTER DEVELOPER SHALL CONFIRM COMPLIANCE WITH ALL APPLICABLE SPECIFIC PLAN STANDARDS AT THE TIME OF FINAL PLOT PLANS. UPON REQUEST BY WASHOE COUNTY, THE MASTER DEVELOPER SHALL PROVIDE SUPPLEMENTAL MATERIALS (AS APPROPRIATE) TO DEMONSTRATE COMPLIANCE WITH THE SILVER HILLS SPECIFIC PLAN DEVELOPMENT STANDARDS. THIS SHALL NOT RESULT IN DELAYS TO PROCESSING AND/OR CONSTRUCTION REVIEW.

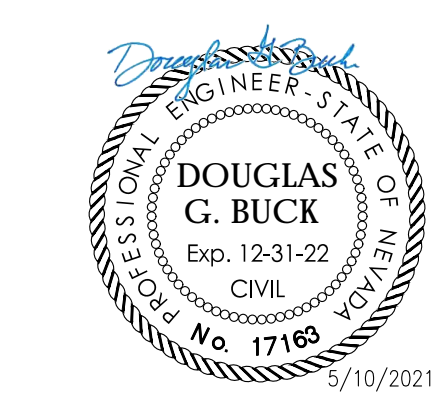
LANDSCAPE AND GRADING PLANS DEPICT BUILDING PADS ONLY FOR ILLUSTRATIVE PURPOSES. FINAL LANDSCAPING PLANS AND PLOT PLANS ARE SUBJECT TO STAGGERING STANDARDS.

A MINIMUM OF THREE BUILDING ELEVATIONS FOR EACH FLOORPLAN WITHIN VILLAGE 1 WILL BE PROVIDED AT THE TIME OF FINAL MAP/PLOT PLANS. MASTER DEVELOPER SHALL DEMONSTRATE THAT IDENTICAL ELEVATIONS ARE NOT LOCATED ON ADJOINING LOTS WITH FINAL PLOT PLANS.

### LEGEND

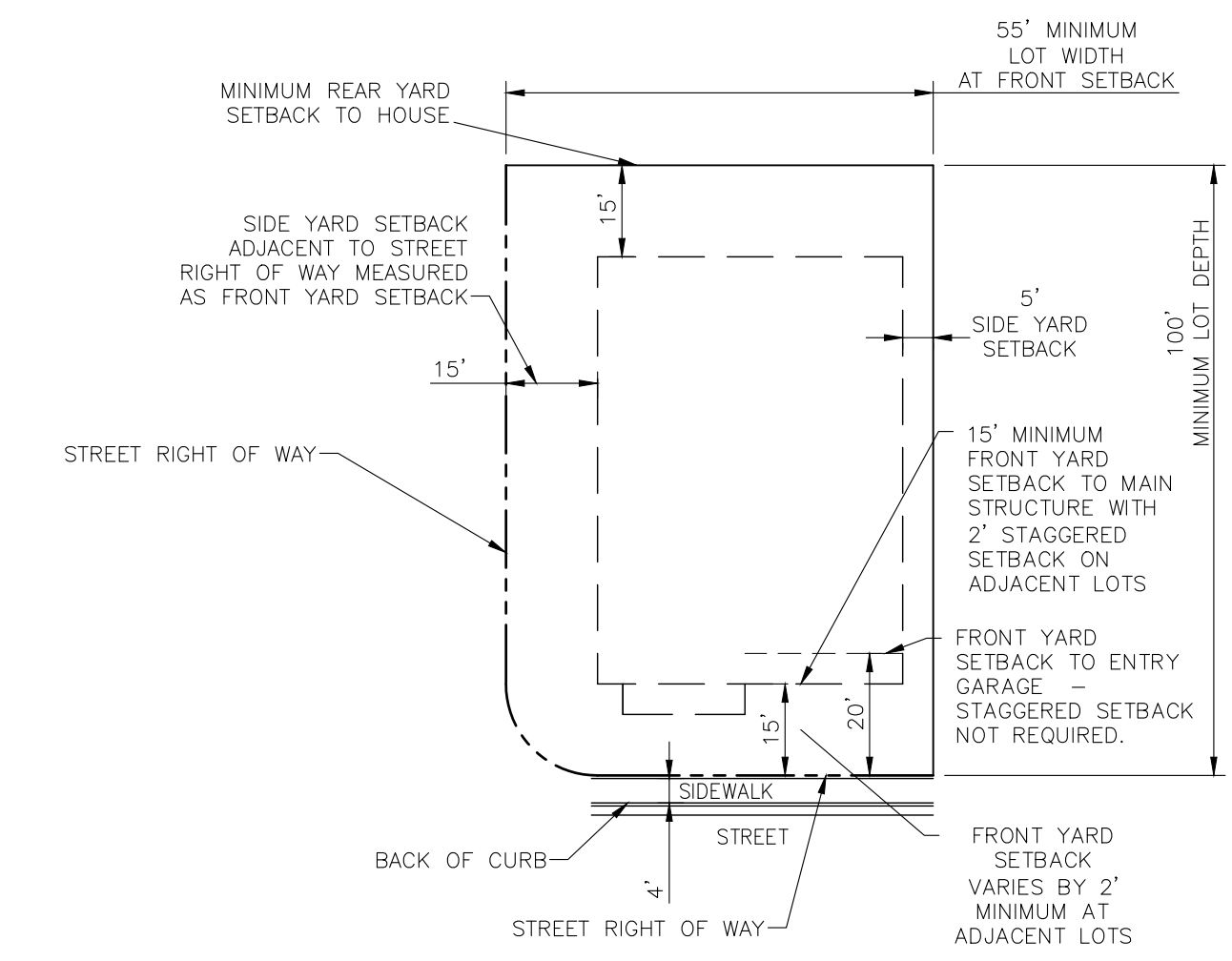
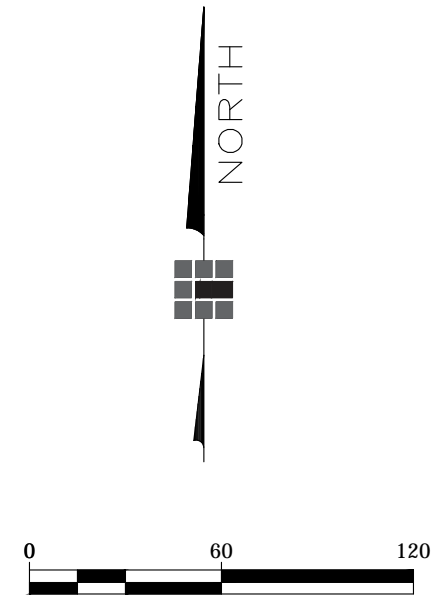
- STREET LIGHT
- ASPHALT PAVEMENT
- PCC CONCRETE
- GRAVEL/DECOMPOSED GRANITE
- RIPRAP

NOTE:  
1. ALL PROPOSED STREETS SHALL BE PUBLIC

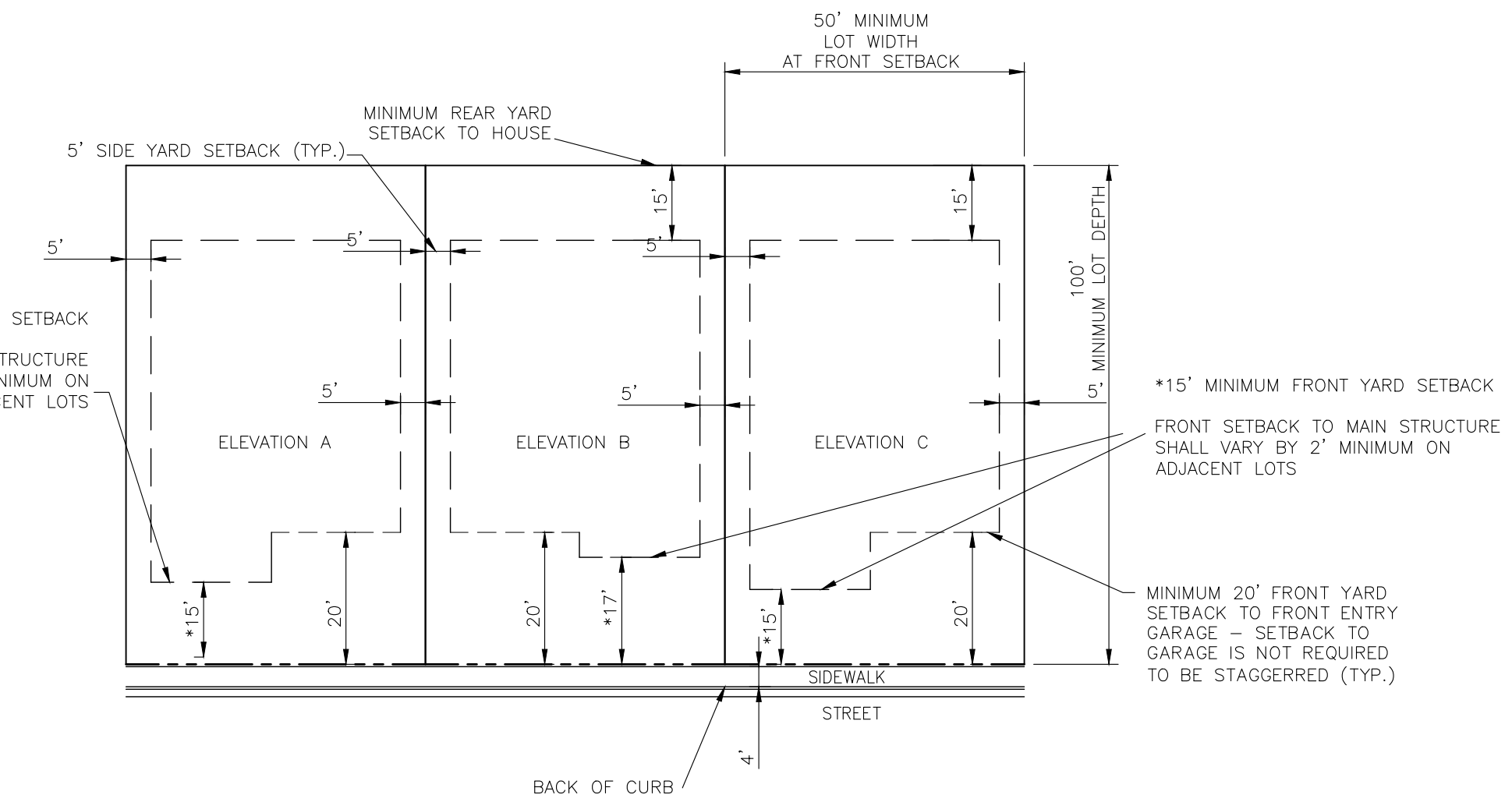




# TENTATIVE SUBDIVISION MAP FOR SILVER HILLS - VILLAGE 1 - VILLAGE 1 A SPECIFIC PLAN DEVELOPMENT



TYPICAL CORNER LOT



TYPICAL INTERIOR LOTS

### VARIABLE SETBACK NOTES

BUILDING FOOTPRINTS DEPICTED IN THIS PLAN SET ARE FOR ILLUSTRATIVE PURPOSES AND SUBJECT TO CHANGE.

STAGGERING OF FRONT YARD SETBACKS SHALL OCCUR WITH FINAL BUILDING FOOTPRINTS. A MINIMUM 2-FOOT FRONT YARD SETBACK DEVIATION SHALL BE PROVIDED FROM ALL ADJOINING PARCELS (AS MEASURED TO BUILDING FAÇADE). FRONT-LOAD GARAGES SHALL INCLUDE A MINIMUM SETBACK OF 20-FEET AND ARE NOT SUBJECT TO THE 2-FOOT OFFSET. FINAL PLOT PLANS SHALL DEPICT ADJOINING PARCELS TO DEMONSTRATE COMPLIANCE WITH THIS STANDARD AND SHALL BE CERTIFIED BY THE MASTER DEVELOPER AND PROFESSIONAL ENGINEER LICENSED IN THE STATE OF NEVADA.

MASTER DEVELOPER SHALL CONFIRM COMPLIANCE WITH ALL APPLICABLE SPECIFIC PLAN STANDARDS AT THE TIME OF FINAL PLOT PLANS. UPON REQUEST BY WASHOE COUNTY, THE MASTER DEVELOPER SHALL PROVIDE SUPPLEMENTAL MATERIALS (AS APPROPRIATE) TO DEMONSTRATE COMPLIANCE WITH THE SILVER HILLS SPECIFIC PLAN DEVELOPMENT STANDARDS. THIS SHALL NOT RESULT IN DELAYS TO PROCESSING AND/OR CONSTRUCTION REVIEW.

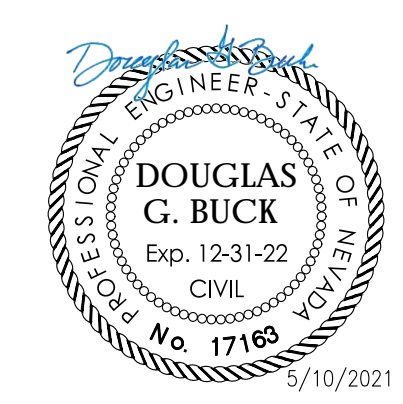
LANDSCAPE AND GRADING PLANS DEPICT BUILDING PADS ONLY FOR ILLUSTRATIVE PURPOSES. FINAL LANDSCAPING PLANS AND PLOT PLANS ARE SUBJECT TO STAGGERING STANDARDS.

A MINIMUM OF THREE BUILDING ELEVATIONS FOR EACH FLOORPLAN WITHIN VILLAGE 1 WILL BE PROVIDED AT THE TIME OF FINAL MAP/PLOT PLANS. MASTER DEVELOPER SHALL DEMONSTRATE THAT IDENTICAL ELEVATIONS ARE NOT LOCATED ON ADJOINING LOTS WITH FINAL PLOT PLANS.

### LEGEND

- STREET LIGHT
- ASPHALT PAVEMENT
- PCC CONCRETE
- GRAVEL/DECOMPOSED GRANITE
- RIPRAP

NOTE:  
1. ALL PROPOSED STREETS SHALL BE PUBLIC



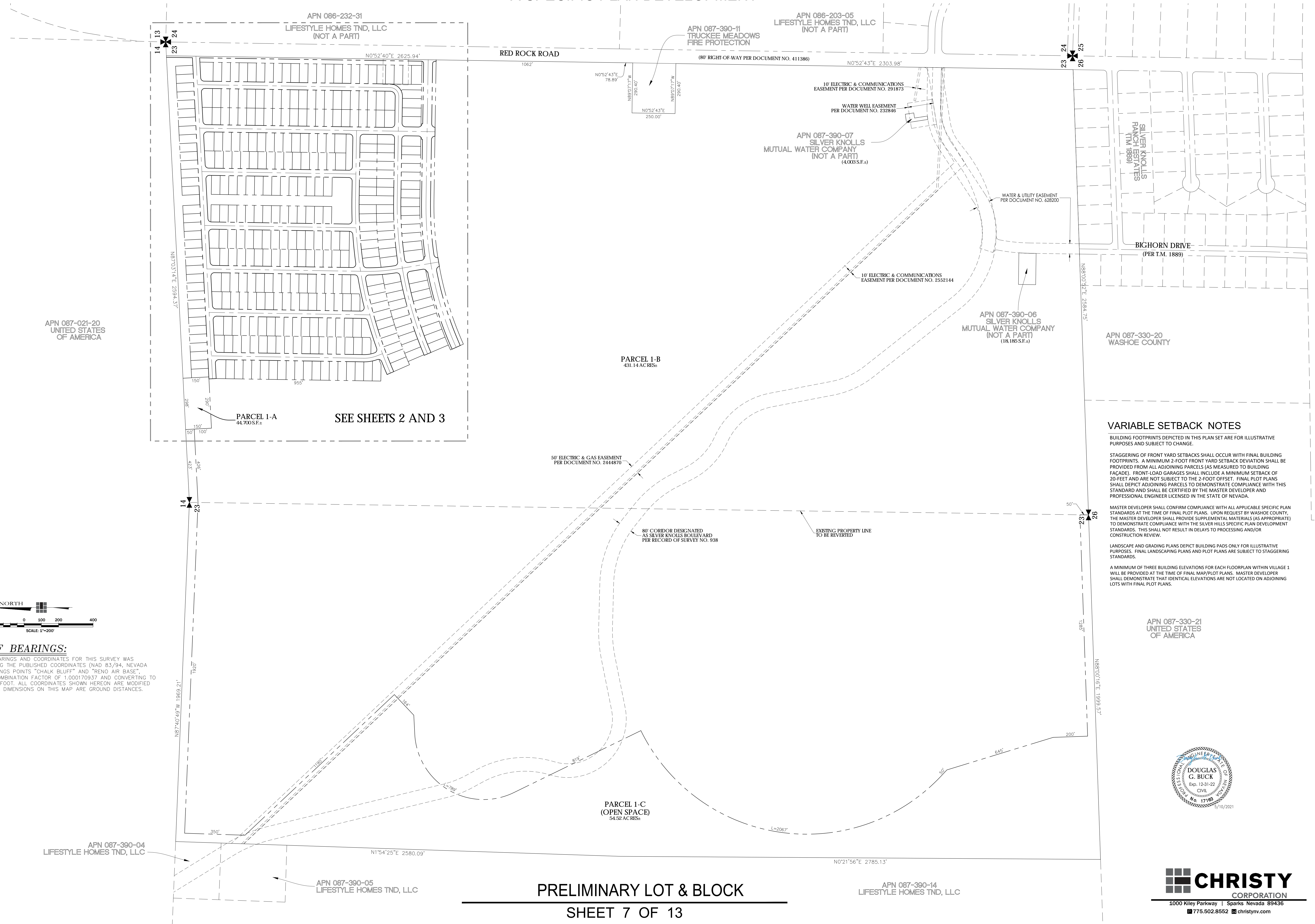






# TENTATIVE SUBDIVISION MAP FOR SILVER HILLS - VILLAGE 1

## A SPECIFIC PLAN DEVELOPMENT



**VARIABLE SETBACK NOTES**

BUILDING FOOTPRINTS DEPICTED IN THIS PLAN SET ARE FOR ILLUSTRATIVE PURPOSES AND SUBJECT TO CHANGE.

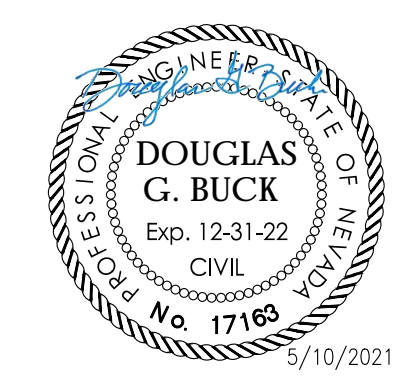
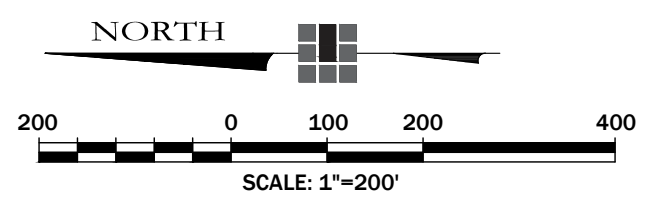
STAGGERING OF FRONT YARD SETBACKS SHALL OCCUR WITH FINAL BUILDING FOOTPRINTS. A MINIMUM 2-FOOT FRONT YARD SETBACK DEVIATION SHALL BE PROVIDED FROM ALL ADJOINING PARCELS (AS MEASURED TO BUILDING FACADE). FRONT-LOAD GARAGES SHALL INCLUDE A MINIMUM SETBACK OF 20-FEET AND ARE NOT SUBJECT TO THE 2-FOOT OFFSET. FINAL PLOT PLANS SHALL DEPICT ADJOINING PARCELS TO DEMONSTRATE COMPLIANCE WITH THIS STANDARD AND SHALL BE CERTIFIED BY THE MASTER DEVELOPER AND PROFESSIONAL ENGINEER LICENSED IN THE STATE OF NEVADA.

MASTER DEVELOPER SHALL CONFIRM COMPLIANCE WITH ALL APPLICABLE SPECIFIC PLAN STANDARDS AT THE TIME OF FINAL PLOT PLANS. UPON REQUEST BY WASHOE COUNTY, THE MASTER DEVELOPER SHALL PROVIDE SUPPLEMENTAL MATERIALS (AS APPROPRIATE) TO DEMONSTRATE COMPLIANCE WITH THE SILVER HILLS SPECIFIC PLAN DEVELOPMENT STANDARDS. THIS SHALL NOT RESULT IN DELAYS TO PROCESSING AND/OR CONSTRUCTION REVIEW.

LANDSCAPE AND GRADING PLANS DEPICT BUILDING PADS ONLY FOR ILLUSTRATIVE PURPOSES. FINAL LANDSCAPING PLANS AND PLOT PLANS ARE SUBJECT TO STAGGERING STANDARDS.

A MINIMUM OF THREE BUILDING ELEVATIONS FOR EACH FLOORPLAN WITHIN VILLAGE 1 WILL BE PROVIDED AT THE TIME OF FINAL MAP/PLOT PLANS. MASTER DEVELOPER SHALL DEMONSTRATE THAT IDENTICAL ELEVATIONS ARE NOT LOCATED ON ADJOINING LOTS WITH FINAL PLOT PLANS.

**BASIS OF BEARINGS:**  
THE BASIS OF BEARINGS AND COORDINATES FOR THIS SURVEY WAS ESTABLISHED USING THE PUBLISHED COORDINATES (NAD 83/94, NEVADA WEST ZONE) FOR NGS POINTS "CHALK BLUFF" AND "RENO AIR BASE" MODIFIED BY A COMBINATION FACTOR OF 1.000170937 AND CONVERTING TO THE U.S. SURVEY FOOT. ALL COORDINATES SHOWN HEREON ARE MODIFIED COORDINATES. ALL DIMENSIONS ON THIS MAP ARE GROUND DISTANCES.





# TENTATIVE SUBDIVISION MAP FOR SILVER HILLS - VILLAGE 1 A SPECIFIC PLAN DEVELOPMENT

APN 087-021-20  
UNITED STATES  
OF AMERICA



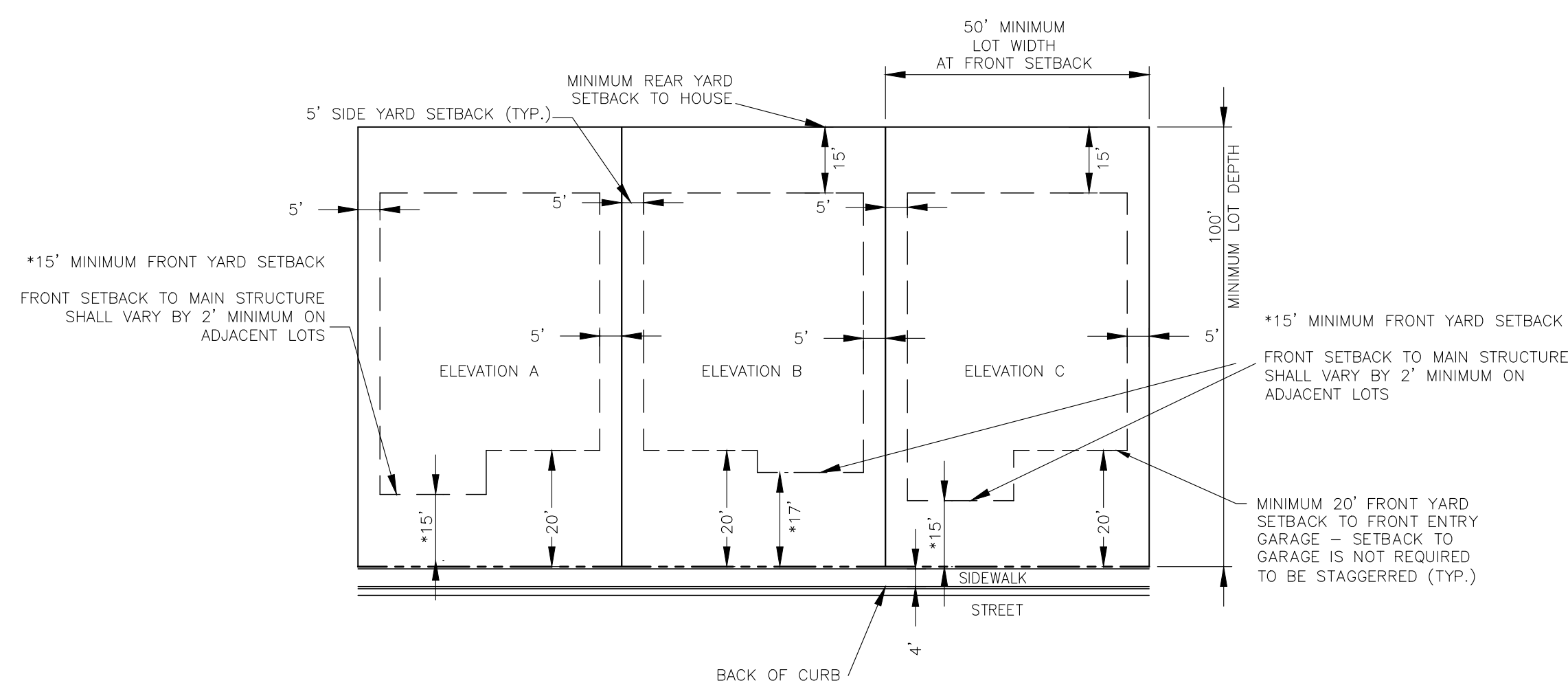
SEE SHEET 3

RED ROCK ROAD  
680' RIGHT-OF-WAY PER DOCUMENT NO. 4113860

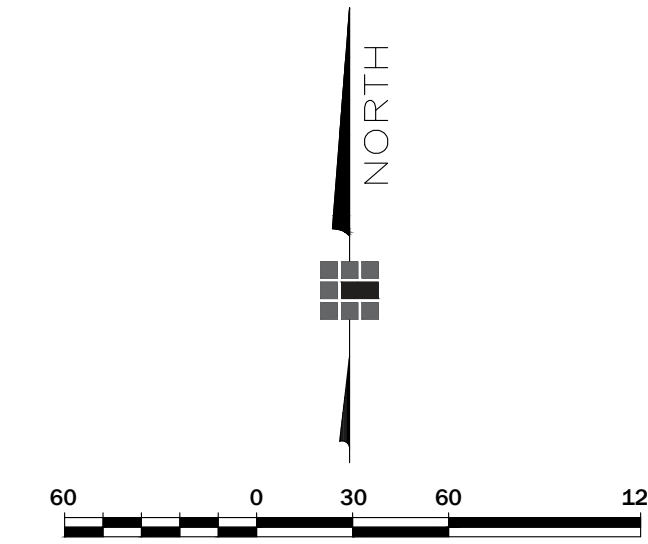
APN 086-232-31  
LIFESTYLE HOMES TRD, LLC  
(NOT A PART)

NO 52° 40' E 262.5' 94"

C.A. A  
32,222 S.F. ±

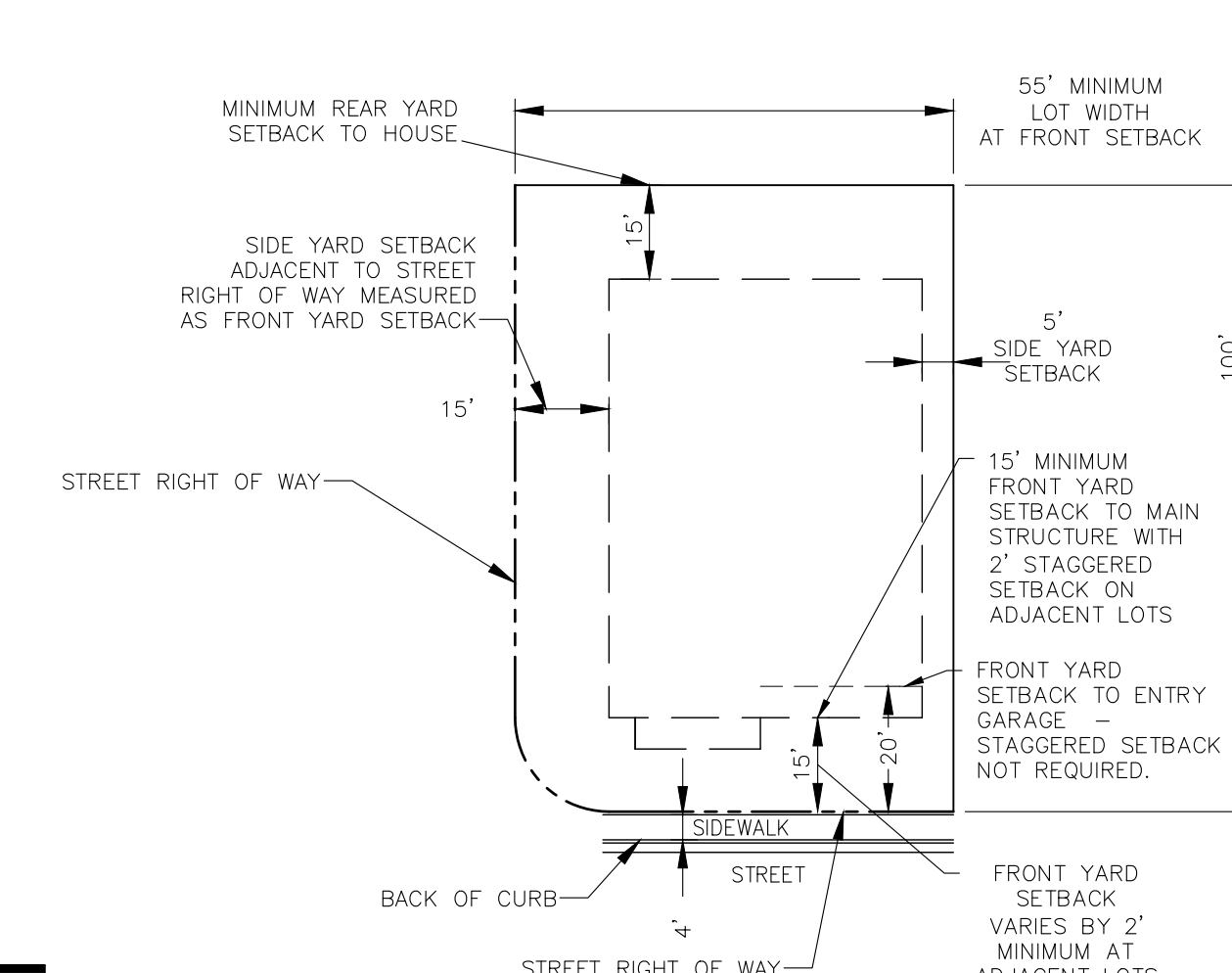


TYPICAL INTERIOR LOTS



## PRELIMINARY LOT & BLOCK

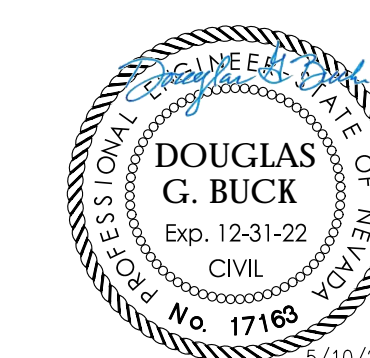
SHEET 8 OF 13



TYPICAL CORNER LOT

### VARIABLE SETBACK NOTES

- BUILDING FOOTPRINTS DEPICTED IN THIS PLAN SET ARE FOR ILLUSTRATIVE PURPOSES AND SUBJECT TO CHANGE.
- STAGGERING OF FRONT YARD SETBACKS SHALL OCCUR WITH FINAL BUILDING FOOTPRINTS. A MINIMUM 2-FOOT FRONT YARD SETBACK DEVIATION SHALL BE PROVIDED FROM ALL ADJOINING PARCELS (AS MEASURED TO BUILDING FACADE). FRONT-LOAD GARAGES SHALL INCLUDE A MINIMUM SETBACK OF 20-FEET AND ARE NOT SUBJECT TO THE 2-FOOT OFFSET. FINAL PLOT PLANS SHALL DEPICT ADJOINING PARCELS TO DEMONSTRATE COMPLIANCE WITH THIS STANDARD AND SHALL BE CERTIFIED BY THE MASTER DEVELOPER AND PROFESSIONAL ENGINEER LICENSED IN THE STATE OF NEVADA.
- MASTER DEVELOPER SHALL CONFIRM COMPLIANCE WITH ALL APPLICABLE SPECIFIC PLAN STANDARDS AT THE TIME OF FINAL PLOT PLANS. UPON REQUEST BY WASHOE COUNTY, THE MASTER DEVELOPER SHALL PROVIDE SUPPLEMENTAL MATERIALS (AS APPROPRIATE) TO DEMONSTRATE COMPLIANCE WITH THE SILVER HILLS SPECIFIC PLAN DEVELOPMENT STANDARDS. THIS SHALL NOT RESULT IN DELAYS TO PROCESSING AND/OR CONSTRUCTION REVIEW.
- LANDSCAPE AND GRADING PLANS DEPICT BUILDING PADS ONLY FOR ILLUSTRATIVE PURPOSES. FINAL LANDSCAPING PLANS AND PLOT PLANS ARE SUBJECT TO STAGGERING STANDARDS.
- A MINIMUM OF THREE BUILDING ELEVATIONS FOR EACH FLOORPLAN WITHIN VILLAGE 1 WILL BE PROVIDED AT THE TIME OF FINAL MAP/PLOT PLANS. MASTER DEVELOPER SHALL DEMONSTRATE THAT IDENTICAL ELEVATIONS ARE NOT LOCATED ON ADJOINING LOTS WITH FINAL PLOT PLANS.





# TENTATIVE SUBDIVISION MAP FOR SILVER HILLS - VILLAGE 1 A SPECIFIC PLAN DEVELOPMENT

SEE SHEET 2

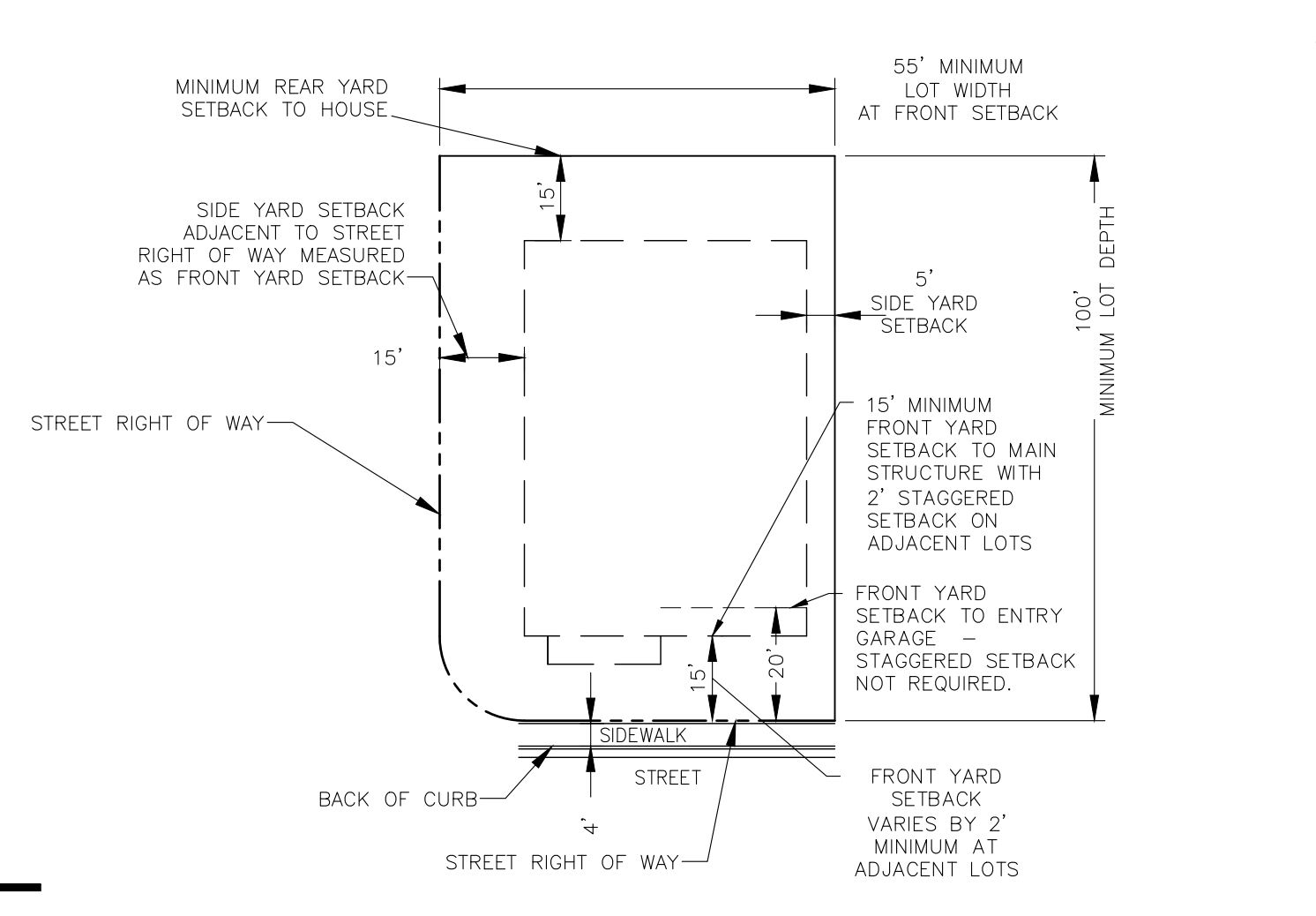
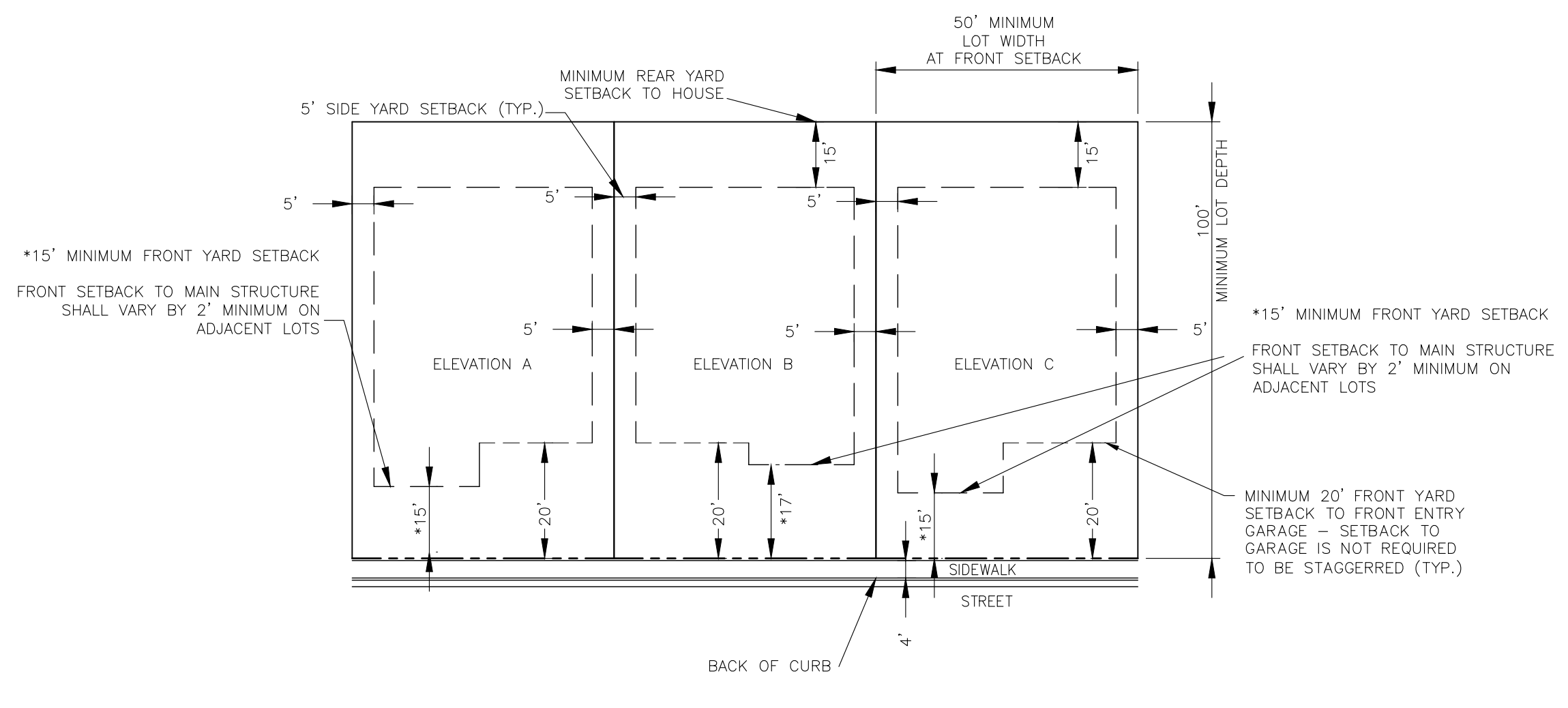
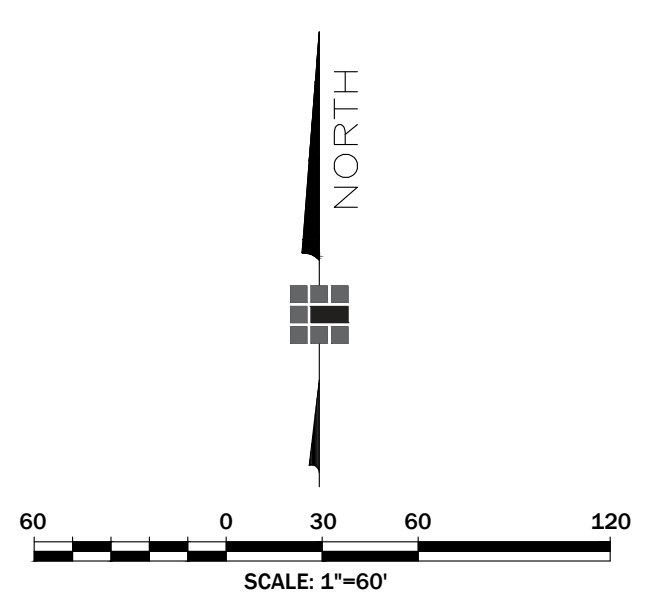


C.A. A  
32,222 S.F. ±

PARCEL 1-B  
431.14 ACRES ±

RED ROCK ROAD  
(80' RIGHT-OF-WAY PER DOCUMENT NO. 411388)

APN 086-232-31  
LIFESTYLE HOMES, INC., LLC  
(NOT A PART)



**VARIABLE SETBACK NOTES**

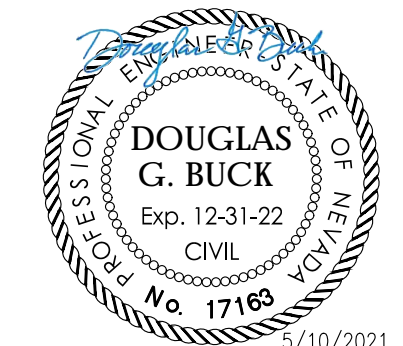
BUILDING FOOTPRINTS DEPICTED IN THIS PLAN SET ARE FOR ILLUSTRATIVE PURPOSES AND SUBJECT TO CHANGE.

STAGGERING OF FRONT YARD SETBACKS SHALL OCCUR WITH FINAL BUILDING FOOTPRINTS. A MINIMUM 2-FOOT FRONT YARD SETBACK DEVIATION SHALL BE PROVIDED FROM ALL ADJOINING PARCELS (AS MEASURED TO BUILDING FACADE). FRONT LOAD GARAGES SHALL INCLUDE A MINIMUM SETBACK OF 20-FEET AND ARE NOT SUBJECT TO THE 2-FOOT OFFSET. FINAL PLOT PLANS SHALL DEPICT ADJOINING PARCELS TO DEMONSTRATE COMPLIANCE WITH THIS STANDARD AND SHALL BE CERTIFIED BY THE MASTER DEVELOPER AND PROFESSIONAL ENGINEER LICENSED IN THE STATE OF NEVADA.

MASTER DEVELOPER SHALL CONFIRM COMPLIANCE WITH ALL APPLICABLE SPECIFIC PLAN STANDARDS AT THE TIME OF FINAL PLOT PLANS. UPON REQUEST BY WASHOE COUNTY, THE MASTER DEVELOPER SHALL PROVIDE SUPPLEMENTAL MATERIALS (AS APPROPRIATE) TO DEMONSTRATE COMPLIANCE WITH THE SILVER HILLS SPECIFIC PLAN DEVELOPMENT STANDARDS. THIS SHALL NOT RESULT IN DELAYS TO PROCESSING AND/OR CONSTRUCTION REVIEW.

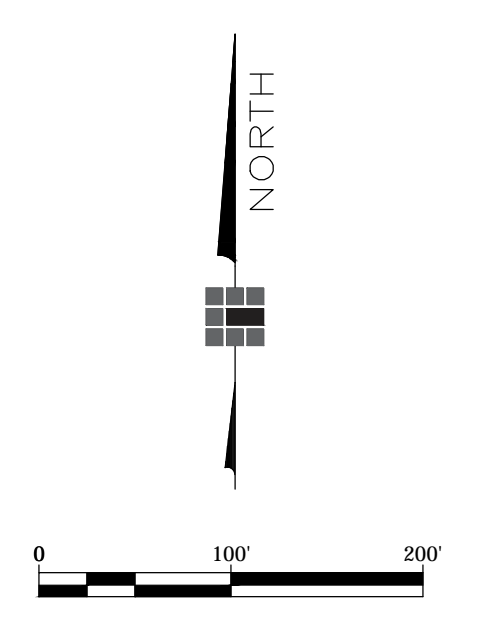
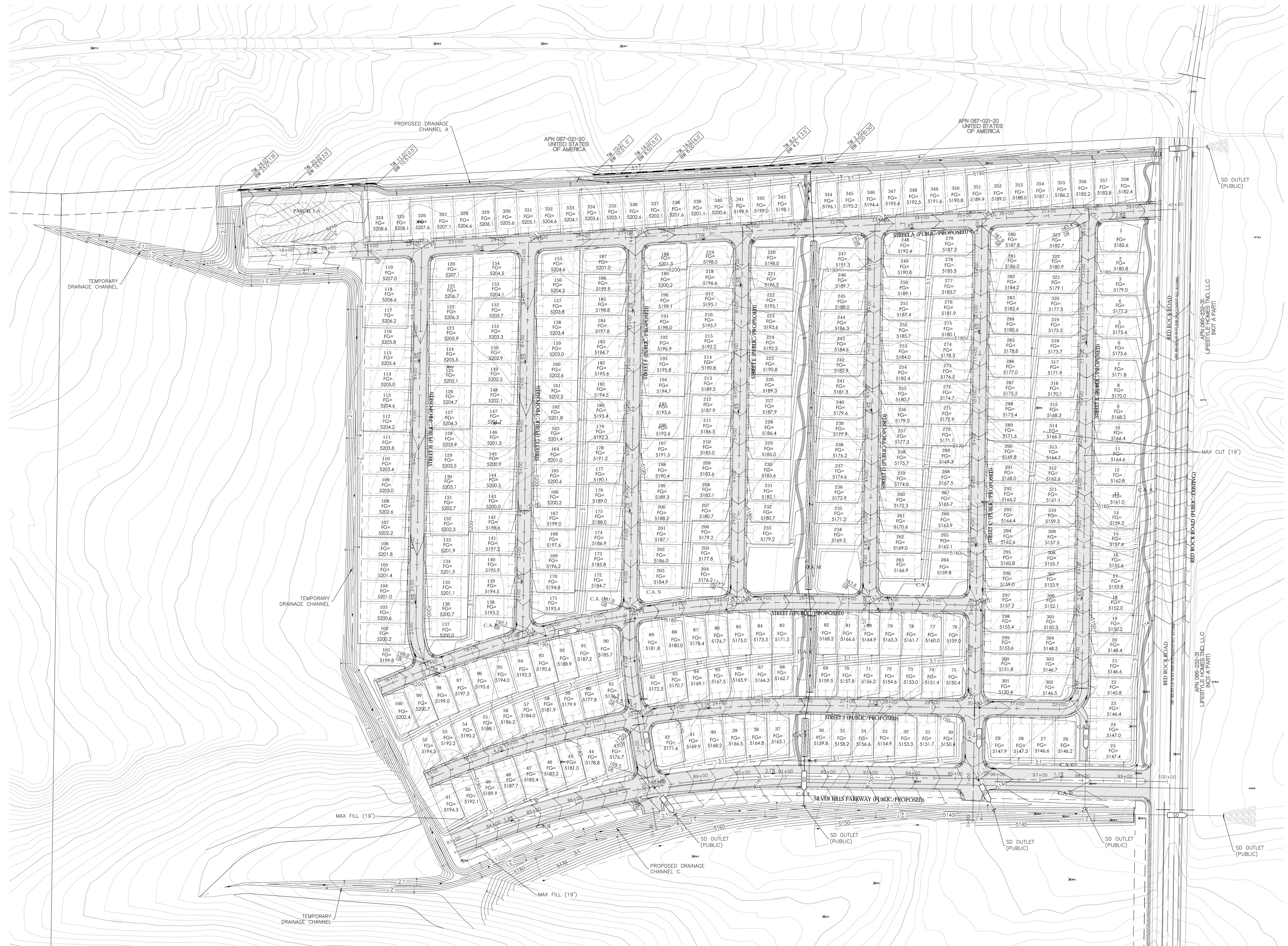
LANDSCAPE AND GRADING PLANS DEPICT BUILDING PADS ONLY FOR ILLUSTRATIVE PURPOSES. FINAL LANDSCAPING PLANS AND PLOT PLANS ARE SUBJECT TO STAGGERING STANDARDS.

A MINIMUM OF THREE BUILDING ELEVATIONS FOR EACH FLOORPLAN WITHIN VILLAGE 1 WILL BE PROVIDED AT THE TIME OF FINAL MAP/PLOT PLANS. MASTER DEVELOPER SHALL DEMONSTRATE THAT IDENTICAL ELEVATIONS ARE NOT LOCATED ON ADJOINING LOTS WITH FINAL PLOT PLANS.





# TENTATIVE SUBDIVISION MAP FOR SILVER HILLS - VILLAGE 1 A SPECIFIC PLAN DEVELOPMENT



**VARIABLE SETBACK NOTES**

BUILDING FOOTPRINTS DEPICTED IN THIS PLAN SET ARE FOR ILLUSTRATIVE PURPOSES AND SUBJECT TO CHANGE.

STAGGERING OF FRONT YARD SETBACKS SHALL OCCUR WITH FINAL BUILDING FOOTPRINTS. A MINIMUM 2-FOOT FRONT YARD SETBACK DEVIATION SHALL BE PROVIDED FROM ALL ADJOINING PARCELS (AS MEASURED TO BUILDING FAÇADE). FRONT-LOAD GARAGES SHALL INCLUDE A MINIMUM SETBACK OF 20-FEET AND ARE NOT SUBJECT TO THE 2-FOOT OFFSET. FINAL PLOT PLANS SHALL DEPICT ADJOINING PARCELS TO DEMONSTRATE COMPLIANCE WITH THIS STANDARD AND SHALL BE CERTIFIED BY THE MASTER DEVELOPER AND PROFESSIONAL ENGINEER LICENSED IN THE STATE OF NEVADA.

MASTER DEVELOPER SHALL CONFIRM COMPLIANCE WITH ALL APPLICABLE SPECIFIC PLAN STANDARDS AT THE TIME OF FINAL PLOT PLANS. UPON REQUEST BY WASHOE COUNTY, THE MASTER DEVELOPER SHALL PROVIDE SUPPLEMENTAL MATERIALS (AS APPROPRIATE) TO DEMONSTRATE COMPLIANCE WITH THE SILVER HILLS SPECIFIC PLAN DEVELOPMENT STANDARDS. THIS SHALL NOT RESULT IN DELAYS TO PROCESSING AND/OR CONSTRUCTION REVIEW.

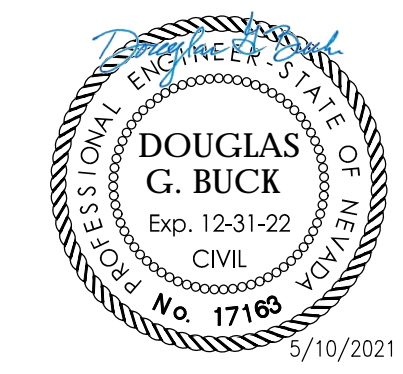
LANDSCAPE AND GRADING PLANS DEPICT BUILDING PADS ONLY FOR ILLUSTRATIVE PURPOSES. FINAL LANDSCAPING PLANS AND PLOT PLANS ARE SUBJECT TO STAGGERING STANDARDS.

A MINIMUM OF THREE BUILDING ELEVATIONS FOR EACH FLOORPLAN WITHIN VILLAGE 1 WILL BE PROVIDED AT THE TIME OF FINAL MAP/PLOT PLANS. MASTER DEVELOPER SHALL DEMONSTRATE THAT IDENTICAL ELEVATIONS ARE NOT LOCATED ON ADJOINING LOTS WITH FINAL PLOT PLANS.

- LEGEND (GRADING)**
- PORTLAND CEMENT CONCRETE (SIDEWALKS, RAMPS & GUTTERS)
  - ASPHALT PAVEMENT
  - ELEVATION TAG (EXISTING)
  - SLOPE (PROPOSED)
  - CATCH BASIN
  - STORM DRAIN MANHOLE
  - STORM DRAIN
  - GRADE BREAK
  - RIPRAP
  - RETAINING WALL
  - WALL HEIGHT
  - TW=TOP OF WALL  
BW=BOTTOM OF WALL @ FINISHED GRADE
- NOTE:**
- SLOPES STEEPER THAN 3:1 WILL BE RIPRAPPED OR MECHANICALLY STABILIZED PER GEOTECHNICAL ENGINEER.
  - ADD 5200 TO ELEVATIONS IF NOT SHOWN

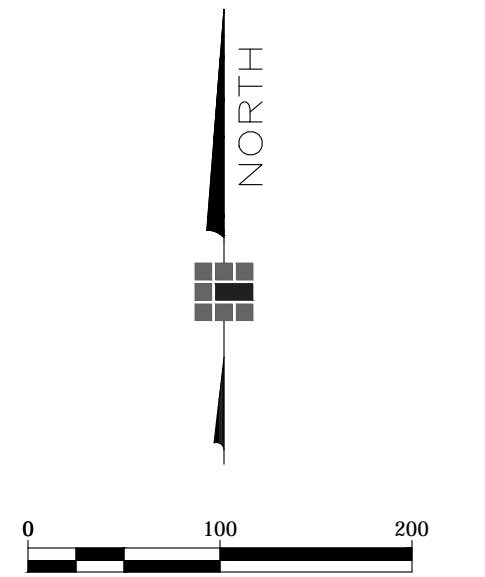
**Cut/Fill Summary**

Cut	Fill	NET CUT/FILL
Totals 327712 Cu. Yd.	327712 Cu. Yd.	0 Cu. Yd.





# TENTATIVE SUBDIVISION MAP FOR SILVER HILLS - VILLAGE 1 SPECIFIC PLAN DEVELOPMENT



## VARIABLE SETBACK NOTES

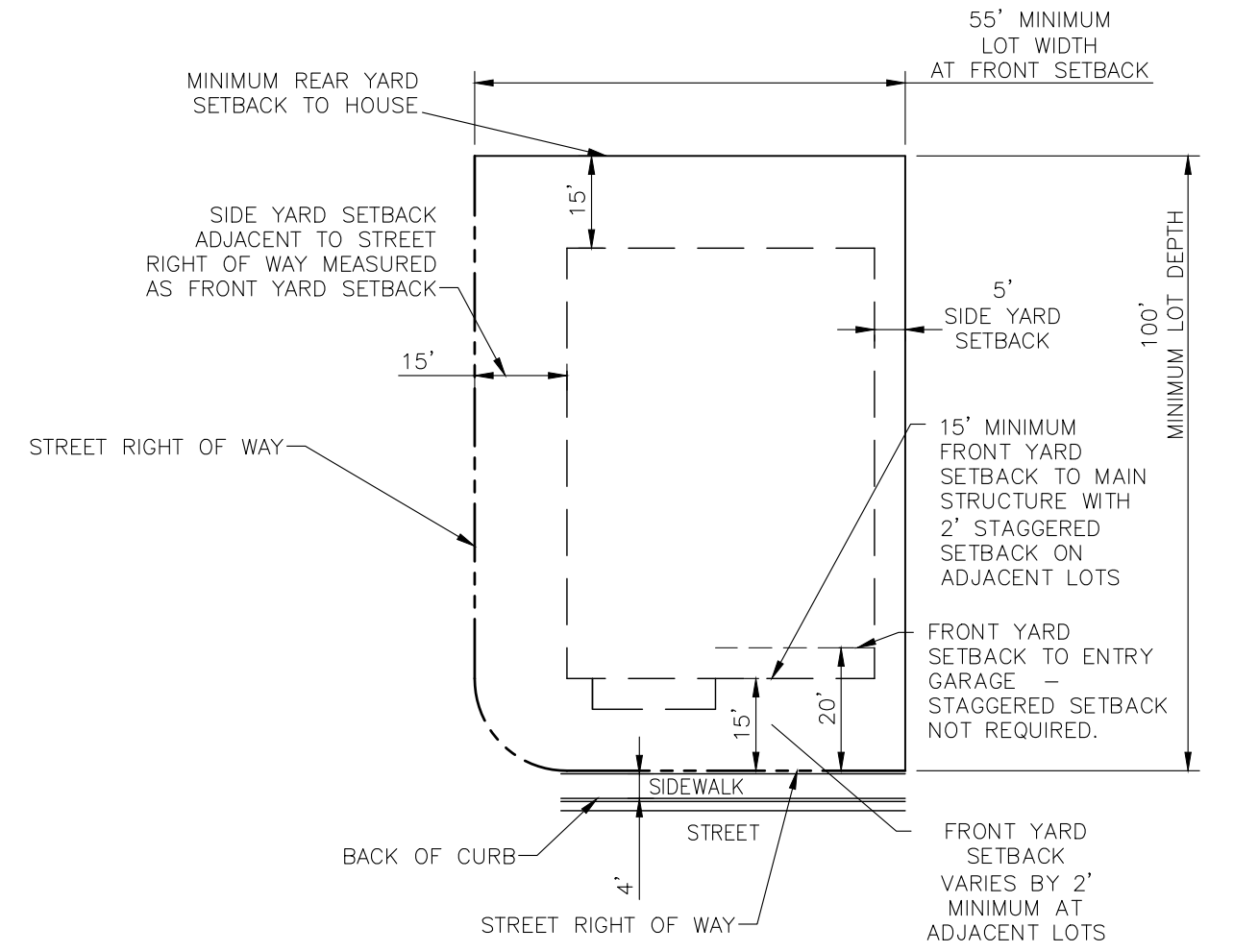
BUILDING FOOTPRINTS DEPICTED IN THIS PLAN SET ARE FOR ILLUSTRATIVE PURPOSES AND SUBJECT TO CHANGE.

STAGGERING OF FRONT YARD SETBACKS SHALL OCCUR WITH FINAL BUILDING FOOTPRINTS. A MINIMUM 2-FOOT FRONT YARD SETBACK DEVIATION SHALL BE PROVIDED FROM ALL ADJOINING PARCELS (AS MEASURED TO BUILDING FAÇADE). FRONT-LOAD GARAGES SHALL INCLUDE A MINIMUM SETBACK OF 20-FEET AND ARE NOT SUBJECT TO THE 2-FOOT OFFSET. FINAL PLOT PLANS SHALL DEPICT ADJOINING PARCELS TO DEMONSTRATE COMPLIANCE WITH THIS STANDARD AND SHALL BE CERTIFIED BY THE MASTER DEVELOPER AND PROFESSIONAL ENGINEER LICENSED IN THE STATE OF NEVADA.

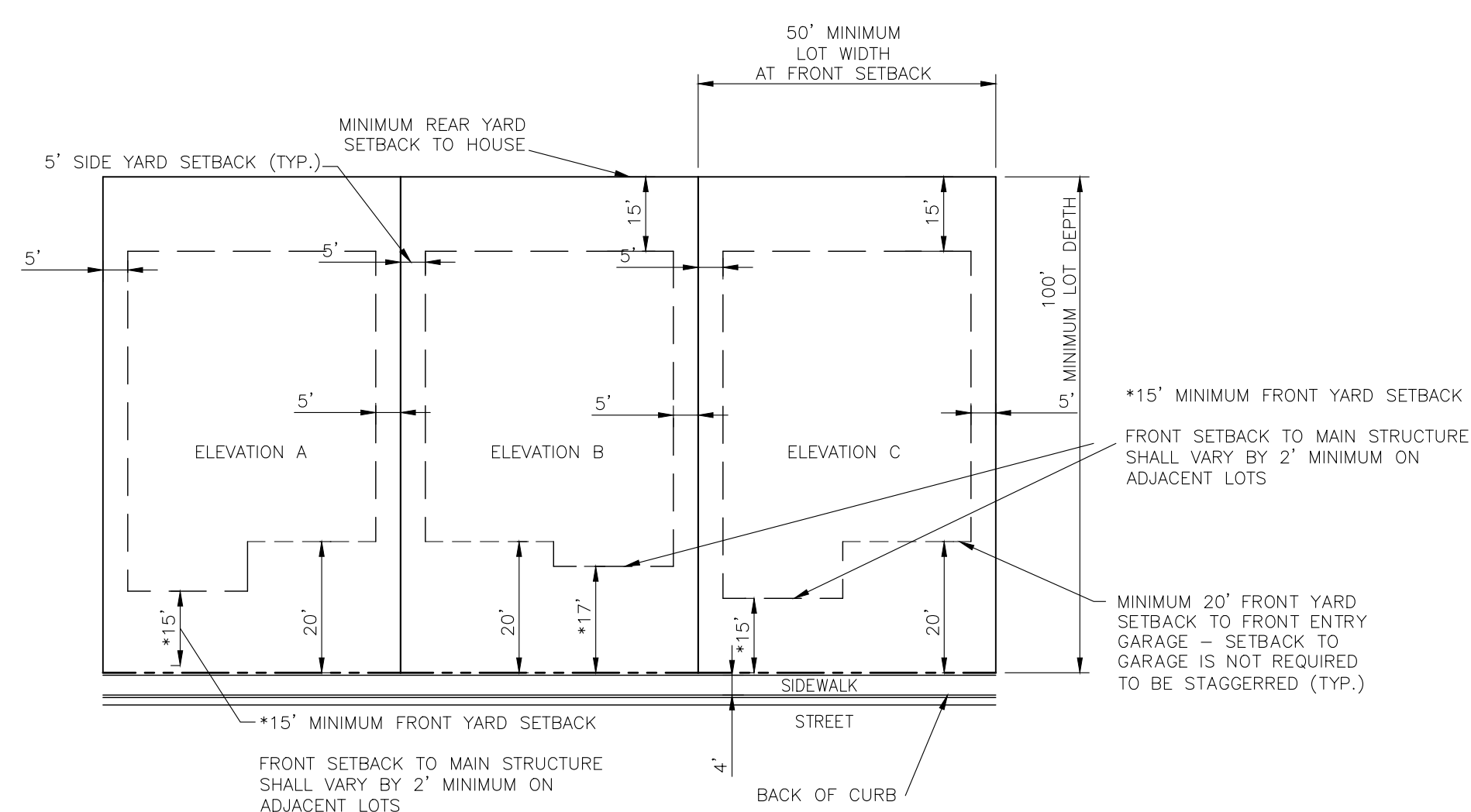
MASTER DEVELOPER SHALL CONFIRM COMPLIANCE WITH ALL APPLICABLE SPECIFIC PLAN STANDARDS AT THE TIME OF FINAL PLOT PLANS. UPON REQUEST BY WASHOE COUNTY, THE MASTER DEVELOPER SHALL PROVIDE SUPPLEMENTAL MATERIALS (AS APPROPRIATE) TO DEMONSTRATE COMPLIANCE WITH THE SILVER HILLS SPECIFIC PLAN DEVELOPMENT STANDARDS. THIS SHALL NOT RESULT IN DELAYS TO PROCESSING AND/OR CONSTRUCTION REVIEW.

LANDSCAPE AND GRADING PLANS DEPICT BUILDING PADS ONLY FOR ILLUSTRATIVE PURPOSES. FINAL LANDSCAPING PLANS AND PLOT PLANS ARE SUBJECT TO STAGGERING STANDARDS.

A MINIMUM OF THREE BUILDING ELEVATIONS FOR EACH FLOORPLAN WITHIN VILLAGE 1 WILL BE PROVIDED AT THE TIME OF FINAL MAP/PLOT PLANS. MASTER DEVELOPER SHALL DEMONSTRATE THAT IDENTICAL ELEVATIONS ARE NOT LOCATED ON ADJOINING LOTS WITH FINAL PLOT PLANS.



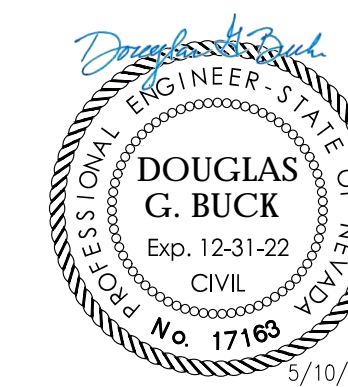
TYPICAL CORNER LOT



TYPICAL INTERIOR LOTS

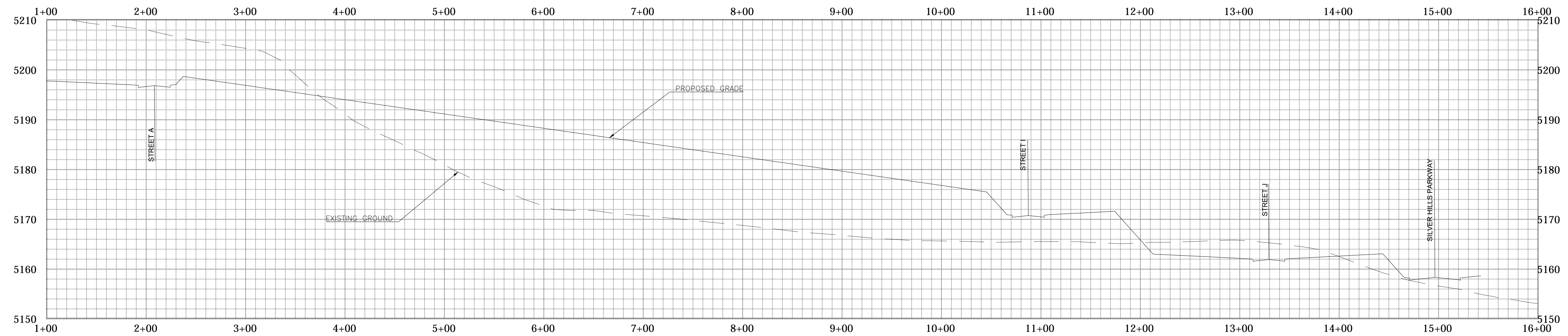
## LEGEND

- |  |   |  |                                  |
|--|---|--|----------------------------------|
|  | PORTLAND CEMENT CONCRETE (SIDEWALKS, RAMPS & GUTTERS) |  | SANITARY SEWER LATERAL (PRIVATE) |
|  | ASPHALT PAVEMENT                                      |  | STREET LIGHT                     |
|  | RIPRAP  |  | FIRE HYDRANT                     |
|  | GRAVEL/DECOMPOSED GRANITE                             |  | WATER VALVE                      |
|  | STORM DRAIN MANHOLE                                   |  | WATER SERVICE                    |
|  | STORM DRAIN   |  | WATER MAIN                       |
|  | CATCH BASIN   |  | RECLAIMED WATER MAIN             |
|  | SANITARY SEWER MANHOLE                                |  |                                  |
|  | SANITARY SEWER  |  |                                  |

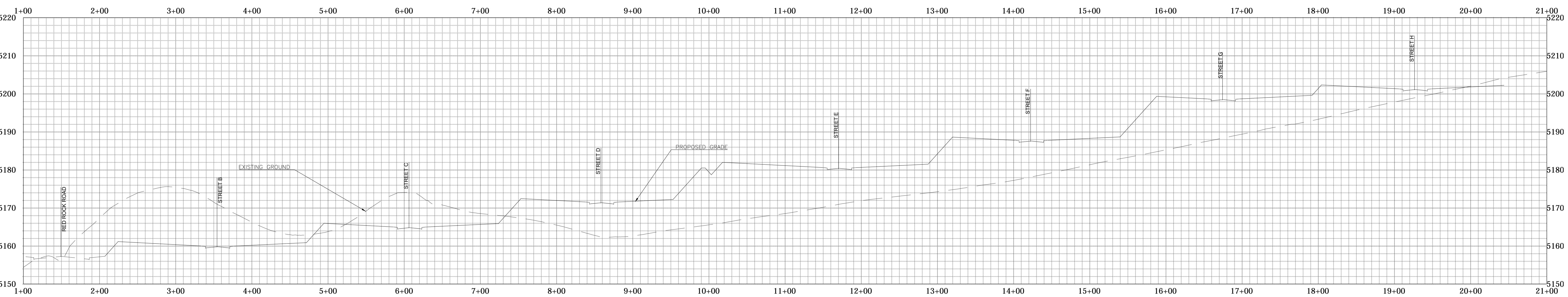




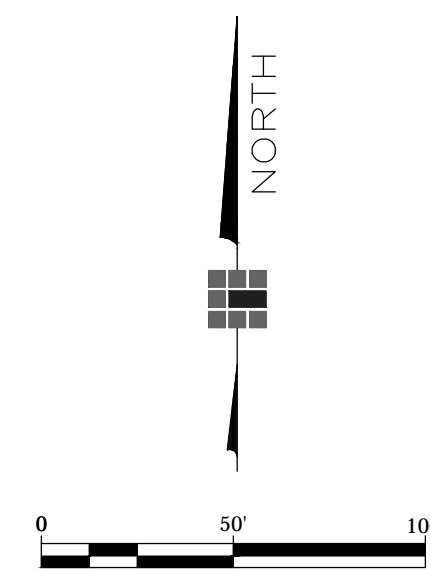
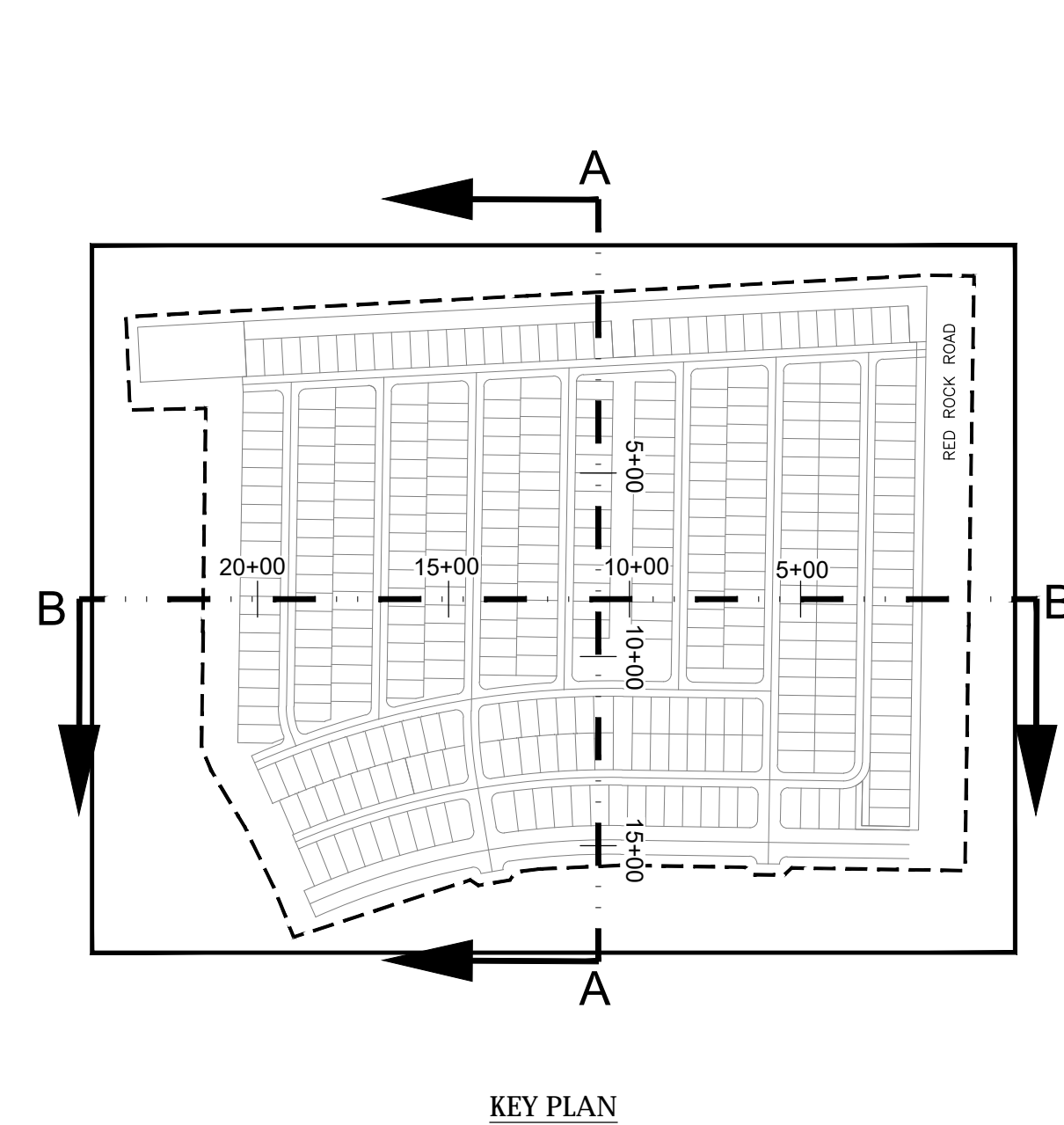
# TENTATIVE SUBDIVISION MAP FOR SILVER HILLS - VILLAGE 1 A SPECIFIC PLAN DEVELOPMENT



**CROSS SECTION A-A**  
SCALE: 1"=50' HORIZ. / 1"=10' VERT.



**CROSS SECTION B-B**  
SCALE: 1"=50' HORIZ. / 1"=10' VERT.



**VARIABLE SETBACK NOTES**

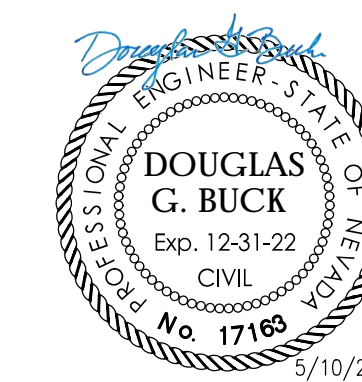
BUILDING FOOTPRINTS DEPICTED IN THIS PLAN SET ARE FOR ILLUSTRATIVE PURPOSES AND SUBJECT TO CHANGE.

STAGGERING OF FRONT YARD SETBACKS SHALL OCCUR WITH FINAL BUILDING FOOTPRINTS. A MINIMUM 2-FOOT FRONT YARD SETBACK DEVIATION SHALL BE PROVIDED FROM ALL ADJOINING PARCELS (AS MEASURED TO BUILDING FACADES). FRONT-LOAD GARAGES SHALL INCLUDE A MINIMUM SETBACK OF 20-FEET AND ARE NOT SUBJECT TO THE 2-FOOT OFFSET. FINAL PLOT PLANS SHALL DEPICT ADJOINING PARCELS TO DEMONSTRATE COMPLIANCE WITH THIS STANDARD AND SHALL BE CERTIFIED BY THE MASTER DEVELOPER AND PROFESSIONAL ENGINEER LICENSED IN THE STATE OF NEVADA.

MASTER DEVELOPER SHALL CONFIRM COMPLIANCE WITH ALL APPLICABLE SPECIFIC PLAN STANDARDS AT THE TIME OF FINAL PLOT PLANS. UPON REQUEST BY WASHOE COUNTY THE MASTER DEVELOPER SHALL PROVIDE SUPPLEMENTAL MATERIALS (AS APPROPRIATE) TO DEMONSTRATE COMPLIANCE WITH THE SILVER HILLS SPECIFIC PLAN DEVELOPMENT STANDARDS. THIS SHALL NOT RESULT IN DELAYS TO PROCESSING AND/OR CONSTRUCTION REVIEW.

LANDSCAPE AND GRADING PLANS DEPICT BUILDING PADS ONLY FOR ILLUSTRATIVE PURPOSES. FINAL LANDSCAPING PLANS AND PLOT PLANS ARE SUBJECT TO STAGGERING STANDARDS.

A MINIMUM OF THREE BUILDING ELEVATIONS FOR EACH FLOORPLAN WITHIN VILLAGE 1 SHALL BE PROVIDED AT THE TIME OF FINAL MAP/PLOT PLANS. MASTER DEVELOPER SHALL DEMONSTRATE THAT IDENTICAL ELEVATIONS ARE NOT LOCATED ON ADJOINING LOTS WITH FINAL PLOT PLANS.











## PRELIMINARY DRAINAGE REPORT

### SILVER HILLS



Prepared for:  
Lifestyle Homes TND, LLC  
4790 Caughlin Parkway, Suite 109  
Reno, NV 89519

Prepared by:  
Christy Corporation, Ltd.  
1000 Kiley Parkway  
Sparks, Nevada 89436

February 2021





# PRELIMINARY DRAINAGE REPORT

## SILVER HILLS

Prepared for:  
Lifestyle Homes TND, LLC  
4790 Caughlin Parkway, Suite 109  
Reno, NV 89519

Prepared by:  
Christy Corporation, Ltd.  
1000 Kiley Parkway  
Sparks, Nevada 89436

February 2021

## Introduction

This report presents the results of a hydrology analysis for Silver Hills in Red Rock, NV. Silver Hills consists of 780± acres located within the North Valleys Area Plan. Specifically, Silver Hills (APN #'s 087-390-10, 087-390-13, and 086-203-05) is located on the east and west sides of Red Rock Road, north of Silver Knolls. The project is separated from the Cold Springs Valley by a large ridgeline that runs along the western boundary of the project. Reference the attached vicinity map located in the appendix.

The purpose of this report is to summarize the off-site and on-site hydrology, and to provide preliminary volumetric hydraulic retention volumes. This report analyzes both the phase 1 and full buildout conditions.

## Design Standards

*Truckee Meadows Regional Drainage Manual* - April 2009 (TMRDM)  
NOAA Atlas 14 Point Precipitation Estimates (2013)

## References

NOAA Atlas 14 Point Precipitation Estimates (2013)  
USGS Web Soil Survey  
*Open-Channel Hydraulics* [Chow, 1959]

## Previous Studies

The following previous studies prepared in the general project site area were compiled and reviewed:  
*Preliminary Master Hydrology Report for Silver Hills Subdivision* by Summit Engineering, March 2009  
*Preliminary Geotechnical Investigation for Silver Hills Subdivision* by Summit Engineering, March 2009

## Existing Conditions

The site topography consists of slopes from west – northwest to southeast, ranging from 2% to 20%. The site has native vegetation and is relatively undisturbed. The vegetation is primarily annual grasses and sagebrush, and the soils belong to the hydrologic soil groups A, C, and D as identified by the Natural Resources Conservation Services (NRCS). Refer to the Soil Map located in the Appendix of this report.

There are four offsite watersheds that drain to the site (reference the “Hydraulic Basin Map – Onsite/Existing” in the Appendix). Calculations for the offsite watersheds are summarized in Table A below.

TABLE A. MODEL PARAMETERS AND RESULTS – ONSITE/EXISTING			
Basin	Area (AC)	CN	Q100 (cfs)
1A	230.5	71.69	291.7
2A	317.3	76.23	418.6
3A	168.2	77.00	272.6
4A	290.0	76.35	503.8

There are significant ephemeral drainages that run through Silver Hills and adjacent to the subject property. Silver Hills discharges to two separate points. The first is located southeast of the intersection of Red Rock Road and Silver Knolls Boulevard. The second is located south of Blackhawk Boulevard and discharges into existing ephemeral drainage. The drainages eventually discharge into Silver Lake southeast of the site.

FEMA’s Flood Insurance Rate Maps (FIRM), lists the site as Zone X (unshaded), an area of minimal flooding. Please reference the FIRM in the appendix.

## Methodology

### SCS Curve Number



HEC-HMS by the U.S. Army Corp of Engineers was used to model the major onsite basins for both the existing and proposed conditions, and the required retention and detention storage volumes. The method used to determine loss rate and rainfall runoff method within the model was the SCS Curve number method. The SCS curve number Method uses the SCS runoff curve number (CN) loss rate, related to potential abstraction.

$$S=(100/CN)-10 \text{ where } S \text{ (in.)=initial abstraction (TMRDM 706)}$$

Curve numbers were chosen from Table 702 in the TMRDM (Appendix) by using data compiled from previous studies, the *Preliminary Geotechnical Investigation for Silver Hills Subdivision* by Summit Engineering, March 2009, and the soils map of the watershed is shown in the Appendix. Weighted curve numbers were calculated based on the soil types. Rainfall depth and intensity were determined using the NOAA Atlas 14 (Appendix).

Lag Times were calculated in tables 5 and 6 (Appendix) using formula 709 from the TMRDM. Formula 709 was used because all basins are all less than one square mile.

$$TLAG=0.6Tc \quad (\text{TRMD Equation 709})$$

$$TLAG = (22.1)(k_n)(L^*L_c/S^{0.5})^{0.33} = (22.1)(0.013)((1.53)(0.7)/150^{0.5})^{0.33} \quad (\text{TRMD Equation 710})$$

The determination of the offsite drainage basin limits was obtained by analyzing USGS Quad Maps, Washoe County’s GIS topography maps and Google Earth. Reference the basin maps located in the appendix.

The SCS curve number model did not take routing into consideration, therefore, the model is conservative. Routing of the peak flows will be included in the final design hydrology analysis to provide a more accurate attenuation of the peak flows.

**Existing Onsite Hydrology**

The overall site consists of 780± acres of undeveloped land and generates an existing total 5-year peak flow of 218.1 cfs and an existing total 100-year peak flow of 880.6 cfs. Reference Basins 5A through 10A in the “Onsite Existing Hydraulic Basin Map” located in the Appendix, and Table B below.

<b>TABLE B. MODEL PARAMETERS AND RESULTS – EXISTING/ONSITE</b>					
<b>Basin</b>	<b>Area (AC)</b>	<b>CN</b>	<b>Lag time (min)</b>	<b>Q5 (cfs)</b>	<b>Q100 (cfs)</b>
5A	256.3	72.20	21.4	70.8	53.1
6A	284.0	62.25	18.8	31.6	291.9
7A	15.1	75.06	10.1	7.6	34.0
8A	203.0	73.60	10.9	89.3	422.5
9A	11.4	77.00	8.4	7.0	29.4
10A	18.9	77.00	8.1	11.8	49.7
<b>TOTAL</b>				<b>218.1</b>	<b>880.6</b>

**Proposed Onsite Hydrology**

Proposed flows will be similar to the historical drainage patterns. Offsite and onsite flows will be captured and routed through and around the site via a network of channels, storm drains and ponds. Flows will be discharged to the two existing outlet points located southeast of the intersection of Red Rock Road and Silver Knolls Boulevard, and south of Blackhawk Boulevard. Reference the Proposed Onsite Hydraulic Basin Map located in the appendix of this report.

The two (2) separate outlet locations within Silver Hills were divided into 6 separate upstream drainage basins to facilitate a preliminary hydraulic analysis. A series of more detailed onsite basins will be created with the final development plans and corresponding hydrology report.

Detention / Retention

According to the Truckee Meadows Drainage Manual, any project must maintain the peak flow rates from the 5-year and 100-year 24-hour storm events at the same rate as before development. In addition, because the project site drains to ultimately drains to Silver Lake, flow volumes from the project area are not allowed to increase due to the impact that it could have on the water surface elevation in the Silver Lake Playa. 150% of the difference between the existing and proposed runoff volume must be retained on site and infiltrated. The design storm used to determine the volume of water that must be retained is the 100-year, 10-day storm event. Required detention and retention volumes were calculated.

HEC-HMS software was used to create a hydrologic model to calculate the flow rates from the design events for pre- and post-development conditions. In order to calculate the required detention storage volume for the site, the inflow hydrograph was calculated, the outflow limits were established and the required storage and outflow limitation was determined using a reservoir routing procedure. Retention volumes were calculated by taking the difference in runoff volumes between the existing and proposed conditions for the design storm event.

The parameters used in the models and the computed flow rates are summarized in Table C. The volume of runoff for both the 24-hour and 10-day periods were determined for both the pre- and post-conditions using data from NOAA Atlas 14 (at [www.nws.noaa.gov/ohd/hdsc/](http://www.nws.noaa.gov/ohd/hdsc/)). Weighted curve numbers were calculated based on soil types and a land use corresponding to “1/4 acre residential districts” per Table 702 in the Truckee Meadows Regional Drainage Manual.

Approximately 507.3 CFS and 1849.5 CFS of peak runoff are estimated for the proposed condition 5 and 100-year storm events respectively. Reference Table C below. Reference the Appendix for applicable HEC-HMS runoff volume calculations.

<b>TABLE C. MODEL PARAMETERS AND RESULTS - PROPOSED</b>					
<b>Basin</b>	<b>Area (AC)</b>	<b>CN</b>	<b>Lag time (min)</b>	<b>Q5 (cfs)</b>	<b>Q100 (cfs)</b>
5A	256.3	84.17	13.2	180.2	623.2
6A	284.0	77.91	13.2	146.6	600.6
7A	15.1	85.85	9.8	13.3	44.1
8A	203.0	85.05	13.2	148.4	502.5
9A	11.4	77.00	8.4	7.0	29.4
10A	18.9	77.00	8.1	11.8	49.7
<b>TOTAL</b>				<b>507.3</b>	<b>1849.5</b>

Basins 5A through 10A will require retention/detention basins to regulate flow to pre-development rates. The flow rates have increased in the Q5 24-hour event by 289.2 cfs and in the Q100 24-hour event by 968.9 cfs. The required retention volume for the 100 year 10-day storm is Q100 vol= 171.9 AC-FT which includes the 1.5 volume multiplier. Proposed retention basins will be placed within the site which will contain a total storage volume of 171.9± AC-FT. Detention basins will also be placed within the site to ensure that the 24-hour 5 year and 100 year peak discharges from each basin are limited to the pre-development rates.

Infiltration:



The design engineer shall design and provide supporting calculations for infiltration facilities. Design of said facilities are outside the scope of this study. Potential infiltration facility locations area shown on the “Infiltration Exhibit” located in the appendix.

The infiltration basins must be designed to infiltrate surface water into the ground. A properly designed infiltration basin will not hold water longer than 7 days. Additionally, the basin volume must be available for subsequent design storm events.

The final design infiltration rate used should be chosen by the design engineer in conjunction with the geotechnical engineer and should be based on the infiltration components selected, existing soil conditions, anticipated maintenance requirements, and an appropriate factor of safety to accommodate long term infiltration basin performance.

**Phase 1 Hydrology**

Phase 1 consists of 64.93± acres containing 358 single family residential units located at the north end of the Silver Hills site, west of Red Rock Road. Reference the vicinity map located in the appendix. Proposed Phase 1 flows will be similar to the historical drainage patterns. Offsite flows will be captured and routed through and around the site via a network of channels, storm drains and ponds. Flows will be discharged to an existing ephemeral channel located at the southeast corner of Silver Hills Phase 1, which ultimately discharges. Into the existing channel located near Blackhawk Boulevard. Reference the Existing Phase 1 Hydraulic Basin Map and Proposed Phase 1 Hydraulic Basin Map located in the appendix of this report.

Phase 1 Detention / Retention

Approximately 60.8 CFS and 203.9 CFS of peak runoff are estimated for the proposed condition 5 and 100-year storm events respectively. Reference Table E below. Reference the Appendix for applicable HEC-HMS runoff volume calculations.

<b>TABLE D. MODEL PARAMETERS AND RESULTS – PHASE 1 EXISTING</b>					
Basin	Area (AC)	CN	Lag time (min)	Q5 (cfs)	Q100 (cfs)
4B	33.5	75.87	10.0	17.7	77.6
5B	31.2	72.78	10.3	13.4	65.3
<b>TOTAL</b>				31.1	142.9

<b>TABLE E. MODEL PARAMETERS AND RESULTS – PHASE 1 PROPOSED</b>					
Basin	Area (AC)	CN	Lag time (min)	Q5 (cfs)	Q100 (cfs)
4B	33.5	86.36	8.2	32.6	107.2
5B	31.2	84.59	8.2	28.2	96.7
<b>TOTAL</b>				60.8	203.9

Basins 4B and 5B will require retention/detention basins to regulate flow to pre-development rates. The flow rates have increased in the Q5 24-hour event by 29.7 cfs and in the Q100 24-hour event by 61.0 cfs. The required retention volume for the 100 year 10-day storm is Q100 vol= 8.0 AC-FT which includes the 1.5 volume multiplier. Proposed retentions basins will be placed within the site which will contain a total storage volume of 8.0± AC-FT. Detention basins will also be placed within the site to ensure that the 24-hour 5 year and 100 year peak discharges from each basin are limited to the pre-development rates.

**Conclusion**

This report presents the findings of a detailed drainage analysis of Silver Hills. The project is located within the Silver Lake drainage basin. It receives flows from several ephemeral drainages, west of the site. The existing flows

will be routed around and through the project site. The existing stormwater flows for the 5 and 100 year storm events have been analyzed. Onsite flow rates for the required design storms (5 and 100 year) will increase due to the paving of relatively permeable soils, and building construction on the project site. 150% of the increased volume from the 100-year, 10-day storm will be retained onsite and allowed to infiltrate within a retention/detention basin. Preliminary hydraulic volumetric retention calculations are provided with this report. The project can be developed without disturbing the integrity of the requirements outlined in the *Truckee Meadows Regional Drainage Manual*. The onsite storm drainage system is designed to convey storm flows per the TMRDM.



# APPENDIX

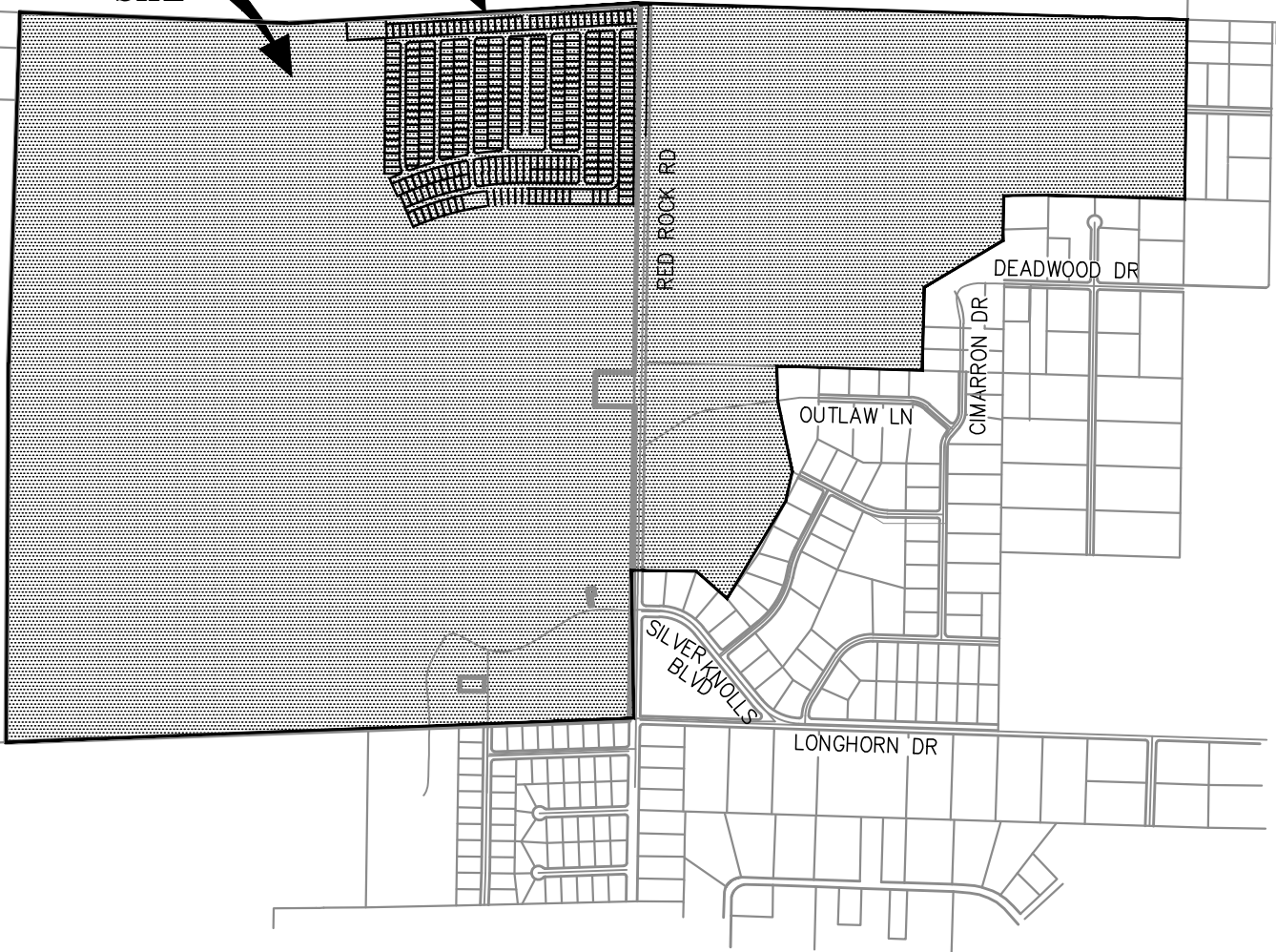
# VICINITY MAP

SILVER HILLS

FEBRUARY 2021



PHASE 1  
PROJECT SITE



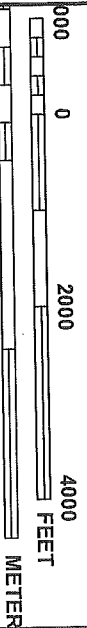
1000 Kiley Pkwy | Sparks Nevada 89436

775.502.8552





MAP SCALE 1" = 2000'



**NFIP**

PANEL 2825G

**FIRM**

FLOOD INSURANCE RATE MAP

WASHOE COUNTY,  
NEVADA  
AND INCORPORATED AREAS

PANEL 2825 OF 3475

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

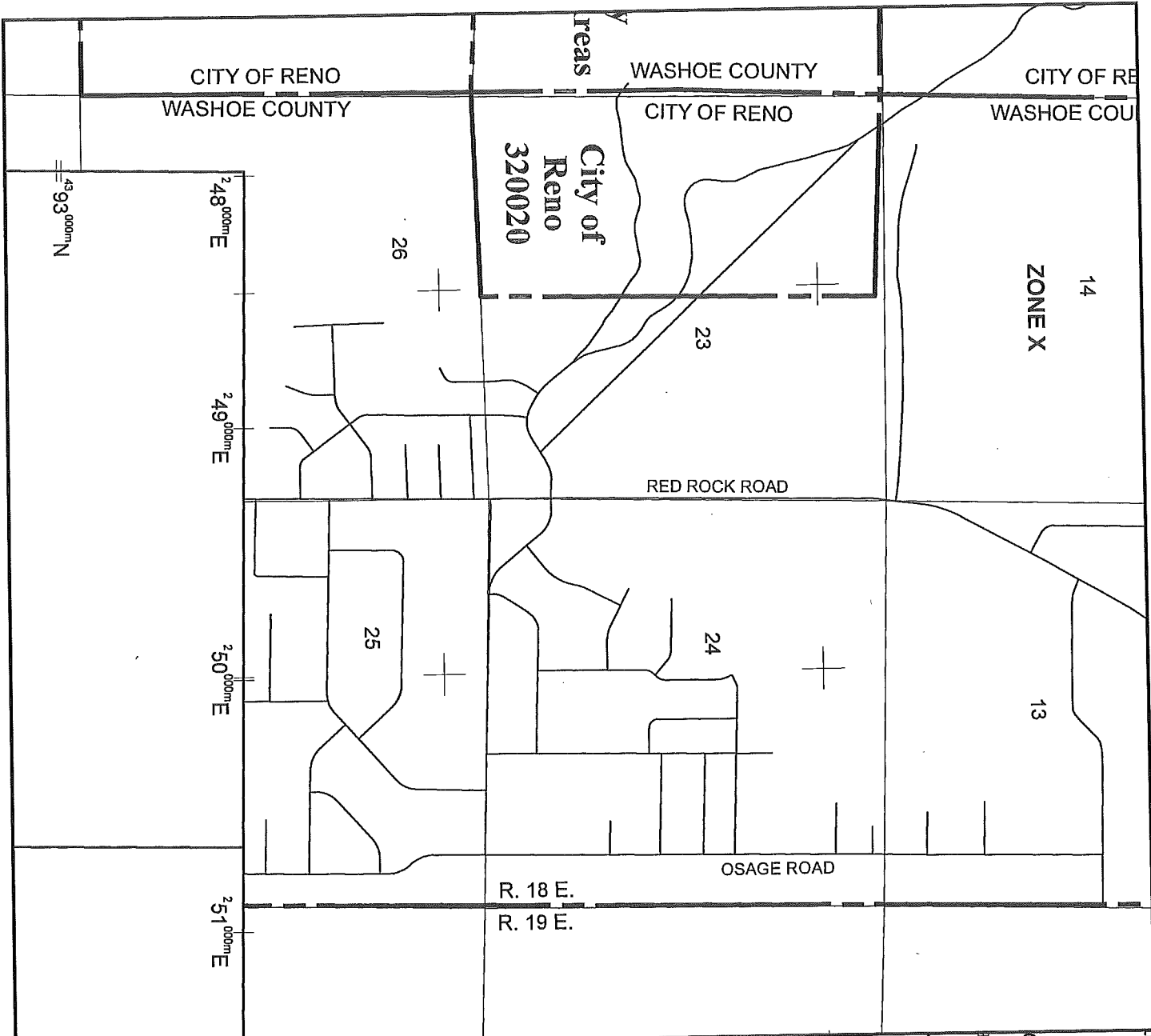
COMMUNITY	NUMBER	PANEL	SUFFIX
RENO, CITY OF	320020	2825	G
WASHOE COUNTY	320019	2825	G

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.



Federal Emergency Management Agency

MAP NUMBER  
32031C2825G  
MAP REVISED  
MARCH 16, 2009



43°00'00\"/>

## **BASIN MAPS**



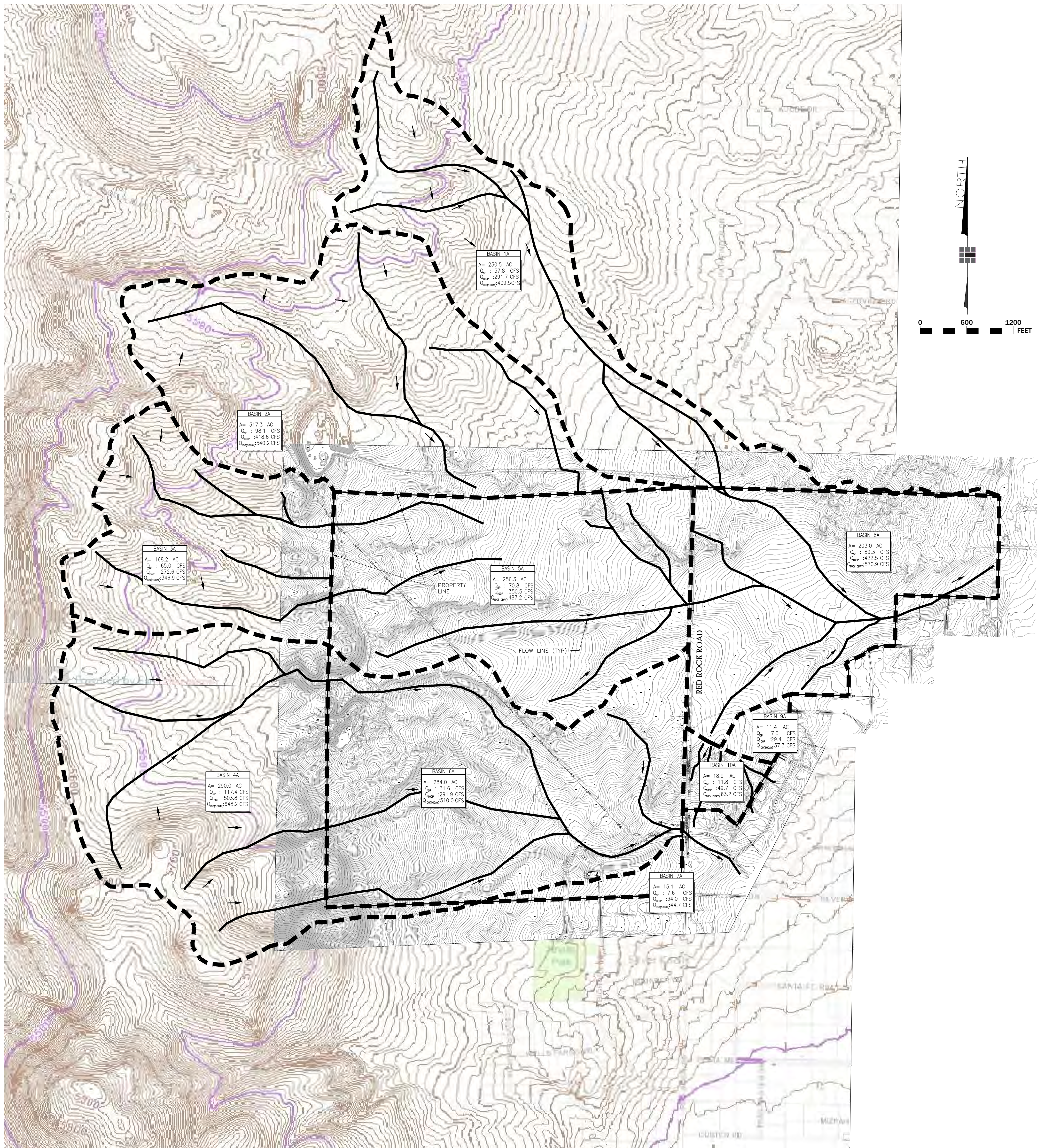




# HYDRAULIC BASIN MAP - ONSITE/EXISTING

SILVER HILLS

FEBRUARY 2021



HYDRAULIC BASIN MAP - ONSITE/EXISTING

**CHRISTY**  
CORPORATION

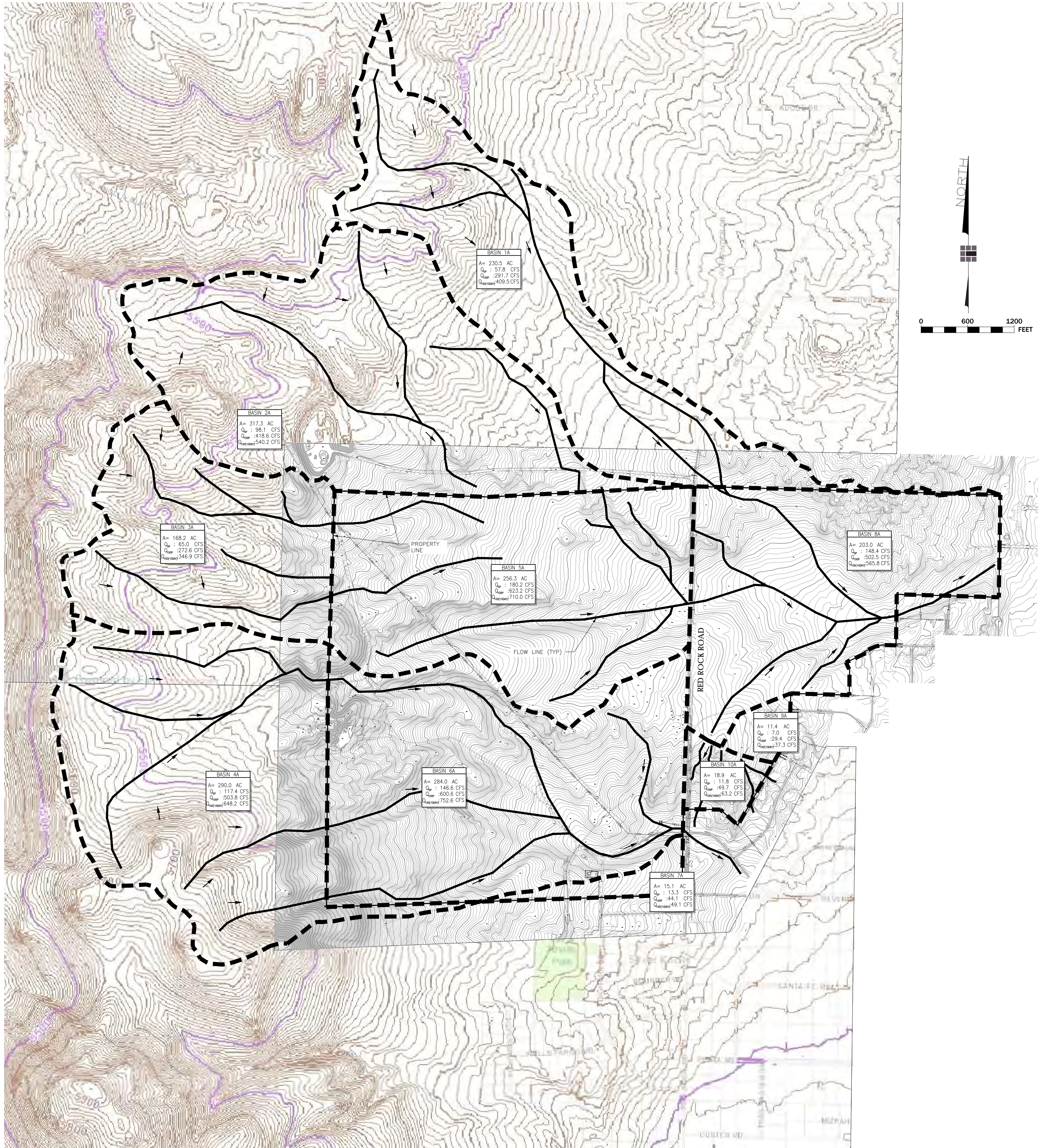
1000 Kiley Pkwy | Sparks Nevada 89436  
775.502.8552



# HYDRAULIC BASIN MAP - ONSITE/PROPOSED

SILVER HILLS

FEBRUARY 2021



HYDRAULIC BASIN MAP - ONSITE/PROPOSED

**CHRISTY**  
CORPORATION

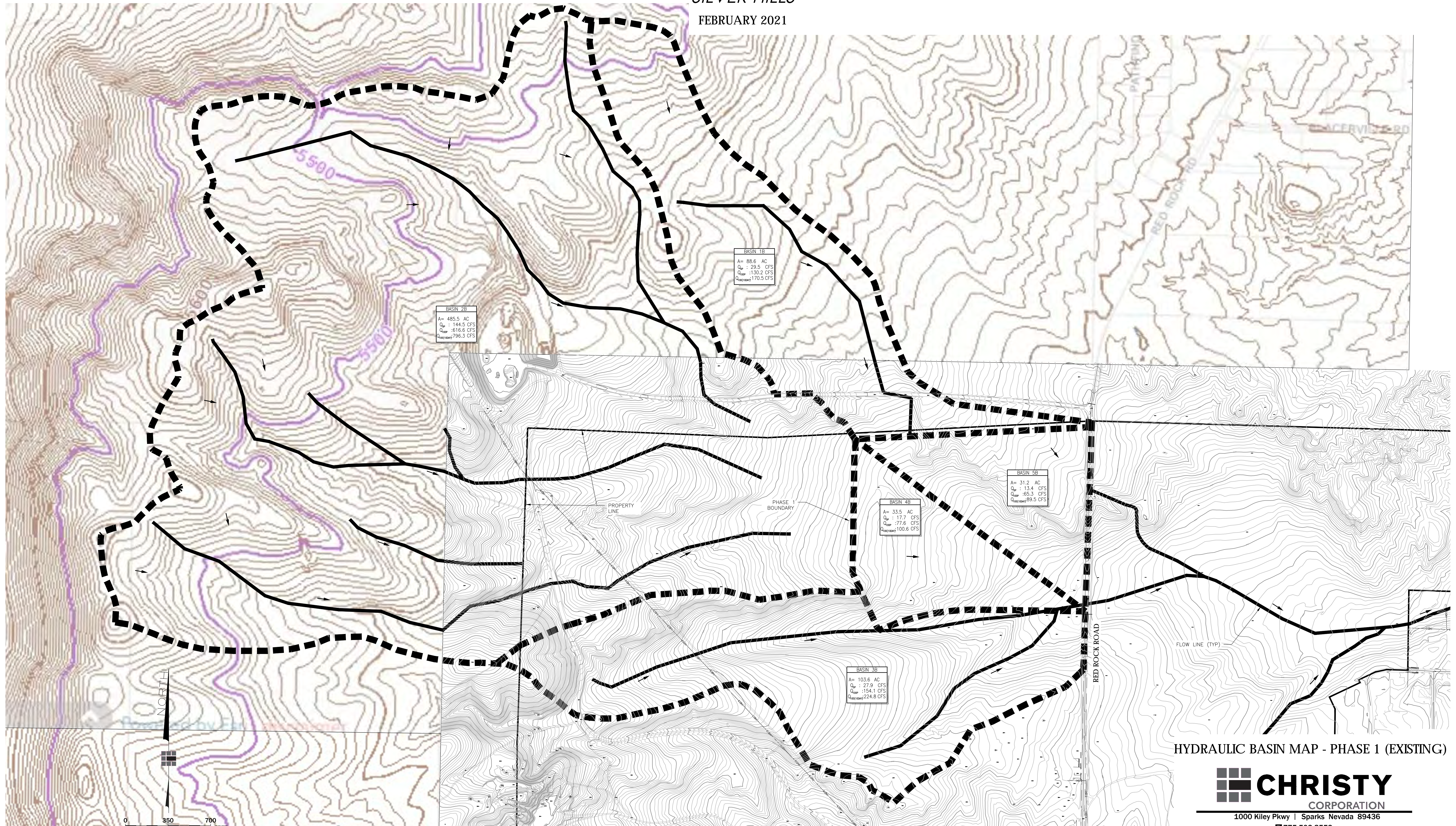
1000 Kiley Pkwy | Sparks Nevada 89436  
775.502.8552



# HYDRAULIC BASIN MAP - PHASE 1 EXISTING

SILVER HILLS

FEBRUARY 2021



HYDRAULIC BASIN MAP - PHASE 1 (EXISTING)

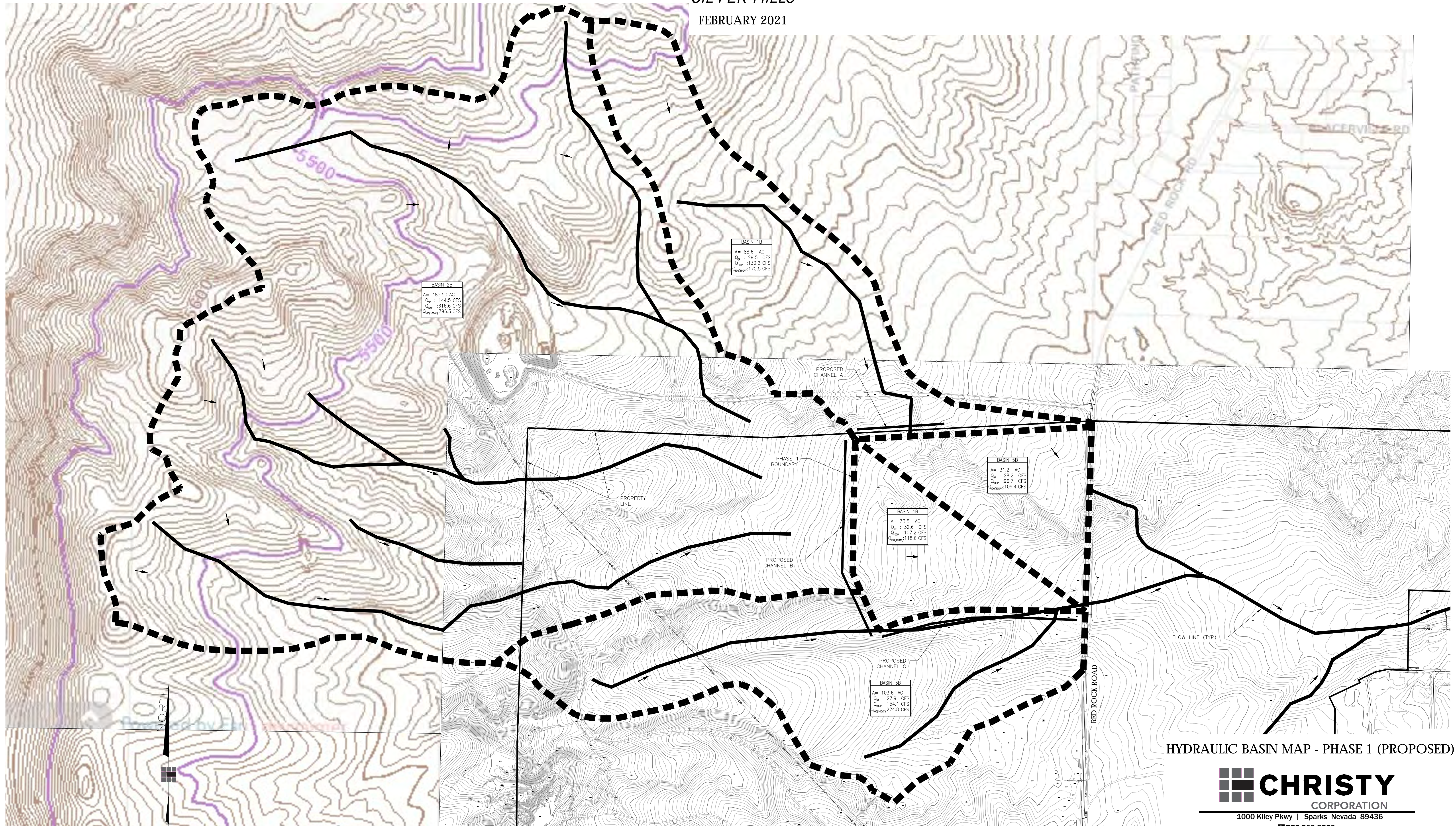
**CHRISTY**  
CORPORATION  
1000 Kiley Pkwy | Sparks Nevada 89436  
775.502.8552



# HYDRAULIC BASIN MAP - PHASE 1 (PROPOSED)

SILVER HILLS

FEBRUARY 2021



HYDRAULIC BASIN MAP - PHASE 1 (PROPOSED)

**CHRISTY**  
CORPORATION

1000 Kiley Pkwy | Sparks Nevada 89436

775.502.8552



**NOAA ATLAS 14  
PRECIPITATION FREQUENCY ESTIMATES**





**NOAA Atlas 14, Volume 1, Version 5**  
**Location name: Reno, Nevada, USA\***  
**Latitude: 39.6694°, Longitude: -119.9296°**  
**Elevation: 5150.17 ft\*\***



\* source: ESRI Maps  
 \*\* source: USGS

**POINT PRECIPITATION FREQUENCY ESTIMATES**

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

NOAA, National Weather Service, Silver Spring, Maryland

[PF\\_tabular](#) | [PF\\_graphical](#) | [Maps\\_&\\_aerials](#)

**PF tabular**

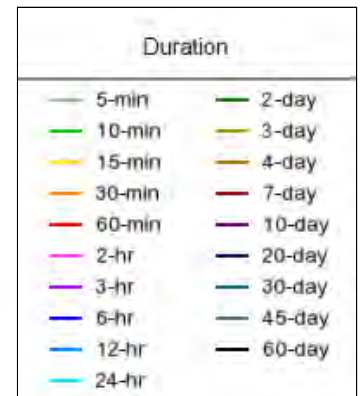
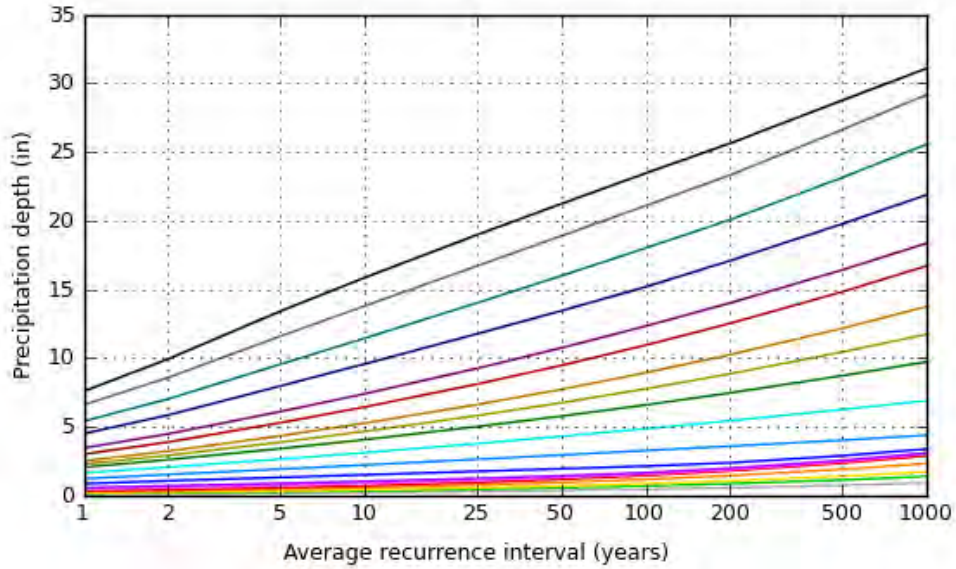
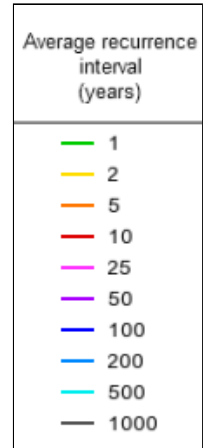
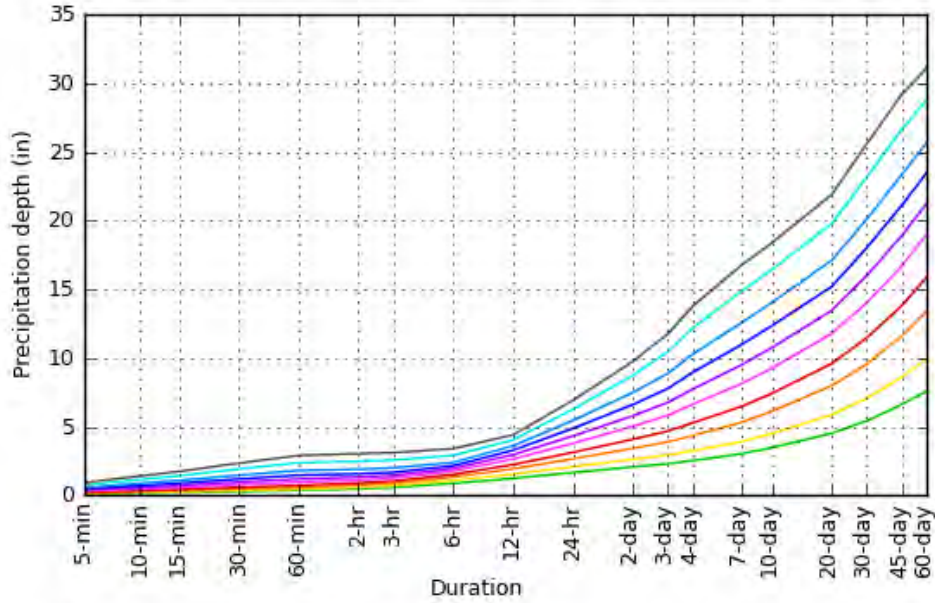
<b>PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)<sup>1</sup></b>										
<b>Duration</b>	<b>Average recurrence interval (years)</b>									
	<b>1</b>	<b>2</b>	<b>5</b>	<b>10</b>	<b>25</b>	<b>50</b>	<b>100</b>	<b>200</b>	<b>500</b>	<b>1000</b>
<b>5-min</b>	<b>0.112</b> (0.094-0.129)	<b>0.139</b> (0.117-0.162)	<b>0.185</b> (0.157-0.218)	<b>0.230</b> (0.195-0.273)	<b>0.306</b> (0.254-0.368)	<b>0.378</b> (0.306-0.461)	<b>0.466</b> (0.366-0.576)	<b>0.575</b> (0.435-0.723)	<b>0.753</b> (0.540-0.977)	<b>0.921</b> (0.633-1.22)
<b>10-min</b>	<b>0.171</b> (0.143-0.196)	<b>0.212</b> (0.178-0.247)	<b>0.282</b> (0.239-0.333)	<b>0.350</b> (0.297-0.415)	<b>0.466</b> (0.387-0.560)	<b>0.576</b> (0.467-0.702)	<b>0.710</b> (0.558-0.878)	<b>0.874</b> (0.662-1.10)	<b>1.15</b> (0.822-1.49)	<b>1.40</b> (0.964-1.86)
<b>15-min</b>	<b>0.212</b> (0.178-0.243)	<b>0.263</b> (0.221-0.306)	<b>0.349</b> (0.297-0.412)	<b>0.434</b> (0.368-0.515)	<b>0.578</b> (0.480-0.695)	<b>0.714</b> (0.578-0.870)	<b>0.880</b> (0.691-1.09)	<b>1.08</b> (0.821-1.37)	<b>1.42</b> (1.02-1.85)	<b>1.74</b> (1.20-2.31)
<b>30-min</b>	<b>0.285</b> (0.239-0.328)	<b>0.354</b> (0.298-0.412)	<b>0.471</b> (0.399-0.556)	<b>0.584</b> (0.495-0.693)	<b>0.778</b> (0.646-0.935)	<b>0.962</b> (0.779-1.17)	<b>1.19</b> (0.930-1.47)	<b>1.46</b> (1.11-1.84)	<b>1.91</b> (1.37-2.48)	<b>2.34</b> (1.61-3.11)
<b>60-min</b>	<b>0.353</b> (0.296-0.406)	<b>0.438</b> (0.369-0.510)	<b>0.583</b> (0.494-0.688)	<b>0.723</b> (0.613-0.858)	<b>0.963</b> (0.800-1.16)	<b>1.19</b> (0.964-1.45)	<b>1.47</b> (1.15-1.81)	<b>1.81</b> (1.37-2.28)	<b>2.37</b> (1.70-3.08)	<b>2.90</b> (1.99-3.84)
<b>2-hr</b>	<b>0.471</b> (0.418-0.539)	<b>0.586</b> (0.521-0.671)	<b>0.749</b> (0.658-0.859)	<b>0.894</b> (0.776-1.02)	<b>1.12</b> (0.951-1.29)	<b>1.33</b> (1.10-1.54)	<b>1.57</b> (1.27-1.85)	<b>1.89</b> (1.49-2.30)	<b>2.48</b> (1.87-3.11)	<b>3.03</b> (2.22-3.88)
<b>3-hr</b>	<b>0.579</b> (0.521-0.653)	<b>0.718</b> (0.650-0.814)	<b>0.894</b> (0.804-1.01)	<b>1.04</b> (0.929-1.18)	<b>1.26</b> (1.10-1.43)	<b>1.45</b> (1.25-1.66)	<b>1.67</b> (1.42-1.94)	<b>2.00</b> (1.67-2.35)	<b>2.57</b> (2.08-3.14)	<b>3.11</b> (2.45-3.92)
<b>6-hr</b>	<b>0.871</b> (0.789-0.970)	<b>1.08</b> (0.980-1.21)	<b>1.33</b> (1.20-1.48)	<b>1.52</b> (1.36-1.70)	<b>1.77</b> (1.57-1.99)	<b>1.96</b> (1.72-2.22)	<b>2.15</b> (1.87-2.45)	<b>2.39</b> (2.05-2.76)	<b>2.90</b> (2.44-3.39)	<b>3.40</b> (2.83-4.01)
<b>12-hr</b>	<b>1.24</b> (1.11-1.37)	<b>1.54</b> (1.39-1.72)	<b>1.93</b> (1.73-2.15)	<b>2.24</b> (2.00-2.50)	<b>2.64</b> (2.34-2.97)	<b>2.96</b> (2.59-3.35)	<b>3.28</b> (2.84-3.75)	<b>3.60</b> (3.08-4.16)	<b>4.04</b> (3.37-4.74)	<b>4.40</b> (3.61-5.24)
<b>24-hr</b>	<b>1.65</b> (1.48-1.86)	<b>2.08</b> (1.86-2.34)	<b>2.66</b> (2.37-2.99)	<b>3.13</b> (2.78-3.52)	<b>3.79</b> (3.34-4.28)	<b>4.32</b> (3.77-4.89)	<b>4.87</b> (4.21-5.57)	<b>5.45</b> (4.65-6.28)	<b>6.27</b> (5.25-7.31)	<b>6.91</b> (5.69-8.16)
<b>2-day</b>	<b>2.07</b> (1.82-2.36)	<b>2.62</b> (2.31-3.00)	<b>3.42</b> (3.00-3.91)	<b>4.08</b> (3.57-4.67)	<b>5.02</b> (4.34-5.78)	<b>5.79</b> (4.94-6.71)	<b>6.60</b> (5.57-7.73)	<b>7.48</b> (6.22-8.85)	<b>8.73</b> (7.10-10.5)	<b>9.74</b> (7.78-11.9)
<b>3-day</b>	<b>2.30</b> (2.02-2.63)	<b>2.93</b> (2.58-3.36)	<b>3.89</b> (3.40-4.46)	<b>4.68</b> (4.07-5.38)	<b>5.82</b> (5.01-6.73)	<b>6.76</b> (5.75-7.86)	<b>7.78</b> (6.52-9.12)	<b>8.87</b> (7.33-10.5)	<b>10.4</b> (8.42-12.6)	<b>11.8</b> (9.29-14.4)
<b>4-day</b>	<b>2.53</b> (2.22-2.91)	<b>3.24</b> (2.84-3.73)	<b>4.35</b> (3.80-5.01)	<b>5.28</b> (4.58-6.08)	<b>6.62</b> (5.68-7.67)	<b>7.73</b> (6.55-9.01)	<b>8.95</b> (7.47-10.5)	<b>10.3</b> (8.43-12.2)	<b>12.2</b> (9.74-14.7)	<b>13.8</b> (10.8-16.8)
<b>7-day</b>	<b>3.02</b> (2.62-3.52)	<b>3.90</b> (3.37-4.55)	<b>5.30</b> (4.57-6.19)	<b>6.45</b> (5.54-7.54)	<b>8.11</b> (6.88-9.52)	<b>9.47</b> (7.95-11.2)	<b>11.0</b> (9.07-13.1)	<b>12.5</b> (10.2-15.1)	<b>14.8</b> (11.8-18.2)	<b>16.7</b> (13.1-20.8)
<b>10-day</b>	<b>3.47</b> (3.01-4.03)	<b>4.49</b> (3.90-5.21)	<b>6.11</b> (5.29-7.10)	<b>7.41</b> (6.40-8.62)	<b>9.25</b> (7.89-10.8)	<b>10.7</b> (9.07-12.6)	<b>12.3</b> (10.3-14.6)	<b>14.0</b> (11.5-16.8)	<b>16.4</b> (13.2-20.0)	<b>18.4</b> (14.5-22.6)
<b>20-day</b>	<b>4.52</b> (3.94-5.22)	<b>5.87</b> (5.11-6.79)	<b>7.97</b> (6.93-9.21)	<b>9.59</b> (8.31-11.1)	<b>11.8</b> (10.1-13.6)	<b>13.4</b> (11.5-15.6)	<b>15.2</b> (12.8-17.8)	<b>17.1</b> (14.3-20.3)	<b>19.8</b> (16.2-23.8)	<b>21.9</b> (17.6-26.7)
<b>30-day</b>	<b>5.41</b> (4.72-6.27)	<b>7.04</b> (6.15-8.15)	<b>9.55</b> (8.32-11.0)	<b>11.5</b> (9.95-13.2)	<b>14.0</b> (12.1-16.2)	<b>16.0</b> (13.7-18.5)	<b>18.0</b> (15.3-21.0)	<b>20.1</b> (16.8-23.7)	<b>23.1</b> (19.1-27.6)	<b>25.6</b> (20.8-30.9)
<b>45-day</b>	<b>6.60</b> (5.77-7.50)	<b>8.60</b> (7.51-9.77)	<b>11.6</b> (10.1-13.2)	<b>13.8</b> (12.0-15.7)	<b>16.7</b> (14.5-19.0)	<b>18.9</b> (16.3-21.6)	<b>21.1</b> (18.0-24.3)	<b>23.3</b> (19.7-27.1)	<b>26.6</b> (22.2-31.2)	<b>29.2</b> (24.1-34.6)
<b>60-day</b>	<b>7.60</b> (6.61-8.66)	<b>9.95</b> (8.65-11.3)	<b>13.4</b> (11.7-15.3)	<b>15.9</b> (13.8-18.0)	<b>19.0</b> (16.4-21.6)	<b>21.2</b> (18.2-24.3)	<b>23.5</b> (20.0-27.0)	<b>25.6</b> (21.7-29.7)	<b>28.8</b> (24.0-33.6)	<b>31.1</b> (25.7-36.6)

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

[Back to Top](#)

**PF graphical**

PDS-based depth-duration-frequency (DDF) curves  
 Latitude: 39.6694°, Longitude: -119.9296°

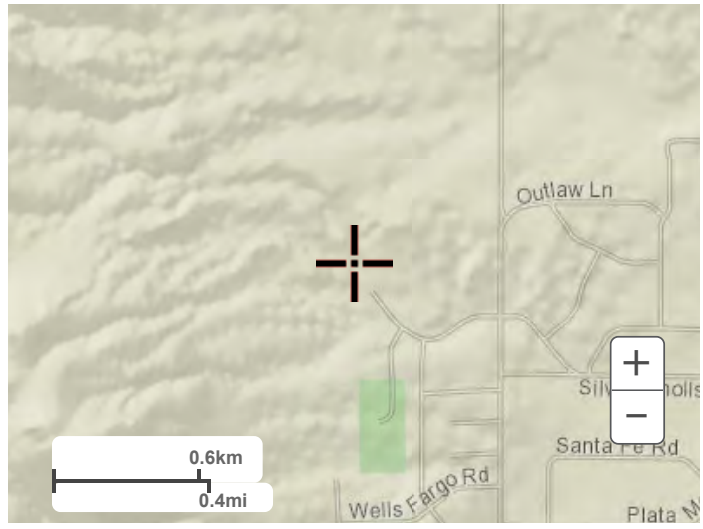


[Back to Top](#)

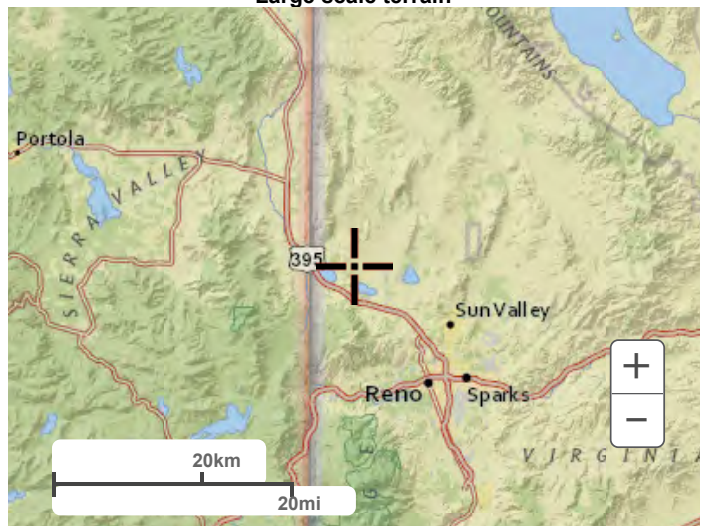
**Maps & aerials**

**Small scale terrain**

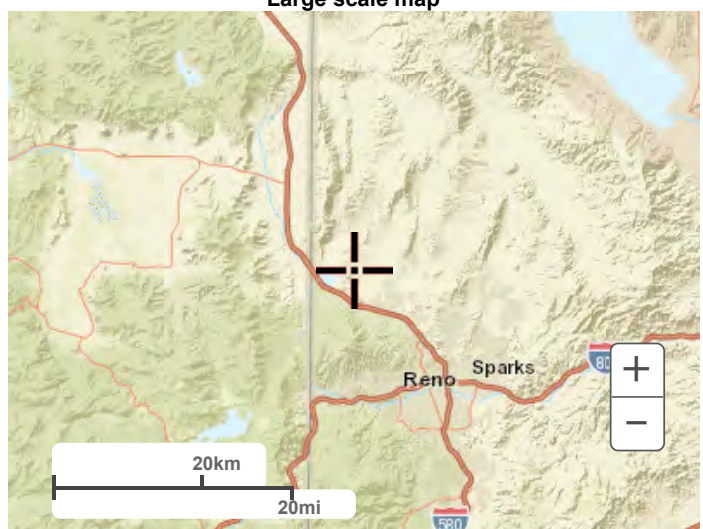




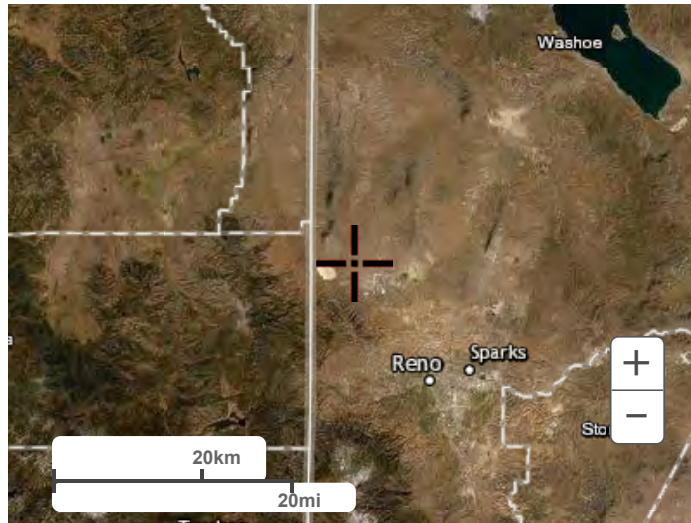
Large scale terrain



Large scale map



Large scale aerial



[Back to Top](#)

---

[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](mailto:HDSC.Questions@noaa.gov)

[Disclaimer](#)



## SCS METHOD

<b>EXISTING</b>						
<b>Basin</b>	<b>Acreeage</b>	<b>Soil Group</b>				<b>Curve Number</b>
		<b>A (35)</b>	<b>B (56)</b>	<b>C (70)</b>	<b>D (77)</b>	
1	229.38	22.44	0	43.8	163.14	71.55
2	743.017	13.54	0	127.3	602.18	75.04
3	574.5543	97.82	0	35.14	441.59	69.42
4	213.3007	0.00	0	108.4	104.90	73.44
5	11.35396	0.00	0	0	11.35	77.00
6	18.91341	0.00	0	0	18.91	77.00
7	15.0681	0.33	0	2.85	11.89	74.76
<b>Basin</b>	<b>Acreeage</b>	<b>Soil Group</b>				<b>Curve Number</b>
		<b>A (35)</b>	<b>B (56)</b>	<b>C (70)</b>	<b>D (77)</b>	
1A	230.46	22.01	0	42.85	165.60	71.69
2A	317.29	2.50	0	19.7	295.09	76.23
3A	168.24	0.00	0	0	168.24	77.00
4A	290.01	3.65	0	4.95	281.41	76.35
5A	256.26	11.51	0	106.76	137.99	72.20
6A	284.00	93.85	0	35.34	154.81	62.25
7A	15.07	0.28	0	2.5	12.29	75.06
8A	203.04	0.00	0	98.74	104.30	73.60
9A	11.35	0.00	0	0	11.35	77.00
10A	18.91	0.00	0	0	18.91	77.00
<b>Basin</b>	<b>Acreeage</b>	<b>Soil Group</b>				<b>Curve Number</b>
		<b>A (35)</b>	<b>B (56)</b>	<b>C (70)</b>	<b>D (77)</b>	
1B	88.60	2.54	0	5.73	80.33	75.34
2B	485.50	0.00	0	57.44	428.06	76.17
3B	103.64	11.14	0	40.16	52.34	69.77
4B	33.50	0.00	0	5.4	28.10	75.87
5B	31.20	0.00	0	18.81	12.39	72.78

<b>PROPOSED</b>						
<b>Basin</b>	<b>Acreeage</b>	<b>Soil Group</b>				<b>Curve Number</b>
		<b>A (61)</b>	<b>B (75)</b>	<b>C (83)</b>	<b>D (87)</b>	
5A	256.26	11.51	0	106.76	137.99	84.17
6A	284.00	93.85	0	35.34	154.81	77.91
7A	15.07	0.28	0	2.5	12.29	85.85
8A	203.04	0.00	0	98.74	104.30	85.05
4B	33.50	0.00	0	5.4	28.10	86.36
5B	31.20	0.00	0	18.81	12.39	84.59





**TABLE 1**  
**TIME OF CONCENTRATION - OVERALL/EXISTING**  
**Silver Hills**

STANDARD FORM 2

SUB-BASIN DATA				INITIAL / OVERLAND TIME ( $t_i$ )			TRAVEL TIME ( $t_t$ )				$t_c$ ( $t_i + t_t$ )	$t_c$ URBANIZED BASINS CHECK	FINAL $t_c$	FINAL $t_c$	REMARKS	
Desig: (1)	R (2)	Area Ac (3)	Urban? Y/N	Length Ft (4)	Slope % (5)	$t_i$ Min (6)	Length Ft (7)	Slope % (8)	Vel. FPS (9)	$t_t$ Min (10)	$t_c$ Min (11)	Len Ft (12)	0 Min (13)	Min (14)	Hr	
<b>PROPOSED CONDITIONS</b>																
1		229.38	Y	250	20.0	11.5	7921	5.6	4.8	27.6	39.1	8171	55.4	39.1	0.65	
2		743.02	Y	950	13.7	25.5	8476	4.6	4.4	32.3	57.8	9426	62.4	57.8	0.96	
3		574.55	Y	1000	15.0	25.4	9174	5.7	4.8	31.7	57.0	10174	66.5	57.0	0.95	
4		213.30	Y	550	4.4	28.3	4433	2.6	3.3	22.6	50.9	4983	37.7	37.7	0.63	
5		11.35	Y	50	2.0	11.1	850	4.8	4.5	3.2	14.3	900	15.0	14.3	0.24	
6		18.91	Y	50	2.0	11.1	847	6.8	5.3	2.7	13.8	897	15.0	13.8	0.23	
7		15.07	Y	50	2.0	11.1	2161	4.5	4.3	8.4	19.5	2211	22.3	19.5	0.32	

(9) Travel time velocity curves from Figure 701:

Non-urban = "nearly bare and untilled"

$$t_i = 1.8 (1.1 - R) L^{1/2} / S^{1/3}$$

Urban = "paved area (sheet flow) and shallow gutter flow"



**TABLE 2**  
**TIME OF CONCENTRATION - EXISTING / ONSITE**  
**Silver Hills**

SUB-BASIN DATA				INITIAL / OVERLAND TIME ( $t_i$ )			TRAVEL TIME ( $t_t$ )				$t_c$ ( $t_i + t_t$ )	$t_c$ URBANIZED BASINS CHECK	FINAL $t_c$	FINAL $t_c$	REMARKS	
Desig: (1)	R (2)	Area Ac (3)	Urban? Y/N	Length Ft (4)	Slope % (5)	$t_i$ Min (6)	Length Ft (7)	Slope % (8)	Vel. FPS (9)	$t_t$ Min (10)	$t_c$ Min (11)	Len Ft (12)	0 Min (13)	Min (14)	Hr	
<b>PROPOSED CONDITIONS</b>																
1A		230.46	Y	250	20.0	11.5	7963	5.5	4.7	28.0	39.5	8213	55.6	39.5	0.66	
2A		317.29	Y	950	13.7	25.5	5403	5.0	4.5	19.9	45.4	6353	45.3	45.3	0.75	
3A		168.24	Y	917	3.1	41.1	3370	7.2	5.4	10.3	51.4	4287	33.8	33.8	0.56	
4A		290.01	Y	550	20.0	17.1	4341	8.7	6.0	12.1	29.2	4891	37.2	29.2	0.49	
5A		256.26	Y	550	20.0	17.1	4279	3.6	3.9	18.5	35.6	4829	36.8	35.6	0.59	
6A		284.00	Y	100	20.0	7.3	5844	4.0	4.0	24.1	31.4	5944	43.0	31.4	0.52	
7A		15.07	Y	100	20.0	7.3	2299	3.9	4.0	9.6	16.9	2399	23.3	16.9	0.28	
8A		203.04	Y	50	20.0	5.2	3033	3.7	3.9	12.9	18.1	3083	27.1	18.1	0.30	
9A		11.35	Y	50	2.0	11.1	796	4.8	4.5	3.0	14.1	846	14.7	14.1	0.23	
10A		18.91	Y	50	2.0	11.1	776	6.8	5.3	2.4	13.6	826	14.6	13.6	0.23	

STANDARD FORM 2

(9) Travel time velocity curves from Figure 701:

Non-urban = "nearly bare and untilled"

$$t_i = 1.8 (1.1 - R) L^{1/2} / S^{1/3}$$

Urban = "paved area (sheet flow) and shallow gutter flow"





**TABLE 3**  
**TIME OF CONCENTRATION - PROPOSED / ONSITE**  
**Silver Hills**

STANDARD FORM 2

SUB-BASIN DATA				INITIAL / OVERLAND TIME ( $t_i$ )			TRAVEL TIME ( $t_t$ )				$t_c$ ( $t_i + t_t$ )	$t_c$ URBANIZED BASINS CHECK	FINAL $t_c$	FINAL $t_c$	REMARKS	
Desig: (1)	R (2)	Area Ac (3)	Urban? Y / N	Length Ft (4)	Slope % (5)	$t_i$ Min (6)	Length Ft (7)	Slope % (8)	Vel. FPS (9)	$t_t$ Min (10)	$t_c$ Min (11)	Len Ft (12)	0 Min (13)	Min (14)	Hr	
<b>PROPOSED CONDITIONS</b>																
5A		256.26	Y	150	2.0	19.2	2000	2.0	2.9	11.6	30.9	2150	21.9	21.9	0.37	
6A		284.00	Y	150	2.0	19.2	2000	2.0	2.9	11.6	30.9	2150	21.9	21.9	0.37	
7A		15.07	Y	150	2.0	19.2	1000	2.0	2.9	5.8	25.1	1150	16.4	16.4	0.27	
8A		203.04	Y	150	2.0	19.2	2000	2.0	2.9	11.6	30.9	2150	21.9	21.9	0.37	

(9) Travel time velocity curves from Figure 701:

Non-urban = "nearly bare and untilled"

$$t_i = 1.8 (1.1 - R) L^{1/2} / S^{1/3}$$

Urban = "paved area (sheet flow) and shallow gutter flow"



**TABLE 4**  
**TIME OF CONCENTRATION - EXISTING / PHASE 1**  
**Silver Hills**

STANDARD FORM 2

SUB-BASIN DATA				INITIAL / OVERLAND TIME ( $t_i$ )			TRAVEL TIME ( $t_t$ )				$t_c$ ( $t_i + t_t$ )	$t_c$ URBANIZED BASINS CHECK	FINAL $t_c$	FINAL $t_c$	REMARKS	
Desig: (1)	R (2)	Area Ac (3)	Urban? Y/N	Length Ft (4)	Slope % (5)	$t_i$ Min (6)	Length Ft (7)	Slope % (8)	Vel. FPS (9)	$t_t$ Min (10)	$t_c$ Min (11)	Len Ft (12)	0 Min (13)	Min (14)	Hr	
<b>PROPOSED CONDITIONS</b>																
1B		88.60	Y	1700	10.0	37.9	3165	2.6	3.3	16.1	54.0	4865	37.0	37.0	0.62	
2B		485.50	Y	520	3.8	28.9	6291	5.0	4.5	23.2	52.1	6811	47.8	47.8	0.80	
3B		103.64	Y	550	20.0	17.1	3942	9.9	6.4	10.3	27.4	4492	35.0	27.4	0.46	
4B		33.50	Y	50	2.0	11.1	1440	4.6	4.4	5.5	16.6	1490	18.3	16.6	0.28	
5B		31.20	Y	50	2.0	11.1	1575	4.6	4.4	6.0	17.1	1625	19.0	17.1	0.29	

(9) Travel time velocity curves from Figure 701:

Non-urban = "nearly bare and untilled"

$$t_i = 1.8 (1.1 - R) L^{1/2} / S^{1/3}$$

Urban = "paved area (sheet flow) and shallow gutter flow"





**TABLE 5**  
**TIME OF CONCENTRATION - PROPOSED / PHASE 1**  
**Silver Hills**

SUB-BASIN DATA				INITIAL / OVERLAND TIME ( $t_i$ )			TRAVEL TIME ( $t_t$ )				$t_c$ ( $t_i + t_t$ )	$t_c$ URBANIZED BASINS CHECK	FINAL $t_c$	FINAL $t_c$	REMARKS	
Desig: (1)	R (2)	Area Ac (3)	Urban? Y / N	Length Ft (4)	Slope % (5)	$t_i$ Min (6)	Length Ft (7)	Slope % (8)	Vel. FPS (9)	$t_t$ Min (10)	$t_c$ Min (11)	Len Ft (12)	0 Min (13)	Min (14)	Hr	
<b>PROPOSED CONDITIONS</b>																
4B		33.50	Y	150	2.0	19.2	500	2.0	2.9	2.9	22.1	650	13.6	13.6	0.23	
5B		31.20	Y	150	2.0	19.2	500	2.0	2.9	2.9	22.1	650	13.6	13.6	0.23	

STANDARD FORM 2

(9) Travel time velocity curves from Figure 701:

Non-urban = "nearly bare and untilled"

$$t_i = 1.8 (1.1 - R) L^{1/2} / S^{1/3}$$

Urban = "paved area (sheet flow) and shallow gutter flow"



**TABLE 6**  
**SCS LAG TIME CALCULATIONS - OVERALL/EXISTING**  
**Silver Hills**

SUB-AREA	Tc	Kn	SLOPE (ft/ft)	LENGTH (ft)	Lc (ft)	Tlag (min)
1	39.14	-	-	-	-	23.5
2	57.85	-	-	-	-	34.7
3	57.05	-	-	-	-	34.2
4	37.68	-	-	-	-	22.6
5	14.28	-	-	-	-	8.6
6	13.78	-	-	-	-	8.3
7	19.48	-	-	-	-	11.7

METHODOLOGY

Tlag=22.1(Kn)[(LLc/S^0.5)]^0.33 (formula 710) For larger drainage basins (greater than one square mile) and basins with a basin slope equal to or greater than ten percent  
 Kn=0.10 (see table 703)

Tlag=0.6Tc (formula 709) For small drainage basins (less than one square mile) and basin slopes less than ten percent





**TABLE 7**  
**SCS LAG TIME CALCULATIONS - EXISTING / ONSITE**  
**Silver Hills**

SUB-AREA	Tc	Kn	SLOPE (ft/ft)	LENGTH (ft)	Lc (ft)	Tlag (min)
1A	39.54	-	-	-	-	23.7
2A	45.30	-	-	-	-	27.2
3A	33.82	-	-	-	-	20.3
4A	29.19	-	-	-	-	17.5
5A	35.62	-	-	-	-	21.4
6A	31.41	-	-	-	-	18.8
7A	16.85	-	-	-	-	10.1
8A	18.10	-	-	-	-	10.9
9A	14.08	-	-	-	-	8.4
10A	13.56	-	-	-	-	8.1

METHODOLOGY

Tlag=22.1(Kn)[(LLc/S^0.5)]^0.33                      (formula 710)    For larger drainage basins (greater than one square mile) and basins with a basin slope equal to or greater than ten percent  
 Kn=0.10 (see table 703)

Tlag=0.6Tc                      (formula 709)    For small drainage basins (less than one square mile) and basin slopes less than ten percent



**TABLE 8**  
**SCS LAG TIME CALCULATIONS - PROPOSED / ONSITE**  
**Silver Hills**

SUB-AREA	Tc	Kn	SLOPE (ft/ft)	LENGTH (ft)	Lc (ft)	Tlag (min)
5A	21.94	-	-	-	-	13.2
6A	21.94	-	-	-	-	13.2
7A	16.39	-	-	-	-	9.8
8A	21.94	-	-	-	-	13.2

METHODOLOGY

$Tlag=22.1(Kn)[(LLc/S^{0.5})]^{0.33}$  (formula 710) For larger drainage basins (greater than one square mile) and basins with a basin slope equal to or greater than ten percent  
 Kn=0.10 (see table 703)

$Tlag=0.6Tc$  (formula 709) For small drainage basins (less than one square mile) and basin slopes less than ten percent





**TABLE 9**  
**SCS LAG TIME CALCULATIONS - EXISTING / PHASE 1**  
**Silver Hills**

SUB-AREA	Tc	Kn	SLOPE (ft/ft)	LENGTH (ft)	Lc (ft)	Tlag (min)
1B	37.03	-	-	-	-	22.2
2B	47.84	-	-	-	-	28.7
3B	27.39	-	-	-	-	16.4
4B	16.63	-	-	-	-	10.0
5B	17.14	-	-	-	-	10.3

METHODOLOGY

$Tlag=22.1(Kn)[(LLc/S^{0.5})]^{0.33}$  (formula 710) For larger drainage basins (greater than one square mile) and basins with a basin slope equal to or greater than ten percent  
 Kn=0.10 (see table 703)

$Tlag=0.6Tc$  (formula 709) For small drainage basins (less than one square mile) and basin slopes less than ten percent



**TABLE 10**  
**SCS LAG TIME CALCULATIONS - PROPOSED / PHASE 1**  
**Silver Hills**

SUB-AREA	Tc	Kn	SLOPE (ft/ft)	LENGTH (ft)	Lc (ft)	Tlag (min)
4B	13.61	-	-	-	-	8.2
5B	13.61	-	-	-	-	8.2

METHODOLOGY

$Tlag=22.1(Kn)[(LLc/S^{0.5})]^{0.33}$  (formula 710) For larger drainage basins (greater than one square mile) and basins with a basin slope equal to or greater than ten percent  
 Kn=0.10 (see table 703)

$Tlag=0.6Tc$  (formula 709) For small drainage basins (less than one square mile) and basin slopes less than ten percent



**RUNOFF CURVE NUMBERS FOR OTHER AGRICULTURAL LANDS<sup>1</sup>**

**Runoff Curve Numbers**

Cover Type	Hydrologic Condition	Soil Comp A	Soil Comp B	Soil Comp C	Soil Comp D
Pasture, grassland, or range – continuous forage for grazing <sup>2</sup>	Poor	68	79	86	89
	Fair	49	69	79	84
	Good	39	61	74	80
Meadow – continuous grass, protected from grazing and generally mowed for hay	-	30	58	71	78
Brush – brush-weed-grass mixture with brush the major element <sup>3</sup>	Poor	48	67	77	83
	Fair	35	56	70	77
	Good	30 <sup>4</sup>	48	65	73
Woods – grass combination (orchard or tree farm) <sup>5</sup>	Poor	57	73	82	86
	Fair	43	65	76	82
	Good	32	58	72	79
Woods <sup>6</sup>	Poor	45	66	77	83
	Fair	36	60	73	79
	Good	30 <sup>4</sup>	55	70	77
Farmsteads – buildings, lanes, driveways, and surrounding lots	-	59	74	82	86

<sup>1</sup>Average runoff condition, and  $I_a = 0.2S$

<sup>2</sup>*Poor*: < 50% ground cover or heavily grazed with no mulch  
*Fair*: 50 to 75% ground cover and not heavily grazed  
*Good*: > 75% ground cover and lightly or only occasionally grazed

<sup>3</sup>*Poor*: < 50% ground cover  
*Fair*: 50 to 75% ground cover  
*Good*: >75% ground cover

<sup>4</sup>Actual curve number is less than 30; use CN = 30 for runoff computations.

<sup>5</sup>CNs shown were computed for areas with 50% woods and 50% grass (pasture) cover. Other combinations of conditions may be computed from the CNs for woods and pasture.

<sup>6</sup>*Poor*: Forest litter, small trees, and brush are destroyed by heavy grazing or regular burning.  
*Fair*: Woods are grazed but not burned, and some forest litter covers the soil.  
*Good*: Woods are protected from grazing, and litter and brush adequately cover the soil.

VERSION: April 30, 2009

WJFC ENGINEERING, INC.

REFERENCE:

210-VI-TR-55, Second Edition, June 1986

TABLE

702  
3 of 4

**RUNOFF CURVE NUMBERS FOR URBAN AREAS<sup>1</sup>**

**Runoff Curve Numbers**

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

<sup>1</sup>Average runoff condition, and  $I_a = 0.2S$

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

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

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

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

VERSION: April 30, 2009

REFERENCE:

210-VI-TR-55, Second Edition, June 1986

TABLE

702

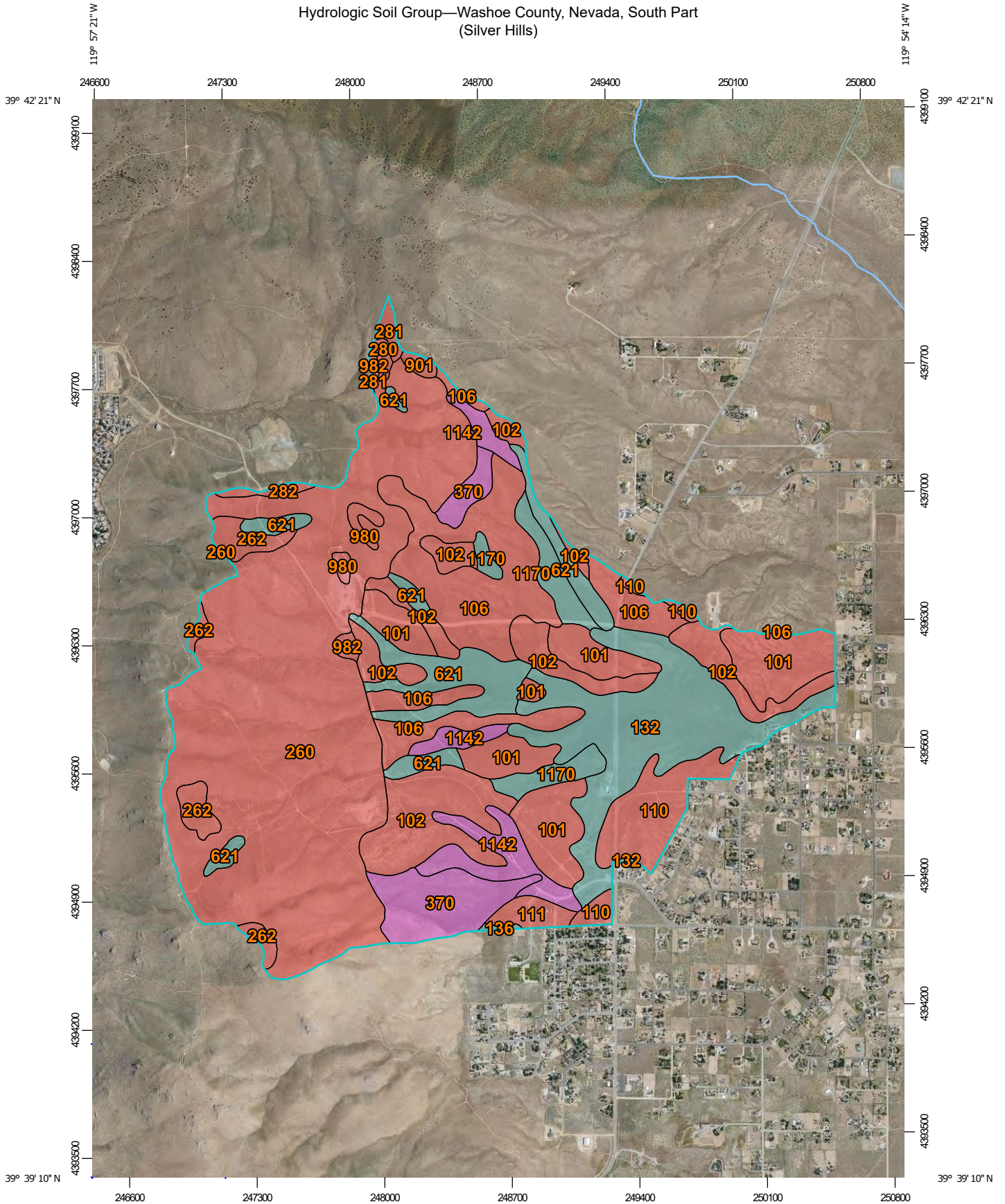
1 of 4

WRC ENGINEERING, INC.

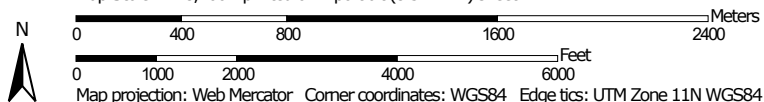


## SCS SOILS

Hydrologic Soil Group—Washoe County, Nevada, South Part  
(Silver Hills)



Map Scale: 1:28,700 if printed on A portrait (8.5" x 11") sheet.



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



Natural Resources  
Conservation Service

Web Soil Survey  
National Cooperative Soil Survey


WTM21-006  
2/1/2021  
Page 1 of 4  
**EXHIBIT D**



Hydrologic Soil Group—Washoe County, Nevada, South Part  
(Silver Hills)

**MAP LEGEND**

**Area of Interest (AOI)**









 Area of Interest (AOI)

**Soils**

**Soil Rating Polygons**





-  A
-  A/D
-  B
-  B/D
-  C
-  C/D
-  D
-  Not rated or not available

**Soil Rating Lines**


-  A
-  A/D
-  B
-  B/D
-  C
-  C/D
-  D
-  Not rated or not available

**Soil Rating Points**






-  A
-  A/D
-  B
-  B/D

-  C
-  C/D
-  D
-  Not rated or not available

**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.

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

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

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

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

Soil Survey Area: Washoe County, Nevada, South Part  
Survey Area Data: Version 17, Aug 26, 2020

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

Date(s) aerial images were photographed: Aug 1, 2018—Oct 1, 2018

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.

## Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
101	Aquinas sandy loam, 4 to 8 percent slopes	D	155.7	8.6%
102	Aquinas sandy loam, 8 to 15 percent slopes	D	174.2	9.6%
106	Aquinas sandy loam, 8 to 15 percent slopes, eroded	D	193.3	10.7%
110	Jowec variant sandy loam, 4 to 8 percent slopes	D	66.7	3.7%
111	Jowec variant-Greenbrae sandy loams, 4 to 15 percent slopes	D	14.8	0.8%
132	Greenbrae sandy loam, 2 to 4 percent slopes	C	177.1	9.8%
136	Greenbrae sandy loam, 4 to 8 percent slopes	C	1.5	0.1%
260	Acrelane-Rock outcrop complex, 15 to 50 percent slopes	D	669.5	37.1%
262	Acrelane very stony sandy loam, 8 to 15 percent slopes	D	35.7	2.0%
280	Wedekind gravelly loam, 8 to 15 percent slopes	D	4.0	0.2%
281	Wedekind gravelly loam, 15 to 30 percent slopes	D	6.0	0.3%
282	Wedekind gravelly sandy loam, 30 to 50 percent slopes	D	5.6	0.3%
370	Lemm very gravelly coarse sandy loam, 4 to 8 percent slopes	A	73.7	4.1%
621	Orr stony sandy loam, 4 to 15 percent slopes	C	102.4	5.7%
901	Flex very gravelly sandy loam, 30 to 50 percent slopes	D	4.4	0.2%
980	Koontz gravelly loam, 8 to 15 percent slopes	D	8.8	0.5%
982	Koontz stony loam, 15 to 30 percent slopes	D	5.9	0.3%



Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
1142	Bedell loamy sand, 4 to 8 percent slopes	A	61.5	3.4%
1170	Wedertz sandy loam, 2 to 4 percent slopes	C	45.4	2.5%
<b>Totals for Area of Interest</b>			<b>1,806.1</b>	<b>100.0%</b>

## Description

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

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

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

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

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

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

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

## Rating Options

*Aggregation Method:* Dominant Condition

*Component Percent Cutoff:* None Specified

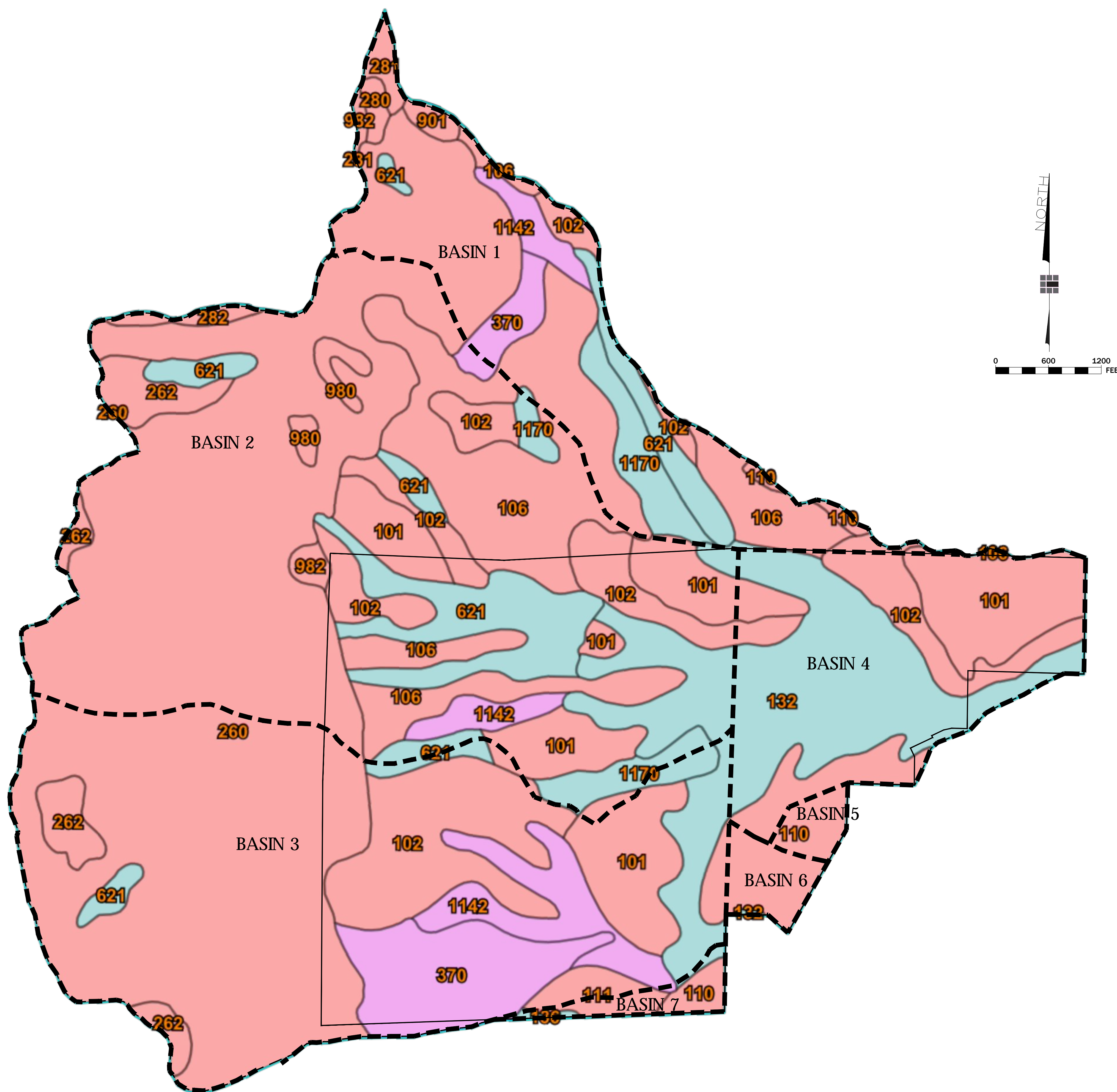
*Tie-break Rule:* Higher



# NRCS SOILS DISPLAY MAP - OVERALL/EXISTING

SILVER HILLS

FEBRUARY 2021



NRCS SOILS DISPLAY MAP - OVERALL/EXISTING



1000 Kiley Pkwy | Sparks Nevada 89436  
775.502.8552



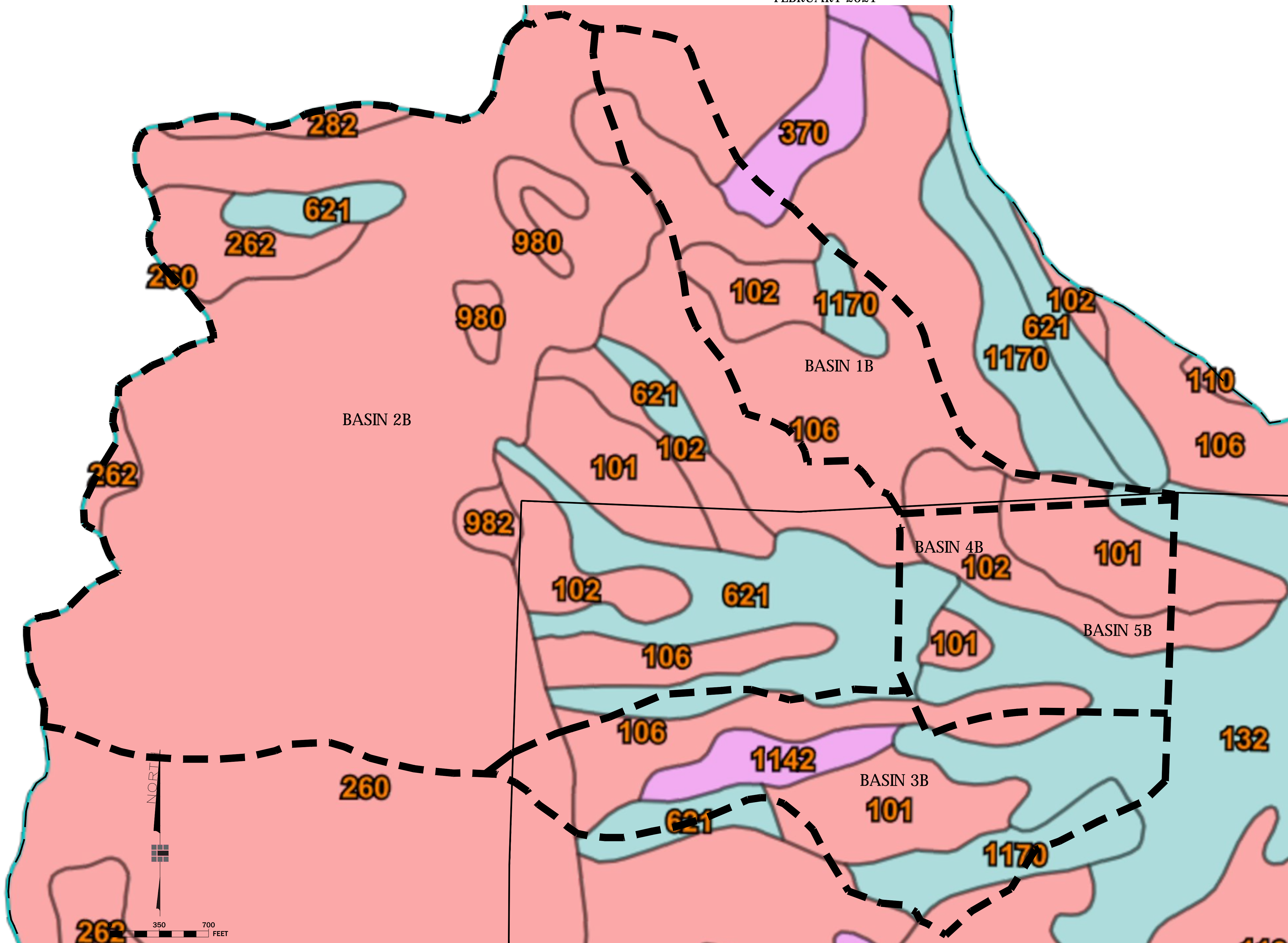




# NRCS SOILS DISPLAY MAP - PHASE 1 EXISTING

SILVER HILLS

FEBRUARY 2021



NRCS SOILS DISPLAY MAP - PHASE 1 (EXISTING)

**CHRISTY**  
CORPORATION  
1000 Kiley Pkwy | Sparks Nevada 89436  
775.502.8552



**HEC-HMS OUTPUT**

Project: Silver Hills Preliminary Simulation Run: 24 Hour 100YR Offsite

Start of Run: 01Jan2000, 00:00

Basin Model: Overall / EX

End of Run: 02Jan2000, 00:01

Meteorologic Model: 100 YR - 24 Hr

Compute Time: 03Feb2021, 14:21:29

Control Specifications: 24-Hour

Hydrologic Element	Drainage Area (MI <sup>2</sup> )	Peak Discharge (CFS)	Time of Peak	Volume (AC-FT)
Basin 1	0.35841	290.5	01Jan2000, 18:26	38.2
Basin 2	1.1610	803.4	01Jan2000, 18:37	138.7
Basin 3	0.89774	529.3	01Jan2000, 18:37	86.3
Basin 4	0.33328	293.1	01Jan2000, 18:25	38.2
Basin 5	0.0177406	29.1	01Jan2000, 18:10	2.4
Basin 6	0.0295522	49.1	01Jan2000, 18:09	3.9
Basin 7	0.0235439	31.4	01Jan2000, 18:13	2.9



Project: Silver Hills Preliminary Simulation Run: 24 Hour 5YR EX

Start of Run: 01Jan2000, 00:00

Basin Model: Existing

End of Run: 02Jan2000, 00:01

Meteorologic Model: 5 YR

Compute Time: 03Feb2021, 14:21:43

Control Specifications: 24-Hour

Hydrologic Element	Drainage Area (MI <sup>2</sup> )	Peak Discharge (CFS)	Time of Peak	Volume (AC-FT)
Basin 1A	0.36010	57.8	01Jan2000, 18:26	10.0
Basin 2A	0.49576	98.1	01Jan2000, 18:30	18.7
Basin 3A	0.26287	65.0	01Jan2000, 18:22	10.5
Basin 4A	0.453	117.4	01Jan2000, 18:19	17.5
Basin 5A	0.400	70.8	01Jan2000, 18:24	11.6
Basin 6A	0.44374	31.6	01Jan2000, 18:23	5.5
Basin 7A	0.0235439	7.6	01Jan2000, 18:12	0.8
Basin 8A	0.31725	89.3	01Jan2000, 18:12	10.3
Basin 9A	0.0177406	7.0	01Jan2000, 18:10	0.7
Basin 10A	0.0295522	11.8	01Jan2000, 18:09	1.2
Basin 1B	0.13844	29.5	01Jan2000, 18:24	5.0
Basin 2B	0.75859	144.5	01Jan2000, 18:31	28.4
Basin 3B	0.16193	27.9	01Jan2000, 18:19	4.0
Basin 4B	0.0523427	17.7	01Jan2000, 18:11	2.0
Basin 5B	0.0487574	13.4	01Jan2000, 18:12	1.5

Project: Silver Hills Preliminary Simulation Run: 24 Hour 5 YR Proposed

Start of Run: 01Jan2000, 00:00

Basin Model: Proposed

End of Run: 02Jan2000, 00:01

Meteorologic Model: 5 YR

Compute Time: 03Feb2021, 14:21:48

Control Specifications: 24-Hour

Hydrologic Element	Drainage Area (MI <sup>2</sup> )	Peak Discharge (CFS)	Time of Peak	Volume (AC-FT)
Basin 5A	0.40041	180.2	01Jan2000, 18:15	24.5
Basin 6A	0.44374	146.6	01Jan2000, 18:15	19.0
Basin 7A	0.0235439	13.3	01Jan2000, 18:11	1.6
Basin 8A	0.31725	148.4	01Jan2000, 18:15	20.4
Basin 4B	0.0523427	32.6	01Jan2000, 18:09	3.6
Basin 5B	0.0487574	28.2	01Jan2000, 18:09	3.1



Project: Silver Hills Preliminary Simulation Run: 24 Hour 100YR EX

Start of Run: 01Jan2000, 00:00 Basin Model: Existing  
 End of Run: 02Jan2000, 00:01 Meteorologic Model: 100 YR - 24 Hr  
 Compute Time: 03Feb2021, 14:21:23 Control Specifications: 24-Hour

Hydrologic Element	Drainage Area (MI <sup>2</sup> )	Peak Discharge (CFS)	Time of Peak	Volume (AC-FT)
Basin 1A	0.36010	291.7	01Jan2000, 18:26	38.6
Basin 2A	0.49576	418.6	01Jan2000, 18:29	62.6
Basin 3A	0.26287	272.6	01Jan2000, 18:22	34.4
Basin 4A	0.453	503.8	01Jan2000, 18:19	58.1
Basin 5A	0.400	350.5	01Jan2000, 18:23	43.8
Basin 6A	0.44374	291.9	01Jan2000, 18:21	31.6
Basin 7A	0.0235439	34.0	01Jan2000, 18:11	2.9
Basin 8A	0.31725	422.5	01Jan2000, 18:12	37.2
Basin 9A	0.0177406	29.4	01Jan2000, 18:10	2.4
Basin 10A	0.0295522	49.7	01Jan2000, 18:09	3.9
Basin 1B	0.13844	130.2	01Jan2000, 18:24	17.0
Basin 2B	0.75859	616.6	01Jan2000, 18:31	95.3
Basin 3B	0.16193	154.1	01Jan2000, 18:18	16.2
Basin 4B	0.0523427	77.6	01Jan2000, 18:11	6.7
Basin 5B	0.0487574	65.3	01Jan2000, 18:12	5.5

Project: Silver Hills Preliminary Simulation Run: 24 Hour 100YR Proposed

Start of Run: 01Jan2000, 00:00

Basin Model: Proposed

End of Run: 02Jan2000, 00:01

Meteorologic Model: 100 YR - 24 Hr

Compute Time: 03Feb2021, 14:21:36

Control Specifications: 24-Hour

Hydrologic Element	Drainage Area (MI <sup>2</sup> )	Peak Discharge (CFS)	Time of Peak	Volume (AC-FT)
Basin 5A	0.40041	623.2	01Jan2000, 18:14	66.7
Basin 6A	0.44374	600.6	01Jan2000, 18:15	60.4
Basin 7A	0.0235439	44.1	01Jan2000, 18:11	4.1
Basin 8A	0.31725	502.5	01Jan2000, 18:14	54.3
Basin 4B	0.0523427	107.2	01Jan2000, 18:09	9.4
Basin 5B	0.0487574	96.7	01Jan2000, 18:09	8.3



## **DETENTION / RETENTION CALCULATIONS**

Project: Silver Hills Preliminary Simulation Run: 10 Day EX

Start of Run: 01Jan2000, 00:00

Basin Model: Existing

End of Run: 10Jan2000, 00:01

Meteorologic Model: 100 YR - 10 DAY

Compute Time: 03Feb2021, 14:20:52

Control Specifications: 10 Day

Hydrologic Element	Drainage Area (MI <sup>2</sup> )	Peak Discharge (CFS)	Time of Peak	Volume (AC-FT)
Basin 1A	0.36010	409.5	08Jan2000, 12:25	147.8
Basin 2A	0.49576	540.2	08Jan2000, 12:29	219.8
Basin 3A	0.26287	346.9	08Jan2000, 12:22	118.1
Basin 4A	0.453	648.2	08Jan2000, 12:19	201.5
Basin 5A	0.400	487.2	08Jan2000, 12:23	165.7
Basin 6A	0.44374	510.0	08Jan2000, 12:20	150.4
Basin 7A	0.0235439	44.7	08Jan2000, 12:11	10.3
Basin 8A	0.31725	570.9	08Jan2000, 12:12	134.9
Basin 9A	0.0177406	37.3	08Jan2000, 12:09	8.0
Basin 10A	0.0295522	63.2	08Jan2000, 12:09	13.3
Basin 1B	0.13844	170.5	08Jan2000, 12:24	60.5
Basin 2B	0.75859	796.3	08Jan2000, 12:30	335.9
Basin 3B	0.16193	224.8	08Jan2000, 12:18	64.2
Basin 4B	0.0523427	100.6	08Jan2000, 12:11	23.1
Basin 5B	0.0487574	89.5	08Jan2000, 12:11	20.4



Project: Silver Hills Preliminary Simulation Run: 10 Day Proposed

Start of Run: 01Jan2000, 00:00

Basin Model: Proposed

End of Run: 10Jan2000, 00:01

Meteorologic Model: 100 YR - 10 DAY

Compute Time: 03Feb2021, 14:20:59

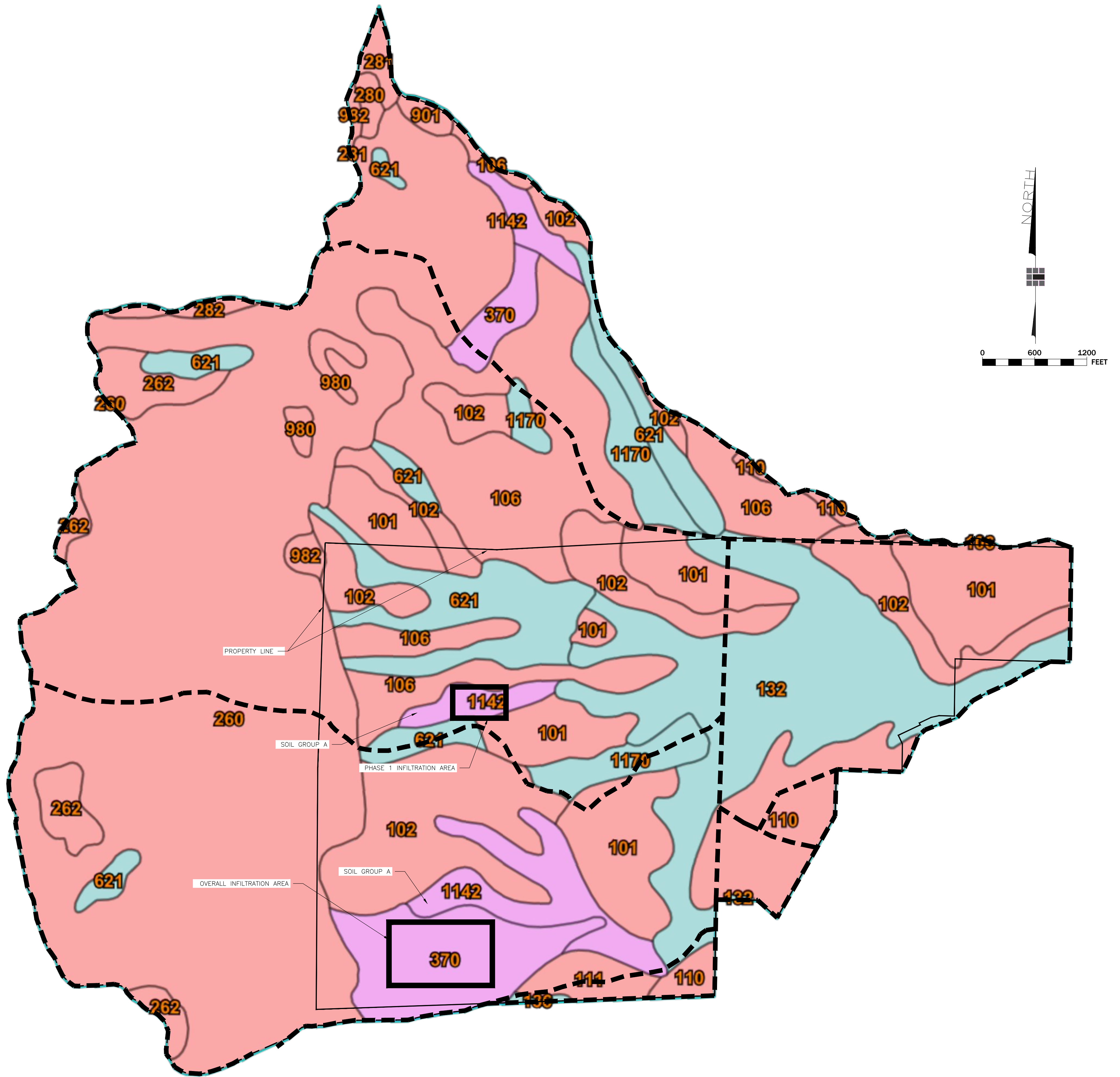
Control Specifications: 10 Day

Hydrologic Element	Drainage Area (MI <sup>2</sup> )	Peak Discharge (CFS)	Time of Peak	Volume (AC-FT)
Basin 5A	0.40041	710.1	08Jan2000, 12:14	200.5
Basin 6A	0.44374	752.6	08Jan2000, 12:14	202.5
Basin 7A	0.0235439	49.1	08Jan2000, 12:11	12.1
Basin 8A	0.31725	565.8	08Jan2000, 12:14	160.8
Basin 4B	0.0523427	118.6	08Jan2000, 12:09	27.0
Basin 5B	0.0487574	109.4	08Jan2000, 12:09	24.6

# INFILTRATION EXHIBIT

SILVER HILLS

FEBRUARY 2021



INFILTRATION EXHIBIT



1000 Kiley Pkwy | Sparks Nevada 89436  
775.502.8552



## CHANNEL CALCULATIONS

## Worksheet for CHANNEL A

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth
Input Data	
Roughness Coefficient	0.035
Channel Slope	0.010 ft/ft
Left Side Slope	2.000 H:V
Right Side Slope	2.000 H:V
Bottom Width	0.00 ft
Discharge	130.20 cfs
Results	
Normal Depth	3.4 ft
Flow Area	23.2 ft <sup>2</sup>
Wetted Perimeter	15.2 ft
Hydraulic Radius	1.5 ft
Top Width	13.62 ft
Critical Depth	3.0 ft
Critical Slope	0.018 ft/ft
Velocity	5.62 ft/s
Velocity Head	0.49 ft
Specific Energy	3.89 ft
Froude Number	0.759
Flow Type	Subcritical
GVF Input Data	
Downstream Depth	0.0 ft
Length	0.0 ft
Number Of Steps	0
GVF Output Data	
Upstream Depth	0.0 ft
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	3.4 ft
Critical Depth	3.0 ft
Channel Slope	0.010 ft/ft
Critical Slope	0.018 ft/ft



## Worksheet for CHANNEL B

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth
Input Data	
Roughness Coefficient	0.035
Channel Slope	0.008 ft/ft
Left Side Slope	2.000 H:V
Right Side Slope	2.000 H:V
Bottom Width	5.00 ft
Discharge	616.80 cfs
Results	
Normal Depth	5.2 ft
Flow Area	80.8 ft <sup>2</sup>
Wetted Perimeter	28.4 ft
Hydraulic Radius	2.8 ft
Top Width	25.92 ft
Critical Depth	4.6 ft
Critical Slope	0.014 ft/ft
Velocity	7.63 ft/s
Velocity Head	0.90 ft
Specific Energy	6.13 ft
Froude Number	0.762
Flow Type	Subcritical
GVF Input Data	
Downstream Depth	0.0 ft
Length	0.0 ft
Number Of Steps	0
GVF Output Data	
Upstream Depth	0.0 ft
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	5.2 ft
Critical Depth	4.6 ft
Channel Slope	0.008 ft/ft
Critical Slope	0.014 ft/ft

## Worksheet for CHANNEL C

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth
Input Data	
Roughness Coefficient	0.035
Channel Slope	0.033 ft/ft
Left Side Slope	2.000 H:V
Right Side Slope	2.000 H:V
Bottom Width	5.00 ft
Discharge	1,104.80 cfs
Results	
Normal Depth	4.9 ft
Flow Area	73.6 ft <sup>2</sup>
Wetted Perimeter	27.1 ft
Hydraulic Radius	2.7 ft
Top Width	24.78 ft
Critical Depth	6.1 ft
Critical Slope	0.013 ft/ft
Velocity	15.01 ft/s
Velocity Head	3.50 ft
Specific Energy	8.45 ft
Froude Number	1.535
Flow Type	Supercritical
GVF Input Data	
Downstream Depth	0.0 ft
Length	0.0 ft
Number Of Steps	0
GVF Output Data	
Upstream Depth	0.0 ft
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	4.9 ft
Critical Depth	6.1 ft
Channel Slope	0.033 ft/ft
Critical Slope	0.013 ft/ft





**PRELIMINARY REPORT**

Assessor's Parcel No.: 087-390-10 Order No.: 124624-RTO  
Property Address: 11305 Red Rock Road  
Reno NV, 89508  
Buyers/Borrowers: Lifestyle Homes TND LLC

In response to the above referenced application for a Policy of Title Insurance, **Stewart Title Guaranty Company** hereby reports that it is prepared to issue, or cause to be issued, as of the date hereof, a Policy or Policies of Title Insurance describing the land and the estate or interest therein, hereinafter set forth, insuring against loss which may be sustained by reason of any defect, lien or encumbrance not shown or referred to as an Exception below or not excluded from coverage pursuant to the printed Schedules, Conditions and Stipulations of said Policy forms. The printed Exceptions and Exclusions from the coverage of said Policy or Policies are set forth on the attached cover. The policy to be issued may contain an arbitration clause. When the Amount of Insurance is less than that set forth in the arbitration clause, all arbitrable matters shall be arbitrated at the option of either the Company or the Insured as the exclusive remedy of the parties. Limitations on Covered Risks applicable to the CLTA and ALTA Homeowner's Policies of Title Insurance which establish a Deductible Amount and a Maximum Dollar Limit of Liability for certain coverages are also set forth on the attached cover. Copies of the Policy forms should be read. They are available from the office which issued this report.

This report (and any supplements or amendments hereto) is issued solely for the purpose of facilitating the issuance of a policy of title insurance and no liability is assumed hereby. If it is desired that liability be assumed prior to the issuance of a policy of title insurance, a Binder or Commitment should be requested.

**Dated as of 01/15/2021 at 07:30 am**

Western Title Company, an authorized agent

The form of Policy of Title Insurance contemplated by this report is:

**Report Only**

The estate or interest in the land hereinafter described or referred to covered by this Report is:

**Fee Simple**

Title to said estate or interest at the date hereof is vested in: **Lifestyle Homes, TND, LLC, a Nevada Limited Liability Company**

\_\_\_\_\_  
**Initial**

\_\_\_\_\_  
**Initial**

\_\_\_\_\_  
**Initial**

\_\_\_\_\_  
**Initial**

**Please read the exceptions shown or referred to below and the Exceptions and Exclusions set forth on the attached cover of this report carefully. The exceptions and exclusions are meant to provide you with notice of matters which are not covered under the terms of the title insurance policy and should be carefully considered. It is important to note that this Preliminary Report is not a written representation as to the condition of title and may not list all liens, defects, and encumbrances affecting title to the land.**

Order No. **124624-RTO**

### **EXCEPTIONS**

At the date hereof exceptions to coverage in addition to the printed Exceptions and Exclusions in said policy form would be as follows:

1. Taxes or assessments which are not shown as existing liens by the records of any taxing authority that levies taxes or assessments on real property or by the public records. Proceedings by a public agency which may result in taxes or assessments, or notices of such proceedings, whether or not shown by the records of such agency or by the public records.
2. Any facts, rights, interests or claims which are not shown by the public records but which could be ascertained by an inspection of the land or which may be asserted by persons in possession thereof.
3. Easements, liens or encumbrances, or claims thereof, which are not shown by the public records.
4. Discrepancies, conflicts in boundary lines, shortage in area, encroachments, or any other facts which a correct survey would disclose, and which are not shown by the public records.
5. (a) Unpatented mining claims; (b) reservations or exceptions in patents or in Acts authorizing the issuance thereof; (c) water rights, claims or title to water, whether or not the matters excepted under (a), (b) or (c) are shown by the public records.
6. Any lien or right to a lien for services, labor or material not shown by the Public Records.
7. The lien, if any, of supplemental taxes, assessed pursuant to the provision of the Nevada Revised Statutes.
8. Any liens that may be created for Delinquent Sewer Charges by reason of said premises lying within the **City of Reno/Sparks, the County of Washoe (Sewer)**. Contact the following for Sewer/Water, and/or Tax Assessment information: **City of Reno Sewer at (775) 334-2095; City of Sparks Sewer at (775) 353-2360; County of Washoe Sewer at (775) 954-4601; Washoe County Treasurer at (775) 328-2510**. Delinquent amounts may be added to and collected through the secured real property tax roll of the **Washoe County Assessor's Office** and included in the tax installments referenced above.
9. Any liens that may be created for delinquent waste management charges pursuant to NRS 444.520.
10. Water rights, claims or title to water, whether or not recorded.
11. Minerals of whatsoever kind, subsurface and surface substances, including but not limited to coal, lignite, oil, gas, uranium, clay, rock, sand and gravel in, on, under and that may be produced from the Land, together with all rights, privileges, and immunities relating thereto, whether or not appearing in the Public Records or listed in Schedule B. The Company makes no representation as to the present ownership of any such interests. There may be leases, grants, exceptions or reservations of interest that are not listed.



12. Rights of way for any existing roads, trails, canals, streams, ditches, drain ditches, pipe, pole or transmission lines traversing said premises.
13. Provisions, Reservations, Easements and the effect thereof, contained in the Patent from the **United States of America**, recorded on **July 20, 1962, in Book G, Page 203** as Document No. **363425**, Patent Records of Washoe County, Nevada.
14. Easement for drilling, installing and maintaining two (2) water wells for irrigation, domestic and quasi municipal purposes, and incidental purposes, granted by **an instrument**, recorded on **January 26, 1972, in Book 609, Page 445** as Document No. **232846**, Official Records of Washoe County, Nevada.
15. Easement for public utilities, and incidental purposes, granted by **an instrument**, recorded on **June 28, 1973, in Book 742, Page 725** as Document No. **291873**, Official Records of Washoe County, Nevada.
16. Matters as disclosed on Record of Survey filed in the office of the County Recorder of Washoe County, State of Nevada on **February 13, 1976**, as Document No. **396369**. Survey Map No. **938**.
17. Easement for underground conduits, and incidental purposes, granted by **an instrument**, recorded on **March 9, 1978, in Book 1207, Page 445** as Document No. **518573**, Official Records of Washoe County, Nevada.
18. A document entitled "License," recorded on **April 6, 1979, in Book 1375, Page 891** as Document No. **598136**, Official Records of Washoe County, Nevada.
19. Easement for underground utility lines, and incidental purposes, granted by **an instrument**, recorded on **September 7, 1979, in Book 1427, Page 644** as Document No. **628200**, Official Records of Washoe County, Nevada.
20. Easement for overhead and underground electric distribution, communication and gas distribution & transmission, and incidental purposes, granted by **an instrument**, recorded on **May 5, 2000**, as Document No. **2444870**, Official Records of Washoe County, Nevada.
21. Easement for overhead electric distribution and communication, and incidental purposes, granted by **an instrument**, recorded on **May 10, 2001**, as Document No. **2552144**, Official Records of Washoe County, Nevada.
22. Matters as disclosed on Record of Survey filed in the office of the County Recorder of Washoe County, State of Nevada on **March 4, 2004**, as Document No. **3002373**. Survey Map No. **4345**.
23. Easement for public access road, and incidental purposes, granted by **an instrument**, recorded on **March 16, 2004**, as Document No. **3007444**, Official Records of Washoe County, Nevada.
24. Easement for ingress and egress, and incidental purposes, granted by **an instrument**, recorded on **November 23, 2005**, as Document No. **3312069**, Official Records of Washoe County, Nevada.
25. A document entitled "Bill No. 1660, Ordinance No. 1484, An Ordinance pursuant to Nevada Revised Statutes 278.0201 Through 278.0207 Adopting a Development Agreement With Lifestyle Homes TND, LLC (Case No. DA 09-001) for Tentative Subdivision Map (Case No. TM 09-001) for Silver Hills Subdivision, recorded on **March 6, 2012**, as Document No. **4090817**, Official Records of Washoe County, Nevada.
26. A document entitled "Amended and Restated Development Agreement (Silver Hills Subdivision), recorded on **February 28, 2017**, as Document No. **4683580**, Official Records of Washoe County, Nevada.
27. A document entitled Ordinance Approving "Amended and Restated Development Agreement (Silver Hills)" recorded on **February 28, 2017**, as Document No. **4683579**, Official Records of Washoe County, Nevada.

Said document was re-recorded on **March 1, 2017**, as Document No. **4684254**, Official Records of Washoe County, Nevada.

28. Rights of parties in possession.
29. The requirement that an Owner's Declaration/Affidavit be completed, and supplied for review prior to the issuance of a policy of title insurance.
30. A property inspection will be made prior to recording the trust deed to be insured. If such inspection discloses any evidence of commencement of a work of improvement, the coverage for mechanic's lien insurance will be deleted from the policy, unless all the necessary documents for indemnification have been submitted to the Company and such indemnification has been formally approved by the Company, prior to recording the trust deed.
31. Any liens that may be filed for work of improvement in progress or recently completed on said land. (NO NOTICE OF COMPLETION HAS BEEN RECORDED)
32. Prior to the issuance of any policy of title insurance, the following must be furnished to the Company with respect to **Lifestyle Homes, TND, LLC, a Nevada Limited Liability Company**:  
  
This Company will require a copy of the articles of organization for **Lifestyle Homes, TND, LLC, a Nevada Limited Liability Company**, and any certificates of amendments filed with the Secretary of State, together with copies of any management agreements or operating agreements, together with a current list of all members of said limited liability company.
33. Any notes following the legal description herein referencing NRS 111.312 are required for recording purposes only and will not be insured in any policy of title insurance.

NOTE: Taxes for the fiscal year **2020-2021**, in the amount of **\$2,695.89** have been paid in full. (APN **087-390-10**)

**NOTE: THIS REPORT IS BEING ISSUED FOR INFORMATION PURPOSES ONLY, NO LIABILITY ASSUMED.**

THE FOLLOWING NOTES ARE FOR INFORMATION PURPOSES ONLY:

**WESTERN TITLE COMPANY RESERVES THE RIGHT TO AMEND THIS COMMITMENT/REPORT AT ANY TIME.**

**\*\*\*\*\*ATTENTION LENDERS\*\*\*\*\***

*THE 100 ENDORSEMENT IS NO LONGER BEING OFFERED. THE REPLACEMENT ALTERNATIVE IS THE ALTA 9.10-06 AND IS NOW REFLECTED IN THE ALTA SUPPLEMENT IN THE COMMITMENT/REPORT.*

NOTE: Any notes following the legal description (if any) referencing NRS 111.312 are required for recording purposes only and will not be insured in any policy of title insurance.

NOTE: A search of the Official Records for the county referenced in the above order number, for the **24** months immediately preceding the date above discloses the following instruments purporting to convey the title to said land: **NONE**

\_\_\_\_\_  
Initial

\_\_\_\_\_  
Initial

\_\_\_\_\_  
Initial

\_\_\_\_\_  
Initial



NOTE: If any current work of improvements have been made on the herein described real property (within the last 90 days) and this Commitment/Report is issued in contemplation of a Policy of Title Insurance which affords mechanic lien priority coverage (i.e. ALTA POLICY); the following information must be supplied for review and approval prior to the closing and issuance of said Policy: (a) Copy of Indemnity Agreement; (b) Financial Statements; (c) Construction Loan Agreement; (d) If any current work of improvements have been made on the herein described real property Building Construction Contract between borrower and contractor; (e) Cost breakdown of construction; (f) Appraisal; (g) Copy of Voucher or Disbursement Control Statement (if project is complete).

NOTE: This commitment/report makes no representations as to water, water rights, minerals or mineral rights and no reliance can be made upon this commitment/report or a resulting title policy for such rights or ownership.

NOTE: Notwithstanding anything to the contrary in this commitment/report, if the policy to be issued is other than an ALTA Owner's Policy (6/17/06) or ALTA Loan Policy (6/17/06), the policy may not contain an arbitration clause, or the terms of the arbitration clause may be different from those set forth in this commitment/report. If the policy does contain an arbitration clause, and the Amount of Insurance is less than the amount, if any, set forth in the arbitration clause, all arbitrable matters shall be arbitrated at the option of either the Company or the Insured as the exclusive remedy of the parties.

NOTE: The map, if any, attached hereto is subject to the following disclaimer:

WESTERN TITLE COMPANY does not represent this plat as a survey of the land indicated hereon, although believed to be correct, no liability is assumed as to the accuracy thereof.

**Legal Description**

All that certain real property situate in the County of Washoe, State of Nevada, described as follows:

A parcel of land situate within the East Half of Section 23, Township 21 North, Range 18 East, MDM, Washoe County, Nevada more particularly described as follows:

Beginning at the intersection of the Westerly Right-of-Way of Red Rock Road and the South Line of said Section from which the Southeast Corner of said Section bears North 88°00'52" East a distance of 80.10 feet;

thence with said Section Line South 88°00'52" West a distance of 2584.75 feet to the South Quarter Corner of said Section;

thence with the center Section Line of said Section North 00°48'19" East a distance of 2718.57 feet to the Center Section;

thence continuing with said Center Section Line North 00°47'43" East a distance of 2496.34 feet to the North Quarter Corner of said Section;

thence with the North Line of said Section North 87°03'14" East a distance of 2594.37 feet to a point on said Right-of-Way;

thence with said Right-of-Way South 00°52'40" West a distance of 2625.94 feet;

thence South 00°52'43" West a distance of 78.89 feet;

thence departing said Right-of-Way North 89°07'17" West a distance of 290.40 feet;

thence South 00°52'43" West a distance of 250.00 feet;

thence South 89°07'17" East a distance of 290.40 feet to a point on said Right-of-Way;

thence with said Right-of-Way South 00°52'43" West a distance of 2303.98 feet to the Point of Beginning.

EXCEPTING THEREFROM all that land described in Exhibit "A" of Deed Document 631016, recorded September 21, 1979 in Book 1432, Page 384 more particularly described as follows:

Beginning at a point from which the Southeast Corner of said Section bears South 79°32'24" East a distance of 1165.52 feet;

thence North 89°08'48" West a distance of 181.50 feet;

thence North 00°51'12" East a distance of 100.00 feet;

thence South 89°08'48" East a distance of 183.24 feet;

thence from a tangent which bears South 04°08'56" West, along a circular curve to the left with a radius of 1054.82 feet and a central angle of 03°17'44" an arc length of 60.67 feet;

thence South 00°51'12" West a distance of 39.36 feet to the Point of Beginning.

ALSO EXCEPTING THEREFROM all that land described in Exhibit "B" of Deed Document 631016, recorded September 21, 1979 in Book 1432, Page 384 more particularly described as follows:

Beginning at a point from which the Southeast Corner of said Section bears South 23°43'54" East a distance of 917.01 feet;

\_\_\_\_\_  
Initial

\_\_\_\_\_  
Initial

\_\_\_\_\_  
Initial

\_\_\_\_\_  
Initial



thence North 08°48'38" West a distance of 125.00 feet;

thence North 81°11'22" East a distance of 50.00 feet;

thence South 08°48'38" East a distance of 50.00 feet;

thence South 81°11'22" West a distance of 30.00 feet;

thence South 08°48'38" East a distance of 75.45 feet;

thence from a tangent which bears South 83°47'41" West along a circular curve to the left with a radius of 440.00 feet and a central angle of 02°36'19" a distance of 20.01 feet to the Point of Beginning.

NOTE: The above metes and bounds description appeared previously in that certain Boundary Line Adjustment recorded in the office of the County Recorder of Washoe County, Nevada on March 4, 2004, as Document No. 3002372 of Official Records.

Assessor's Parcel Number(s):  
087-390-10

Exhibit A (Revised 02-07-14)

CALIFORNIA LAND TITLE ASSOCIATION  
STANDARD COVERAGE POLICY – 1990

EXCLUSIONS FROM COVERAGE

The following matters are expressly excluded from the coverage of this policy and the Company will not pay loss or damage, costs, attorneys' fees or expenses which arise by reason of:

1. (a) Any law, ordinance or governmental regulation (including but not limited to building or zoning laws, ordinances, or regulations) restricting, regulating, prohibiting or relating (i) the occupancy, use, or enjoyment of the land; (ii) the character, dimensions or location of any improvement now or hereafter erected on the land; (iii) a separation in ownership or a change in the dimensions or area of the land or any parcel of which the land is or was a part; or (iv) environmental protection, or the effect of any violation of these laws, ordinances or governmental regulations, except to the extent that a notice of the enforcement thereof or a notice of a defect, lien, or encumbrance resulting from a violation or alleged violation affecting the land has been recorded in the public records at Date of Policy.
- (b) Any governmental police power not excluded by (a) above, except to the extent that a notice of the exercise thereof or notice of a defect, lien or encumbrance resulting from a violation or alleged violation affecting the land has been recorded in the public records at Date of Policy.
2. Rights of eminent domain unless notice of the exercise thereof has been recorded in the public records at Date of Policy, but not excluding from coverage any taking which has occurred prior to Date of Policy which would be binding on the rights of a purchaser for value without knowledge.
3. Defects, liens, encumbrances, adverse claims or other matters:
  - (a) whether or not recorded in the public records at Date of Policy, but created, suffered, assumed or agreed to by the insured claimant;
  - (b) not known to the Company, not recorded in the public records at Date of Policy, but known to the insured claimant and not disclosed in writing to the Company by the insured claimant prior to the date the insured claimant became an insured under this policy;
  - (c) resulting in no loss or damage to the insured claimant;
  - (d) attaching or created subsequent to Date of Policy; or
  - (e) resulting in loss or damage which would not have been sustained if the insured claimant had paid value for the insured mortgage or for the estate or interest insured by this policy.
4. Unenforceability of the lien of the insured mortgage because of the inability or failure of the insured at Date of Policy, or the inability or failure of any subsequent owner of the indebtedness, to comply with the applicable doing business laws of the state in which the land is situated.
5. Invalidity or unenforceability of the lien of the insured mortgage, or claim thereof, which arises out of the transaction evidenced by the insured mortgage and is based upon usury or any consumer credit protection or truth in lending law.
6. Any claim, which arises out of the transaction vesting in the insured the estate of interest insured by this policy or the transaction creating the interest of the insured lender, by reason of the operation of federal bankruptcy, state insolvency or similar creditors' rights laws.



EXCEPTIONS FROM COVERAGE - SCHEDULE B, PART I

This policy does not insure against loss or damage (and the Company will not pay costs, attorneys' fees or expenses) which arise by reason of:

1. Taxes or assessments which are not shown as existing liens by the records of any taxing authority that levies taxes or assessments on real property or by the public records.  
  
Proceedings by a public agency which may result in taxes or assessments, or notices of such proceedings, whether or not shown by the records of such agency or by the public records.
2. Any facts, rights, interests, or claims which are not shown by the public records but which could be ascertained by an inspection of the land or which may be asserted by persons in possession thereof.
3. Easements, liens or encumbrances, or claims thereof, not shown by the public records.
4. Discrepancies, conflicts in boundary lines, shortage in area, encroachments, or any other facts which a correct survey would disclose, and which are not shown by the public records.
5. (a) Unpatented mining claims; (b) reservations or exceptions in patents or in Acts authorizing the issuance thereof; (c) water rights, claims or title to water, whether or not the matters excepted under (a), (b) or (c) are shown by the public records.
6. Any lien or right to a lien for services, labor or material not shown by the public records.

CLTA HOMEOWNER'S POLICY OF TITLE INSURANCE (12-02-13)  
ALTA HOMEOWNER'S POLICY OF TITLE INSURANCE

EXCLUSIONS

In addition to the Exceptions in Schedule B, You are not insured against loss, costs, attorneys' fees, and expenses resulting from:

1. Governmental police power, and the existence or violation of those portions of any law or government regulation concerning:
  - a. building;
  - b. zoning;
  - c. land use;
  - d. improvements on the Land;
  - e. land division; and
  - f. environmental protection.

This Exclusion does not limit the coverage described in Covered Risk 8.a., 14, 15, 16, 18, 19, 20, 23 or 27.

2. The failure of Your existing structures, or any part of them, to be constructed in accordance with applicable building codes. This Exclusion does not limit the coverage described in Covered Risk 14 or 15.
3. The right to take the Land by condemning it. This Exclusion does not limit the coverage described in Covered Risk 17.
4. Risks:
  - a. that are created, allowed, or agreed to by You, whether or not they are recorded in the Public Records;
  - b. that are Known to You at the Policy Date, but not to Us, unless they are recorded in the Public Records at the Policy Date;
  - c. that result in no loss to You; or
  - d. that first occur after the Policy Date - this does not limit the coverage described in Covered Risk 7, 8.e., 25, 26, 27 or 28.
5. Failure to pay value for Your Title.
6. Lack of a right:

- a. to any land outside the area specifically described and referred to in paragraph 3 of Schedule A; and
- b. in streets, alleys, or waterways that touch the Land.

This Exclusion does not limit the coverage described in Covered Risk 11 or 21.

- 7. The transfer of the Title to You is invalid as a preferential transfer or as a fraudulent transfer or conveyance under federal bankruptcy, state insolvency, or similar creditors' rights laws.
- 8. Contamination, explosion, fire, flooding, vibration, fracturing, earthquake, or subsidence.
- 9. Negligence by a person or an Entity exercising a right to extract or develop minerals, water, or any other substances.

### *LIMITATIONS ON COVERED RISKS*

Your insurance for the following Covered Risks is limited on the Owner's Coverage Statement as follows:

For Covered Risk 16, 18, 19, and 21 Your Deductible Amount and Our Maximum Dollar Limit of Liability shown in Schedule A.

The deductible amounts and maximum dollar limits shown on Schedule A are as follows:

	<u>Your Deductible Amount</u>	<u>Our Maximum Dollar Limit of Liability</u>
Covered Risk 16:	1.00% of Policy Amount Shown in Schedule A or \$2,500.00 _____ (whichever is less)	\$ 10,000.00 _____
Covered Risk 18:	1.00% of Policy Amount Shown in Schedule A or \$5,000.00 _____ (whichever is less)	\$25,000.00 _____
Covered Risk 19:	1.00% of Policy Amount Shown in Schedule A or \$5,000.00 _____ (whichever is less)	\$25,000.00 _____
Covered Risk 21:	1.00% of Policy Amount Shown in Schedule A or \$2,500.00 _____ (whichever is less)	\$ 5,000.00 _____

#### 2006 ALTA LOAN POLICY (06-17-06)

#### EXCLUSIONS FROM COVERAGE

The following matters are expressly excluded from the coverage of this policy, and the Company will not pay loss or damage, costs, attorneys' fees, or expenses that arise by reason of:

- 1. (a) Any law, ordinance, permit, or governmental regulation (including those relating to building and zoning) restricting, regulating, prohibiting, or relating to
  - (i) the occupancy, use, or enjoyment of the Land;
  - (ii) the character, dimensions, or location of any improvement erected on the Land;
  - (iii) the subdivision of land; or
  - (iv) environmental protection;

or the effect of any violation of these laws, ordinances, or governmental regulations. This Exclusion 1(a) does not modify or limit the coverage provided under Covered Risk 5.

\_\_\_\_\_  
Initial

\_\_\_\_\_  
Initial

\_\_\_\_\_  
Initial

\_\_\_\_\_  
Initial



- (b) Any governmental police power. This Exclusion 1(b) does not modify or limit the coverage provided under Covered Risk 6.
- 2. Rights of eminent domain. This Exclusion does not modify or limit the coverage provided under Covered Risk 7 or 8.
- 3. Defects, liens, encumbrances, adverse claims, or other matters
  - (a) created, suffered, assumed, or agreed to by the Insured Claimant;
  - (b) not Known to the Company, not recorded in the Public Records at Date of Policy, but Known to the Insured Claimant and not disclosed in writing to the Company by the Insured Claimant prior to the date the Insured Claimant became an Insured under this policy;
  - (c) resulting in no loss or damage to the Insured Claimant;
  - (d) attaching or created subsequent to Date of Policy (however, this does not modify or limit the coverage provided under Covered Risk 11, 13 or 14); or
  - (e) resulting in loss or damage that would not have been sustained if the Insured Claimant had paid value for the Insured Mortgage.
- 4. Unenforceability of the lien of the Insured Mortgage because of the inability or failure of an Insured to comply with applicable doing-business laws of the state where the Land is situated.
- 5. Invalidity or unenforceability in whole or in part of the lien of the Insured Mortgage that arises out of the transaction evidenced by the Insured Mortgage and is based upon usury or any consumer credit protection or truth-in-lending law.
- 6. Any claim, by reason of the operation of federal bankruptcy, state insolvency, or similar creditors' rights laws, that the transaction creating the lien of the Insured Mortgage, is
  - (a) a fraudulent conveyance or fraudulent transfer, or
  - (b) a preferential transfer for any reason not stated in Covered Risk 13(b) of this policy.
- 7. Any lien on the Title for real estate taxes or assessments imposed by governmental authority and created or attaching between Date of Policy and the date of recording of the Insured Mortgage in the Public Records. This Exclusion does not modify or limit the coverage provided under Covered Risk 11(b).

The above policy form may be issued to afford either Standard Coverage or Extended Coverage. In addition to the above Exclusions from Coverage, the Exceptions from Coverage in a Standard Coverage policy will also include the following Exceptions from Coverage:

**EXCEPTIONS FROM COVERAGE**

Except as provided in Schedule B - Part II, This policy does not insure against loss or damage, and the Company will not pay costs, attorneys' fees or expenses, that arise by reason of:

**PART I**

The above policy form may be issued to afford either Standard Coverage or Extended Coverage. In addition to the above Exclusions from Coverage, the Exceptions from Coverage in a Standard Coverage policy will also include the following Exceptions from Coverage:

- 1. (a) Taxes or assessments that are not shown as existing liens by the records of any taxing authority that levies taxes or assessments on real property or by the Public Records; (b) proceedings by a public agency that may result in taxes or assessments, or notices of such proceedings, whether or not shown by the records of such agency or by the Public Records.
- 2. Any facts, rights, interests, or claims that are not shown by the Public Records but that could be ascertained by an inspection of the Land or that may be asserted by persons in possession of the Land.
- 3. Easements, liens or encumbrances, or claims thereof, not shown by the Public Records.
- 4. Any encroachment, encumbrance, violation, variation, or adverse circumstance affecting the Title that would be disclosed by an accurate and complete land survey of the Land and not shown by the Public Records.

\_\_\_\_\_  
**Initial**

\_\_\_\_\_  
**Initial**

\_\_\_\_\_  
**Initial**

\_\_\_\_\_  
**Initial**

- 5. (a) Unpatented mining claims; (b) reservations or exceptions in patents or in Acts authorizing the issuance thereof; (c) water rights, claims or title to water, whether or not the matters excepted under (a), (b), or (c) are shown by the Public Records.
- 6. Any lien or right to a lien for services, labor or material not shown by the Public Records.

**PART II**

In addition to the matters set forth in Part I of this Schedule, the Title is subject to the following matters, and the Company insures against loss or damage sustained in the event that they are not subordinate to the lien of the Insured Mortgage:

2006 ALTA OWNER'S POLICY (06-17-06)  
EXCLUSIONS FROM COVERAGE

The following matters are expressly excluded from the coverage of this policy, and the Company will not pay loss or damage, costs, attorneys' fees, or expenses that arise by reason of:

- 1. (a) Any law, ordinance, permit, or governmental regulation (including those relating to building and zoning) restricting, regulating, prohibiting, or relating to
  - (i) the occupancy, use, or enjoyment of the Land;
  - (ii) the character, dimensions, or location of any improvement erected on the Land;
  - (iii) the subdivision of land; or
  - (iv) environmental protection;
 or the effect of any violation of these laws, ordinances, or governmental regulations. This Exclusion 1(a) does not modify or limit the coverage provided under Covered Risk 5.
- (b) Any governmental police power. This Exclusion 1(b) does not modify or limit the coverage provided under Covered Risk 6.
- 2. Rights of eminent domain. This Exclusion does not modify or limit the coverage provided under Covered Risk 7 or 8.
- 3. Defects, liens, encumbrances, adverse claims, or other matters
  - (a) created, suffered, assumed, or agreed to by the Insured Claimant;
  - (b) not Known to the Company, not recorded in the Public Records at Date of Policy, but Known to the Insured Claimant and not disclosed in writing to the Company by the Insured Claimant prior to the date the Insured Claimant became an Insured under this policy;
  - (c) resulting in no loss or damage to the Insured Claimant;
  - (d) attaching or created subsequent to Date of Policy (however, this does not modify or limit the coverage provided under Covered Risk 9 and 10); or
  - (e) resulting in loss or damage that would not have been sustained if the Insured Claimant had paid value for the Title.
- 4. Any claim, by reason of the operation of federal bankruptcy, state insolvency, or similar creditors' rights laws, that the transaction vesting the Title as shown in Schedule A, is
  - (a) a fraudulent conveyance or fraudulent transfer; or
  - (b) a preferential transfer for any reason not stated in Covered Risk 9 of this policy.
- 5. Any lien on the Title for real estate taxes or assessments imposed by governmental authority and created or attaching between Date of Policy and the date of recording of the deed or other instrument of transfer in the Public Records that vests Title as shown in Schedule A.

The above policy form may be issued to afford either Standard Coverage or Extended Coverage. In addition to the above Exclusions from Coverage, the Exceptions from Coverage in a Standard Coverage policy will also include the following Exceptions from Coverage:

EXCEPTIONS FROM COVERAGE

\_\_\_\_\_  
**Initial**                      **Initial**                      **Initial**                      **Initial**



This policy does not insure against loss or damage, and the Company will not pay costs, attorneys' fees or expenses, that arise by reason of:

The above policy form may be issued to afford either Standard Coverage or Extended Coverage. In addition to the above Exclusions from Coverage, the Exceptions from Coverage in a Standard Coverage policy will also include the following Exceptions from Coverage:

1. (a) Taxes or assessments that are not shown as existing liens by the records of any taxing authority that levies taxes or assessments on real property or by the Public Records; (b) proceedings by a public agency that may result in taxes or assessments, or notices of such proceedings, whether or not shown by the records of such agency or by the Public Records.
2. Any facts, rights, interests, or claims that are not shown in the Public Records but that could be ascertained by an inspection of the Land or that may be asserted by persons in possession of the Land.
3. Easements, liens or encumbrances, or claims thereof, not shown by the Public Records.
4. Any encroachment, encumbrance, violation, variation, or adverse circumstance affecting the Title that would be disclosed by an accurate and complete land survey of the Land and that are not shown by the Public Records.
5. (a) Unpatented mining claims; (b) reservations or exceptions in patents or in Acts authorizing the issuance thereof; (c) water rights, claims or title to water, whether or not the matters excepted under (a), (b), or (c) are shown by the Public Records.
6. Any lien or right to a lien for services, labor or material not shown by the Public Records.
7. Variable exceptions such as taxes, easements, CC&R's, etc. shown here.

ALTA EXPANDED COVERAGE RESIDENTIAL LOAN POLICY (12-02-13)

EXCLUSIONS FROM COVERAGE

The following matters are expressly excluded from the coverage of this policy and the Company will not pay loss or damage, costs, attorneys' fees or expenses which arise by reason of:

1. (a) Any law, ordinance, permit, or governmental regulation (including those relating to building and zoning) restricting, regulating, prohibiting, or relating to
  - (i) the occupancy, use, or enjoyment of the Land;
  - (ii) the character, dimensions, or location of any improvement erected on the Land;
  - (iii) the subdivision of land; or
  - (iv) environmental protection;or the effect of any violation of these laws, ordinances, or governmental regulations. This Exclusion 1(a) does not modify or limit the coverage provided under Covered Risk 5, 6, 13(c), 13(d), 14 or 16.
- (b) Any governmental police power. This Exclusion 1(b) does not modify or limit the coverage provided under Covered Risk 5, 6, 13(c), 13(d), 14 or 16.
2. Rights of eminent domain. This Exclusion does not modify or limit the coverage provided under Covered Risk 7 or 8.
3. Defects, liens, encumbrances, adverse claims, or other matters
  - (a) created, suffered, assumed, or agreed to by the Insured Claimant;
  - (b) not Known to the Company, not recorded in the Public Records at Date of Policy, but Known to the Insured Claimant and not disclosed in writing to the Company by the Insured Claimant prior to the date the Insured Claimant became an Insured under this policy;
  - (c) resulting in no loss or damage to the Insured Claimant;
  - (d) attaching or created subsequent to Date of Policy (however, this does not modify or limit the coverage provided under Covered Risk 11, 16, 17, 18, 19, 20, 21, 22, 23, 24, 27 or 28); or

- (e) resulting in loss or damage that would not have been sustained if the Insured Claimant had paid value for the Insured Mortgage.
- 4. Unenforceability of the lien of the Insured Mortgage because of the inability or failure of an Insured to comply with applicable doing-business laws of the state where the Land is situated.
- 5. Invalidity or unenforceability in whole or in part of the lien of the Insured Mortgage that arises out of the transaction evidenced by the Insured Mortgage and is based upon usury, or any consumer credit protection or truth-in-lending law. This Exclusion does not modify or limit the coverage provided in Covered Risk 26.
- 6. Any claim of invalidity, unenforceability or lack of priority of the lien of the Insured Mortgage as to Advances or modifications made after the Insured has Knowledge that the vestee shown in Schedule A is no longer the owner of the estate or interest covered by this policy. This Exclusion does not modify or limit the coverage provided in Covered Risk 11.
- 7. Any lien on the Title for real estate taxes or assessments imposed by governmental authority and created or attaching subsequent to Date of Policy. This Exclusion does not modify or limit the coverage provided in Covered Risk 11(b) or 25.
- 8. The failure of the residential structure, or any portion of it, to have been constructed before, on or after Date of Policy in accordance with applicable building codes. This Exclusion does not modify or limit the coverage provided in Covered Risk 5 or 6.
- 9. Any claim, by reason of the operation of federal bankruptcy, state insolvency, or similar creditors' rights laws, that the transaction creating the lien of the Insured Mortgage, is
  - (a) a fraudulent conveyance or fraudulent transfer, or
  - (b) a preferential transfer for any reason not stated in Covered Risk 27(b) of this policy.
- 10. Contamination, explosion, fire, flooding, vibration, fracturing, earthquake, or subsidence.
- 11. Negligence by a person or an Entity exercising a right to extract or develop minerals, water, or any other substances.

**PRIVACY POLICY**

The Financial Services Modernization Act recently enacted by Congress has brought many changes to the financial services industry, which includes insurance companies and their agents. One of the changes requires Western Title Company, LLC, a Nevada limited liability company, to explain to you how we collect and use customer information.

Western Title Company has always and will continue to adhere to strict standards of confidentiality when it comes to protecting the privacy, accuracy and security of customer information provided to us.

**PERSONAL INFORMATION WE MAY COLLECT:**

Western Title collects information about you (for instance, your name, address and telephone number), and information about your transaction, including the identity of the real property you are buying or refinancing. We obtain copies of deeds, notes or mortgages that may be involved in the transaction. We may obtain this information directly from you or from the lender, attorney, or real estate broker or agent that you have chosen. When we provide escrow, or settlement services, or mortgage loan servicing, we may obtain your social security number, along with other information from third parties including appraisals, credit reports, land surveys, loan account balances, and sometimes your bank account information in order to facilitate your transaction.

**HOW WE USE THIS INFORMATION:**

\_\_\_\_\_  
Initial

\_\_\_\_\_  
Initial

\_\_\_\_\_  
Initial

\_\_\_\_\_  
Initial



Western Title Company does *NOT* share your information with marketers outside our own family. There is *NO* need to tell us to keep your information to ourselves because we share your information only to provide the service requested by you, your lender or in other ways permitted by law. The privacy law permits some sharing of information without your approval. We may share your information internally and with nonaffiliated third parties in order to carry out and service your transaction, to protect against fraud or unauthorized transactions, for institutional risk control and to provide information to government and law enforcement agencies. Companies within a family may share certain information among themselves in order to identify and market their own products that they think may be useful to you. Credit information about you is shared only to facilitate your transaction or for some other purpose permitted by law.

HOW WE PROTECT YOUR INFORMATION:

We restrict access to nonpublic information about you to our employees that need the information to provide products and services to you. We maintain physical, electronic and procedural safeguards that comply with the law to guard your nonpublic information. We reinforce Western Title's privacy policy with our employees.

You do not need to respond to this notice, unless you have concerns about any information we have obtained. You can write us at:

Western Title Company, LLC, a Nevada limited liability company  
Attention: Operations Manager  
P.O. Box 3059  
Reno, NV 89505

Western Title Company, LLC, is an agent for Chicago Title Insurance, Westcor Land Title Insurance Company, First American Title Insurance Company, Fidelity National Title Insurance Company, Old Republic National Title Insurance Company, Commonwealth Land Title, and Stewart Title Guaranty Company. You may receive additional Privacy Policy information from these companies.

February 2, 2021

Washoe County  
 Community Services Department  
 1001 E. 9<sup>th</sup> Street,  
 Reno, NV 89512

**Wastewater Generation-Silver Hills West - Phase 1**

**Introduction**

Set forth below are the wastewater generation calculations for the sanitary sewer facilities for the above project, which consists of 358 single family units on 64.93± acres. The project is within the Silver Hills West development area, located in Section 23, Township 21 N., Range 18 E., within Washoe County, Nevada. The site is located along the west side of Red Rock Road and north of Silver Knolls Boulevard.

**Previous Studies**

*Preliminary Sewer Interceptor Design Summary Evans Ranch, Silver Star, and Silver Hills; Cody R. Black, P.E.; Shaw Engineering; October 2020*

**Wastewater Generation**

Sewage generation for the project was calculated utilizing accepted practice for estimating flow rates. Proposed flows for this phase of the project were calculated as follows:

**Proposed Project – Buildout**

Land Use	Use	Units	Wastewater rate (gpdupd)	Peak Factor	Peak Flow (gpd)
Silver Hills West	SF	358	250	3	268,500

**Total proposed project peak flow, MGD: 0.269**

The peak wastewater generation from the project is estimated to be 268,500 gallons per day (0.269 MGD).

**Collection System**

The sewage flows generated by this project will be conveyed in conformance with the Shaw Engineering study.

**Conclusion**

The proposed Silver Hills West project is a master plan development and is in compliance with the master sewer report provided by Shaw Engineering.

If you have any questions or require any additional information, please contact me by email at [doug@christynv.com](mailto:doug@christynv.com) or by telephone at 775-527-0707

Regards,  
 CHRISTY CORPORATION, LTD.

Douglas Buck, P.E.  
 Engineering Manager

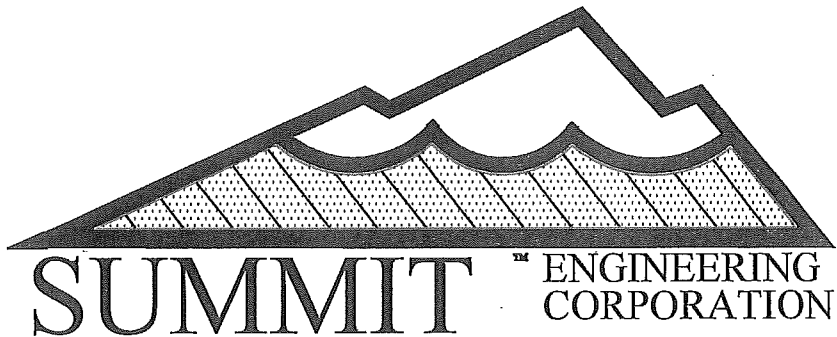




PRELIMINARY  
GEOTECHNICAL INVESTIGATION  
SILVER HILLS  
RENO, NEVADA

File No. 28813

March 10, 2009

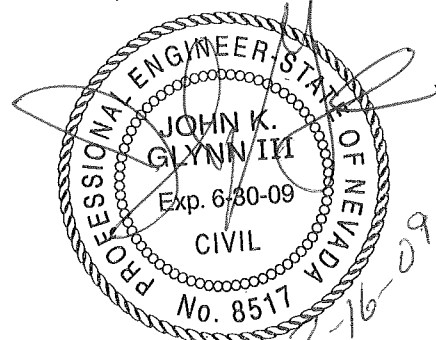


Prepared For:

Mr. Robert Lissner  
Lifestyle Homes TND, LLC  
P.O. Box 7548  
Reno, Nevada 89510

Prepared By:

Summit Engineering Corporation  
5405 Mae Anne Avenue  
Reno, Nevada 89523



Tom Harding  
Staff Geotechnician

Jack K. Glynn III, P.E.  
Geotechnical Manager

March 10, 2009

Job No. 28813

Mr. Robert Lissner  
Lifestyle Homes TND, LLC  
P.O. Box 7548  
Reno, NV 89510

RE: Preliminary  
Geotechnical Investigation  
Silver Hills  
Reno, Nevada

Dear Mr. Lissner:

Attached please find the results of our preliminary geotechnical investigation for the proposed Silver Hills development approximately 3 miles northwest of the intersection of US 395 and Red Rock Road in Reno, Nevada. Summit excavated 15 test pits and 3 fault trenches to characterize the site. Material testing was performed on samples from the site. Results of the analyses and logs of the test pits are included as sheets in this report.

The material found on site classifies predominately as a sandstone bedrock that has been slightly to moderately altered which excavates to a silty sand (SM), clayey sand (SC), silty clayey sand (SC-SM), poorly graded sand with silt (SP-SM), and well graded sand with silt (SW/SM). The majority of the native material uncovered during the geotechnical exploration shall provide foundation support. No groundwater was encountered in any of the 15 test pits.

Design plans and traffic studies were not available during the preparation of this report. Summit Engineering should be afforded the opportunity of reviewing plans, particularly any deep foundations or depressed floor/pit areas to verify the applicability of our recommendations. The following report provides geotechnical recommendations and guidelines for the design and construction of the project. We wish to thank you for the opportunity of providing our services. We are readily available to answer any related questions.

Sincerely,

**SUMMIT ENGINEERING CORPORATION**

Jack K. Glynn III, P.E.  
Geotechnical Department Manager

**WTM21-006  
EXHIBIT D**



**TABLE OF CONTENTS**

I. INTRODUCTION.....1

    A. Project Description .....1

    B. Purpose and Scope.....1

    C. Field Exploration and Laboratory Testing.....2

II. DISCUSSION.....2

    A. Site Description .....2

    B. Site Geology .....3

    C. Regional Seismicity .....3

    D. Subsurface Materials and Conditions .....5

III. CONCLUSIONS AND RECOMMENDATIONS .....6

    A. Foundation Considerations.....6

    B. Grading and Filling.....7

    C. Surface and Subsurface Drainage .....9

    D. Slope Stability and Erosion Control.....10

    E. Trenching and Excavation.....10

    F. Asphaltic Concrete Design.....11

    G. Concrete Slabs .....12

    H. Anticipated Construction Problems .....14

LIMITATIONS .....15

REFERENCES .....16

APPENDIX A - GUIDELINE SPECIFICATIONS.....17

APPENDIX B - FLEXIBLE PAVEMENT SECTION .....29

APPENDIX C - PRELIMINARY FAULTLINE EXPLORATION .....30

LIST OF SHEETS

1. Vicinity Map

2. Site Map

3. Geological Map

4-18. Test Pit Logs

19. Key to Logs

20-25. Laboratory Testing Results

**PRELIMINARY  
GEOTECHNICAL INVESTIGATION  
SILVER HILLS  
RENO, NEVADA**

**I. INTRODUCTION**

**A. Project Description**

This report presents the results of our Geotechnical Investigation to evaluate the Silver Hills project with respect to geotechnical and geologic site conditions. Exploration, laboratory testing and engineering analyses were conducted to provide geotechnical recommendations for the design and construction of the project.

Proposed development is to be single-family residential subdivision and will likely be 1 to 2 story wood frame construction. Foundations are anticipated to be either conventional spread footings or slab-on-grade with moderate structural loads. Sheet 1 presents a vicinity map and Sheet 2 presents the project site with test pit locations.

**B. Purpose and Scope**

The purpose of this investigation was to determine subsurface soil conditions and to provide geotechnical design criteria for the Silver Hills project. The scope of this investigation included surface reconnaissance, subsurface exploration, analysis of field and laboratory data, research of pertinent geologic literature and report preparation. This report provides conclusions and recommendations concerning:

- General subsurface conditions and geology
- Site preparation and earthwork
- Engineering properties of the soils that will influence design of future structures, including:
  - Bearing capacities
  - Settlement potential
  - Lateral earth pressures
  - Portland cement concrete
  - Asphalt concrete
  - Seismic design criteria



### **C. Field Exploration and Laboratory Testing**

Summit Engineering Corporation conducted the subsurface investigation by excavating fifteen test pits to a maximum depth of 14 feet. No grading planes were available at the time of the field exploration. Additional exploration (test pits) will be needed prior to completion of the final report. All test pits were excavated with a Cat 420 D Backhoe. Representative samples of the soil were collected from the test pits. Selected samples were tested at Summit's laboratory and two outside laboratories. Sheet 1 shows the vicinity map and Sheet 2 presents a site map with the locations of the test pits. General site geology is shown on sheet 3. Sheets 4 through 18 display the logs of soils encountered in the excavations. Sheet 19 provides a key to the test pit logs as well as a copy of the Unified Soil Classification System used to identify the site soils.

Representative bulk samples were taken from the excavations every three feet of depth or every significant lithologic change. Representative samples were tested as follows: 1) sieve analyses tests (ASTM D422); 2) moisture content tests (ASTM D2216); 3) Atterberg limits tests (ASTM 4318), to confirm field soil classifications; 4) a soluble sulfates test to determine if the native soils are reactive with Portland cement concrete; and 5) an R-value test (ASTM D2844), to determine a flexible pavement structural section. The index test results can be used to estimate engineering properties of the native soil. Results of the laboratory tests are displayed on the test pit logs, and presented independently in Sheets 20 through 25. All laboratory testing was conducted in accordance with the applicable standards.

## **II. DISCUSSION**

### **A. Site Description**

The proposed site will consist of a single-family residential subdivision approximately 3 miles northwest of the intersection of US 395 and Red Rock Road in Reno, Nevada. The site is situated in Section 23, Township 21 North, and Range 18 East, and North ½ of Section 24, Township 21 North, Range 18 East, SW ¼ of Section 24, Township 21 North, and Range 18 East (M.D.B.M). The site is in a rural area surrounded by an undeveloped desert to the east and desert with some older homes on the remaining sides. The property on the west side of Red Rock Road has overhead power lines that run northwest to southeast with a gas line below ground. Also the west property there is cable running underground parallel to the

power lines. There are currently old tires, furniture, and typical trash around the site. The site is has some small hills and drainages running through out the site. Access to the site is from Red Rock Road.

## **B. Site Geology**

The primary geologic reference reviewed was the Reno NW Quad 4Dg Geologic Map (S.A. Soeller and R.L. Nielsen, 1980). The bulletin and its geologic map (Sheet 3) provided information about the general geology and earthquake hazards for the subject property and surrounding area. The site was described as a "Qsw, Ts, Qpg, Mzgd". The authors characterized the site geology as the following:

**Qsw: Sheetwash Alluvium:** "Thin deposits of moderately to poorly sorted medium to fine sand, granular coarse to medium sand, and sandy pebble gravel. Color and texture closely related to local bedrock source areas."

**Ts: Lacustrine and Alluvial Sediments:** "Thick basin-fill deposits of grayish-orange to pale-brown, coarse to medium sand, granular sand, siltstone, silty to pebbly sandstone, and minor sandy pebble conglomerate, very thin-bedded ash and diatomite. Sediments are generally unconsolidated and bedding is usually indistinct. In part includes much younger alluvium near the surface. Probably equivalent in age to the sandstone of Hunter Creek" (Bonham and Bingler, 1973).

**Qpg: Pediment gravel:** "Thin sheets of pale-brown and pale yellowish-brown, sandy granule to cobble gravel, and pebbly very coarse sand. Clasts comprise a wide range of lithologic compositions and locally from a desert pavement."

**Mzgd: Granodiorite:** "Medium- to coarse-grained, massive, plutonic, dark-gray biotite and hornblende granodiorite. Includes aplite and pegmatite dikes. Resistant to erosion and forms abundant knobby outcrops."

According to the map (#32031C2825G) available by F.E.M.A. (Federal Emergency Management Agency) the site is within Zone X. According to F.E.M.A., Zone X is "areas determined to be outside the 0.2% annual chance floodplain".

## **C. Regional Seismicity**

The property, according to U.S. Geological Survey, may be subject to strong seismic acceleration, 0.504g



ground acceleration, and therefore has a strong probability for experiencing a major seismic event. The effect of seismic shaking, therefore, is an important consideration. The site has native soil profiles of D, “stiff soil.” The following table summarizes seismic design parameters for the 2006 International Building Code criteria for structural design of the project:

**IBC SEISMIC DESIGN**

Site Class	D
Soil Profile Type	Stiff Soil
Seismic Source Type	B
Soil Shear Wave Velocity ( $\bar{v}_s$ )	600-1200
Standard penetration resistance (N)	15-50
Soil undrained shear strength ( $s_u$ )	1000-2000
Site Coefficient ( $F_a$ ) w/ short accel. ( $s_s$ )	1.005
Site Coefficient ( $F_v$ ) w/ 1-sec. accel. ( $s_1$ )	1.534
Max. ground motion, 0.2-sec SA ( $S_s$ ), g	1.237
Max. ground motion, 1.0-sec SA ( $S_1$ ), g	0.466
Design acceleration, $S_{DS}$ , g	0.829
Design acceleration, $S_{D1}$ , g	0.477

**Design of improvements shall be based on Site Class D as per IBC 2006 standards.** The Peak Ground Acceleration (PGA) of the site with a Probability of Exceedance of 5% and Exposure Time of 50 was calculated to be a  $K_H = 0.3708g$ .

Earthquake activity is difficult to predict and it is not known which documented fault system may produce an earthquake event and associated surface rupture. Current research by the Nevada Bureau of Mines and Geology and the University of Nevada, Reno indicates that a local earthquake event of Magnitude 7.0 would be likely. The nearest active faults known to be capable of producing such an event are located approximately 17 miles northeast, 20 miles southeast and 25 miles east of the site (dePolo and Ramelli, 2004; dePolo, 1996; and dePolo and dePolo, 1999, respectively).

At the present time, there are not any local codes that provide guidelines for the evaluation of seismic risk or surface rupture hazard associated with Quaternary (Holocene and Pleistocene) faults. The State of Nevada requires the use of seismic provisions set by the IBC, as well as adoptions of appropriate local standards (NRS 278.580.5). For the purposes of assessing seismic hazard and potential fault rupture hazard, standard engineering practice is to pursue the most diligent investigation of those faults deemed to be most likely to

be active. Most geological consultants in Nevada follow the conventions established by the Nevada Earthquake Safety Council, whose guidelines are based on the Alquist-Priolo Act of 1972 in California. Per these guidelines, faults with evidence of movement in Holocene time (past 10,000 years) are considered "Holocene active". Those faults with evidence of displacement during Late Pleistocene time (10,000 to 130,000 years ago) would be considered "Late Quaternary active". Faults with evidence of last displacement having occurred during middle and early Quaternary time (130,000 years to 1,600,000 years ago) are considered "Quaternary Active Faults". Faults with last displacement older than 1,600,000 years are deemed "inactive". Active faults are afforded a greater degree of study and analysis than those regarded as inactive.

Normally, any fault suspected of being active, as demonstrated by presence of scarps, offset of the argillic (topsoil) horizon, and other criteria, poses a greater risk to development and requires a minimum setback of 50 feet for occupied structures. **Three mapped faults cross the site (Sheet 3). Two of these faults were encountered during this investigation and interpreted to be active (Appendix C).** The seismic hazard at the Silver Hills site is probably no greater than other comparable locations in the area that are located at comparable distances to similar faults. Occupied structures have been built over and adjacent to inactive faults in the area for decades, without significant harm to residents from temblors affecting the area. Building codes have evolved in recent years to provide adequate structural protection to residents for the level of tremors experienced to date. **Summit Engineering does not recommend siting occupied structures over any faults.**

Groundwater was not encountered in any of the test pit excavations. Liquefaction, a hazard in seismic zones where water-saturated granular cohesionless soils lose their bearing during seismic shaking, is not anticipated to be a problem on the project site because of cohesive soils and groundwater depth.

#### **D. Subsurface Materials and Conditions**

Fifteen test pits were excavated on this site to a maximum depth of 14 feet. The native materials encountered included sandstone bedrock that has been slightly to moderately altered which excavates to a silty sand (SM), clayey sand (SC), silty clayey sand (SC-SM), poorly graded sand with silt (SP-SM), and well graded sand with silt (SW/SM).

Groundwater was not encountered in any of the test pits and is not likely to affect development of the site.



### III. CONCLUSIONS AND RECOMMENDATIONS

From a geotechnical engineering standpoint, it is our opinion that the Silver Hills site is suitable for the construction of the proposed subdivision provided that the recommendations contained in this report are incorporated into design and construction. The following sections present our conclusions and recommendations concerning the proposed project.

#### A. Foundation Considerations

All expansive materials shall not provide direct foundation support. The primary geotechnical recommendation is to remove this material entirely from all structural areas and replace it with structural fill to footing grade and pavement and concrete slab subgrade. A less preferable, but less costly, alternative with more risk is to minimize the potential for post-construction differential foundation and subgrade movement by providing a minimum of 3 feet of structural fill beneath footings, and 2 feet of structural fill beneath all pavement and concrete slab subgrades.

The near-surface native materials uncovered during the course of the investigation may not provide direct foundation support. If any other materials are encountered in the course of construction, they may provide direct foundation support provided they meet parameters for structural fill as provided in this report. Analysis obtained from field and laboratory testing indicates the imported material (silty sand with gravel) can typically support up to 2,000 pounds per square foot for dead plus long term live loads (per IBC 2006 Table 1804.2) on spread type footings with less than 1 inch of total settlement and less than 1/2 inch of differential settlement across the length of the structures.

The design coefficient of friction for the majority of the native material on site is 0.25. The passive soil pressure was calculated as 407 pounds per cubic foot (407 psf per foot of depth). The active soil pressure was similarly calculated as 35 pounds per cubic foot (35 psf per foot of depth). The at-rest soil pressure, when walls are braced on the top and the bottom, was calculated as 55 pounds per cubic foot (55 psf per foot of depth). These design values assume the non-expansive granular soils that meet the outlined parameters are providing vertical and lateral support. All exterior footings shall be embedded a minimum 24 inches below adjacent finished grade for frost protection, and a minimum of four feet above groundwater.

## **B. Grading and Filling**

All expansive materials that are encountered within 3 feet of the bottom of footings, shall be removed prior to placing any fill. These materials are unsuitable for use as fill in structural areas due to their potentially detrimental properties. Therefore, these materials shall only be placed as the final lift of fill in landscaped areas. **If any uncontrolled fill is encountered, it will require complete removal, or if the material is suitable for fill according to the Geotechnical Engineer, removed and properly recompacted.**

All areas that are to receive fill or structural loading shall be scarified to a depth of at least 12 inches, moisture conditioned to within 2 percent of optimum, and recompacted to at least 90 percent relative compaction (ASTM D 1557). If the native subgrade is too coarse to density test, then moisture conditioning and compaction shall be completed to the satisfaction of the Geotechnical Engineer. A proof-rolling program of a minimum 5 complete passes with a minimum 10-ton roller or a Cat 825 self propelled sheepfoot may be acceptable. For footing trenches, three complete passes with hand compactors may be adequate.

All fill, except rock fill, shall be placed in 12-inch maximum lifts, moisture conditioned to within 2 percent of optimum, and compacted to at least 90 percent (ASTM D1557). If any of the on-site materials are too coarse for density testing (>30% retained on the 3/4" sieve), these materials must be treated as rock fill. Whenever structural foundations will be placed partially in cut and partially in structural fill, over-excavation and replacement of material on the cut side may be necessary in order to reduce the potential for differential settlement. Any differential fills shall be reduced to a maximum of 8 feet within the building envelope.

The maximum particle size shall be 12 inches up to 5 feet below finished grade and 6 inches from 5 feet below finished grade to finished grade. This material shall be placed in 12-inch lifts (maximum), moisture conditioned, and compacted to the satisfaction of the Geotechnical Engineer. Care should be taken to insure that voids between cobbles and boulders are filled with finer materials. Five complete passes of a minimum 10-ton roller or Cat 825 sheepsfoot compactor may achieve adequate compaction. Acceptance of density requirements for this type of rock fill shall be by observation of lift thickness, moisture conditioning, and applied compactive effort. The maximum allowable particle size shall be decreased if the Geotechnical Engineer is not satisfied with the achieved compaction and/or "nesting" of particles is observed.

Native materials are suitable to be utilized as structural cap material. Structural cap materials are materials within 3 feet below bottom of footing and within 2 feet below pavement and concrete subgrade. Any native



materials encountered that do not meet the requirements of structural fill will not be permitted within 3 feet of footings or 2 feet of roadway improvements without approval of the Geotechnical Engineer.

Any expansive soils, if encountered during the course of excavation, may not be utilized for direct support of improvements (including streets), nor may they be reused as structural fill. The primary geotechnical recommendation is to remove this material entirely from all structural areas and replace it with structural fill to footing grade and pavement and concrete slab subgrade. A less preferable, but less costly alternative with more risk is to minimize the potential for post-construction differential foundation and subgrade movement by providing a minimum of 3 feet of structural fill beneath footings, and 2 feet of structural fill beneath all pavement and concrete slab subgrades. This may be accomplished entirely by fill or by over-excavation and replacement with structural fill, or any combination thereof. Soils at the bottom of the over excavation shall be scarified to a minimum depth of 6 inches; moisture conditioned to at least optimum moisture, and recompacted to 90 percent (ASTM D1557). If the Owner/Developer elects to implement this alternate method and not remove all clays from structural areas, he will assume the risk of potential post-construction differential foundation movement, and will hold harmless the Geotechnical Engineer for this decision.

Expansive soil shall be defined as any soil or bedrock with more than 30 percent (by weight) passing the No. 200 sieve and/or a plasticity index of 16 or greater and/or an expansion index of at least 21. Expansive soils may only be placed as fill in non-structural areas, or as structural fill to within 3 feet of footing grade or 2 feet of pavement subgrade. Expansive soils utilized as fill shall be moisture conditioned to at least optimum and compacted to a minimum of 90 percent. All direct structural support shall be provided by non-expansive material. Any imported structural fill for this project should meet or exceed the following guideline specifications:

<u>Sieve Sizes</u>	<u>Percentage Passing (by weight)</u>
4 Inch	100
3/4 Inch	70-100
No. 40	15-50
No. 200	10-30

Additional Requirements are as follows:

Water Soluble Sulfate (SO <sub>4</sub> )(max)	0.1%
Total Available Water Soluble Sodium Sulfate (Na <sub>2</sub> SO <sub>4</sub> )(max)	0.2%
Solubility (max)(AWWA 2540C)	0.5%
Liquid Limit (max.)	38
Plasticity Index (max.)	15
Expansion Index (max.)	20

This specification is meant as a guideline to pre-approve imported structural fill. Other materials not meeting this specification may be suitable, but will require approval from the Geotechnical Engineer.

Mining of structural fill material on-site is not permissible unless taken from non-structural areas, or from re-using suitable material as structural fill taken from areas of designated cut.

### **C. Surface and Subsurface Drainage**

Surface drainage shall be diverted away from all buildings and not be permitted to pond or pool adjacent to foundations. If crawlspaces are utilized it is recommended that all crawlspaces be lined with Visqueen sheeting, and that positive crawlspace drainage be provided to a collection point. A small diameter pipe (2 to 4-inch) may be placed beneath and perpendicular to the footing, sloped to drain to daylight, or the drain rock bedding of the storm water catchment basin lateral to the street may be utilized to drain the crawlspace.

Slab-on-grade foundation systems may require subsurface drainage dependent on conditions encountered during grading. The Geotechnical Engineer shall determine whether subsurface drainage is required at that time.

Grading plans should be designed to minimize the potential for infiltrated precipitation or landscaping irrigation to migrate laterally and downslope along the cut/fill interface and surfacing in downslope lots. Roof gutters and downspouts are recommended to discharge water well away from foundation areas. Steps should also be taken to minimize the moisture seepage at the joint between the stem wall and the footing.



#### **D. Slope Stability and Erosion Control**

The results of our exploration and testing indicate that 2:1 (H:V) slopes will be stable for on-site materials in cut and fill. All cut and fill slopes should incorporate brow ditches to divert surface drainage away from the slope face. Any major cut or fill slopes shall include mid-height benches in accordance with International Building Code standards.

The potential for dust generation, both during and after construction, is high at this project. Dust control will be mandatory on this project in order to comply with air quality standards. The contractor shall submit a dust control plan and obtain the required permits from Washoe County and the City of Reno prior to commencing site grading.

Stabilization of all slopes and areas disturbed by construction will be required to prevent erosion and to control dust. Stabilization may consist of riprap, revegetation and landscaping, or dust palliative. Slopes steeper than 3:1 (H:V) will require stabilization.

Where the fill extends onto native slopes with gradients greater than 5:1, the fill shall be keyed into the native soils. The keys will have a minimum width of equipment width or 10 feet, whichever is lesser, and constructed with a minimum 5 percent slope into the hillside.

#### **E. Trenching and Excavation**

All trenching and excavation shall be conducted in accordance with all local, state, and federal (OSHA) standards. In general, the soil, encountered during exploration meets the criteria for OSHA Type A and B soils. Any oversized material loosened during excavation will require scaling prior to permitting workmen to enter the trench.

Any area in question should be examined by the Geotechnical Engineer. The following table is reproduced from Occupational Safety and Health, Subpart P, 1926.652, Appendix B:

**TABLE B-1**

**MAXIMUM ALLOWABLE SLOPES**

SOIL OR ROCK TYPE	MAXIMUM ALLOWABLE SLOPES (H:V) <sup>[1]</sup> FOR EXCAVATIONS LESS THAN 20 FEET DEEP <sup>[3]</sup>
STABLE ROCK	VERTICAL (90°)
TYPE A <sup>[2]</sup>	3/4:1 (53°)
TYPE B	1:1 (45°)
TYPE C	1 1/2:1 (34°)

**NOTES**

1. Numbers shown in parentheses next to maximum allowable slopes are angles expressed in degrees from the horizontal. Angles have been rounded off.
2. A short-term maximum allowable slope of 1/2 H:1V (63°) is allowed in excavations in Type A soil that are 12 feet (3.67 m) or less in depth. Short-term maximum allowable slopes for excavations greater than 12 feet (3.67 m) in depth shall be 3/4 H:1V (53°).
3. Sloping or benching for excavations greater than 20 feet deep shall be designed by a registered professional engineer.

Bedding and initial backfill over the pipe will require import to meet the specifications of the utility having jurisdiction. On-site soils may be used for trench backfill, provided particles over 4 inches in diameter are removed. Imported structural cap material or native material meeting the requirements for structural fill will be required within 3 feet below bottom of footing and 2 feet below bottom of pavement subgrade. All trench backfill shall be placed in 8 inch (max.) finished lifts, moisture conditioned to within 2 percent of optimum, and densified to at least 90 percent relative compaction (ASTM D1557). If metal pipes are to be utilized, corrosion protective measures shall be taken.

**F. Asphaltic Concrete Design**

Truck traffic counts and the type of trucks were not available during the preparation of this report so assumptions were made for the pavement design. A sample from TP-5 was analyzed to determine a representative R-value for the existing materials found on site. The R-value for this sample is 33. This material can provide adequate support for the intended improvements (Appendix B), provided the recommendations in this report are incorporated into design and construction. A Type 2 (3/4 inch size) or Type 3 (1/2 inch size) may be used for the bottom layer, but a Type 3 (1/2 inch size) mix is recommended for the access ways and parking areas for a smoother, more flush finished surface, which is less susceptible



to moisture penetration. A 50 Blow, Marshall mix design with 3-5 percent air voids is recommended for this project. The use of PG64-28NV is also recommended in order to increase the resistance to thermal cracking and help reduce pavement maintenance over the life of the pavement. A mix design shall be submitted to the Geotechnical Engineer for approval one week prior to paving.

Subgrade material shall be scarified to a minimum depth of 12 inches below finished asphalt grade, moisture conditioned to within 2 percent of optimum, and compacted to at least 90 percent. Next, 8 inches of aggregate base materials (Type 2, Class B) shall be placed on top of the subgrade. The aggregate base materials shall be approved by the Geotechnical Engineer prior to incorporation into the pavement structure. Aggregate base shall be moisture conditioned to within 2 percent of optimum and compacted to at least 95 percent compaction (ASTM D 1557). Finally, 4 inches of asphaltic concrete shall be placed on top of the base in two approximately equal lifts.

#### **G. Concrete Slabs**

All dedicated concrete walkways and driveways should be directly underlain by aggregate base per accepted standards. Decomposed granite, the same unit thickness as aggregate base, can be used in lieu of aggregate base under private walks and driveways. The concrete mix design for exterior concrete shall have a minimum of 6 sacks of Portland cement, with a maximum water to cement ratio of 0.45, and air content between 4.5 and 7.5 percent. This recommendation is to provide resistance to freeze-thaw cycles that occur in the Reno area. Additional requirements for exterior concrete are as follows:

Minimum compression strength = 4,000 psi,

Maximum slump = 4"

Interior slab-on-grade and foundation concrete shall follow criteria established by the project structural engineer. One sample was tested for soluble sulfates. Soluble sulfates have a detrimental effect on Portland cement concrete. The results (Sheet 25) indicate that there are 0.01 percent soluble sulfates in the native soils. Therefore, the sulfate exposure is ranked "negligible". This is according to Table 4.3.1 of the ACI Building Code Requirements (as per IBC, 2006), as follows:

TABLE 4.3.1

REQUIREMENTS FOR CONCRETE EXPOSED TO SULFATE-CONTAINING SOLUTIONS

SULFATE EXPOSURE	WATER SOLUBLE SULFATE (SO <sub>4</sub> ) IN SOIL, PERCENT BY WEIGHT	SULFATE (SO <sub>4</sub> ) IN WATER (ppm)	CEMENT TYPE	MAXIMUM WATER-CEMENTITIOUS MATERIAL RATIO, BY WEIGHT, NORMAL WEIGHT AGGREGATE CONCRETE *	MINIMUM $f'_c$ NORMAL-WEIGHT AND LIGHTWEIGHT AGGREGATE CONCRETE (psi) *
Negligible	$0.00 \leq SO_4 < 0.10$	$0 \leq SO_4 < 150$	-	-	-
Moderate <sup>†</sup>	$0.10 \leq SO_4 < 0.20$	$150 \leq SO_4 < 1500$	II, IP(MS), IS(MS), P(MS), I(PM)(MS), I(SM)(MS)	0.50	4,000
Severe	$0.20 \leq SO_4 < 2.00$	$1500 \leq SO_4 < 10,000$	V	0.45	4,500
Very severe	$SO_4 > 2.00$	$SO_4 > 10,000$	V plus pozzolan <sup>‡</sup>	0.45	4,500

\* When both Table 4.3.1 and Table 4.2.2 are considered, the lowest applicable maximum water-cementitious material ratio and highest applicable minimum  $f'_c$  shall be used.

<sup>†</sup> Seawater.

<sup>‡</sup> Pozzolan that has been determined by test or service record to improve sulfate resistance when used in concrete containing Type V cement.

Structural concrete mix designs for interior and private improvements only should meet one of the additional following criteria:

TYPE OF CEMENT	MINIMUM SACKS OF CEMENT PER CUBIC YARD (prior to replacement with fly ash)	MAXIMUM WATER TO CEMENTITIOUS MATERIALS RATIO
Type II	6	0.5
Type II and fly ash	5.5	0.53
Type IP	5.5	0.53
Type V	5.5	0.53
Type V and fly ash	5.5	0.53

Concrete mix designs shall be determined per Chapter 7 of "Design and Control of Concrete Mixtures" by the Portland Cement Association and as further modified by IBC 2006 standards, and submitted to the Geotechnical Engineer for approval at least one week prior to pouring the concrete.

The greater Elko area is in a climatic zone of low humidity and concrete is susceptible to shrinkage cracking and curling during curing. All concrete work shall follow the procedures of the American Concrete Institute.



## **H. Anticipated Construction Problems**

The site has a high potential for dust generation, and will require constant dust suppression measures during construction. The disposal of construction waste may also cause problems due to the lack of nearby washouts. Furthermore, proximity of the site to existing residences may limit the hours during which certain work can be done.

## LIMITATIONS

This report is prepared solely for the use of Summit Engineering's client. Any entity wishing to utilize this report must obtain permission from them prior to doing so. Our services consist of professional opinions and recommendations made in accordance with generally accepted soil and foundation engineering principles and practices. The analyses and recommendations contained in this report are based on our site reconnaissance, the information derived from our field exploration and laboratory testing, our understanding of the proposed development, and the assumption that the soil conditions in the proposed building and grading areas do not deviate from the anticipated conditions.

Unanticipated variations in soil conditions could exist in unexplored areas on the site. If any soil or groundwater conditions are encountered at the site that are different from those discussed in this report, our firm should be immediately notified so that our recommendations can be modified to accommodate the situation. In addition, if the scope of the proposed construction, including proposed loads or structural location, changes from that described in this report, our firm should be notified.

Recommendations made in this report are based on the assumption that an adequate number of tests and inspections will be made during construction to verify compliance with these recommendations. Such tests and inspections should include, but not necessarily be limited to, the following:

- . Review of site construction plans for conformance with soils investigation.
- . Observation and testing during site preparation, grading, excavation and placement of fill.
- . Observation and testing of materials and placement of asphalt concrete and site concrete.
- . Foundation observation and review.
- . Consultation as may be required during construction.

The findings in this report are valid as of the present date; however, changes in the conditions of the property can occur with the passage of time, whether they are due to natural processes or to the works of man on this or adjacent lands. In addition, changes in applicable or appropriate standards occur, whether they result from legislation or from the broadening of knowledge. Accordingly, the findings in this report might be invalidated, wholly or partially, by changes outside of our control.



## REFERENCES

- DePolo, Craig M., and Ramelli, Alan R., 2004, Paleoseismic studies along the Warm Springs Fault system: National Earthquake Hazards Reduction Program Final Technical Report Grant No. 01HQGR0119, Nevada Bureau of Mines and Geology, Reno, Nevada, 42 p.
- dePolo, Diane M., and dePolo, Craig M., 1999, Earthquakes in Nevada, 1852-1998: Nevada Bureau of Mines and Geology Map 119; Reno, 1 sheet.
- dePolo, Craig M., 1996, Local Quaternary Faults and Associated Potential Earthquakes in the Reno and Carson City Urban Areas, Nevada: National Earthquake Hazards Reduction Program Final Technical Report Contract No. 1434-95-G-2612s: National Bureau of Mines and Geology, Reno, 110 p.
- Szecsody, Gail Cordy, 1983, Reno NW Quadrangle Earthquake Hazards: Nevada Bureau of Mines and Geology Urban Maps 4Di, Reno, Nevada, 1 plate.
- Federal Emergency Management Agency, FEMA Map Zone #32031C2825G.
- <http://eqhazmaps.usgs.gov>
- International Building Code, 2006, International Conference of Building Officials.
- Lindeburg, Michael R., 2003, Civil Engineering Reference Manual: Professional Publications, Inc.
- Naval Facilities Engineering Command, 1986, Soil Mechanics – Design Manual 7.01.
- Naval Facilities Engineering Command, 1986, Foundations and Earth Structures – Design Manual 7.02.
- Occupational Safety and Health Administration Guidelines, Subpart P, 1926.652, Appendix B.

## APPENDIX A

**APPENDIX A**  
**SPECIFICATIONS FOR**  
**SITE PREPARATION, EXCAVATION, COMPACTION**  
**STRUCTURAL FILL, AND SUBGRADE PREPARATION**

**1.0 GENERAL**

- 1.1** Standard Specifications - Where referred to in these specifications, "Standard Specifications" shall mean the Standard Specifications for Public Works Construction sponsored and distributed by the Regional Transportation Commission of Washoe County, *et al.* (2007 edition).
- 1.2** Scope - All work shall be done in accordance with the Standard Specifications except as may be modified by the specifications outlined below. The work done under these specifications shall include clearing, stripping, removal of unsuitable material, excavation and preparation of natural soil, placement and compaction of on-site and/or imported fill material, or as specifically referred to in the plans or specifications.
- 1.3** Geotechnical Engineer - When used herein, Geotechnical Engineer shall mean the engineer or a representative under the engineer's supervision. The work covered by these specifications shall be inspected by a Geotechnical Engineer, who shall be retained by the Owner. The Geotechnical Engineer will be present during the site preparation and grading to inspect the work and to perform the tests necessary to evaluate material quality and compaction. The Geotechnical Engineer shall submit a report to the Owner, including a tabulation of all tests performed.
- 1.4** Soils Report - A "Geotechnical Investigation" report, prepared by Summit Engineering Corporation, is available for review and may be used as a reference to the surface and subsurface soil and groundwater conditions on these projects. The Contractor shall make his own interpretation with regards to the methods and equipment necessary to perform the excavations.



- 1.5 Percent Relative Compaction - Where referred to herein, percent relative compaction shall mean the in-place dry unit weight of soil expressed as a percentage of the maximum dry unit weight of the same material, as determined by ASTM D-1557, laboratory compaction test procedure. Optimum moisture content is the moisture content corresponding to the maximum dry density determined by ASTM D-1557.

## 2.0 SITE PREPARATION AND EARTHWORK

- 2.1 All earthwork and site preparation should be performed in accordance with the requirements of this report and attached specifications, and the Standard Specifications.
- 2.2 Clearing - Areas to be graded shall be cleared of brush and debris. These materials shall be removed from the site and discarded by an acceptable means approved by the owner.
- 2.3 Stripping - Surface soils containing roots and organic matter shall be stripped from areas to be graded and stockpiled or discarded as specified by the plans and specifications or at the discretion of the owner. Strippings may be used as the final lift of fill for areas to be planted.
- 2.4 Dust Control - The contractor shall prevent and maintain control of all dust generated during construction in compliance with all federal, state, and county regulations. The project specifications should include an indemnification by the contractor of the engineer and owner for all dust generated during the entire construction period.
- 2.5 Materials - All material not suitable for use as structural fill, shall be removed from the sites by the Contractor, or placed in non-structural fill areas. The Geotechnical Engineer shall determine the suitability of material for reuse as structural fill.
- 2.6 Ground Surface - The ground surface exposed by stripping and/or excavation shall be scarified to a minimum depth of 12 inches, moisture conditioned, by aerating or adding water, to within 2 percent of optimum moisture content and compacted to 90 percent relative compaction, unless otherwise specified. Compaction of the ground surface shall be approved by the Geotechnical Engineer prior to placement of fill, structural fill, aggregate base, and/or Portland cement concrete.

2.7 Backfill of test pits and trenches – Our exploration pits and trenches were backfilled without mechanical compaction. In structural areas, backfill in the pits should be removed and replaced in lifts with compactive effort.

**3.0 FILL MATERIAL**

3.1 Fill material shall be free of perishable, organic material. Rock used in the fill shall be placed in such a manner that no voids are present, either between or around the rock, after compacting the layer.

3.2 Structural Fill Material - Material shall consist of suitable non-expansive soils having a plasticity index less than 16, and a minimum R-value of 30. The gradation requirements shall be as follows:

<u>Sieve Sizes</u>	<u>Percentage Passing (by weight)</u>
4"	100
3/4"	70 - 100
#40	15 - 50
#200	10 - 30

Materials not meeting the above requirements may be suitable for use as structural cap material at the discretion of the Geotechnical Engineer. Samples of imported fill proposed for use as structural cap material shall be submitted to the Geotechnical Engineer and approved before it is delivered to a site.

3.3 Rock Fill - Fill material containing over 30 percent (by weight) of rock larger than 3/4 inches in greatest dimension is defined as rock fill. Rock Fill located five or more feet below finished grade may be constructed in loose lifts up to the maximum size of the rock in the material but not exceeding diameters of 18 inches. The voids around the rock in each rock fill lift shall be filled with granular material and fines and compacted to the satisfaction of the Geotechnical Engineer. Rocks larger than 18 inches in diameter shall be placed in non-structural areas or in deep fills at the discretion of the geotechnical engineer. Care should be taken to fill all voids with finer grained materials. No nesting of larger rocks shall be allowed. Rock fill shall not be used for slab-on-grade construction without

the approval of the Geotechnical Engineer. The maximum allowable particle size shall be decreased by the Geotechnical Engineer if the achieved compaction is not satisfactory to the Geotechnical Engineer or “nesting” is observed by the Geotechnical Engineer.

#### **4.0 EARTHWORK AND FILL PLACEMENT**

- 4.1** Placement - Fill material shall be placed in layers that shall not exceed 12 inches of compacted thickness, unless otherwise approved by the Geotechnical Engineer. Each layer shall be evenly spread and moisture conditioned to within 2 percent of optimum moisture content. Unless otherwise specified, each layer of earth fill shall be compacted to 90 percent relative compaction. Compaction shall be approved by the Geotechnical Engineer. Rock fill shall be placed in accordance with the appropriate sections of the Standard Specifications. Rock fill placement and compaction shall be approved by the Geotechnical Engineer. Full time inspection of fill placement is required in structural areas and areas designated as dedicated improvement for the Washoe County, unless otherwise approved by the Engineer.
- 4.2** Keyways - Where the fill extends onto native slopes with gradients greater than 5:1, the fill shall be keyed into the native soils. The keys will have a minimum width of equipment width or 10 feet, whichever is lesser, and constructed with a minimum 5 percent slope into the hillside.
- 4.3** Compaction Equipment - The Contractor shall provide and use equipment of a type and weight suitable for the conditions encountered in the field. The equipment shall be capable of obtaining the required degree of compaction in all areas including those that are inaccessible to ordinary rolling equipment.
- 4.4** Reworking - When, in the judgment of the Geotechnical Engineer, sufficient compaction effort has not been used, or where the field density tests indicate that the required compaction or moisture content has not been obtained, subgrade and/or fill materials shall be reworked and compacted as needed to obtain the required density and moisture content. This reworking shall be accomplished prior to the placement of fill, structural fill, aggregate base, and/or Portland cement concrete.



- 4.5 Unstable Areas - If pumping or other indications of instability are noted, fill and/or subgrade materials shall be evaluated by the Geotechnical Engineer, scarified, left to dry, and recompacted or removed and replaced as needed to obtain the required density and moisture content. This work shall be accomplished prior to the placement of fill, structural fill, aggregate base, and/or Portland cement concrete.
- 4.6 Frozen Materials – Fill shall not be placed on frozen materials, nor shall frozen material be utilized as fill.

## 5.0 EXCAVATION AND SLOPE REQUIREMENTS

- 5.1 Finished cut slopes shall not exceed 2 horizontal to 1 vertical and fill slopes should not exceed ratios of 2 horizontal to 1 vertical. Slopes steeper than three horizontal to one vertical or more than ten feet in height should be protected from erosion using riprap, vegetation, or a similar designated and acceptable means meeting the applicable standards.
- 5.2 Temporary, unsupported construction slopes less than ten feet in height may stand at a slope as steep as 1½:1 (H:V) provided that the length of the unsupported slope does not exceed twenty feet. These temporary slopes should not remain unsupported for extended periods of time.

## 6.0 FOUNDATIONS AND FOOTING DESIGN

- 6.1 Spread type continuous and column footings should be designed to impose a maximum net dead plus long-term live load of 2,000 pounds per square foot (per IBC 2006 Table 1804.2). Net bearing pressures of up to one-third in excess of the given bearing value are permitted for transient live loads from wind and earthquake.
- 6.2 Exterior footings should be embedded a minimum of 30 inches below the lowest adjacent final compacted subgrade to provide adequate frost protection and confinement. Isolated interior footings should be imbedded per IBC requirements. The recommendations of this report are applicable to all footings.

- 6.3 Passive soil resistance to lateral footing pressures may be calculated as 407 pounds per square foot per foot of depth and a base coefficient of friction of 0.25 for footings. Active soil pressure may be calculated as 35 pounds per square foot per foot of depth. At-rest soil pressure may be calculated as 55 pounds per square foot per foot of depth.
- 6.4 Backfill of footing excavations or formed footings should be moisture conditioned to within 2 percent of optimum moisture content and compacted to a minimum of 90 percent relative compaction.
- 6.5 All footing excavations should be clear of loose material prior to placement of concrete. The bottom of the footing excavation should be scarified to a depth of 12 inches, moisture conditioned to within 2 percent of optimum moisture content, and compacted to a minimum of 90 percent relative compaction.

## 7.0 UTILITY TRENCH BACKFILL

- 7.1 Bedding Material - Bedding material shall meet one of the following gradation requirements listed below and shall be nonplastic:

Bedding will require import to meet one of the following specifications:

	CLASS A BACKFILL	CLASS B BACKFILL	CLASS C BACKFILL
SIEVE SIZE	% PASSING	%PASSING	% PASSING
1"	-	-	100
¾"	-	-	90-100
½"	-	100	-
3/8"	100	-	10-55
#4	90-100	0-15	0-10
#50	10-40	-	-
#100	3-20	-	-
#200	0-15	0-3	-

Bedding as defined in this report shall be within 6 inches of the bottom of the pipe, within 12 inches of the sides of the pipe, and within 12 inches, or to a depth required from the top of the pipe to the top of the groundwater table, whichever is greater, over the pipe. Where groundwater is encountered, filter fabric or filter material shall encapsulate the bedding, if Class B or Class C backfill is utilized. The filter fabric shall be a 10 oz./sq. yd. nonwoven geotextile.

Individual utility companies may have additional specifications, which should also be followed.

7.2 Placement and Compaction - Bedding material shall first be placed so that the pipe is supported for the full length of the barrel with full bearing on the bottom segment of the pipe equal to a minimum of 0.4 times the outside diameter of the barrel. Bedding shall also extend to one foot above the top of the pipe. Pipe bedding within 6 inches of the pipe shall be placed in thin layers not exceeding 8 inches in loose thickness, conditioned to the proper moisture content for compaction. Class A backfill shall be compacted to at least 90 percent relative compaction. Class B and/or C backfill shall be compacted to the satisfaction of the Geotechnical Engineer. All other trench backfill shall be placed in thin layers not exceeding 8 inches in loose thickness, conditioned to within 2 percent of optimum moisture content, and compacted as required for adjacent fill, or if not specified, to at least 90 percent compaction in areas under structures, utilities, roadways, parking areas, and concrete flatwork.

7.3 Drain Rock - Any necessary subsurface drainage systems shall use drain rock conforming to the following Class C gradation:

<u>Sieve Sizes</u>	<u>Percentage Passing (by weight)</u>
1"	100
3/4"	90-100
3/8"	10-55
#4	0-10



## 8.0 CONCRETE SLAB-ON-GRADE AND FLATWORK CONSTRUCTION

- 8.1 Slab-on-grade - When used in this report, slab-on-grade shall refer to all interior concrete floors.
- 8.2 Concrete flatwork - A general term, flatwork refers to all exterior concrete site work including sidewalks, driveways, curb and gutters, and patios.
- 8.3 Subgrade - The upper twelve inches of subgrade beneath the aggregate base under concrete flatwork and slabs-on-grade shall be scarified, moisture conditioned to within 2 percent of optimum moisture content, and compacted to 90 percent relative compaction. Compaction shall be approved by the Geotechnical Engineer.
- 8.4 Concrete Mix Design - The contractor shall submit a concrete mix design to the Geotechnical Engineer for review and approval at least 1 week prior to placement of any concrete. The exterior concrete mix design shall utilize a minimum of 6 sacks of Portland Cement Concrete and a maximum water cement ratio of 0.45. Exterior concrete shall also meet the following specifications:

Minimum 28 day compressive strength = 4000 psi.  
Air content = 4.5 – 7.5%  
Maximum slump = 4 inches

Interior concrete mix designs shall comply with the structural plans and the tables included in Section G of this report.

Admixtures - All admixtures incorporated in the mix design shall be approved by the Geotechnical Engineer.

Finishing - All finishing shall be done in the absence of bleed water. No water shall be added to placed concrete during finishing.

- 8.5 Overexcavation - If encountered, expansive soils within two feet of flatwork or three feet of slab-on-grade shall be overexcavated. Overexcavations should extend at least two feet laterally beyond the edge of the flatwork/slab-on-grade section.

- 8.6 Base - Base material shall be compacted to 95 percent relative compaction. Compaction shall be approved by the Geotechnical Engineer. Type II Class B aggregate base meeting the following requirements shall be used:

Gradation Requirements

<u>Sieve Size</u>	<u>Percentage Passing (by weight)</u>
1"	100
3/4"	90-100
#4	35-65
#16	15-40
#200	2-10

Plasticity Index should meet the following requirements:

<u>Percentage Passing #200 (by weight)</u>	<u>Plasticity Index Maximum</u>
0.1 to 3.0	15
3.1 to 4.0	12
4.1 to 5.0	9
5.1 to 8.0	6
8.0 to 11.0	4

Other Requirements

R-value	Minimum of 70
Fractured faces	Minimum of 35%
LA Abrasion	Maximum of 45%
Liquid Limit	Maximum of 35%

- 8.7 Concrete slab-on-grade thickness and compressive strength requirements shall be in accordance with design criteria provided by the Structural Engineer. Minimum slab thickness and compressive strength for flatwork shall be in accordance with the applicable requirements.
- 8.8 Concrete work shall conform to all requirements of ACI 301-84, Specifications for Structural Concrete for Buildings, except as modified by supplemental requirements.
- 8.9 To facilitate curing of the slab, base materials shall be kept moist until placement of the concrete.

- 8.10 Excessive slump (high water cement ratio) of the concrete and/or improper curing procedures used during hot or cold weather could lead to excessive shrinkage, cracking or curling of slabs and other flatwork.

## 9.0 RETAINING WALLS

- 9.1 Retaining walls should be designed using a passive pressure calculated as 407 pounds per square foot per foot of depth and active soil pressure should be calculated as 35 pounds per square foot per foot of depth. A base coefficient of 0.25 should be used for resistance to sliding.
- 9.2 Footings should be placed at least 24 inches below the lowest adjacent finished grade. Subgrade shall be prepared as per these specifications.
- 9.3 In addition to active soil pressures the effects of any surcharge from adjacent structures or roadways should be included in calculating lateral pressures on retaining walls.
- 9.4 The design pressures given assume the soils retained are granular, non-expansive and free draining.
- 9.5 Retaining wall backfill should be moisture conditioned to within 2 percent of optimum and compacted to 85 percent in non-structural areas and 90 percent in structural areas. The use of heavy compaction equipment could cause excessive lateral pressures, which may cause failure of the wall.
- 9.6 Installation of weep holes or a continuous drain along the base of the wall is recommended to prevent water from being retained behind the wall.
- 9.7 An interceptor swale should be provided at the top of all retaining walls.

## 10.0 ASPHALTIC CONCRETE PAVEMENT

- 10.1 Material and Procedure - The asphalt-concrete material and placement procedures shall



conform to appropriate sections of the "Standard Specifications". Aggregate materials for asphaltic concrete shall conform to the requirements listed for Type 2 and Type 3 aggregate in Section 200.02.02 of the "Standard Specifications, 2007". A Type 3, 50-blow, Marshall mix design with 3 to 5 percent air voids is recommended. An asphaltic cement grade PG64-22 or equivalent is recommended for top layer for this project. The Contractor shall submit proposed asphalt-concrete mix designs to the Geotechnical Engineer for review and approval at least one week prior to paving. Asphalt materials should be compacted to a minimum of 92 percent of its theoretical maximum specific gravity or 96 percent of its Marshall density.

**10.2** Subgrade Preparation - After completion of the utility trench backfill and prior to the placement of aggregate base, the upper 12 inches of finished subgrade soil or structural fill material shall be moisture conditioned to at within 2 percent of optimum and compacted to at least 90 percent. This may require scarifying, moisture conditioning and compacting.

**10.3** Aggregate Base Rock - After the subgrade and/or structural fill is properly prepared, the aggregate base material shall be placed uniformly on the approved areas. Aggregate base shall be placed in such a manner as to prevent segregation of the different sizes of material and any such segregation, unless satisfactorily corrected, shall be cause for rejection at the discretion of the Geotechnical Engineer. The aggregate base material shall be spread for compaction in layers not to exceed six inches; moisture conditioned to within 2 percent of optimum, and compacted to at least 95 percent compaction. Aggregate base materials shall meet the requirements of Section 200.01.03 of the "Standard Specifications, 2007" for Type 2, Class B aggregate base. The aggregate base materials shall be approved by the Geotechnical Engineer prior to incorporation into the pavement structure.

## **11.0 SEISMIC DESIGN**

**11.1** Design of structures should include an allowance for earthquake loading. Structures should be designed in conjunction with IBC 2006 criteria for seismic acceleration of 0.504g in soil profile D.

## **APPENDIX B**

# SILVER HILLS

Truck Type	Daily Traffic Count	Number of Vehicles/Year	Number of Vehicles/Year in Design Lane	Truck Factor	Growth Factor	ESAL
<b>Single-Unit Trucks</b>						
2-Axle, 4-Tire	1000	365000	182500	0.006	29.8	32631
2-Axle, 6-Tire (includes school buses)	4	1460	730	0.13	29.8	2828
3-Axle or more (includes RTC buses)	4	1460	730	0.72	29.8	15663
<b>Tractor Semi-Trailers and Combinations</b>						
4-Axle or less	2	730	365	0.4	29.8	4351
5-Axle	1	365	183	0.63	29.8	3426
6-Axle or more	0	0	0	0.64	29.8	0
				<b>Total ESAL</b>		<b>58,899</b>

50

Percentage of Truck in Design Lane

### Key Assumptions

Urban Collector  
20 year design @ 4% growth



# 1993 AASHTO Pavement Design

## DARWin Pavement Design and Analysis System

A Proprietary AASHTOWare  
Computer Software Product

Don M. McHarg

### Flexible Structural Design Module

Asphalt Section

#### Flexible Structural Design

18-kip ESALs Over Initial Performance Period	60,000
Initial Serviceability	4.2
Terminal Serviceability	3
Reliability Level	90 %
Overall Standard Deviation	0.49
Roadbed Soil Resilient Modulus	12,949 psi
Stage Construction	1
 Calculated Design Structural Number	 1.81 in

#### Layered Thickness Design

Thickness precision		Actual							
<u>Layer</u>	<u>Material Description</u>	Struct Coef. <u>(Ai)</u>	Drain Coef. <u>(Mi)</u>	Spec Thickness <u>(Di)(in)</u>	Min Thickness <u>(Di)(in)</u>	Elastic Modulus <u>(psi)</u>	Width <u>(ft)</u>	Calculated Thickness <u>(in)</u>	Calculated SN <u>(in)</u>
1	Asphalt	0.44	1	-	3	350,000	12	3.00	1.32
2	Base	0.12	1	6	-	27,500	12	6.00	0.72
Total	-	-	-	-	-	-	-	9.00	2.04

## APPENDIX C

PRELIMINARY FAULTLINE EXPLORATION  
SILVER HILLS AREA  
WASHOE COUNTY, NEVADA

A Professional Geologist supervised the excavation of three trenches across mapped faults on this proposed development. Two of the faults (FT-2 and FT-3) were determined to be active; the other fault (FT-1) was not encountered during this program. The faults were generally excavated to depths of 4-5 feet below ground surface and ranged from 45 feet in length to 111 feet. Excavations were done using a CAT 420 backhoe.

Fault trench FT-1 was excavated at the southwestern corner of the development in an effort to transect a mapped northwesterly fault that parallels the Walker Lane fault zone. The mapped fault was plotted on a topographic map, and the trench was positioned to intersect the trace of the fault using both the topographic map and interpreted linears from orthophotography. The trench was 45 ft long and ranged in depth from 44 inches on western part to 40 inches on the eastern part (Sheet C1). The topsoil, a blocky dark brown clayey sand, ranged in thickness from 22 inches to 32 inches depth below ground surface (bgs), increasing in depth to the east. The underlying soil was a decomposed arkosic sandstone that excavates to a coherent coarse clayey or silty sand, or decomposed granite. No abrupt changes in soils were noted in the trench in either the topsoil or the underlying sands. The change in topsoil thickness was a gradual tapering thickness downslope. No fault appeared to be intersected in this trench, and no scarps were noted in the surrounding topography (Sheet C2).

Fault trench FT-2 was excavated at the northwestern part of the development. The trench was sited to intersect a mapped north-south rangefront fault where it intersected an abrupt northwesterly photolinear interpreted to be a northwesterly striking fault parallel the Walker Lane orientation. The trench was 57 feet long and ranged in depth from 52 inches bgs on the southwest terminus to 36 inches bgs on its northeast origin. Two faults were noted in the trench with an intervening damage zone (Sheets C3, C4). The first fault was at 0+35 feet, and separated an arkosic sandstone containing clasts of the Peavine Peak metamorphic rocks on the east from the fault zone breccia. The eastern unit is estimated to excavate to a silty sand with gravel (SM). The second fault was at 0+43 - 0+46 feet, and separated the fault zone breccia on the east from an arkosic sandstone containing clasts of coarse and fine grained granite. This western unit is estimated to excavate to a clayey sand (SC). A rotated clast of topsoil was noted and photographed at 0+46 in the hanging wall of the fault. The western unit contained veinlets of hydrothermal magnetite from approximately 0+46 - 0+48 feet. Clay alteration of the western unit prevailed to the terminus of the trench at 0+57 feet, presumably associated with the hydrothermal magnetite. This alteration may cause isolated problems during construction, and should be evaluated in greater detail. The intervening breccia between 0+35 feet and 0+43 feet was a brecciated arkosic sandstone with clasts of both granitic



and metamorphic rocks, and is estimated to excavate to the properties of a clayey sand (SC).

The topsoil, a dark brown blocky clayey sand, ranged in thickness from 24 inches on the southwest part of the trench to 12 inches on the northeast part of the trench. No abrupt thinning of topsoil was observed, but, as noted previously, a clast of topsoil was observed in the western fault within the arkosic sandstone (Sheet C5). The fault is interpreted to be active Holocene, with right lateral strike slip motion. A 50-foot offset of both sides of the faults is proscribed for occupied structures.

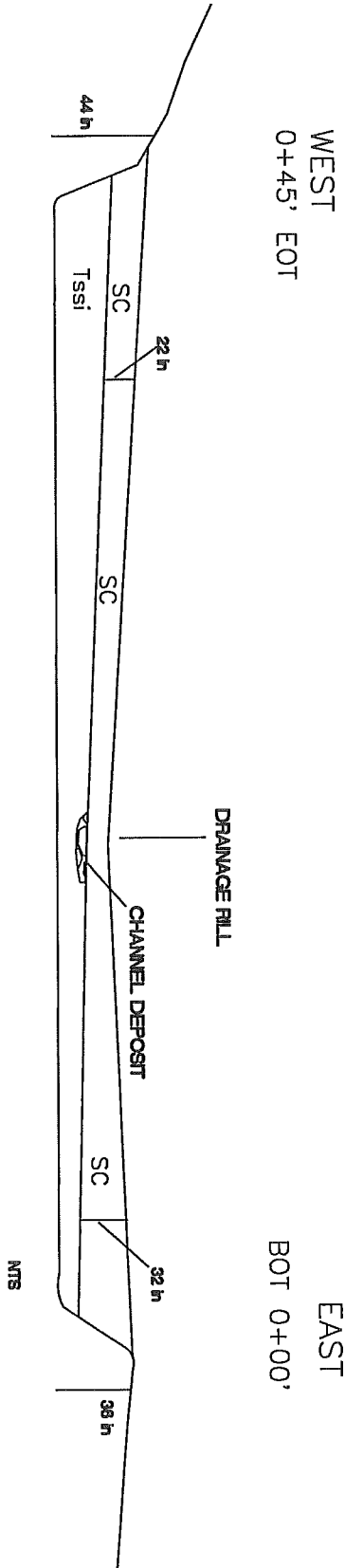
Fault trench FT-3 was excavated at the northeastern part of the proposed Silver Hills development (Sheet C6). The trench was sited to intersect a mapped north-south fault situated approximately 1 mile east of the range front (see geologic map). When reconnoitering the area in the field, a scarp was noticed and the trench was sited to intersect the scarp (Sheet C7). The trench was 111 feet long and ranged in depth from 56 inches bgs near the terminus on the western end to 40 inches depth at the origin on the eastern end. Topsoil, a dark brown clayey sand (SC) with blocky break, averaged approximately 24 inches thickness bgs, but thinned to approximately 15 inches in two faults.

The main fault zone occurred at the surface scarp between 0+65 – 0+82 feet. The fault separates a fine-grained medium reddish brown sandstone on the east from a medium greenish gray shale on the west (Sheet C8). The sandstone is estimated to excavate to a dense well graded sand (SW). The shale is estimated to excavate to a very stiff sandy silt (ML).

The second smaller fault zone occurred at 1+03 – 1+08, apparently parallel to the main fault. This second fault separates the shale on the east side from a dark greenish gray poorly consolidated conglomerate on the west (Sheet C9). The conglomerate is estimated to excavate to a medium dense silty gravel with sand (GM). The topsoil thins over this fault to 15-17 inches. Because the topsoil is thinned over both faults, they are interpreted to be active Holocene, with indeterminate dip slip motion. A 50-foot offset of both sides of the faults is proscribed for occupied structures.

FAULT TRENCH FT-1 SCHEMATIC SECTION

SC - TOPSOIL, CLAYEY SAND  
 Tssi - arkosic sandstone, excavates to a CLAYEY SAND



FAULT TRENCH SCHEMATIC  
 SILVER HILLS  
 WASHOE CO., NV

JOB NO.: 28813

APPR.: JKG

BY: WMM

9:22 AM \* 05-MAR--2009

**SUMMIT** ENGINEERING CORPORATION  
 5405 MAE ANNE AVENUE, RENO, NV. 89523  
 PHONE:(775) 747-8550 FAX:(775) 747-8559

SHEET  
 C1

OF  
 APP. C



PHOTO OF TRENCH FT-1  
SILVER HILLS  
WASHOE CO., NV

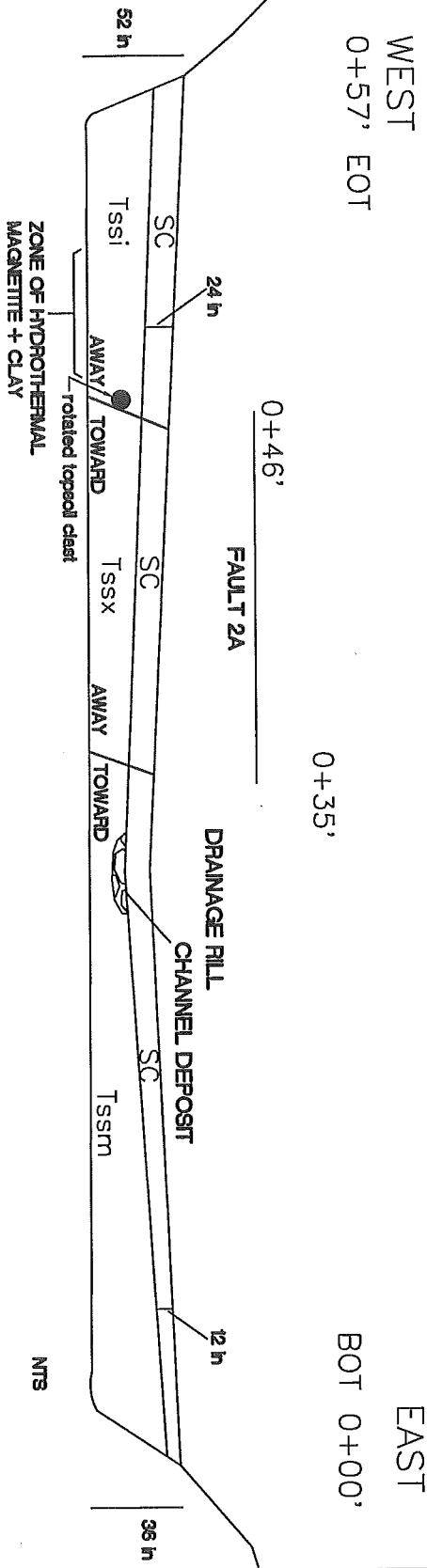
JOB NO.: 28813  
APPR.: JKG  
BY: WMM  
Copyright SUMMIT ENG 2009

**SUMMIT** ENGINEERING CORPORATION  
5405 MAE ANNE AVENUE, RENO, NV. 89523  
PHONE:(775) 747-8550 FAX:(775) 747-8559

SHEET  
C2  
OF  
APP. C



# FAULT TRENCH FT-2 SCHEMATIC SECTION



**Tsax - brecciated arkosic sandstone w/ granite + metamorphic clasts, excavates to a CLAYEY SAND**

**Tsai - arkosic sandstone w/granite clasts, excavates to a CLAYEY SAND**

**Tsam - arkosic sandstone w/metamorphic clasts, excavates to a SILTY SAND w/GRAVEL**

**FAULT TRENCH SCHEMATIC  
SILVER HILLS  
WASHOE CO., NV**

JOB NO.: 28813

APPR.: JKG

BY: WMM

9:29 AM \* 05-MAR-2009

**SUMMIT** ENGINEERING CORPORATION  
5405 MAE ANNE AVENUE, RENO, NV, 89523  
PHONE: (775) 747-8550 FAX: (775) 747-8559

SHEET  
C3

OF  
APP. C



PHOTO OF TRENCH FT-2  
SILVER HILLS  
WASHOE CO., NV

JOB NO.: 28813

APPR.: JKG

BY: WMM

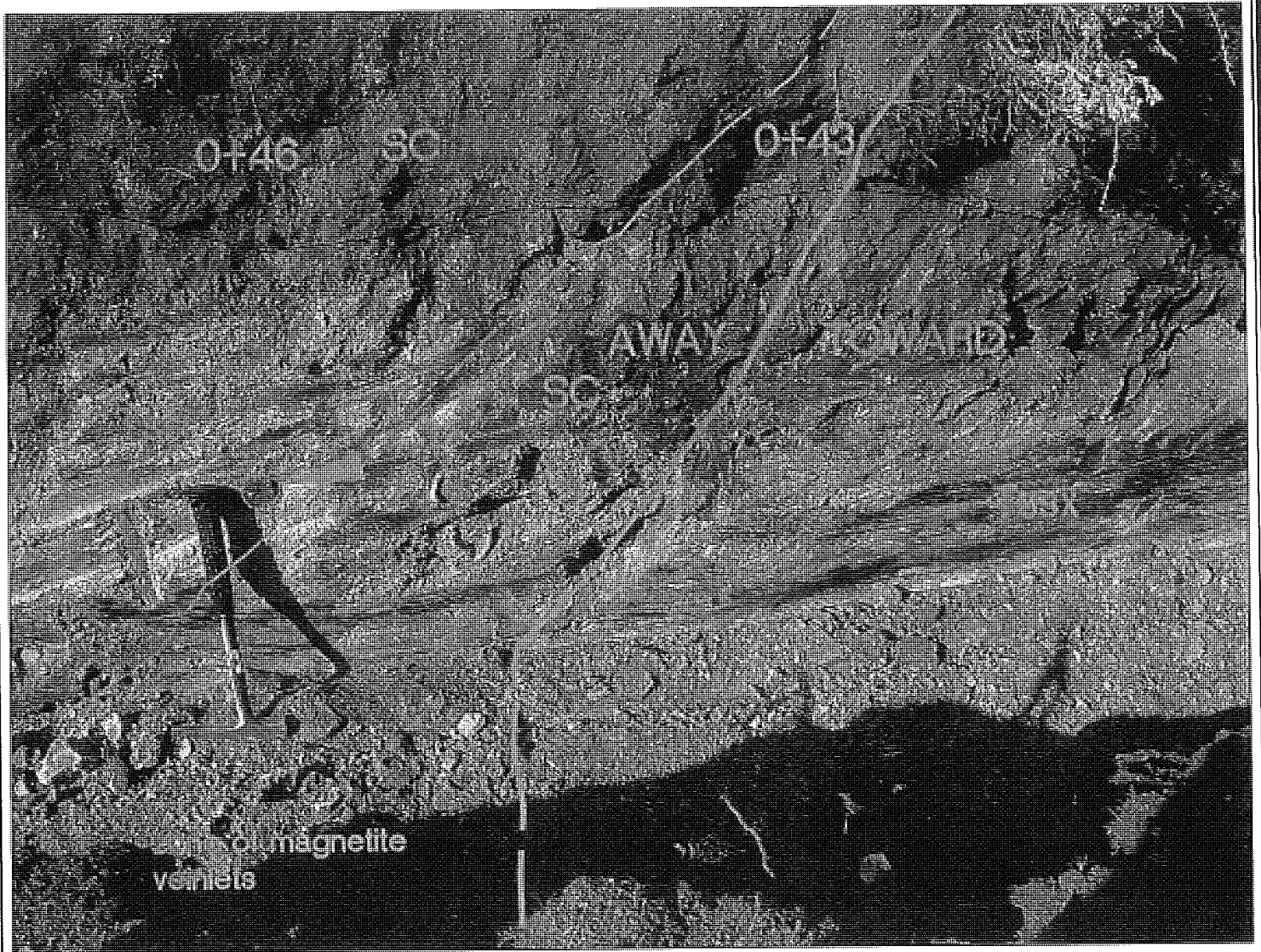
9:23 AM \* 05-MAR-2009



**SUMMIT** ENGINEERING CORPORATION  
5405 MAE ANNE AVENUE, RENO, NV. 89523  
PHONE:(775) 747-8550 FAX:(775) 747-8559

SHEET  
C4

OF  
21  
EXHIBIT D



DETAIL- FAULT TRENCH 2  
 SILVER HILLS  
 WASHOE COUNTY, NV

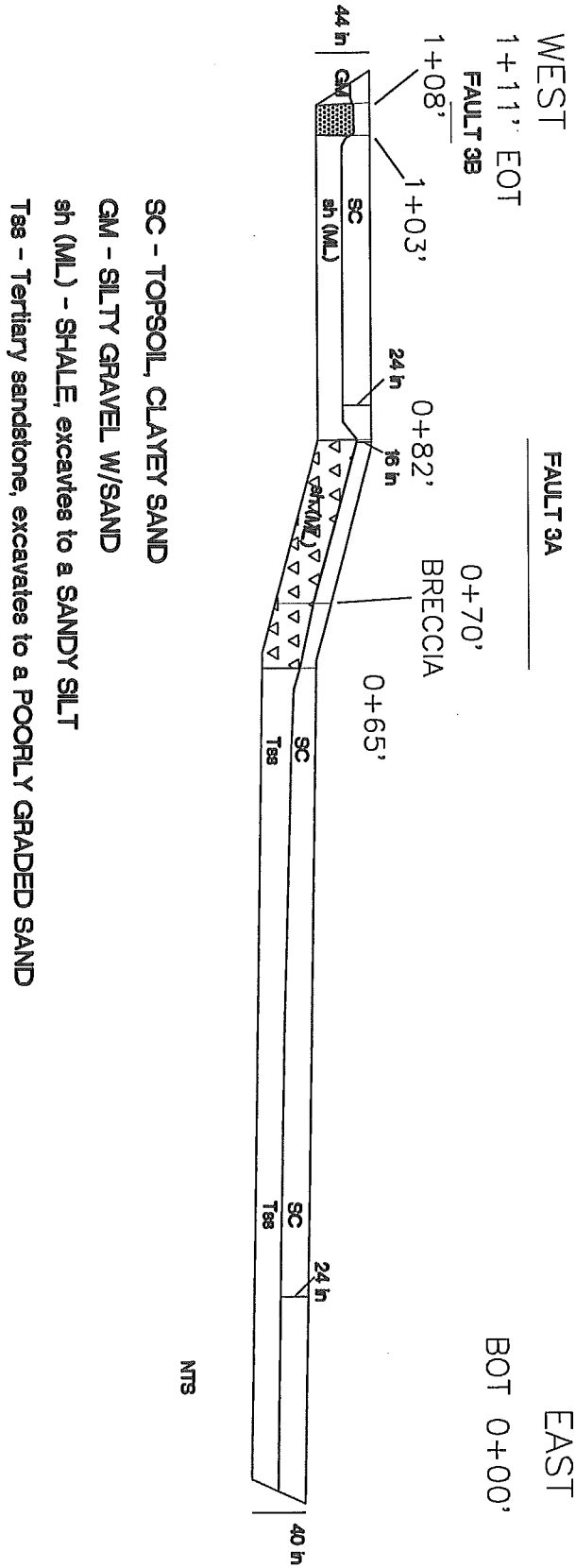
JOB NO.: 28813  
 APPR.: JKG  
 BY: WMM  
 9:26 AM \* 05-MAR-2009

**SUMMIT** ENGINEERING CORPORATION  
 5405 MAE ANNE AVENUE, RENO, NV, 89523  
 PHONE:(775) 747-8550 FAX:(775) 747-8559

SHEET  
 C5  
 OF  
 WTM21-006  
 EXHIBIT D



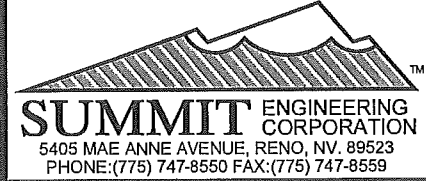
# FAULT TRENCH FT-3 SCHEMATIC SECTION



SC - TOPSOIL, CLAYEY SAND  
 GM - SILTY GRAVEL W/SAND  
 sh (ML) - SHALE, excavates to a SANDY SILT  
 Tss - Tertiary sandstone, excavates to a POORLY GRADED SAND

**FAULT TRENCH SCHEMATIC**  
**SILVER HILLS**  
**WASHOE CO., NV**

JOB NO.: 28813  
 APPR.: JKG  
 BY: WMM  
 9:49 AM \* 05-MAR-2009



SHEET  
**C6**  
 OF  
**APP. C**

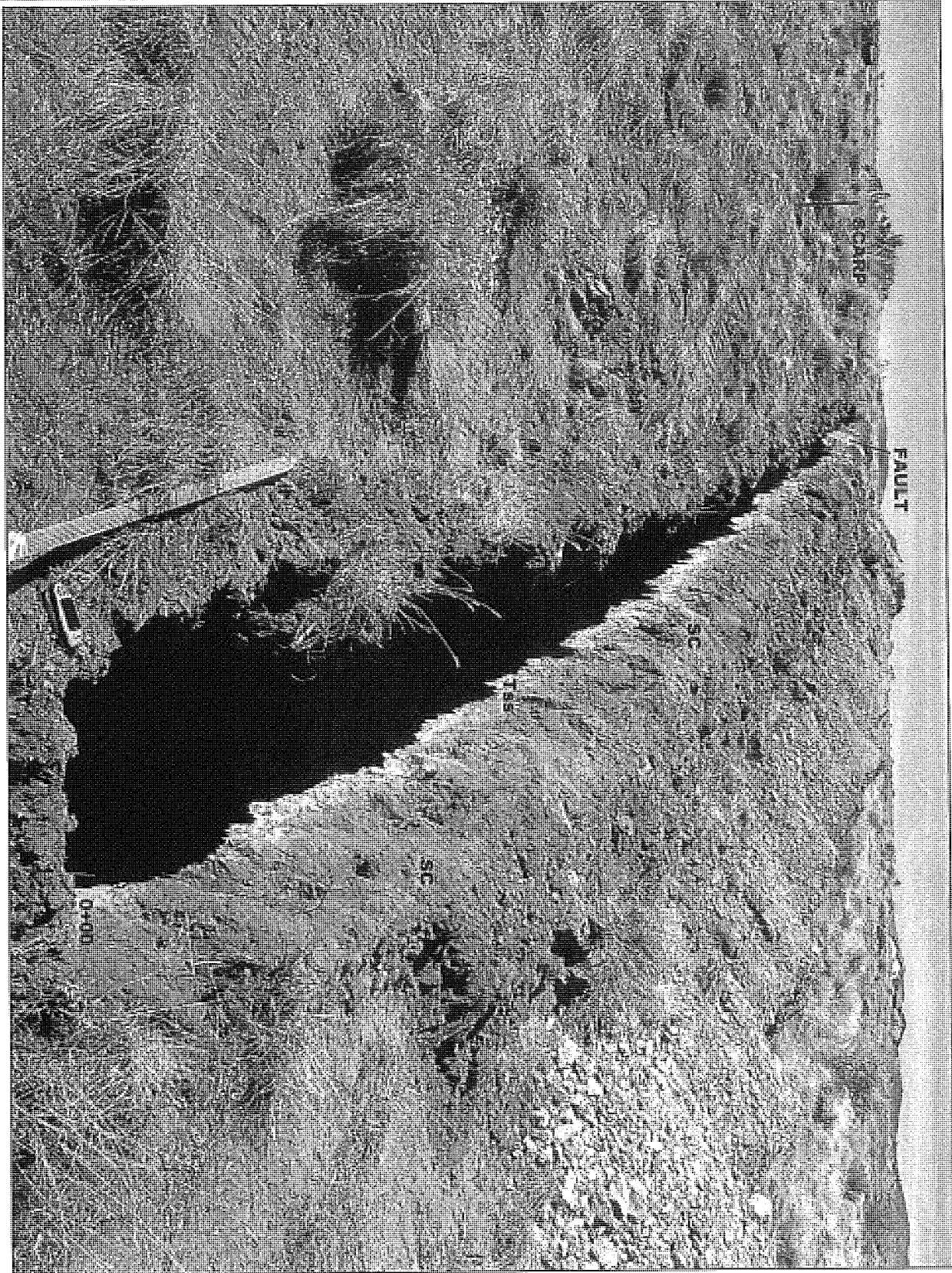


PHOTO OF TRENCH FT-3  
SILVER HILLS  
WASHOE CO., NV

JOB NO.: 28813

APPR. JKG

BY: WMM

9:43 AM \* 05-MAR-2009

**SUMMIT** ENGINEERING CORPORATION  
5405 MAE ANNE AVENUE, RENO, NV. 89523  
PHONE:(775) 747-8550 FAX:(775) 747-8559

SHEET  
C7

OF  
APP. C

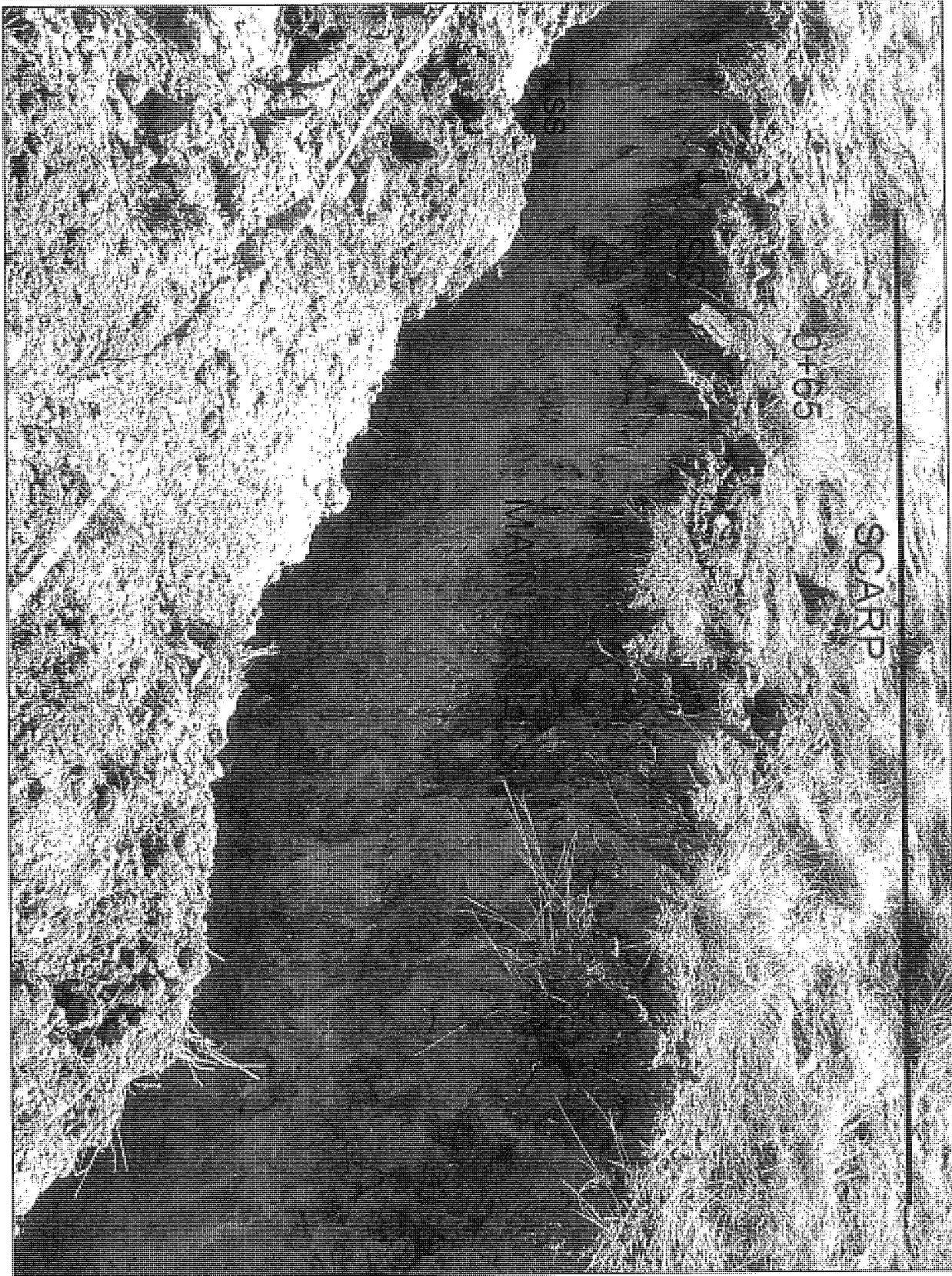


PHOTO OF TRENCH FT-3  
SILVER HILLS  
WASHOE CO., NV

JOB NO.: 28813

APPR.: JKG

BY: WMM

9:31 AM \* 05-MAR-2009

**SUMMIT** ENGINEERING CORPORATION  
5405 MAE ANNE AVENUE, RENO, NV. 89523  
PHONE:(775) 747-8550 FAX:(775) 747-8559

SHEET  
C8

OF  
APP. C  
21-006



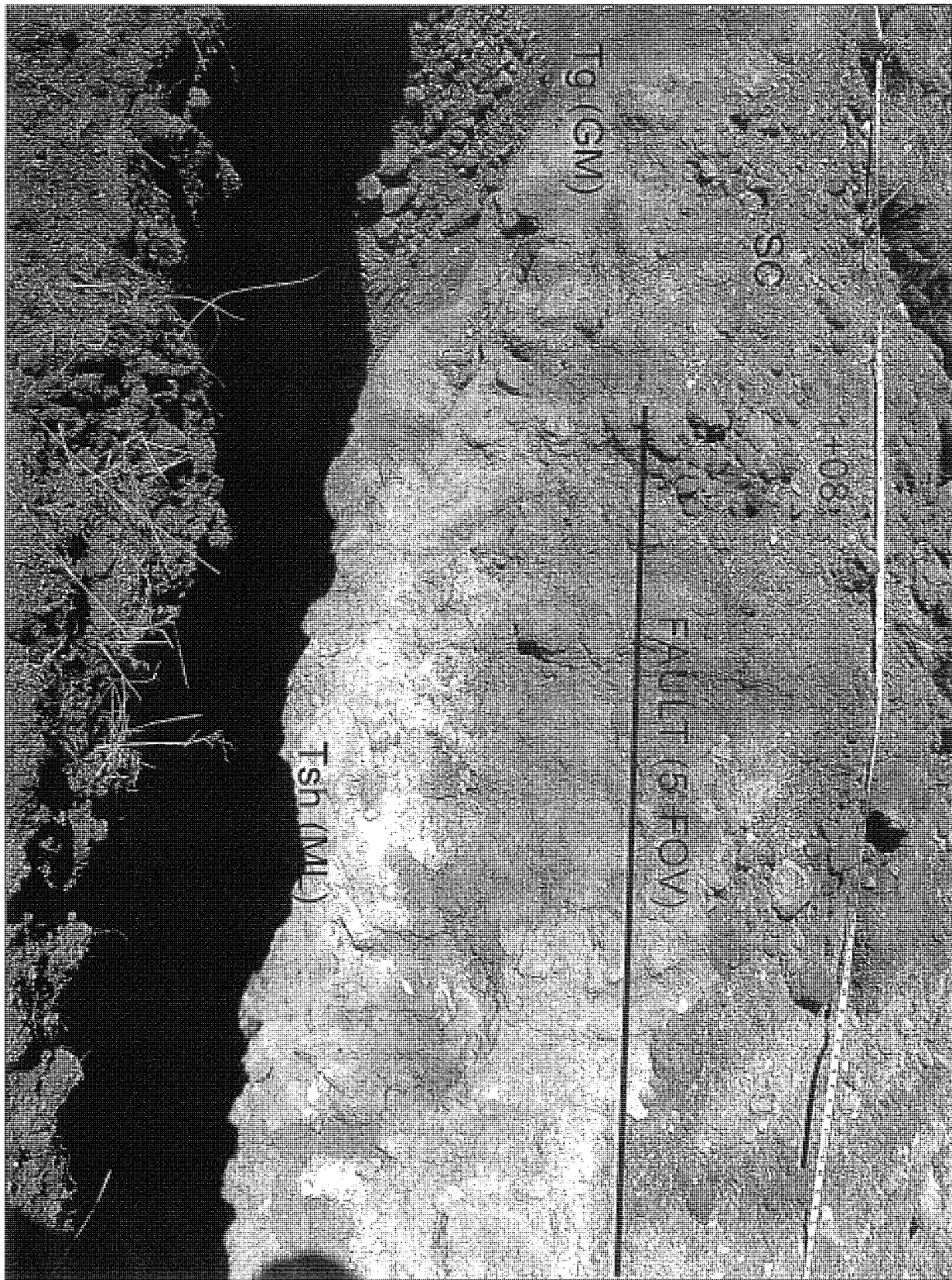


PHOTO OF TRENCH FT-3  
SILVER HILLS  
WASHOE CO., NV

JOB NO.: 28813

APPR.: JKG

BY: WMM

9:45 AM \* 05-MAR-2009



SHEET  
C9

OF  
APP. C

N:\DWGS\J28813\_SilverHills\Geotech\ft-3\_1+05.DWG

WTM21-006

EXHIBIT D

**SHEETS**



Sep 2008

N

SITE

Copperfield

US-395

North-South Hwy

Image U.S. Geological Survey  
Image © 2009 DigitalGlobe  
© 2009 Terra Atlas

0005

lat: 39.650678° lon: -119.928341°

VICINITY MAP  
SILVER HILLS  
RENO, NEVADA

JOB NO.: 28813

APPR.: JKG

BY.: TMH

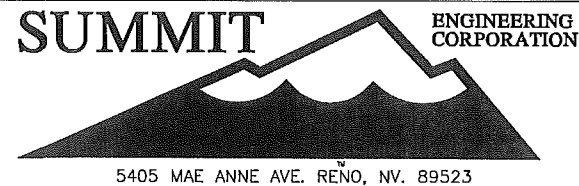
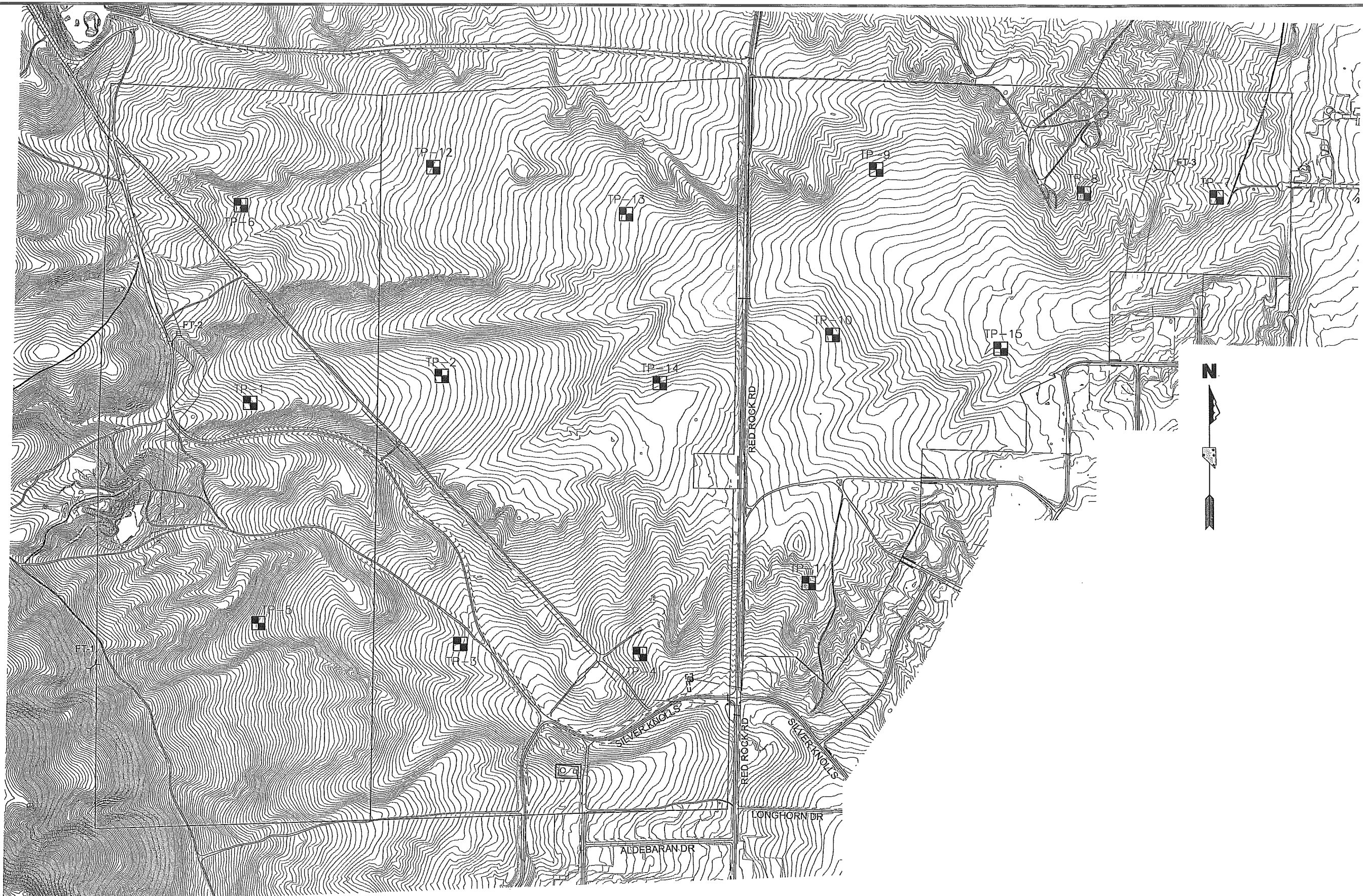
Copyright SUMMIT ENG 2009



SHEET  
1

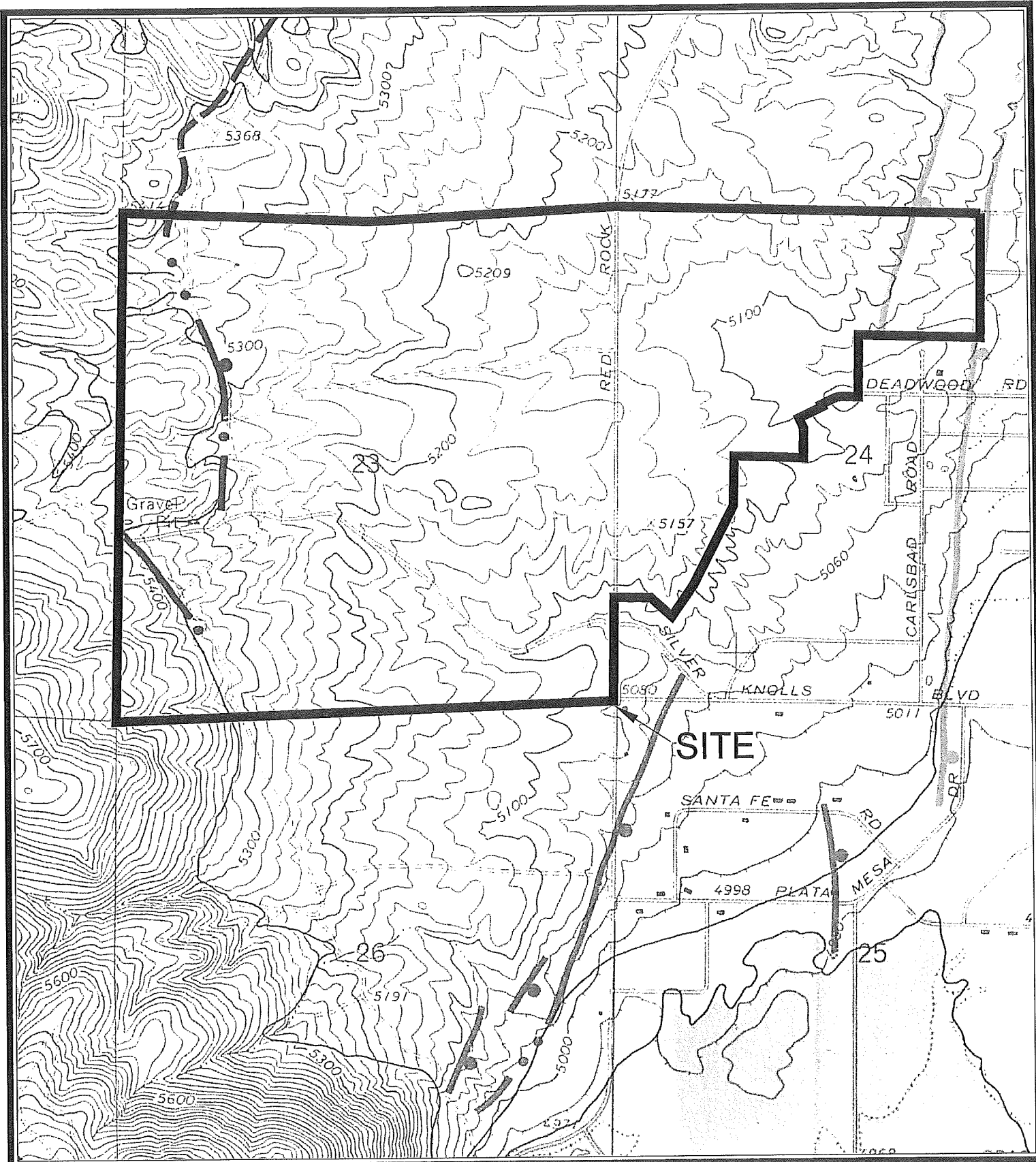
OF  
25





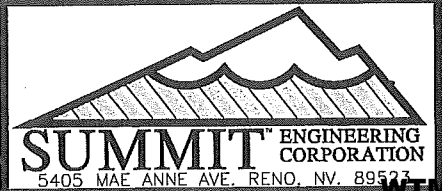
SCALE: 1"=700'	DESIGNED BY:
JOB #: 28813	CHECKED BY: JKG
Copyright SUMMIT ENG 2009	DRAWN BY: tmh
N:\DWGS\28813_SilverHills\Geotech\site.DWG ~ 2:39 PM * 06-MAR-2009	

**SITE MAP  
SILVER HILLS  
RENO, NEVADA**



**GEOLOGY MAP  
SILVER HILLS  
RENO, NEVADA**

JOB NO.: 28813  
 APPR.: JKG  
 BY: TMH  
 Copyright SUMMIT ENG 2009



SHEET  
**3**  
 OF  
**25**

LOG OF TEST PIT 1

EQUIPMENT: CAT 420 D

DATE: 2-23-09 ELEV.

PLASTICITY INDEX	% PASSING #200	MOISTURE CONTENT % OF DRY WT.	DRY DENSITY (PCF)	DEPTH (FT.)	SAMPLE LOCATION	BLOWS / FOOT
12	22.8	5.3		2	X	
				4		
				6	X	
				8		
				10		
				12	X	
				14		

SM  
SS (SC)  
SP  
SS (SM)

0-0.5': Silty Sand, dark brown, medium dense, slightly moist. Estimated 20% non plastic silt, 80% fine to coarse sand, trace gravel to 0.5".

0.5'-6': Bedrock: brown, medium dense, fine grained, Sandstone, slightly moist. Excavates to the properties of a Clayey Sand (SC), Approximately 25% medium plastic clay, 70% fine to coarse sand, 5% fine gravel to 0.5".

4': dense.

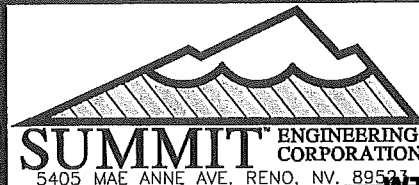
6'-11.5': Poorly Graded Sand with Silt, tan, medium dense, slightly moist. Estimated 5% non plastic silt, 95% fine to coarse sand, trace gravel to 0.5". organics to 9' (roots)

11.5'-13': Bedrock: brown, medium dense, fine grained, Sandstone, slightly moist. Excavates to the properties of a Silty Sand (SM), Estimated 20% non plastic silt, 70% fine to coarse sand, 10% fine gravel to 0.5".

Bottom of hole @ 13'  
No Groundwater Encountered.

TEST PIT LOG  
SILVER HILLS  
RENO, NEVADA

JOB NO.: 28813  
APPR.: JKG  
BY: TMH  
Copyright SUMMIT ENG 2009



SHEET  
4  
OF  
25





LOG OF TEST PIT 3

EQUIPMENT: CAT 420 D

DATE: 2-23-09 ELEV.

PLASTICITY INDEX	% PASSING #200	MOISTURE CONTENT % OF DRY WT.	DRY DENSITY (PCF)	DEPTH (FT.)	SAMPLE LOCATION	BLOWS / FOOT
				0		
				2		
				4		
				6		
NP	19.9	7.4		8		
				10		
				12		
				14		

SC  
0-1': Clayey Sand, dark brown, medium dense, slightly moist. Estimated 20% low plastic clay, 80% fine to coarse sand.

SS (SC)  
1'-6': Bedrock: brown, medium dense, fine to medium grained, Sandstone, slightly moist. Excavates to the properties of a Clayey Sand (SC), Estimated 40% low plastic clay, 60% fine to coarse sand.

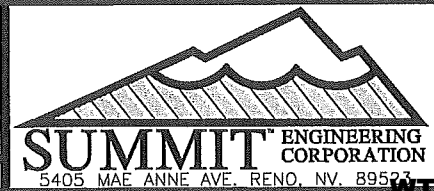
SS (SM)  
6'-13': Bedrock: tan, orange, brown, medium dense, fine grained, Sandstone, slightly moist. Excavates to the properties of a Silty Sand (SM), Approximately 20% non plastic silt, 75% fine to medium sand, 5% gravel to 0.5". Slightly cemented

9' white

Bottom of hole @ 13'  
No Groundwater Encountered.

TEST PIT LOG  
SILVER HILLS  
RENO, NEVADA

JOB NO.: 28813  
APPR.: JKG  
BY: TMH  
Copyright SUMMIT ENG 2009



SHEET  
6  
OF  
25

PLASTICITY INDEX

% PASSING #200

MOISTURE CONTENT  
% OF DRY WT.

DRY DENSITY  
(PCF)

DEPTH (FT.)

SAMPLE LOCATION

BLOWS / FOOT

LOG OF TEST PIT 4

EQUIPMENT: CAT 420 D

DATE: 2-23-09 ELEV.

				X			
			2				
				X			
			4				
			6				
			8	X			
			10				
			12				
			14	X			

SS  
(SM)

0-14': Bedrock: brown, medium dense, fine grained, Sandstone, slightly moist. Excavates to the properties of a Silty Sand (SM), Estimated 20% non plastic silt, 80% fine to coarse sand, trace gravel.

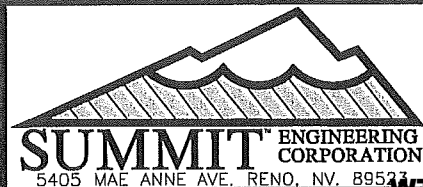
3' slightly cemented

8': tan, 10% non plastic silt, 90% fine to coarse sand, trace gravel.

Bottom of hole @ 14'  
No Groundwater Encountered.

TEST PIT LOG  
SILVER HILLS  
RENO, NEVADA

JOB NO.: 28813  
APPR.: JKG  
BY: TMH  
Copyright SUMMIT ENG 2009



SHEET  
7  
OF  
25



LOG OF TEST PIT 5

EQUIPMENT: CAT 420 D

DATE: 2-23-09 ELEV.

PLASTICITY INDEX	% PASSING #200	MOISTURE CONTENT % OF DRY WT.	DRY DENSITY (PCF)	DEPTH (FT.)	SAMPLE LOCATION	BLOWS / FOOT
				2	X	
12	21.2	6.2		4		
				6	X	
				8		
				10		
				12	X	
				14		

SM  
SS (SC)  
0-0.5': Silty Sand, dark brown, medium dense, slightly moist. Estimated 20% non plastic silt, 80% fine to coarse sand.

0.5'-3.5': Bedrock: brown, medium dense, fine grained, Sandstone, slightly moist. Excavates to the properties of a Clayey Sand (SC), Approximately 20% medium plastic clay, 70% fine to coarse sand, 10% fine gravel to 0.5".

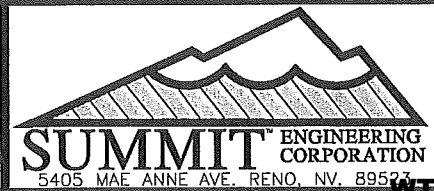
SS (SM)  
3.5'-9': Bedrock: brown, tan, orange, medium dense, medium grained, Sandstone, slightly moist. Excavates to the properties of a Silty Sand (SM), Estimated 15% non plastic silt, 85% very fine to coarse sand, trace gravel.  
coarse sand bedding, fine gravel bedding.  
8.5' dense.

SS (SC)  
9'-12': Bedrock: brown, tan, orange medium dense, fine grained, Sandstone, slightly moist. Excavates to the properties of a Clayey Sand (SC), Estimated 20% low plastic clay, 70% fine to coarse sand, 10% fine gravel to 0.5".

Bottom of hole @ 12'  
No Groundwater Encountered.

**TEST PIT LOG  
SILVER HILLS  
RENO, NEVADA**

JOB NO.: 28813  
APPR.: JKG  
BY: TMH  
Copyright SUMMIT ENG 2009



SHEET 8  
OF 25



LOG OF TEST PIT 7

EQUIPMENT: CAT 420 D

DATE: 2-24-09 ELEV.

PLASTICITY INDEX	% PASSING #200	MOISTURE CONTENT % OF DRY WT.	DRY DENSITY (PCF)	DEPTH (FT.)	SAMPLE LOCATION	BLOWS / FOOT
				2		
NP	15.2	5.1		4	X	
				6		
				8		
				10	X	
				12	X	
				14		

SC 0-0.5': Clayey Sand, dark brown, medium dense, slightly moist.

CL Estimated 30% low plastic clay, 70% fine to coarse sand, trace gravel.

SS (SM) 0.5'-1.5': Lean Clay with Sand, dark brown, stiff, slightly moist. Estimated 60% medium plastic clay, 40% fine to coarse sand, trace gravel to 1".

1.5'-8': Bedrock: brown, tan, red, yellow, medium dense, medium grained, Sandstone, slightly moist. Excavates to the properties of a Silty Sand (SM), Approximately 15% non plastic silt, 80% very fine to coarse sand, 5% fine gravel to 0.5", slightly cemented.

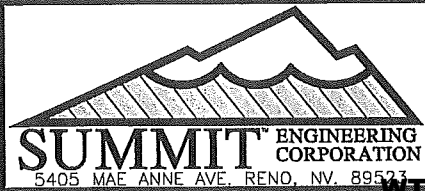
SP 8'-10.5': Poorly Graded Sand with Silt, tan, medium dense, slightly moist. Estimated 5% non plastic silt, 95% fine to coarse sand, trace gravel to 0.5".

SS (SM) 10.5'-13': Bedrock: tan, medium dense, fine grained, Sandstone, slightly moist. Excavates to the properties of a Silty Sand (SM), Estimated 40% low plastic silt, 60% very fine to coarse sand.

Bottom of hole @ 13'  
No Groundwater Encountered.

TEST PIT LOG  
SILVER HILLS  
RENO, NEVADA

JOB NO.: 28813  
APPR.: JKG  
BY: TMM  
Copyright SUMMIT ENG 2009



SHEET  
10  
OF  
25



LOG OF TEST PIT 8

EQUIPMENT: CAT 420 D

DATE: 2-24-09 ELEV.

PLASTICITY INDEX	% PASSING #200	MOISTURE CONTENT % OF DRY WT.	DRY DENSITY (PCF)	DEPTH (FT.)	SAMPLE LOCATION	BLOWS / FOOT
20	42.3	11.9		2		
				4		
				6		
				8		
				10		
NP	10.1	6.5		12		
				14		

SM 0-1': Silty Sand, dark brown, medium dense, slightly moist. Estimated 25% non plastic silt, 75% fine to coarse sand, trace gravel.

SC 1'-2': Clayey Sand, dark brown, medium dense, slightly moist.

SS (SM) Approximately 40% medium plastic clay, 60% fine to coarse sand, trace gravel.

2'-11': Bedrock: red, tan, yellow medium dense, fine to medium grained, Sandstone, slightly moist. Excavates to the properties of a Silty Sand (SM), Approximately 10% non plastic silt, 80% fine to coarse sand, 10% gravel to 0.5", slightly cemented.

6' tan to brown.

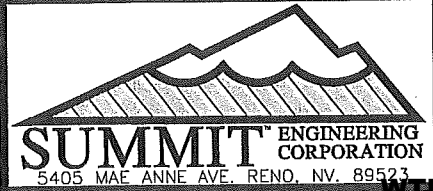
9' moist.

11'-13': Bedrock: tan, medium dense, fine to medium grained, Sandstone, slightly moist. Excavates to the properties of a Well Graded Sand with Silt (SW/SM), Approximately 10% non plastic silt, 80% fine to coarse sand, 10% gravel to 0.5", slightly cemented.

Bottom of hole @ 13'  
No Groundwater Encountered.

**TEST PIT LOG  
SILVER HILLS  
RENO, NEVADA**

JOB NO.: 28813  
APPR.: JKG  
BY: TMH  
Copyright SUMMIT ENG 2009



SHEET  
**11**  
OF  
**25**

PLASTICITY INDEX  
 % PASSING #200  
 MOISTURE CONTENT  
 % OF DRY WT.  
 DRY DENSITY  
 (PCF)  
 DEPTH (FT.)  
 SAMPLE LOCATION  
 BLOWS / FOOT

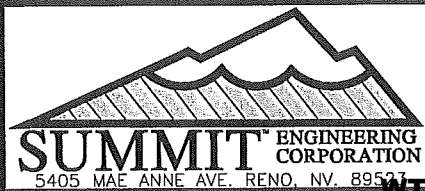
LOG OF TEST PIT 9  
 EQUIPMENT: CAT 420 D  
 DATE: 2-24-09 ELEV.

PLASTICITY INDEX	% PASSING #200	MOISTURE CONTENT % OF DRY WT.	DRY DENSITY (PCF)	DEPTH (FT.)	SAMPLE LOCATION	BLOWS / FOOT
				0		
				2	X	
				4	X	
5	27.8	5.9		5		
				6		
				8		
				10		
				12	X	
				14		

SM 0-1': Silty Sand, dark brown, medium dense, slightly moist.  
 SC Estimated 25% non plastic silt, 75% fine to coarse sand, trace gravel.  
 1'-2.5': Clayey Sand, dark brown, medium dense, slightly moist.  
 SS Estimated 40% medium plastic clay, 60% fine to coarse sand, trace gravel.  
 (SC)  
 (SM) 2.5'-12': Bedrock: tan, orange, medium dense, medium grained, Sandstone, slightly moist. Excavates to the properties of a Silty Clayey Sand (SC/SM), Approximately 30% low plastic clay/silt, 70% very fine to medium sand, trace gravel to 0.5".  
 10' 35% non plastic silt, 65% very fine to fine sand.  
 Bottom of hole @ 12'  
 No Groundwater Encountered.

TEST PIT LOG  
 SILVER HILLS  
 RENO, NEVADA

JOB NO.: 28813  
 APPR.: JKG  
 BY: TMH  
 Copyright SUMMIT ENG 2009



SHEET  
 12  
 OF  
 25

LOG OF TEST PIT 10

EQUIPMENT: CAT 420 D

DATE: 2-24-09 ELEV.

PLASTICITY INDEX	% PASSING #200	MOISTURE CONTENT % OF DRY WT.	DRY DENSITY (PCF)	DEPTH (FT.)	SAMPLE LOCATION	BLOWS / FOOT
				2	X	
				4		
				6	X	
				8		
NP	9.4	5.1		10	X	
				12		
				14		

SM 0-1': Silty Sand, dark brown, medium dense, slightly moist. Estimated 25% non plastic silt, 75% fine to coarse sand, trace gravel.

SS (SC) 1'-5': Bedrock: brown to tan, medium dense, fine to medium grained, Sandstone, slightly moist. Excavates to the properties of a Clayey Sand (SC), Estimated 20% low plastic clay, 80% fine to coarse sand, trace gravel

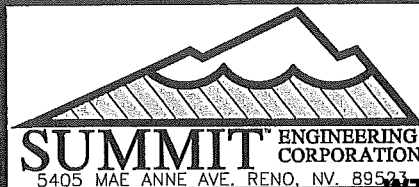
SS (SM) 5'-9': Bedrock: brown to red, medium dense, fine to medium grained, Sandstone, slightly moist. Excavates to the properties of a Silty Sand (SM), Estimated 25% non plastic silt, 75% very fine to coarse sand, trace gravel to 0.5".

SS (SP) (SM) 9'-13': Bedrock: tan, yellow, gray medium dense, fine to medium grained, Sandstone, slightly moist. Excavates to the properties of a Poorly Graded Sand with Silt (SP/SM), Approximately 10% non plastic silt, 90% fine to medium sand.

Bottom of hole @ 13'  
No Groundwater Encountered.

TEST PIT LOG  
SILVER HILLS  
RENO, NEVADA

JOB NO.: 28813  
APPR.: JKG  
BY: TMH  
Copyright SUMMIT ENG 2009



SHEET  
13  
OF  
25



LOG OF TEST PIT 11

EQUIPMENT: CAT 420 D

DATE: 2-24-09 ELEV.

PLASTICITY INDEX	% PASSING #200	MOISTURE CONTENT % OF DRY WT.	DRY DENSITY (PCF)	DEPTH (FT.)	SAMPLE LOCATION	BLOWS / FOOT
				0		
				2	X	
				4	X	
				6		
				8		
				10	X	
				12		
				14		

NP 12.1 6.7

SM  
SS  
(SC)

0-0.5': Silty Sand, dark brown, medium dense, slightly moist. Estimated 20% non plastic silt, 80% fine to coarse sand, trace gravel.

SS  
(SM)

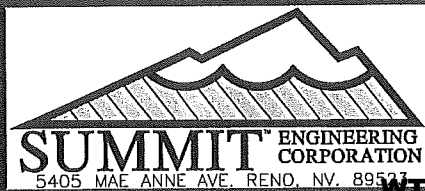
0.5'-3': Bedrock: tan, medium dense, fine to medium grained, Sandstone, slightly moist. Excavates to the properties of a Clayey Sand (SC), Estimated 30% low plastic clay, 70% fine to coarse sand, trace gravel

3'-12': Bedrock: brown to tan, medium dense, fine to medium grained, Sandstone, slightly moist. Excavates to the properties of a Silty Sand (SM), Approximately 10% non plastic silt, 85% very fine to coarse sand, 5% gravel to 0.5".

Bottom of hole @ 12'  
No Groundwater Encountered.

TEST PIT LOG  
SILVER HILLS  
RENO, NEVADA

JOB NO.: 28813  
APPR.: JKG  
BY: TMH  
Copyright SUMMIT ENG 2009



SHEET  
14  
OF  
25

LOG OF TEST PIT 12

EQUIPMENT: CAT 420 D

DATE: 2-24-09 ELEV.

PLASTICITY INDEX	% PASSING #200	MOISTURE CONTENT % OF DRY WT.	DRY DENSITY (PCF)	DEPTH (FT.)	SAMPLE LOCATION	BLOWS / FOOT
				0		
				2	X	
				4		
				6		
				8		
14	28.5	6.0		9	X	
				10		
				12		
				14		

SM  
0-1': Silty Sand, dark brown, medium dense, slightly moist. Estimated 25% non plastic silt, 75% fine to coarse sand, trace gravel.

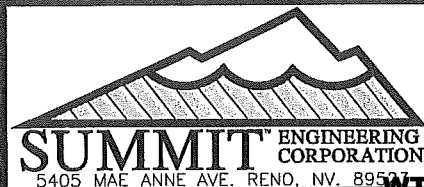
SS (SC)  
1'-8': Bedrock: brown, medium dense, fine to medium grained, Sandstone, slightly moist. Excavates to the properties of a Clayey Sand (SC), Estimated 25% medium plastic clay, 75% fine to coarse sand, trace gravel

SS (SC)  
8'-11.5': Bedrock: brown, tan, red, dense, fine to medium grained, Sandstone, slightly moist. Excavates to the properties of a Clayey Sand (SC), Approximately 30% medium plastic clay, 70% fine to coarse sand, trace gravel to 0.5"

Bottom of hole @ 11.5'  
No Groundwater Encountered.

TEST PIT LOG  
SILVER HILLS  
RENO, NEVADA

JOB NO.: 28813  
APPR.: JKG  
BY: TMH  
Copyright SUMMIT ENG 2009



SHEET  
15  
OF  
25

PLASTICITY INDEX  
 % PASSING #200  
 MOISTURE CONTENT  
 % OF DRY WT.  
 DRY DENSITY  
 (PCF)  
 DEPTH (FT.)  
 SAMPLE LOCATION  
 BLOWS / FOOT

LOG OF TEST PIT 13  
 EQUIPMENT: CAT 420 D  
 DATE: 2-24-09 ELEV.

PLASTICITY INDEX	% PASSING #200	MOISTURE CONTENT % OF DRY WT.	DRY DENSITY (PCF)	DEPTH (FT.)	SAMPLE LOCATION	BLOWS / FOOT
				0		
3	21.4	3.5		2	X	
				4		
				6	X	
				8		
				10		
				12		
				14	X	

SM  
 0-1': Silty Sand, dark brown, medium dense, slightly moist. Estimated 20% non plastic silt, 80% fine to coarse sand, trace gravel.

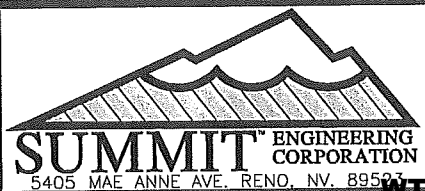
SS (SM)  
 1'-12': Bedrock: brown to tan, medium dense, fine to medium grained, Sandstone, slightly moist. Excavates to the properties of a Silty Sand (SM), Approximately 20% low plastic silt, 80% fine to coarse sand, trace gravel to 0.5".

SS (SC)  
 12'-14': Bedrock: brown, dense, fine to medium grained, Sandstone, slightly moist. Excavates to the properties of a Clayey Sand (SC), Estimated 30% low plastic clay, 70% fine to medium sand, trace gravel

Bottom of hole @ 14'  
 No Groundwater Encountered.

TEST PIT LOG  
 SILVER HILLS  
 RENO, NEVADA

JOB NO.: 28813  
 APPR.: JKG  
 BY: TMH  
 Copyright SUMMIT ENG 2009



SHEET  
 16  
 OF  
 25



LOG OF TEST PIT 14

EQUIPMENT: CAT 420 D

DATE: 2-24-09 ELEV.

PLASTICITY INDEX	% PASSING #200	MOISTURE CONTENT % OF DRY WT.	DRY DENSITY (PCF)	DEPTH (FT.)	SAMPLE LOCATION	BLOWS / FOOT
				0		
				2	X	
				4		
				6		
NP	42.3	19.0		8	X	
				10		
				12		
				14		

CL 0'-1': Lean Clay with Sand, dark brown, stiff, slightly moist. Estimated 50% medium plastic clay, 50% fine to coarse sand, trace gravel to 0.5".

SS (SM) 1'-6': Bedrock: gray to tan, dense, fine to medium grained, Sandstone, slightly moist. Excavates to the properties of a Silty Sand (SM), Estimated 30% low plastic silt, 70% fine to coarse sand, trace gravel to 0.5".

SS (SM) 6'-11': Bedrock: tan, medium dense, fine grained, Sandstone, moist. Excavates to the properties of a Silty Sand (SM), Approximately 40% non plastic silt, 60% very fine to fine sand.

SS (SM) 11'-13.5': Bedrock: tan, medium dense, fine to medium grained, Sandstone, slightly moist. Excavates to the properties of a Silty Sand (SM), Estimated 10% non plastic silt, 90% fine to medium sand.

Bottom of hole @ 13.5'  
No Groundwater Encountered.

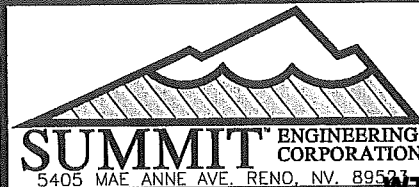
TEST PIT LOG  
SILVER HILLS  
RENO, NEVADA

JOB NO.: 28813

APPR.: JKG

BY: TMH

Copyright SUMMIT ENG 2009



SHEET  
17

OF  
25

LOG OF TEST PIT 15

EQUIPMENT: CAT 420 D

DATE: 2-24-09 ELEV.

PLASTICITY INDEX	% PASSING #200	MOISTURE CONTENT % OF DRY WT.	DRY DENSITY (PCF)	DEPTH (FT.)	SAMPLE LOCATION	BLOWS / FOOT
				0		
				2		
				4	X	
NP	29.3	13.9		6	X	
				8		
				10		
				12		
				14		

SM 0-1': Silty Sand, dark brown, medium dense, slightly moist. Estimated 20% non plastic silt, 80% fine to coarse sand, trace gravel.

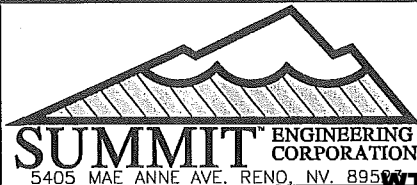
SS (SC) 1'-5': Bedrock: dark brown, medium dense, fine grained, Sandstone, moist. Excavates to the properties of a Clayey Sand (SC), Estimated 30% low plastic clay, 70% fine to coarse sand, trace gravel to 0.5".

SS (SM) 5'-13': Bedrock: gray, tan, brown, medium dense, fine to medium grained, Sandstone, slightly moist. Excavates to the properties of a Silty Sand (SM), Approximately 30% non plastic silt, 70% fine to medium sand.

Bottom of hole @ 13'  
No Groundwater Encountered.

TEST PIT LOG  
SILVER HILLS  
RENO, NEVADA

JOB NO.: 28813  
APPR.: JKG  
BY: TMH  
Copyright SUMMIT ENG 2009



SHEET 18  
OF 25

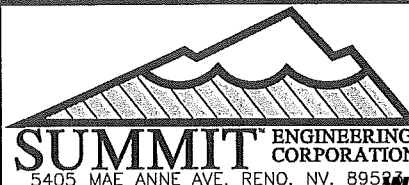
MAJOR DIVISIONS		GRAPHIC SYMBOL	GROUP SYMBOL	TYPICAL NAMES
COARSE GRAINED SOILS LESS THAN 50% PASSING No. 200 SIEVE	<b>GRAVELS</b> LESS THAN 50% COARSE FRACTION PASSES THE No.4 SIEVE		GW	WELL GRADED GRAVELS, GRAVEL/SAND MIXTURE
			GP	POORLY GRADED GRAVELS, GRAVEL/SAND MIXTURE
			GM	SILTY GRAVEL, POORLY GRADED GRAVEL/SAND/SILT MIXTURE
			GC	CLAYEY GRAVEL, POORLY GRADED GRAVEL/SAND/CLAY MIXTURE
	<b>SANDS</b> MORE THAN 50% COARSE FRACTION PASSES THE No.4 SIEVE		SW	WELL GRADED SANDS, GRAVELLY SANDS
			SP	POORLY GRADED SANDS, GRAVELLY SANDS
			SM	SILTY SANDS, POORLY GRADED SAND/CLAY MIXTURES
			SC	CLAYEY SAND, POORLY GRADED SAND/CLAY MIXTURES
FINE GRAINED SOILS MORE THAN 50% PASSING No. 200 SIEVE	<b>SILTS AND CLAYS</b> LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS & VERY FINE SANDS OF LOW PLASTICITY
			CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, LEAN CLAYS
	<b>SILTS AND CLAYS</b> LIQUID LIMIT GREATER THAN 50		OL	ORGANIC CLAYS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
			MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
			CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
			OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
<b>ORGANIC RICH SOILS</b>			PT	TOPSOIL, PEAT, ORGANIC RICH SOILS
<b>OTHER SOILS</b>			F	FILL MATERIALS

## UNIFIED SOIL CLASSIFICATION SYSTEM

	UNDISTURBED SAMPLE		BULK SAMPLE		NO RECOVERY		MEASURED DEPTH TO GROUNDWATER
--	--------------------	--	-------------	--	-------------	--	-------------------------------

**KEY TO TEST PIT LOGS  
SILVER HILLS  
RENO, NEVADA**

JOB NO.: 28813  
APPR.: JKG  
BY: TMH  
Copyright SUMMIT ENG 2009



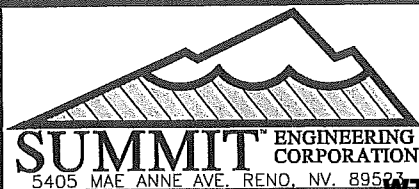
SHEET  
**19**  
OF  
**25**



SAMPLE LOCATION	SAMPLE DEPTH	% PASSING 3"	% PASSING #4	% PASSING #40	% PASSING #200	LIQUID LIMIT	PLASTICTY INDEX	EXPANSION INDEX	USCS
TP-1	1'-2'	100	94	44	22.8	27	12	-	SC
TP-2	3.5'-4'	100	94	65	42.4	NP	NP	-	SM
TP-3	8'-9'	100	94	57	19.9	NP	NP	-	SM
TP-5	2'-3'	100	93	39	21.2	27	12	-	SC
TP-6	10'-11'	100	99	56	35.1	31	15	-	SC
TP-7	4'	100	95	56	15.2	NP	NP	-	SM
TP-8	1'-2'	100	99	71	42.3	42	20	-	SC
TP-8	12'-13'	100	90	32	10.1	NP	NP	-	SW-SM
TP-9	4'-5'	100	98	69	27.8	25	5	-	SC-SM
TP-10	10.5'-11.5'	100	100	67	9.4	NP	NP	-	SP-SM
TP-11	3.5'-4.5'	100	94	50	12.1	NP	NP	-	SM
TP-12	8.5'-9.5'	100	96	53	28.5	27	14	-	SC
TP-13	2'-3'	100	97	53	21.4	19	3	-	SM
TP-14	7'-8'	100	100	79	42.3	NP	NP	-	SM
TP-15	6'-7'	100	100	71	29.3	NP	NP	-	SM

**SIEVE ANALYSIS  
SILVER HILLS  
RENO, NEVADA**

JOB NO.: 28813  
APPR.: JKG  
BY: TMH  
Copyright SUMMIT ENG 2009

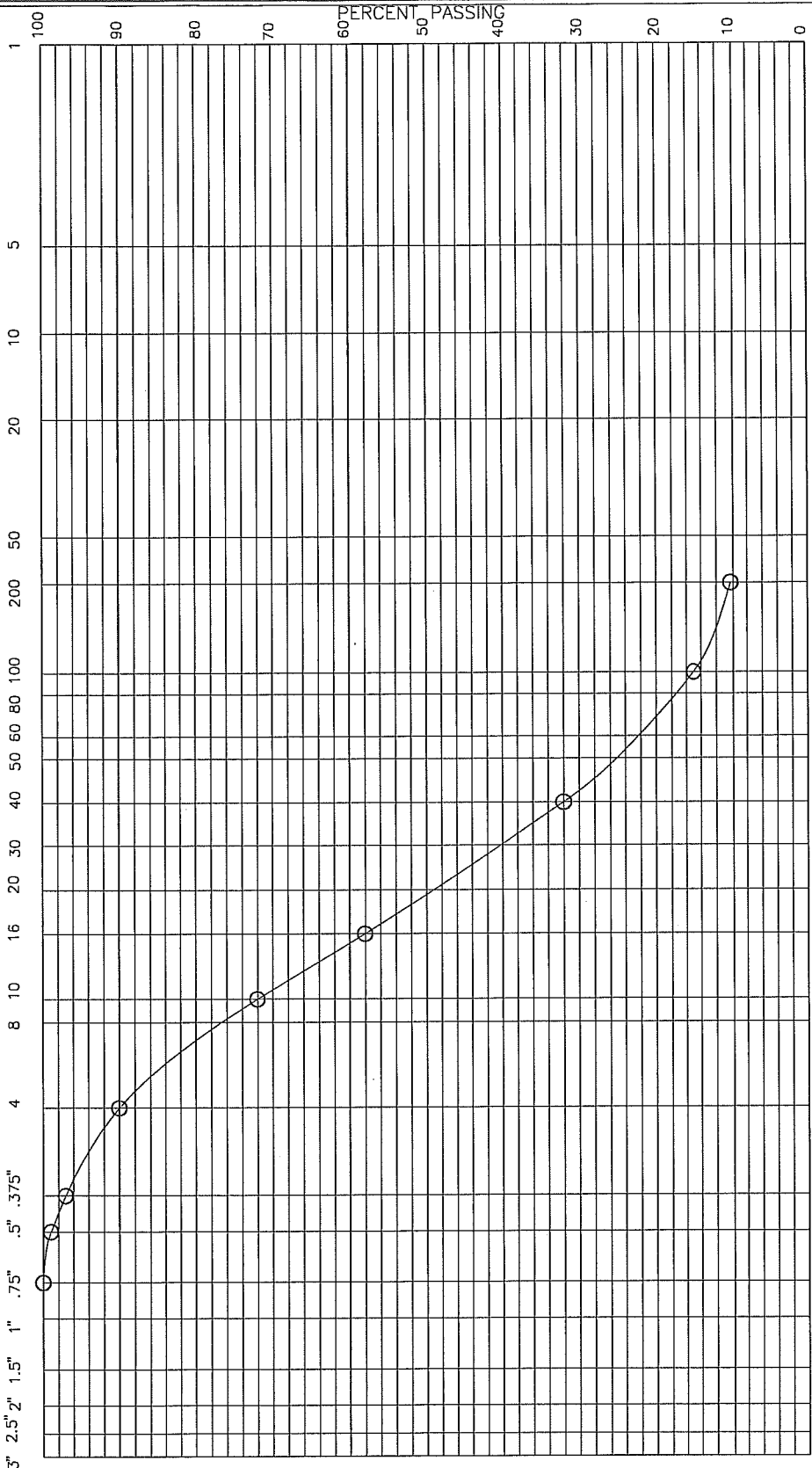


SHEET  
20  
OF  
25

UNIFIED SOIL CLASSIFICATION SYSTEM

GRAVEL	COARSE SAND	MEDIUM SAND	FINE SAND	SILT AND CLAY
--------	-------------	-------------	-----------	---------------

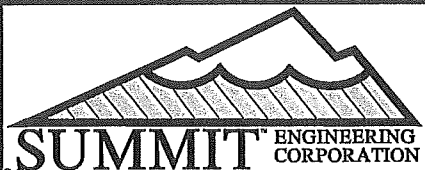
U.S. Standard Sieve Sizes — Microns



SYMBOL: ○  
 D-60 = 0.05  
 D-30 = 0.015  
 D-10 = 0.00252  
 CU = 19.84  
 CC = 1.78  
 DESCRIPTION:  
 CLASSIFICATION: SW-SM  
 WELL GRADED SAND WITH SILT

GRADING ANALYSIS  
SILVER HILLS  
RENO, NEVADA

JOB NO: 28813  
APPR: JKG  
BY: TMH  
Copyright SUMMIT ENG 2009

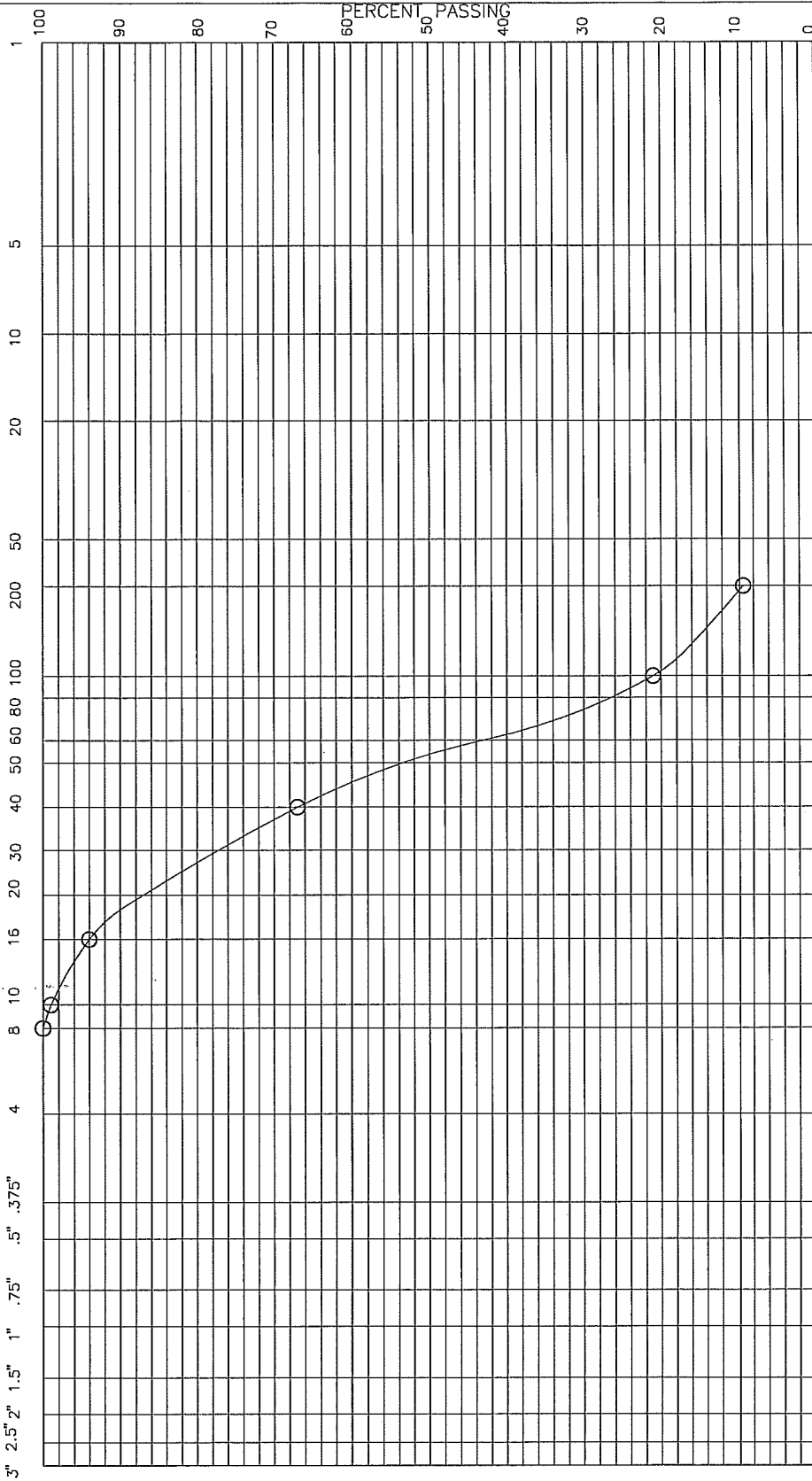


SHEET  
21  
OF  
25

UNIFIED SOIL CLASSIFICATION SYSTEM

GRAVEL	COARSE SAND	MEDIUM SAND	FINE SAND	SILT AND CLAY
--------	-------------	-------------	-----------	---------------

U.S. Standard Sieve Sizes ————— Microns

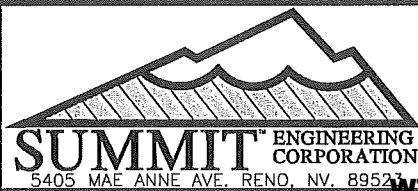


3" 2.5" 2" 1.5" 1" .75" .5" .375" 8 10 16 20 30 40 50 60 80 100 200 500 1000 0.0005" 0.001" 0.0005" 0.001" 0.0005" 0.001" 0.0005" 0.001" 0.0005"

SYMBOL: O D-30 = 0.0078 D-10 = 0.003  
 D-60 = 0.014 D-10 = 0.003  
 SAMPLE NO.: TP-10  
 LOCATION.: 10.5'-11.5'  
 DESCRIPTION:  
 CLASSIFICATION: SP-SM  
 POORLY GRADED SAND WITH SILT  
 CU = 4.66  
 CC = 1.448

GRADING ANALYSIS  
SILVER HILLS  
RENO, NEVADA

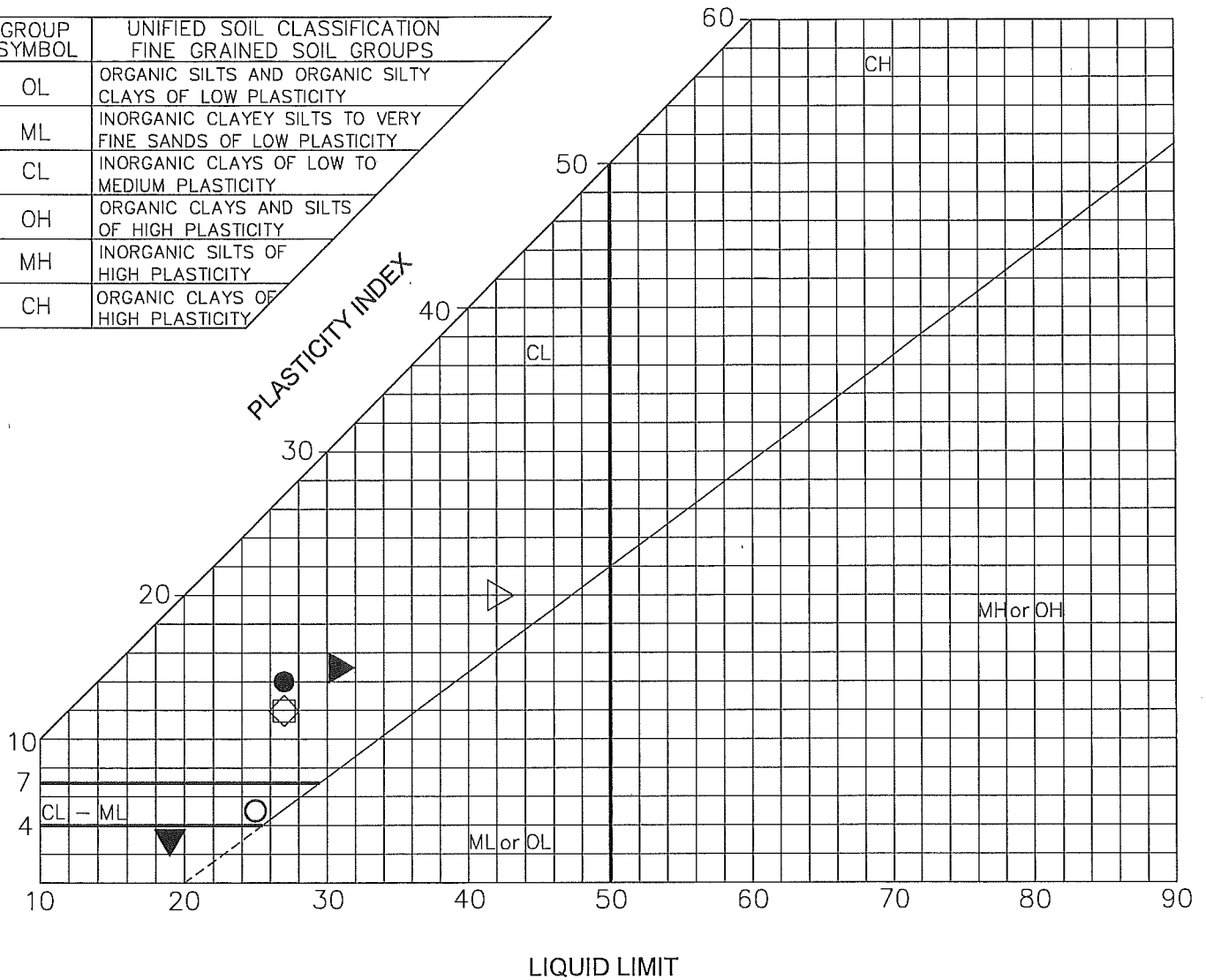
JOB NO: 28813  
APPR: JKG  
BY: TMH  
Copyright SUMMIT ENG 2009



SHEET 22  
OF 25



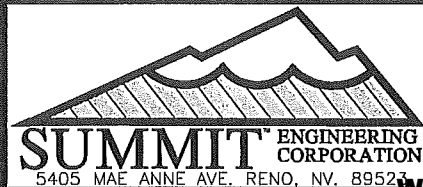
GROUP SYMBOL	UNIFIED SOIL CLASSIFICATION FINE GRAINED SOIL GROUPS
OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
ML	INORGANIC CLAYEY SILTS TO VERY FINE SANDS OF LOW PLASTICITY
CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY
OH	ORGANIC CLAYS AND SILTS OF HIGH PLASTICITY
MH	INORGANIC SILTS OF HIGH PLASTICITY
CH	ORGANIC CLAYS OF HIGH PLASTICITY



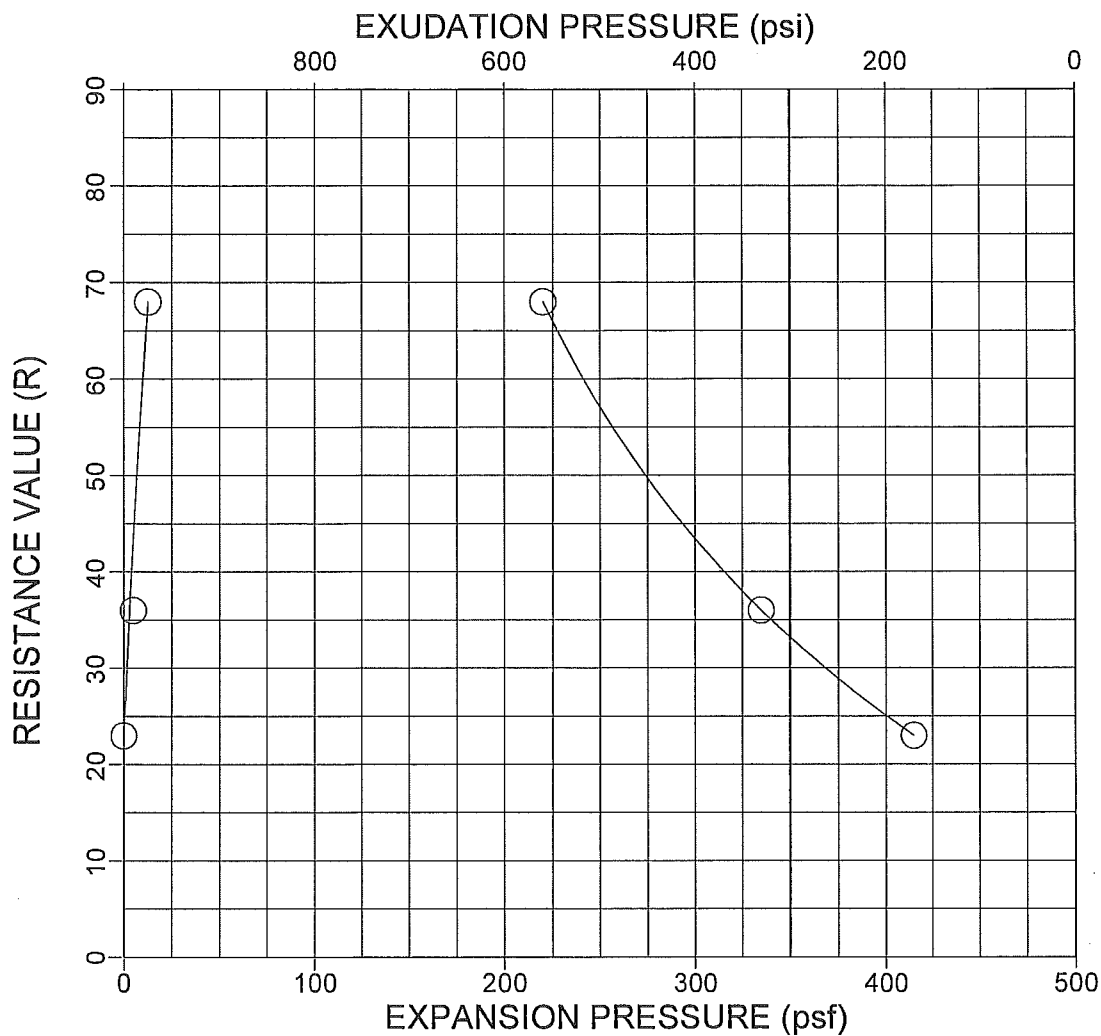
TEST SYMBOL	SAMPLE LOCATION	SAMPLE DEPTH	% PASSING #200 SIEVE	LIQUID LIMIT	PLASTICITY INDEX	EXP. INDEX	CLASSIFICATION
□	TP-1	1'-2'	22.8	27	12		SC
◇	TP-5	2'-3'	21.2	27	12		SC
▶	TP-6	10'-11'	35.1	31	15		SC
◀	TP-8	1'-2'	42.3	42	20		SC
○	TP-9	4'-5'	27.8	25	5		SC-SM
●	TP-12	8.5'-9.5'	28.5	27	14		SC
▼	TP-13	2'-3'	21.4	19	3		SM

PLASTICITY INDEX  
SILVER HILLS  
RENO, NEVADA

JOB NO.: 28813  
APPR: JKG  
BY: TMH  
Copyright SUMMIT ENG 2009



SHEET  
23  
OF  
25

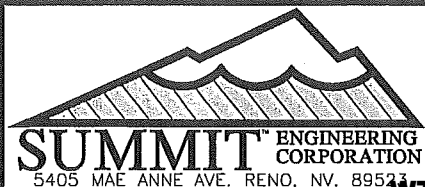


Specimen No.	1	2	3
Water Content (%)	11.5	12.5	10.5
Dry Density (pcf)	128.8	126.8	130.7
Exudation Pressure (psi)	330	167	561
Expansion Pressure (psf)	4.32	0.0	12.96
Resistance Value (R)	36	23	68

Sample Source	Classification	Sand Equivalent	Values Interpolated at 300 psi Exudation press.	
			Expansion Pressure	R-value
TP-5 2'-3'	CLAYEY SAND		3	33

R-VALUE  
SILVER HILLS  
RENO, NEVADA

JOB NO.: 28813  
APPR.: JKG  
BY: TMH  
Copyright SUMMIT ENG 2009



SHEET  
24  
OF  
25

# Atlas Consultants, Inc.

6000 S. Eastern Avenue, Suite 10J • Las Vegas, Nevada 89119  
 (702) 383-1199 • Fax (702) 383-4983

CHEMICAL  
 PHYSICAL

member of  
 AMERICAN SOCIETY FOR  
 TESTING MATERIALS

ACT LAB NO: 15425(a)                      DATE: February 27, 2009  
 PROJECT NO: 28813                          P.O. 4196  
 SUBMITTED BY: Summit Engineering Corporation (Reno)      LAB ID: 8995  
 ANALYZED BY: Kurt D. Ergun

Silver Hills

**WATER SOLUBLE SALT ANALYSIS IN SOIL**  
 1:5 (soil:water) Aqueous Extraction  
 AWWA 3500-Na D, AWWA 4500 E  
 AWWA 2540 C

SOIL SIEVE SIZE = -10 MESH

Sample No.	Location	Depth (feet)	Sodium (Percent)	Water Soluble Sulfate (SO <sub>4</sub> ) (Percent)	Total Available Water Soluble Sodium Sulfate (Na <sub>2</sub> SO <sub>4</sub> ) (Percent)
	TP-1	1.0-2.0	<0.01	0.01	<0.01
Solubility = 0.05%					
	TP-8	1.0-2.0	<0.01	0.01	<0.01
Solubility = 0.05%					
	TP-13	2.0-3.0	<0.01	0.01	<0.01
Solubility = 0.06%					

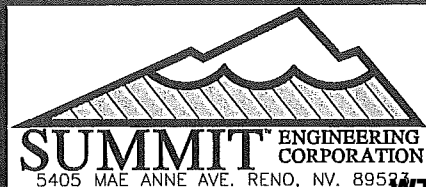
*Kurt D. Ergun*  
 LABORATORY DIRECTOR

Notes: The results for each constituent denote the percentage of that analyte, at a 1:5 (soil:water) extraction ratio, which is present in the soil. Sodium was determined by flame photometry, sulfate turbidimetrically, and sodium sulfate by calculation.

TOTAL P.01

**SULFATE ANALYSIS  
 SILVER HILLS  
 RENO, NEVADA**

JOB NO.: 28813  
 APPR.: JKG  
 BY: TMH  
 Copyright SUMMIT ENG 2009



SHEET  
 25  
 OF  
 25



**SILVER HILLS PHASE 1**  
**TRAFFIC ANALYSIS**

FEBRUARY 2021



Prepared by:  
Solaegui Engineers, Ltd.  
715 H Street  
Sparks, Nevada 89431  
(775) 358-1004

# TABLE OF CONTENTS

EXECUTIVE SUMMARY.....	3
INTRODUCTION.....	4
STUDY AREA.....	4
EXISTING AND PROPOSED LAND USES.....	4
EXISTING AND PROPOSED ROADWAYS AND INTERSECTIONS.....	4
TRIP GENERATION.....	7
TRIP DISTRIBUTION AND ASSIGNMENT.....	8
EXISTING AND PROJECTED TRAFFIC VOLUMES.....	8
INTERSECTION CAPACITY ANALYSIS.....	15
SITE PLAN REVIEW.....	20
RECOMMENDATIONS.....	20
APPENDIX.....	21

# LIST OF FIGURES

FIGURE 1 - VICINITY MAP.....	5
FIGURE 2 - TRIP DISTRIBUTION.....	9
FIGURE 3 - TRIP ASSIGNMENT.....	10
FIGURE 4 - EXISTING TRAFFIC VOLUMES.....	11
FIGURE 5 - EXISTING PLUS PROJECT TRAFFIC VOLUMES.....	12
FIGURE 6 - 2028 BASE TRAFFIC VOLUMES.....	13
FIGURE 7 - 2028 BASE PLUS PROJECT TRAFFIC VOLUMES.....	14

# SILVER HILLS PHASE 1

## TRAFFIC ANALYSIS

### EXECUTIVE SUMMARY

The proposed Silver Hills development will be located in Washoe County, Nevada. The project site is located west of Red Rock Road in the vicinity of Silver Knolls Boulevard. Phase 1 is located in the northeast corner of the site. The entire project site is currently undeveloped land. The purpose of this study is to address the Phase 1 project impacts on the adjacent street network. The Red Rock Road intersections with the US-395 Northbound and Southbound Ramps, Silver Lake Road, Moya Boulevard, Osage Road, Bighorn Drive, Plata Mesa Drive, Silver Knolls Boulevard, and Silver Hills Parkway have been identified for capacity analysis for the existing, existing plus project, 2028 base, and 2028 base plus project scenarios. The Red Rock Road/Longhorn Drive intersection has been identified for qualitative analysis.

The proposed Silver Hills Phase 1 development will consist of the construction of 361 single family detached homes. Project access will be provided from the construction of Silver Hills Parkway west of Red Rock Road. The Silver Hills Phase 1 development is anticipated to generate 3,408 average daily trips with 267 trips occurring during the AM peak hour and 357 trips occurring during the PM peak hour.

Traffic generated by the Silver Hills Phase 1 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 Washoe County and Nevada Department of Transportation requirements.

It is recommended that traffic signal warrants be periodically reviewed at the Red Rock Road/US-395 Southbound Ramp intersection and traffic signal and/or capacity improvements be constructed when warranted through the Regional Transportation Commission's (RTC) Regional Road Impact Fee Program.

It is recommended that capacity improvements be constructed at the Red Rock Road/US-395 Northbound Ramp intersection when warranted through the Regional Transportation Commission's (RTC) Regional Road Impact Fee Program. A free right turn lane at the east off-ramp approach should be considered a priority improvement that the project developer pursue through RTC impact fee waivers with future development phases.

It is recommended that the Red Rock Road/Silver Hills Parkway intersection be constructed as an unsignalized three-leg intersection with stop sign control at the west approach and an exclusive left turn lane at the south approach.



# INTRODUCTION

## STUDY AREA

The proposed Silver Hills development is located in Washoe County, Nevada. The project site is located west of Red Rock Road in the vicinity of Silver Knolls Boulevard. Phase 1 is located in the northeast corner of the site. The location of the project site is shown in Figure 1. The purpose of this study is to address the Phase 1 project impacts on the adjacent street network. The Red Rock Road intersections with the US-395 Northbound and Southbound Ramps, Silver Lake Road, Moya Boulevard, Osage Road, Bighorn Drive, Plata Mesa Drive, Silver Knolls Boulevard, and Silver Hills Parkway have been identified for capacity analysis for the existing, existing plus project, 2028 base, and 2028 base plus project scenarios. The Red Rock Road/Longhorn Drive intersection has been identified for qualitative analysis.

## EXISTING AND PROPOSED LAND USES

The project site is currently undeveloped land. Properties adjacent to the site include residential development to the east and south and undeveloped land to the north and west. The proposed Silver Hills Phase 1 development will consist of the construction of 361 single family homes. Project access will be provided from the construction of Silver Hills Parkway west of Red Rock Road.

## EXISTING AND PROPOSED ROADWAYS AND INTERSECTIONS

Red Rock Road is a four-lane roadway with two through lanes in each direction from the US-395 Northbound Ramp intersection to Moya Boulevard and a two-lane roadway with one through lane in each direction south of the US-395 Northbound Ramp intersection and north of Moya Boulevard. The speed limit is posted for 35 miles per hour from US-395 to Moya Boulevard, 40 miles per hour from Moya Boulevard to south of Bighorn Drive, 25 miles per hour further north to Longview Drive, 40 miles per hour between Longview Drive and the fire station, and 50 miles per hour further north. Roadway improvements generally include curb, gutter and sidewalk on the four-lane segment and graded shoulders with striped edgelines on the two-lane section.

Silver Lake Road is a two-lane roadway with one through-lane in each direction. The speed limit is posted for 35 miles per hour. Roadway improvements generally include curb, gutter and sidewalk in some areas and graded shoulders with striped edgelines in other areas. Bike lanes exist on both sides of the street east of Red Rock Road.

Moya Boulevard is a two-lane roadway with one through lane in each direction east of Red Rock Road. The speed limit is posted for 45 miles per hour with a 35 mile per hour speed limit for trucks. Roadway improvements generally include curb, gutter, sidewalks, and bike lanes on both sides of the street with a center two-way left turn lane.

Osage Road is generally an unimproved gravel roadway with one through lane in each direction east of Red Rock Road. The speed limit is posted for 15 miles per hour.



SILVER HILLS PHASE 1  
VICINITY MAP  
FIGURE 1

Bighorn Drive is a two-lane roadway with one through lane in each direction west of Red Rock Road. The speed limit is not posted. Roadway improvements generally include paved travel lanes with graded shoulders.

Plata Mesa Drive is a two-lane roadway with one through lane in each direction east of Red Rock Road. The speed limit is posted for 25 miles per hour. Roadway improvements generally include paved travel lanes with graded shoulders.

Silver Knolls Boulevard is a two-lane roadway with one through lane in each direction east of Red Rock Road. The speed limit is posted for 25 miles per hour. Roadway improvements include paved travel lanes with graded shoulders. An unimproved gravel road serving Silver Knolls Park aligns with Silver Knolls Boulevard on the west side of Red Rock Road.

Silver Hills Parkway does not currently exist but is anticipated to be constructed to serve phase one of the project. Silver Hills Parkway is anticipated to be a two-lane roadway with one through lane in each direction west of Red Rock Road.

The Red Rock Road/US-395 Southbound Ramp intersection is an unsignalized four-leg intersection with stop sign control at the off-ramp approach. The north Red Rock Road approach contains one shared left turn-through lane. The south Red Rock Road approach contains one shared through-right turn lane. The off-ramp approach contains one shared left turn-through-right turn lane. The east leg is the on-ramp to southbound US-395.

The Red Rock Road/US-395 Northbound Ramp intersection is an unsignalized four-leg intersection with stop sign control at the off-ramp approach. The north Red Rock Road approach contains one through lane and one right turn lane. The south Red Rock Road approach contains one left turn lane and one through lane. The off-ramp approach contains one shared left turn-through-right turn lane. The west leg is the on-ramp to northbound US-395.

The Red Rock Road/Silver Lake Road intersection is a signalized four-leg intersection with flashing yellow arrow phasing at the north, south, and east approaches. The north and south approaches each contain one left turn lane, one through lane, and one shared through-right turn lane. The west approach contains one shared left turn-through-right turn lane. The east approach contains one left turn lane and one shared through-right turn lane.

The Red Rock Road/Moya Boulevard intersection is a signalized three-leg intersection with flashing yellow arrow phasing for the southbound left turn movement. The north approach contains one left turn lane and one through lane. The south approach contains one through lane and one right turn lane. The east approach contains one left turn lane and one shared left turn-right turn lane.

The Red Rock Road/Osage Road intersection is an unsignalized three-leg intersection with stop sign control at the east approach. The north approach contains one shared left turn-through lane. The south approach contains one shared through-right turn lane. The west approach contains one shared left turn-right turn lane.



The Red Rock Road/Bighorn Drive intersection is an unsignalized three-leg intersection with stop sign control at the west approach. The north approach contains one shared through-right turn lane. The south approach contains one shared left turn-through lane. The west approach contains one shared left turn-right turn lane.

The Red Rock Road/Plata Mesa Drive intersection is an unsignalized intersection with stop sign control at the east approach. A residential driveway aligns with Plata Mesa Drive west of Red Rock Road. All approaches contain one shared left turn-through-right turn lane.

The Red Rock Road/Silver Knolls Boulevard intersection is an unsignalized four-leg intersection with stop sign control at the east and west approaches. All approaches contain one shared left turn-through-right turn lane.

The Red Rock Road/Silver Hills Parkway intersection does not currently exist but will be constructed as an unsignalized three-leg intersection with stop sign control at the west approach. The intersection is anticipated to contain one shared through-right turn lane at the north approach, one left turn lane and one through lane at the south approach, and one shared left turn-right turn lane at the west approach.

## 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 rates were obtained from the 10th Edition of *ITE Trip Generation* (2018) for Land Uses 210: Single Family Detached Housing. The proposed Silver Hills Phase 1 development will consist of the construction of 361 single family homes. Trip generation was calculated for an average weekday and the weekday peak hours occurring between 7:00 and 9:00 AM and 4:00 and 6:00 PM. The periods correspond to the peak hours of adjacent street traffic. Table 1 shows a summary of the average daily traffic (ADT) and AM and PM peak hour volumes generated by the proposed project. The trip generation worksheets are included in the Appendix.

LAND USE	ADT	AM PEAK HOUR			PM PEAK HOUR		
		IN	OUT	TOTAL	IN	OUT	TOTAL
Single Family Detached Housing (361 DU)	3,408	67	200	267	225	132	357

As shown in Table 1, the proposed Silver Hills Phase 1 development is anticipated to generate 3,408 average daily trips with 267 trips occurring during the AM peak hour and 357 trips occurring during the PM peak hour.

## TRIP DISTRIBUTION AND ASSIGNMENT

The distribution of the project traffic to the key intersections was based on existing and future 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 trips shown in Table 1 were subsequently assigned to the key intersections based on the trip distribution percentages. Figure 3 shows the AM and PM peak hour project trip assignment at the key intersections.

## EXISTING AND PROJECTED TRAFFIC VOLUMES

The existing peak hour traffic volumes at the Red Rock Road intersections with the US-395 Northbound and Southbound Ramps, Silver Lake Road, Moya Boulevard, Bighorn Drive, and Silver Knolls Boulevard were obtained from the previous traffic study for Silver Hills dated July of 2018. The existing peak hour traffic volumes at the Red Rock Road intersections with Osage Road and Plata Mesa Drive were obtained from traffic counts taken in January of 2021. The 2021 traffic counts were conducted during the COVID-19 pandemic which may have resulted in reduced traffic. The 2021 traffic counts were subsequently compared with the preCOVID-19 traffic volumes obtained from the previous traffic study and appropriate adjustments were made in order to ensure conservative traffic volumes. Figure 4 shows the existing traffic volumes at the key intersections during the AM and PM peak hours.

Figure 5 shows the existing plus project traffic volumes at the key intersections during the AM and PM peak hours. The existing plus project 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 2028 base traffic volumes at the key intersections during the AM and PM peak hours. The 2028 base traffic volumes were estimated based on average daily and peak hour traffic volumes extrapolated from 2025 and 2030 traffic volumes obtained directly from the Regional Transportation Commission's traffic forecasting model.

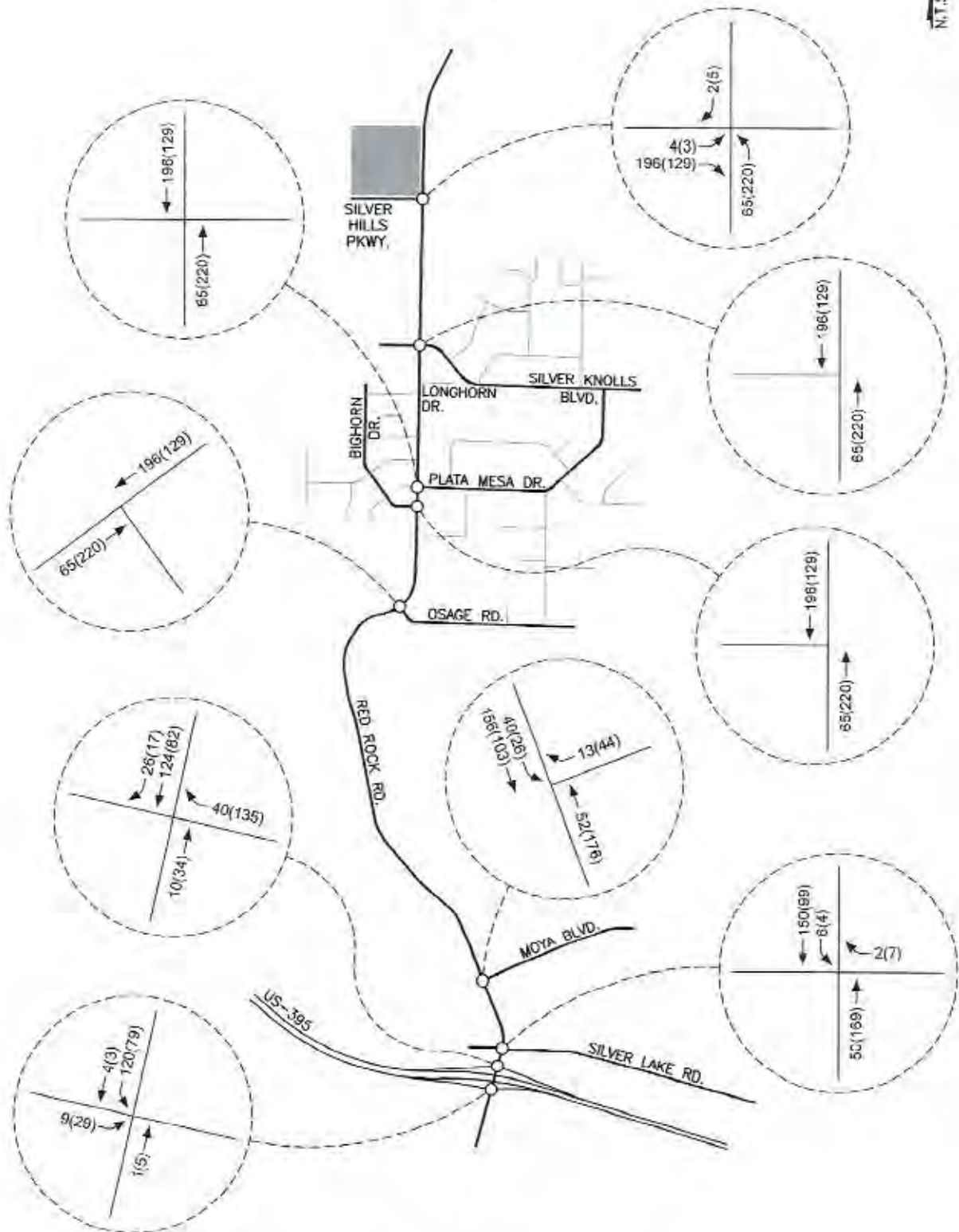
Figure 7 shows the 2028 base plus project traffic volumes at the key intersections during the AM and PM peak hours. The 2028 base plus project traffic volumes were obtained by adding the trip assignment volumes shown on Figure 3 to the 2028 base traffic volumes shown on Figure 6.



SILVER HILLS PHASE 1  
TRIP DISTRIBUTION  
FIGURE 2

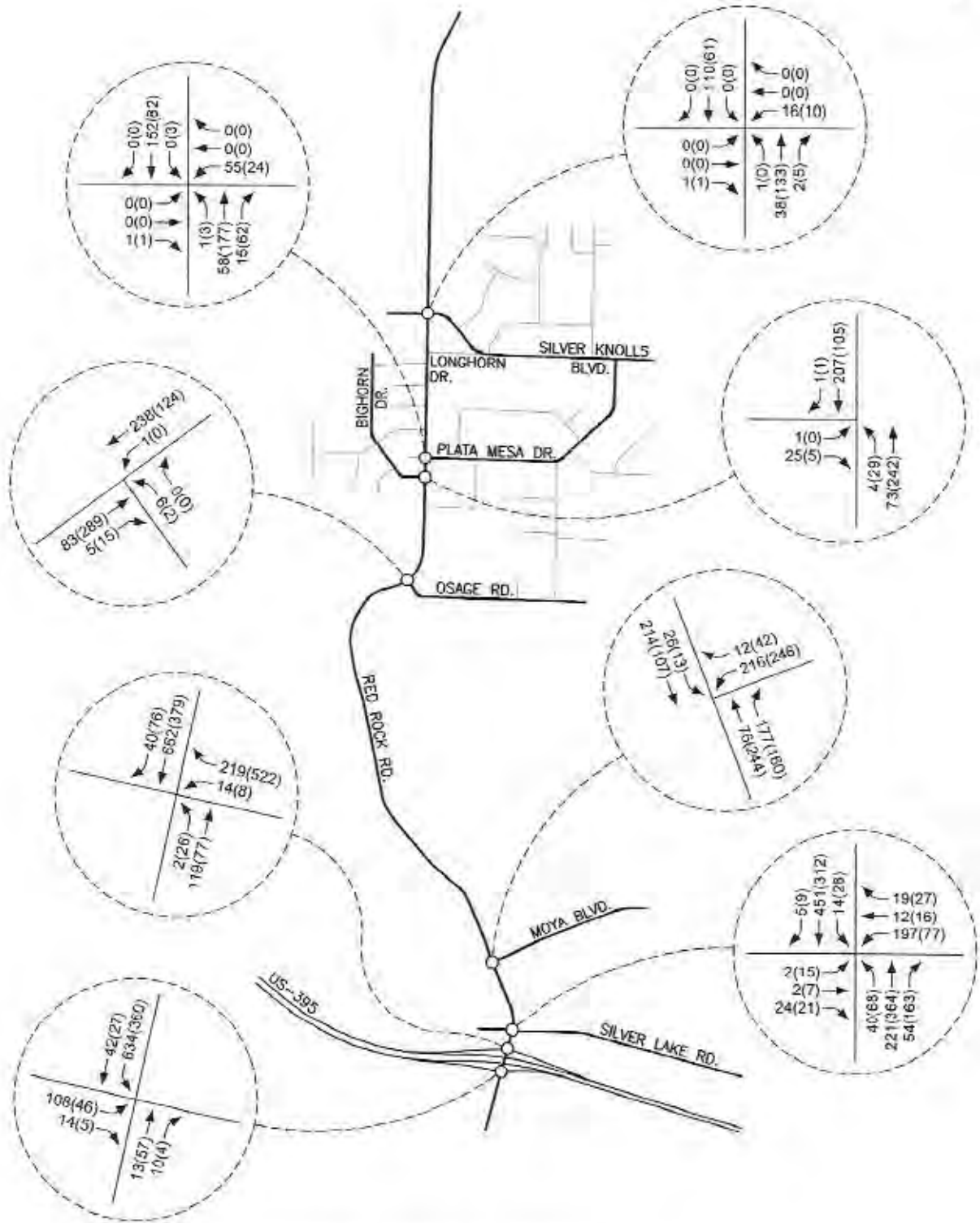


**LEGEND**  
 — AM PEAK HOUR  
 (—) PM PEAK HOUR



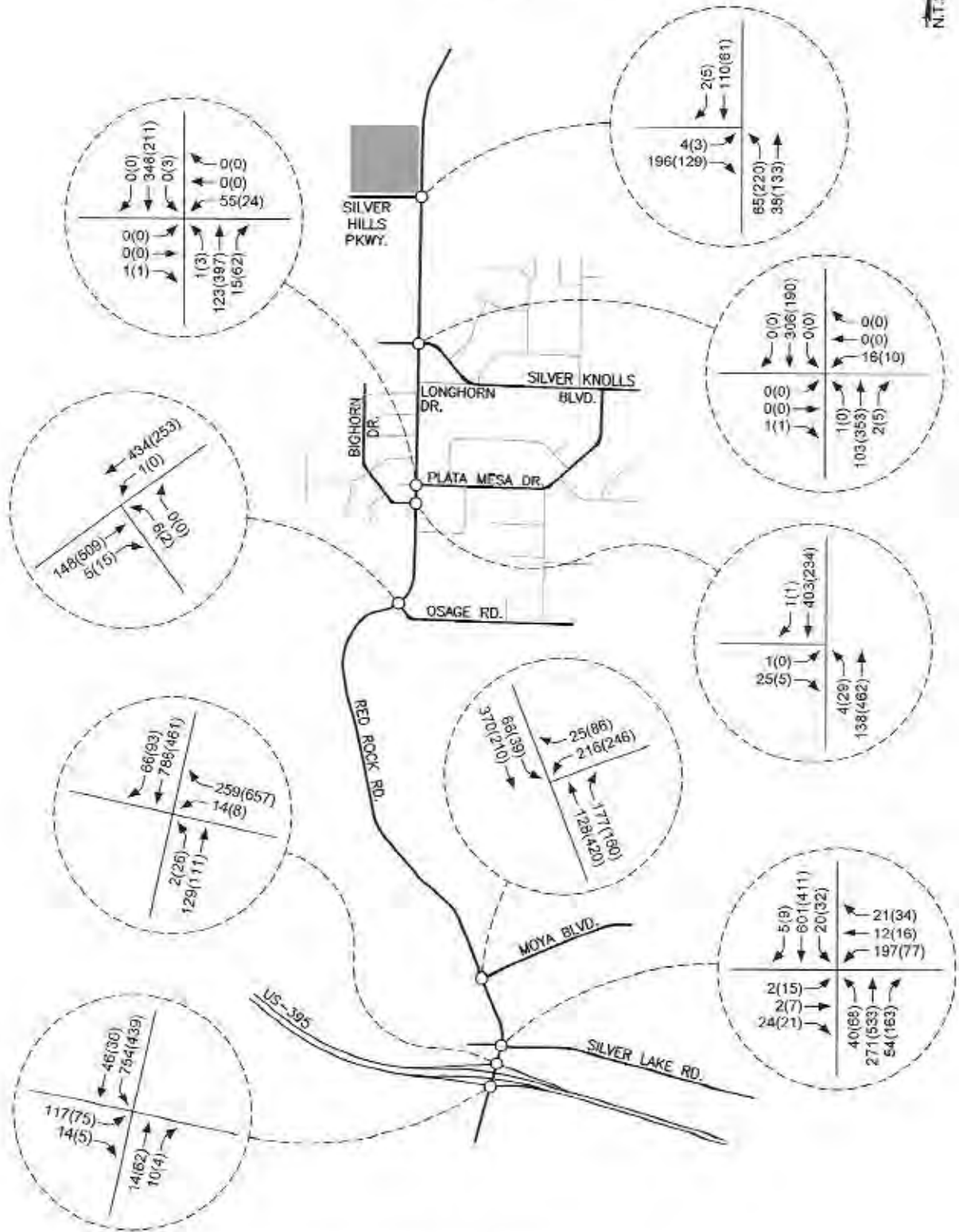
**SILVER HILLS PHASE 1**  
**TRIP ASSIGNMENT**  
**FIGURE 3**

**LEGEND**  
 — AM PEAK HOUR  
 (-) PM PEAK HOUR



**SILVER HILLS PHASE 1**  
**EXISTING TRAFFIC VOLUMES**  
**FIGURE 4**

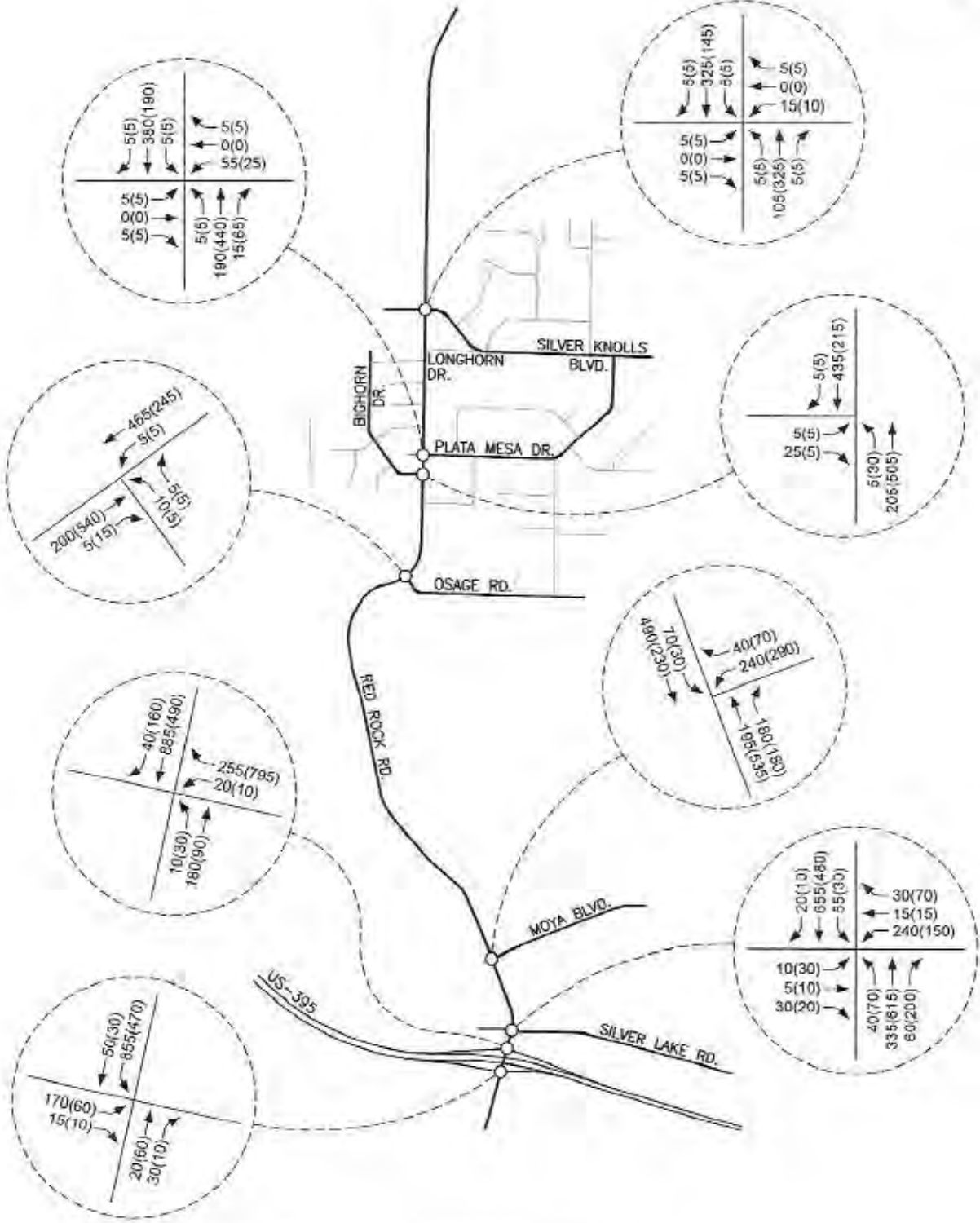
**LEGEND**  
 — AM PEAK HOUR  
 (—) PM PEAK HOUR



**SILVER HILLS PHASE 1**  
**EXISTING PLUS PROJECT TRAFFIC VOLUMES**  
**FIGURE 5**

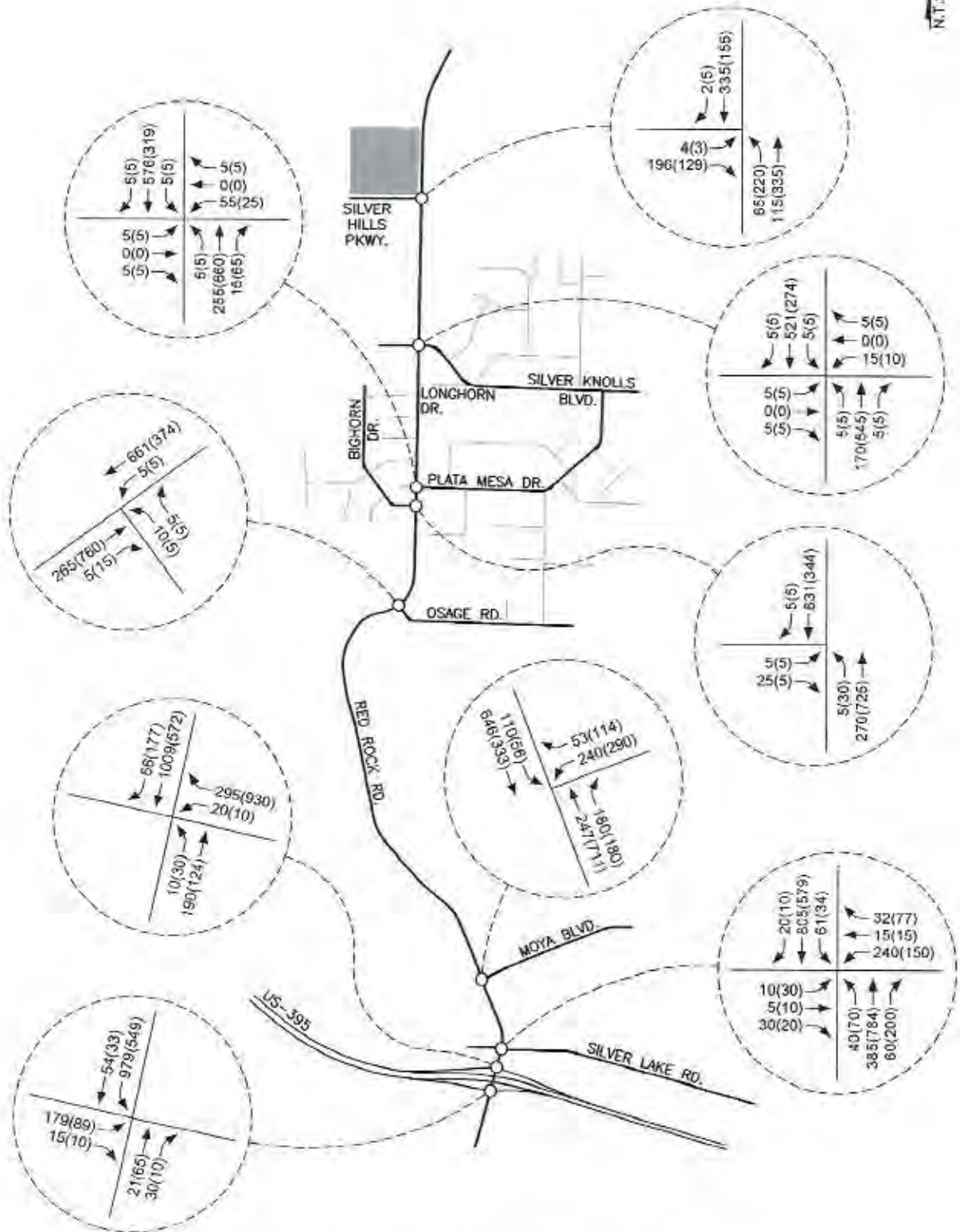


**LEGEND**  
 - AM PEAK HOUR  
 (-) PM PEAK HOUR



**SILVER HILLS PHASE 1**  
**2028 BASE TRAFFIC VOLUMES**  
**FIGURE 6**

**LEGEND**  
 — AM PEAK HOUR  
 (-) PM PEAK HOUR



**SILVER HILLS PHASE 1**  
**2028 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 (6th Edition)*, prepared by the Transportation Research Board, for unsignalized and signalized intersections using the latest version of the Highway Capacity software.

The result of capacity analysis is a level of service (LOS) rating for signalized intersections and minor movements at a partial stop controlled intersection. 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. The intersection capacity worksheets are included in the Appendix.

TABLE 4 INTERSECTION LEVEL OF SERVICE AND DELAY RESULTS								
INTERSECTION	EXISTING		EXISTING + PROJECT		2028 BASE		2028 BASE + PROJECT	
	AM	PM	AM	PM	AM	PM	AM	PM
Red Rock Road & US-395 SB Ramps Stop at West Leg								
EB Left-Thru-Right	F432.0	D25.2	F999+	F50.6	F999+	E49.9	F999+	F176.5
SB Left	A9.0	A8.1	A9.7	A8.4	B10.7	A8.6	B12.3	A8.9
Signalized w/Improvements	B10.7	B10.3	B12.4	B11.1	B19.7	B10.9	C34.6	B12.1
Red Rock Road & US-395 NB Ramps Stop at East Leg								
WB Left-Thru-Right	B11.3	B14.2	B12.2	C21.7	B14.5	E36.2	C16.7	F95.1
NB Left	A9.3	A8.5	A9.9	A8.8	B10.3	A9.2	B11.1	A9.6
Stop at East Leg w/Free WB Right								
WB Left-Thru	N/A	N/A	N/A	N/A	D27.4	C16.3	D34.4	C18.9
NB Left	N/A	N/A	N/A	N/A	B10.3	A9.2	B11.1	A9.6
Red Rock Road & Silver Lake Road Signalized	B18.3	B19.2	B19.6	C21.2	C20.4	C22.3	C22.6	C26.5
Red Rock Road & Moya Boulevard Signalized	B14.5	B16.5	B14.5	B17.1	B14.6	B19.6	B15.6	C29.3
Red Rock Road & Osage Road Stop at East Leg								
WB Left-Right	B10.7	B11.4	B13.3	C15.8	B13.0	B14.5	C16.4	C20.1
SB Left	A7.4	A7.9	A7.6	A8.6	A7.7	A8.7	A7.9	A9.6
Red Rock Road & Bighorn Drive Stop at West Leg								
EB Left-Right	A9.6	A8.9	B11.2	A9.6	B12.0	B13.1	B14.7	C17.8
NB Left	A7.7	A7.5	A8.2	A7.8	A8.3	A7.8	A9.0	A8.1
Red Rock & Plata Mesa Drive Stop at East & West Legs								
EB Left-Thru-Right	A9.1	A8.7	B10.4	A9.5	B12.8	B12.9	C16.6	C18.3
WB Left-Thru-Right	B10.5	B11.1	B13.9	C16.2	C16.0	C16.4	C24.1	C24.9
NB Left	A7.6	A7.4	A8.1	A7.7	A8.2	A7.7	A8.8	A8.0
SB Left	A7.4	A7.8	A7.5	A8.4	A7.7	A8.5	A7.9	A9.4
Red Rock & Silver Knolls Stop at East & West Legs								
EB Left-Thru-Right	A8.9	A8.6	B10.1	A9.3	B11.5	B11.2	B14.6	C15.0
WB Left-Thru-Right	A9.6	A9.9	B12.2	B13.9	B11.9	B12.4	C15.5	C17.8
NB Left	A7.5	A7.3	A7.9	A7.6	A8.0	A7.6	A8.6	A7.9
SB Left	A7.3	A7.5	A7.4	A8.1	A7.5	A8.0	A7.6	A8.7
Red Rock Road & Silver Hills Stop at West Leg								
EB Left-Right	N/A	N/A	B10.1	A9.4	N/A	N/A	B12.9	B10.3
NB Left	N/A	N/A	A7.6	A7.8	N/A	N/A	A8.2	A8.1

### Red Rock Road/US-395 Southbound Ramp Intersection

The Red Rock Road/US-395 Southbound Ramp intersection was analyzed as an unsignalized four-leg intersection with stop sign control at the west approach for all scenarios. The intersection minor movements currently operate at LOS D or better except for the eastbound left turn movement which operates at level of service F during the AM peak hour. For the existing plus project traffic volumes the eastbound left turn movement operates at LOS F during the AM and PM peak hours. For the 2028 base traffic volumes the eastbound left turn movement operates at LOS F during the AM peak hour and LOS E during the PM peak hour. For the 2028 base plus project traffic volumes the eastbound left turn movement operates at LOS F during the AM and PM peak hours. The intersection was analyzed with the existing approach lanes for all scenarios. Capacity improvements that include exclusive left turn lanes at the north and west approaches will decrease delays but the unsignalized intersection will continue to operate at LOS F for all scenarios.

The Red Rock Road/US-395 Southbound Ramp intersection was subsequently analyzed as a signalized intersection with capacity improvements that include separate left turn and through lanes at the north approach. The signalized intersection is anticipated to operate at LOS C or better. Traffic signal warrant 3 per the *Manual on Uniform Traffic Control Devices* (MUTCD) does not appear to be met at the intersection. However, the MUTCD has eight additional warrants that should be evaluated when considering the need for the installation of a traffic signal. It is recommended that traffic signal warrants be periodically reviewed at the Red Rock Road/US-395 Southbound Ramp intersection and traffic signal and capacity improvements be constructed when warranted through RTC's Regional Road Impact Fee Program.

### Red Rock Road/US-395 Northbound Ramp Intersection

The Red Rock Road/US-395 Northbound Ramp intersection was analyzed as an unsignalized four-leg intersection with stop sign control at the east approach for all scenarios. The intersection minor movements currently operate at LOS B or better during the AM and PM peak hours. For the existing plus project traffic volumes the intersection minor movements operate at LOS C or better during the AM and PM peak hours. For the 2028 base traffic volumes the intersection minor movements operate at LOS C or better except for the westbound left turn-through-right turn movement which operates at LOS E during the PM peak hour. For the 2028 base plus project traffic volumes the intersection minor movements operate at LOS C or better except for the westbound left turn-through-right turn movement which operates at LOS F during the PM peak hour. The intersection was analyzed with the existing approach lanes for all scenarios.

Capacity improvements that include a free westbound right turn lane on the off-ramp will result in LOS D or better operation during the AM and PM peak hours for the 2028 base and 2028 base plus project traffic volumes under unsignalized conditions. It is recommended that capacity improvements be constructed at the Red Rock Road/US-395 Northbound Ramp intersection when warranted through RTC's Regional Road Impact Fee Program. A free right turn lane at the east off-ramp approach should be considered a priority improvement that the project developer pursue through RTC impact fee waivers with future development phases.

### Red Rock Road/Silver Lake Road Intersection

The Red Rock Road/Silver Lake Road intersection was analyzed as a signalized four-leg intersection for all scenarios. The intersection currently operates at LOS B with a delay of 18.3 seconds per vehicle during the AM peak hour and LOS B with a delay of 19.2 seconds per vehicle during the PM peak hour. For the existing plus project traffic volumes the intersection operates at LOS B with a delay of 19.6 seconds per vehicle during the AM peak hour and LOS C with a delay of 21.2 seconds per vehicle during the PM peak hour. For the 2028 base traffic volumes the intersection operates at LOS C with a delay of 20.4 seconds per vehicle during the AM peak hour and LOS C with a delay of 22.3 seconds per vehicle during the PM peak hour. For the 2028 base plus project traffic volumes the intersection operates at LOS C with a delay of 22.6 seconds per vehicle during the AM peak hour and LOS C with a delay of 26.5 seconds per vehicle during the PM peak hour. The intersection was analyzed with the existing approach lanes for all scenarios.

### Red Rock Road/Moya Boulevard Intersection

The Red Rock Road/Moya Boulevard intersection was analyzed as a signalized three-leg intersection for all scenarios. The intersection currently operates at LOS B with a delay of 14.5 seconds per vehicle during the AM peak hour and LOS B with a delay of 16.5 seconds per vehicle during the PM peak hour. For the existing plus project traffic volumes the intersection operates at LOS B with a delay of 14.5 seconds per vehicle during the AM peak hour and LOS B with a delay of 17.1 seconds per vehicle during the PM peak hour. For the 2028 base traffic volumes the intersection operates at LOS B with a delay of 14.6 seconds per vehicle during the AM peak hour and LOS B with a delay of 19.6 seconds per vehicle during the PM peak hour. For the 2028 base plus project traffic volumes the intersection operates at LOS B with a delay of 15.6 seconds per vehicle during the AM peak hour and LOS C with a delay of 29.3 seconds per vehicle during the PM peak hour. The intersection was analyzed with the existing approach lanes for all scenarios.

### Red Rock Road/Osage Road Intersection

The Red Rock Road/Osage Road intersection was analyzed as an unsignalized three-leg intersection with stop sign control at the east approach for all scenarios. The intersection minor movements currently operate at LOS B or better during the AM and PM peak hours. For the existing plus project traffic volumes the intersection minor movements operate at LOS C or better during the AM and PM peak hours. For the 2028 base traffic volumes the intersection minor movements operate at LOS B or better during the AM and PM peak hours. For the 2028 base plus project traffic volumes the intersection minor movements operate at LOS C or better during the AM and PM peak hours. The intersection was analyzed with the existing approach lanes.

### Red Rock Road/Bighorn Drive Intersection

The Red Rock Road/Bighorn Drive intersection was analyzed as an unsignalized three-leg intersection with stop sign control at the west approach for all scenarios. The minor movements currently operate at LOS A during the AM and PM peak hours. For the existing plus project traffic volumes the minor movements operate at LOS B or better during the AM and PM peak hours.



For the 2028 base traffic volumes the minor movements at the Red Rock Road/Bighorn Drive intersection operate at LOS B or better during the AM and PM peak hours. For the 2028 base plus project traffic volumes the intersection minor movements operate at LOS C or better during the AM and PM peak hours. The intersection was analyzed with the existing approach lanes.

#### Red Rock Road/Plata Mesa Drive Intersection

The Red Rock Road/Plata Mesa Drive intersection was analyzed 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 B or better during the AM and PM peak hours. For the existing plus project traffic volumes the intersection minor movements operate at LOS C or better during the AM and PM peak hours. For the 2028 base traffic volumes the intersection minor movements operate at LOS C or better during the AM and PM peak hours. For the 2028 base plus project traffic volumes the intersection minor movements operate at LOS C or better during the AM and PM peak hours. The intersection was analyzed with the existing approach lanes.

#### Red Rock Road/Silver Knolls Boulevard Intersection

The Red Rock Road/Silver Knolls Boulevard intersection was analyzed 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 A during the AM and PM peak hours. For the existing plus project traffic volumes the intersection minor movements operate at LOS B or better during the AM and PM peak hours. For the 2028 base traffic volumes the intersection minor movements operate at LOS B or better during the AM and PM peak hours. For the 2028 base plus project traffic volumes the intersection minor movements operate at LOS C or better during the AM and PM peak hours. The intersection was analyzed with the existing approach lanes for all scenarios.

#### Red Rock Road/Silver Hills Parkway Intersection

The Red Rock Road/Silver Hills Parkway intersection was analyzed as an unsignalized three-leg intersection with stop sign control at the west approach for the existing plus project and 2028 base plus project scenarios. For the existing plus project traffic volumes the intersection minor movements operate at LOS B or better during the AM and PM peak hours. For the 2028 base plus project traffic volumes the intersection minor movements operate at LOS B or better during the AM and PM peak hours. The intersection was analyzed with one shared through-right turn lane at the north approach, one left turn lane and one through lane at the south approach; and one shared left turn-right turn lane at the west approach. It is recommended that the Red Rock Road/Silver Hills Parkway intersection be constructed as an unsignalized three-leg intersection with stop sign control at the west approach and an exclusive left turn lane at the south approach.

#### Red Rock Road/Longhorn Drive Intersection

The Red Rock Road/Longhorn Drive intersection was qualitatively reviewed for traffic operation per the request of Washoe County staff. The intersection is an unsignalized three-leg intersection with stop sign control at the east approach.

Longhorn Drive intersects Red Rock Road approximately 800 feet south of Silver Knolls Boulevard and therefore residents tributary to the eastern portion of Silver Knolls Boulevard utilize the Red Rock Road/Longhorn Drive intersection instead of the Red Rock Road/Silver Knolls Boulevard intersection. It is estimated that the Red Rock Road/Longhorn Drive intersection serves turning traffic volumes comparable to those at the Red Rock Road/Plata Mesa Drive intersection based on the location of existing residences in the area. However, through movements at the Red Rock Road/Longhorn Drive intersection are lower than those at the Red Rock Road/Plata Mesa Drive intersection. As previously discussed the Red Rock Road/Plata Mesa Drive intersection is anticipated to operate at LOS C or better for all study scenarios so it is estimated that the adjacent Red Rock Road/Longhorn Drive intersection will also operate at LOS C or better.

## SITE PLAN REVIEW

A copy of the preliminary site plan for the Silver Hills Phase 1 development is included in this submittal. The site plan indicates that project access will be provided from Silver Hills Parkway west of Red Rock Road. The Red Rock Road/Silver Hills Parkway intersection will be located more than 3,000 feet north of the existing Red Rock Road/Silver Knolls Boulevard intersection which will meet Washoe County and RTC spacing requirements.

## RECOMMENDATIONS

Traffic generated by the Silver Hills Phase 1 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 Washoe County and Nevada Department of Transportation requirements.

It is recommended that traffic signal warrants be periodically reviewed at the Red Rock Road/US-395 Southbound Ramp intersection and traffic signal and/or capacity improvements be constructed when warranted through the Regional Transportation Commission's (RTC) Regional Road Impact Fee Program.

It is recommended that capacity improvements be constructed at the Red Rock Road/US-395 Northbound Ramp intersection when warranted through the Regional Transportation Commission's (RTC) Regional Road Impact Fee Program. A free right turn lane at the east off-ramp approach should be considered a priority improvement that the project developer pursue through RTC impact fee waivers with future development phases.

It is recommended that the Red Rock Road/Silver Hills Parkway intersection be constructed as an unsignalized three-leg intersection with stop sign control at the west approach and an exclusive left turn lane at the south approach.

# APPENDIX



# Single-Family Detached Housing (210)

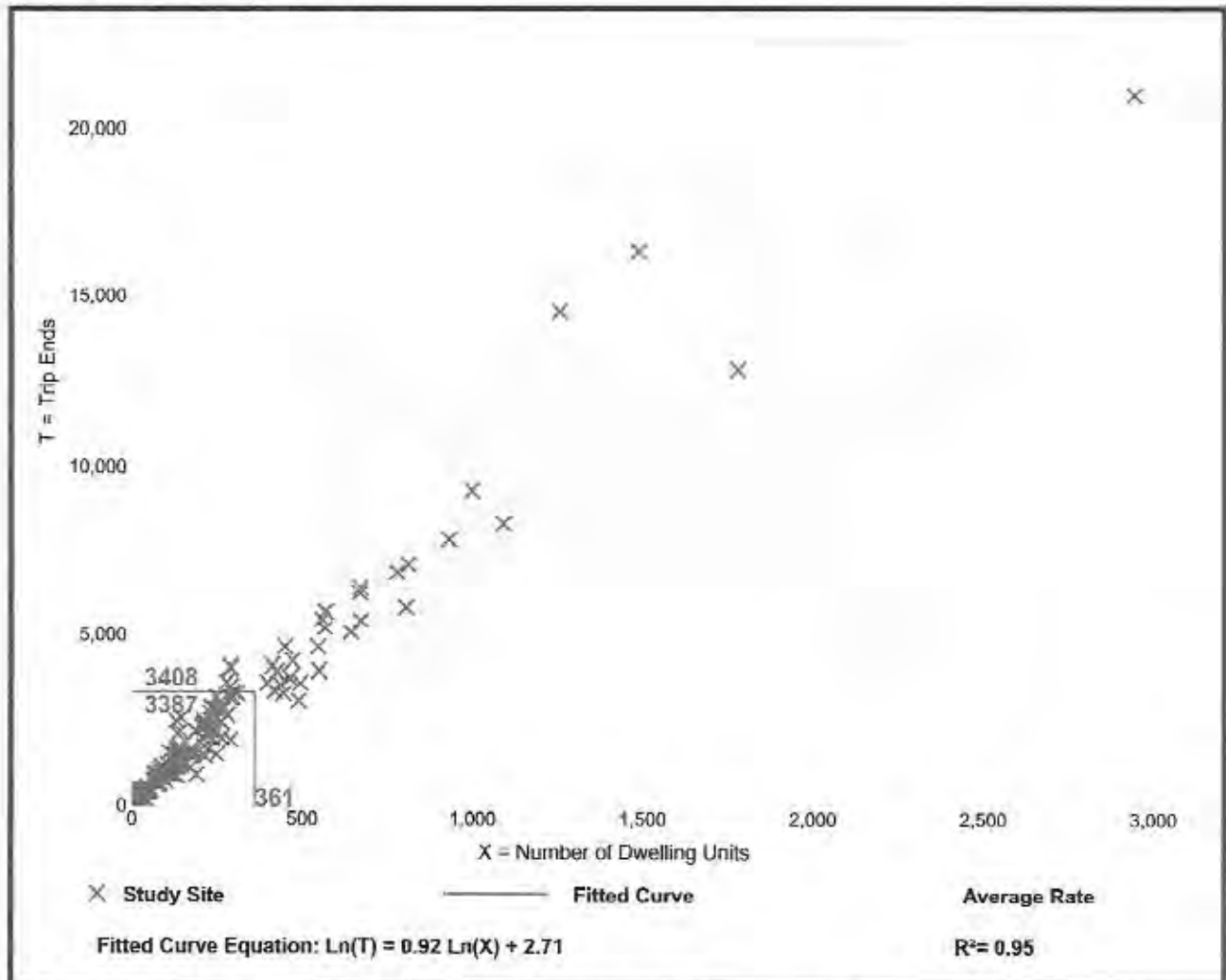
Vehicle Trip Ends vs: Dwelling Units  
On a: Weekday

Setting/Location: General Urban/Suburban  
Number of Studies: 159  
Avg. Num. of Dwelling Units: 264  
Directional Distribution: 50% entering, 50% exiting

## Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
9.44	4.81 - 19.39	2.10

## Data Plot and Equation



Trip Gen Manual, 10th Edition • Institute of Transportation Engineers

# Single-Family Detached Housing (210)

Vehicle Trip Ends vs: Dwelling Units  
 On a: Weekday,  
 Peak Hour of Adjacent Street Traffic,  
 One Hour Between 7 and 9 a.m.

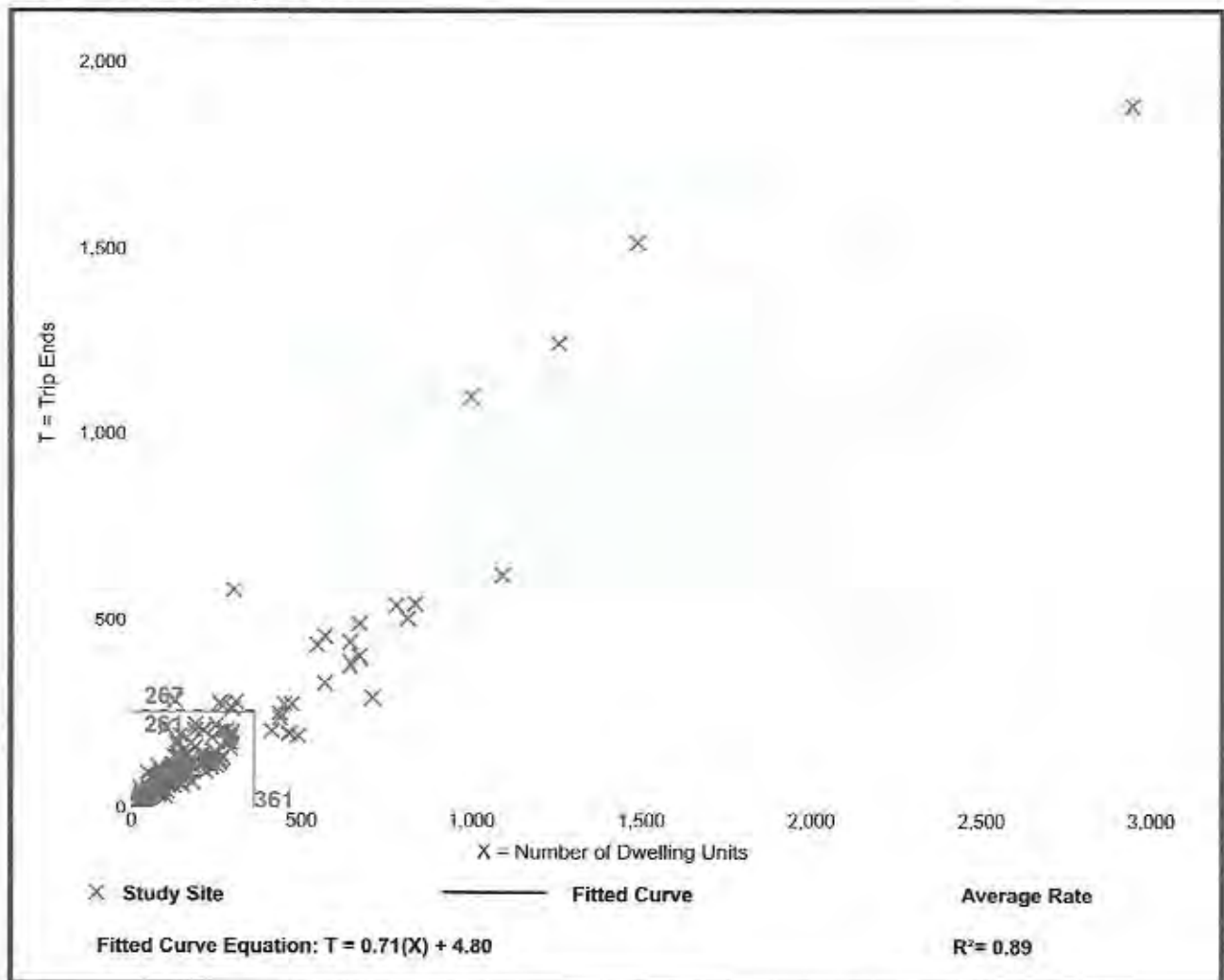
Setting/Location: General Urban/Suburban

Number of Studies: 173  
 Avg. Num. of Dwelling Units: 219  
 Directional Distribution: 25% entering, 75% exiting

## Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.74	0.33 - 2.27	0.27

## Data Plot and Equation



Trip Gen Manual, 10th Edition • Institute of Transportation Engineers

# Single-Family Detached Housing (210)

Vehicle Trip Ends vs: Dwelling Units

On a: Weekday,

Peak Hour of Adjacent Street Traffic,

One Hour Between 4 and 6 p.m.

Setting/Location: General Urban/Suburban

Number of Studies: 190

Avg. Num. of Dwelling Units: 242

Directional Distribution: 63% entering, 37% exiting

## Vehicle Trip Generation per Dwelling Unit

Average Rate

0.99

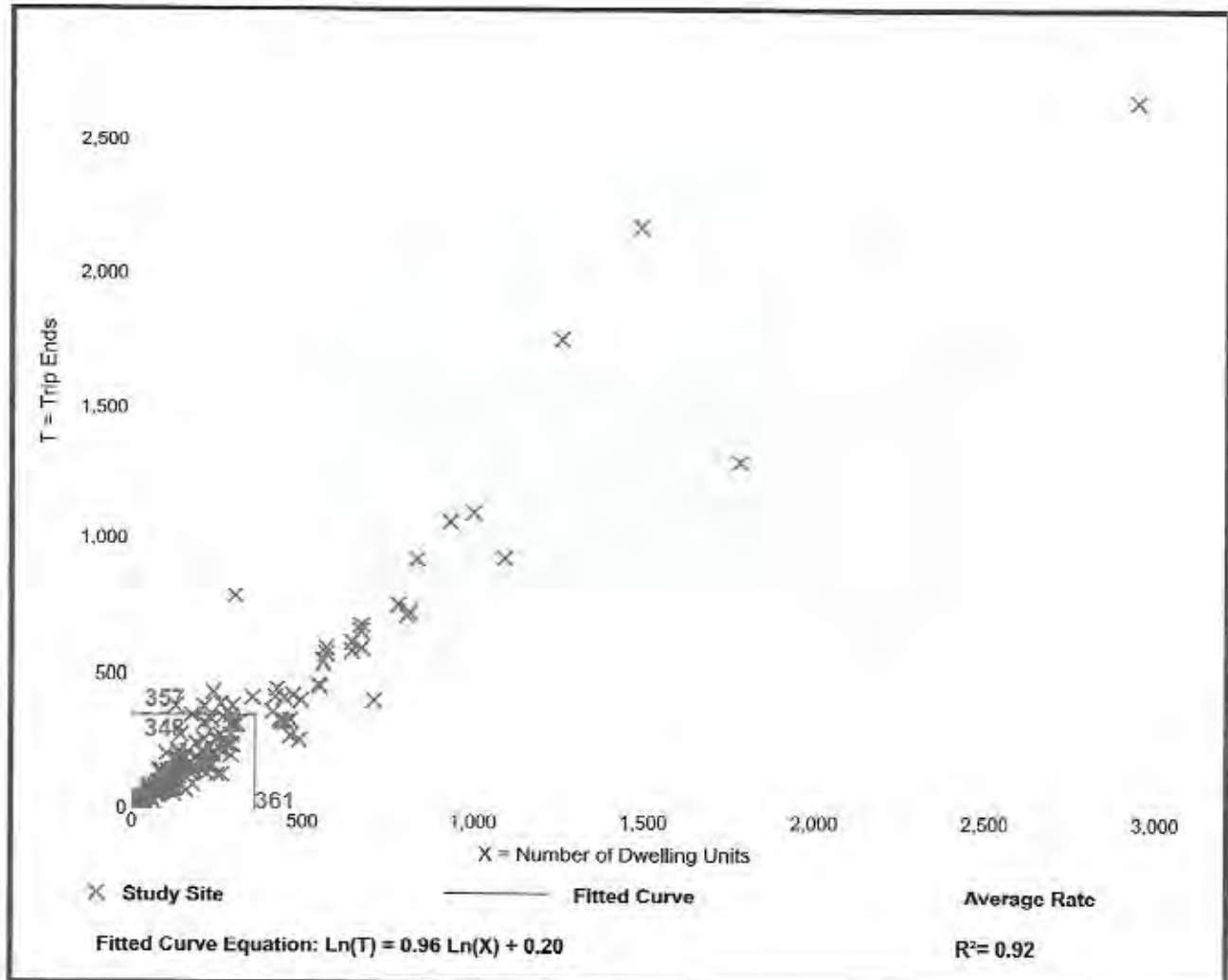
Range of Rates

0.44 - 2.98

Standard Deviation

0.31

## Data Plot and Equation



Trip Gen Manual, 10th Edition • Institute of Transportation Engineers



# HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	MSH	Intersection	Red Rock/US-395 SB Ramps
Agency/Co.	Solaegui Engineers	Jurisdiction	Washoe County
Date Performed	2/3/2021	East/West Street	US-395 SB Ramps
Analysis Year	2021	North/South Street	Red Rock Road
Time Analyzed	AM Existing	Peak Hour Factor	0.92
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	10	1	2	3	4	5	6		
Number of Lanes		0	1	0		0	0	0		0	1	0		0	1	0	
Configuration			LTR								TR			LT			
Volume (veh/h)		108	0	14							13	10		634	42		
Percent Heavy Vehicles (%)		2	2	2										2			
Proportion Time Blocked																	
Percent Grade (%)		0															
Right Turn Channelized																	
Median Type   Storage		Undivided															

## Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2										4.1			
Critical Headway (sec)		7.12	6.52	6.22										4.12			
Base Follow-Up Headway (sec)		3.5	4.0	3.3										2.2			
Follow-Up Headway (sec)		3.52	4.02	3.32										2.22			

## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			133											689			
Capacity, c (veh/h)			80											1588			
v/c Ratio			1.65											0.43			
95% Queue Length, Q <sub>95</sub> (veh)			11.1											2.3			
Control Delay (s/veh)			432.2											9.0			
Level of Service (LOS)			F											A			
Approach Delay (s/veh)		432.2												8.7			
Approach LOS		F															



# HCS7 Two-Way Stop-Control Report

## General Information

Analyst	MSH
Agency/Co.	Solaegui Engineers
Date Performed	2/3/2021
Analysis Year	2021
Time Analyzed	PM Existing
Intersection Orientation	North-South
Project Description	

## Site Information

Intersection	Red Rock/US-395 SB Ramps
Jurisdiction	Washoe County
East/West Street	US-395 SB Ramps
North/South Street	Red Rock Road
Peak Hour Factor	0.92
Analysis Time Period (hrs)	0.25

## 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	10	1	2	3	4	5	6			
Number of Lanes		0	1	0		0	0	0	0	0	1	0	0	0	1	0		
Configuration			LTR								TR			LT				
Volume (veh/h)		46	0	5							57	4		360	27			
Percent Heavy Vehicles (%)		2	2	2										2				
Proportion Time Blocked																		
Percent Grade (%)		0																
Right Turn Channelized																		
Median Type   Storage		Undivided																

## Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2												4.1		
Critical Headway (sec)		7.12	6.52	6.22												4.12		
Base Follow-Up Headway (sec)		3.5	4.0	3.3												2.2		
Follow-Up Headway (sec)		3.52	4.02	3.32												2.22		

## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			55													391		
Capacity, c (veh/h)			233													1534		
v/c Ratio			0.24													0.26		
95% Queue Length, Q <sub>95</sub> (veh)			0.9													1.0		
Control Delay (s/veh)			25.2													8.1		
Level of Service (LOS)			D													A		
Approach Delay (s/veh)		25.2														7.7		
Approach LOS		D																



# HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	MSH	Intersection	Red Rock/US-395 SB Ramps
Agency/Co.	Solaegui Engineers	Jurisdiction	Washoe County
Date Performed	2/3/2021	East/West Street	US-395 SB Ramps
Analysis Year	2021	North/South Street	Red Rock Road
Time Analyzed	AM Existing + Project	Peak Hour Factor	0.92
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	0		0	0	0	0	0	1	0	0	0	1	0	
Configuration			LTR								TR			LT			
Volume (veh/h)		117	0	14							14	10		754	46		
Percent Heavy Vehicles (%)		2	2	2										2			
Proportion Time Blocked																	
Percent Grade (%)		0															
Right Turn Channelized																	
Median Type   Storage		Undivided															

## Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2										4.1			
Critical Headway (sec)		7.12	6.52	6.22										4.12			
Base Follow-Up Headway (sec)		3.5	4.0	3.3										2.2			
Follow-Up Headway (sec)		3.52	4.02	3.32										2.22			

## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			142											820			
Capacity, c (veh/h)			46											1587			
v/c Ratio			3.08											0.52			
95% Queue Length, Q <sub>95</sub> (veh)			15.5											3.1			
Control Delay (s/veh)			1121.2											9.7			
Level of Service (LOS)			F											A			
Approach Delay (s/veh)		1121.2												9.4			
Approach LOS		F												A			



# HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	MSH	Intersection	Red Rock/US-395 SB Ramps
Agency/Co.	Solaegui Engineers	Jurisdiction	Washoe County
Date Performed	2/3/2021	East/West Street	US-395 SB Ramps
Analysis Year	2021	North/South Street	Red Rock Road
Time Analyzed	PM Existing + Project	Peak Hour Factor	0.92
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	0		0	0	0	0	0	1	0	0	0	1	0
Configuration			LTR								TR			LT		
Volume (veh/h)		75	0	5							62	4		439	30	
Percent Heavy Vehicles (%)		2	2	2										2		
Proportion Time Blocked																
Percent Grade (%)	0															
Right Turn Channelized																
Median Type   Storage	Undivided															

## Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2										4.1		
Critical Headway (sec)		7.12	6.52	6.22										4.12		
Base Follow-Up Headway (sec)		3.5	4.0	3.3										2.2		
Follow-Up Headway (sec)		3.52	4.02	3.32										2.22		

## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			87											477		
Capacity, c (veh/h)			162											1527		
v/c Ratio			0.54											0.31		
95% Queue Length, Q <sub>95</sub> (veh)			2.7											1.3		
Control Delay (s/veh)			50.6											8.4		
Level of Service (LOS)			F											A		
Approach Delay (s/veh)	50.6												8.1			
Approach LOS	F															



# HCS7 Two-Way Stop-Control Report

## General Information

Analyst	MSH
Agency/Co.	Solaegui Engineers
Date Performed	2/3/2021
Analysis Year	2028
Time Analyzed	AM Base
Intersection Orientation	North-South
Project Description	

## Site Information

Intersection	Red Rock/US-395 SB Ramps
Jurisdiction	Washoe County
East/West Street	US-395 SB Ramps
North/South Street	Red Rock Road
Peak Hour Factor	0.92
Analysis Time Period (hrs)	0.25

## 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	10	1	2	3	4	4	5	6
Number of Lanes		0	1	0		0	0	0		0	1	0		0	1	0
Configuration			LTR								TR			LT		
Volume (veh/h)		170	0	15							20	30		855	50	
Percent Heavy Vehicles (%)		2	2	2										2		
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized																
Median Type   Storage		Undivided														

## Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2										4.1		
Critical Headway (sec)		7.12	6.52	6.22										4.12		
Base Follow-Up Headway (sec)		3.5	4.0	3.3										2.2		
Follow-Up Headway (sec)		3.52	4.02	3.32										2.22		

## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			201											929			
Capacity, c (veh/h)			27											1550			
v/c Ratio			7.58											0.60			
95% Queue Length, Q <sub>95</sub> (veh)			24.9											4.3			
Control Delay (s/veh)			3248.4											10.7			
Level of Service (LOS)			F											B			
Approach Delay (s/veh)		3248.4												10.5			
Approach LOS		F															



# HCS7 Two-Way Stop-Control Report

## General Information

Analyst	MSH
Agency/Co.	Solaegui Engineers
Date Performed	2/3/2021
Analysis Year	2028
Time Analyzed	PM Base
Intersection Orientation	North-South
Project Description	

## Site Information

Intersection	Red Rock/US-395 SB Ramps
Jurisdiction	Washoe County
East/West Street	US-395 SB Ramps
North/South Street	Red Rock Road
Peak Hour Factor	0.92
Analysis Time Period (hrs)	0.25

## 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	10	1	2	3	4	5	6		
Number of Lanes		0	1	0		0	0	0	0	0	1	0	0	0	1	0	
Configuration			LTR								TR		LT				
Volume (veh/h)		60	0	10							60	10		470	30		
Percent Heavy Vehicles (%)		2	2	2										2			
Proportion Time Blocked																	
Percent Grade (%)		0															
Right Turn Channelized																	
Median Type   Storage		Undivided															

## Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2										4.1			
Critical Headway (sec)		7.12	6.52	6.22										4.12			
Base Follow-Up Headway (sec)		3.5	4.0	3.3										2.2			
Follow-Up Headway (sec)		3.52	4.02	3.32										2.22			

## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			76												511		
Capacity, c (veh/h)			153												1522		
v/c Ratio			0.50												0.34		
95% Queue Length, Q <sub>95</sub> (veh)			2.4												1.5		
Control Delay (s/veh)			49.9												8.6		
Level of Service (LOS)			E												A		
Approach Delay (s/veh)		49.9												8.2			
Approach LOS		E															



# HCS7 Two-Way Stop-Control Report

## General Information

Analyst	MSH
Agency/Co.	Solaegui Engineers
Date Performed	2/3/2021
Analysis Year	2028
Time Analyzed	AM Base + Project
Intersection Orientation	North-South
Project Description	

## Site Information

Intersection	Red Rock/US-395 SB Ramps
Jurisdiction	Washoe County
East/West Street	US-395 SB Ramps
North/South Street	Red Rock Road
Peak Hour Factor	0.92
Analysis Time Period (hrs)	0.25

## 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	0		0	0	0		0	1	0		0	1	0
Configuration			LTR								TR			LT		
Volume (veh/h)		179	0	15							21	30		979	54	
Percent Heavy Vehicles (%)		2	2	2										2		
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized																
Median Type   Storage		Undivided														

## Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2										4.1		
Critical Headway (sec)		7.12	6.52	6.22										4.12		
Base Follow-Up Headway (sec)		3.5	4.0	3.3										2.2		
Follow-Up Headway (sec)		3.52	4.02	3.32										2.22		

## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			211											1064		
Capacity, c (veh/h)			14											1548		
v/c Ratio			14.98											0.69		
95% Queue Length, Q <sub>95</sub> (veh)			27.5											6.0		
Control Delay (s/veh)			6814.4											12.3		
Level of Service (LOS)			F											B		
Approach Delay (s/veh)		6814.4												12.1		
Approach LOS		F														



# HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	MSH	Intersection	Red Rock/US-395 SB Ramps
Agency/Co.	Solaegui Engineers	Jurisdiction	Washoe County
Date Performed	2/3/2021	East/West Street	US-395 SB Ramps
Analysis Year	2028	North/South Street	Red Rock Road
Time Analyzed	PM Base + Project	Peak Hour Factor	0.92
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	0		0	0	0	0	0	1	0	0	0	1	0		
Configuration			LTR								TR			LT				
Volume (veh/h)		89	0	10							65	10		549	33			
Percent Heavy Vehicles (%)		2	2	2										2				
Proportion Time Blocked																		
Percent Grade (%)		0																
Right Turn Channelized																		
Median Type   Storage		Undivided																

## Critical and Follow-up Headways


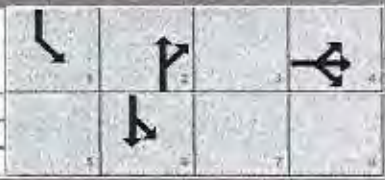
Base Critical Headway (sec)		7.1	6.5	6.2										4.1			
Critical Headway (sec)		7.12	6.52	6.22										4.12			
Base Follow-Up Headway (sec)		3.5	4.0	3.3										2.2			
Follow-Up Headway (sec)		3.52	4.02	3.32										2.22			

## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			108											597			
Capacity, c (veh/h)			104											1515			
v/c Ratio			1.04											0.39			
95% Queue Length, Q <sub>95</sub> (veh)			6.6											1.9			
Control Delay (s/veh)			176.5											8.9			
Level of Service (LOS)			F											A			
Approach Delay (s/veh)		176.5												8.6			
Approach LOS		F															



## HCS7 Signalized Intersection Results Summary

General Information						Intersection Information										
Agency	Solaegui Engineers					Duration, h	0.250									
Analyst	MSH		Analysis Date	Feb 3, 2021		Area Type	Other									
Jurisdiction	Washoe County		Time Period	AM Peak Hour		PHF	0.92									
Urban Street			Analysis Year	Existing		Analysis Period	1 > 7:00									
Intersection	Red Rock & US-395 SB...		File Name	RrSb18ax.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				108	0	14				13	10		634	42		
Signal Information																
Cycle, s	75.0	Reference Phase	2													
Offset, s	0	Reference Point	End													
Uncoordinated	No	Simult. Gap E/W	On	Green	24.0	25.0	11.0	0.0	0.0	0.0						
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	4.0	4.0	0.0	0.0	0.0						
				Red	1.0	1.0	1.0	0.0	0.0	0.0						
Timer Results				EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT					
Assigned Phase					4				2		1	6				
Case Number					12.0				8.3		1.0	4.0				
Phase Duration, s					16.0				30.0		29.0	59.0				
Change Period, (Y+R <sub>c</sub> ), s					5.0				5.0		5.0	5.0				
Max Allow Headway (MAH), s					3.2				0.0		3.1	0.0				
Queue Clearance Time (g <sub>s</sub> ), s					7.3						17.1					
Green Extension Time (g <sub>e</sub> ), s					0.1				0.0		1.1	0.0				
Phase Call Probability					1.00						1.00					
Max Out Probability					0.59						0.19					
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				2	12		1	6		
Adjusted Flow Rate (v), veh/h				133						25			689 46			
Adjusted Saturation Flow Rate (s), veh/h/ln				1719						1707			1781 1870			
Queue Service Time (g <sub>s</sub> ), s				5.3						0.7			15.1 0.5			
Cycle Queue Clearance Time (g <sub>c</sub> ), s				5.3						0.7			15.1 0.5			
Green Ratio (g/C)				0.15						0.33			0.68 0.72			
Capacity (c), veh/h				252						569			1114 1347			
Volume-to-Capacity Ratio (X)				0.526						0.044			0.618 0.034			
Back of Queue (Q), ft/ln (95 th percentile)				99.6						13.5			192.2 6.6			
Back of Queue (Q), veh/ln (95 th percentile)				3.9						0.5			7.6 0.3			
Queue Storage Ratio (RQ) (95 th percentile)				0.00						0.00			0.00 0.00			
Uniform Delay (d <sub>1</sub> ), s/veh				29.6						16.9			6.4 3.0			
Incremental Delay (d <sub>2</sub> ), s/veh				1.0						0.1			0.8 0.0			
Initial Queue Delay (d <sub>3</sub> ), s/veh				0.0						0.0			0.0 0.0			
Control Delay (d), s/veh				30.6						17.1			7.1 3.1			
Level of Service (LOS)				C						B			A A			
Approach Delay, s/veh / LOS				30.6	C	0.0			17.1	B	6.9	A				
Intersection Delay, s/veh / LOS				10.7					B							
Multimodal Results				EB			WB			NB			SB			
Pedestrian LOS Score / LOS				1.72	B	1.95	B	1.39	A	1.32	A					
Bicycle LOS Score / LOS				0.71	A			0.53	A	1.70	B					



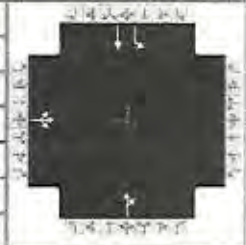
## HCS7 Signalized Intersection Results Summary

**General Information**

Agency	Solaegui Engineers		
Analyst	MSH	Analysis Date	Feb 3, 2021
Jurisdiction	Washoe County	Time Period	PM Peak Hour
Urban Street		Analysis Year	Existing
Intersection	Red Rock & US-395 SB...	File Name	RrSb18px.xus
Project Description			

**Intersection Information**

Duration, h	0.250
Area Type	Other
PHF	0.92
Analysis Period	1> 7:00


**Demand Information**

Approach Movement	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	46	0	5						57	4	360	27

**Signal Information**

Cycle, s	75.0	Reference Phase	2													
Offset, s	0	Reference Point	End	Green	24.0	21.0	15.0	0.0	0.0	0.0						
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	4.0	4.0	0.0	0.0	0.0						
Force Mode	Fixed	Simult. Gap N/S	On	Red	1.0	1.0	1.0	0.0	0.0	0.0						

**Timer Results**

	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4				2	1	6
Case Number		12.0				8.3	1.0	4.0
Phase Duration, s		20.0				26.0	29.0	55.0
Change Period, (Y+R <sub>c</sub> ), s		5.0				5.0	5.0	5.0
Max Allow Headway (MAH), s		3.2				0.0	3.1	0.0
Queue Clearance Time (g <sub>s</sub> ), s		4.0					9.9	
Green Extension Time (g <sub>e</sub> ), s		0.0				0.0	0.7	0.0
Phase Call Probability		1.00					1.00	
Max Out Probability		0.00					0.00	

**Movement Group Results**


Approach Movement	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14					2	12	1	6	
Adjusted Flow Rate (v), veh/h	55						66			391 29		
Adjusted Saturation Flow Rate (s), veh/h/ln	1732						1843			1781 1870		
Queue Service Time (g <sub>s</sub> ), s	2.0						2.0			7.9 0.4		
Cycle Queue Clearance Time (g <sub>c</sub> ), s	2.0						2.0			7.9 0.4		
Green Ratio (g/C)	0.20						0.28			0.63 0.67		
Capacity (c), veh/h	346						516			1004 1247		
Volume-to-Capacity Ratio (X)	0.160						0.128			0.390 0.024		
Back of Queue (Q), ft/ln (95 th percentile)	35.8						40.7			107.5 5.8		
Back of Queue (Q), veh/ln (95 th percentile)	1.4						1.6			4.2 0.2		
Queue Storage Ratio (RQ) (95 th percentile)	0.00						0.00			0.00 0.00		
Uniform Delay (d <sub>1</sub> ), s/veh	24.8						20.2			6.9 4.2		
Incremental Delay (d <sub>2</sub> ), s/veh	0.1						0.5			0.1 0.0		
Initial Queue Delay (d <sub>3</sub> ), s/veh	0.0						0.0			0.0 0.0		
Control Delay (d), s/veh	24.9						20.7			6.9 4.3		
Level of Service (LOS)	C						C			A A		
Approach Delay, s/veh / LOS	24.9	C	0.0				20.7	C	6.8	A		
Intersection Delay, s/veh / LOS	10.3						B					

**Multimodal Results**

	EB	WB	NB	SB
Pedestrian LOS Score / LOS	1.72 B	1.95 B	1.40 A	1.34 A
Bicycle LOS Score / LOS	0.58 A		0.60 A	1.18 A



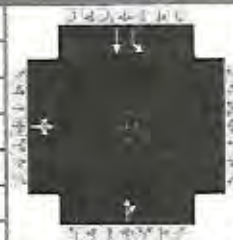
## HCS7 Signalized Intersection Results Summary

General Information				Intersection Information											
Agency	Solaegui Engineers			Duration, h	0.250										
Analyst	MSH	Analysis Date	Feb 3, 2021	Area Type	Other										
Jurisdiction	Washoe County	Time Period	AM Peak Hour	PHF	0.92										
Urban Street		Analysis Year	Existing + Project	Analysis Period	1 > 7:00										
Intersection	Red Rock & US-395 SB...	File Name	RrSb18aw.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				117	0	14				14	10		754	46	
Signal Information															
Cycle, s	75.0	Reference Phase	2												
Offset, s	0	Reference Point	End												
Uncoordinated	No	Simult. Gap E/W	On	Green	24.0	25.0	11.0	0.0	0.0	0.0					
				Yellow	4.0	4.0	4.0	0.0	0.0	0.0					
Force Mode	Fixed	Simult. Gap N/S	On	Red	1.0	1.0	1.0	0.0	0.0	0.0					
Timer Results				EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase					4				2		1	6			
Case Number					12.0				8.3		1.0	4.0			
Phase Duration, s					16.0				30.0		29.0	59.0			
Change Period, (Y+R <sub>c</sub> ), s					5.0				5.0		5.0	5.0			
Max Allow Headway (MAH), s					3.2				0.0		3.1	0.0			
Queue Clearance Time (g <sub>s</sub> ), s					7.8						22.5				
Green Extension Time (g <sub>e</sub> ), s					0.1				0.0		0.4	0.0			
Phase Call Probability					1.00						1.00				
Max Out Probability					0.96						1.00				
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				2	12		1	6	
Adjusted Flow Rate (v), veh/h				142						26			820 50		
Adjusted Saturation Flow Rate (s), veh/h/ln				1721						1713			1781 1870		
Queue Service Time (g <sub>s</sub> ), s				5.8						0.8			20.5 0.6		
Cycle Queue Clearance Time (g <sub>c</sub> ), s				5.8						0.8			20.5 0.6		
Green Ratio (g/C)				0.15						0.33			0.68 0.72		
Capacity (c), veh/h				252						571			1113 1347		
Volume-to-Capacity Ratio (X)				0.564						0.046			0.736 0.037		
Back of Queue (Q), ft/ln (95 th percentile)				109.8						14.1			256.3 7.2		
Back of Queue (Q), veh/ln (95 th percentile)				4.3						0.6			10.1 0.3		
Queue Storage Ratio (RQ) (95 th percentile)				0.00						0.00			0.00 0.00		
Uniform Delay (d <sub>1</sub> ), s/veh				29.8						16.9			7.2 3.0		
Incremental Delay (d <sub>2</sub> ), s/veh				1.8						0.2			2.3 0.1		
Initial Queue Delay (d <sub>3</sub> ), s/veh				0.0						0.0			0.0 0.0		
Control Delay (d), s/veh				31.6						17.1			9.5 3.1		
Level of Service (LOS)				C						B			A A		
Approach Delay, s/veh / LOS				31.6	C	0.0			17.1	B	9.1	A			
Intersection Delay, s/veh / LOS				12.4						B					
Multimodal Results				EB			WB			NB			SB		
Pedestrian LOS Score / LOS				1.72	B	1.95	B	1.39	A	1.32	A				
Bicycle LOS Score / LOS				0.72	A			0.53	A	1.92	B				



## HCS7 Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	Solaegui Engineers			Duration, h	0.250		
Analyst	MSH	Analysis Date	Feb 3, 2021	Area Type	Other		
Jurisdiction	Washoe County	Time Period	PM Peak Hour	PHF	0.92		
Urban Street		Analysis Year	Existing + Project	Analysis Period	1 > 7:00		
Intersection	Red Rock & US-395 SB...	File Name	RrSb18pw.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	75	0	5					62	4	439	30	

Signal Information												
Cycle, s	75.0	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	On	Green	24.0	21.0	15.0	0.0	0.0	0.0		
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	4.0	4.0	0.0	0.0	0.0		
				Red	1.0	1.0	1.0	0.0	0.0	0.0		

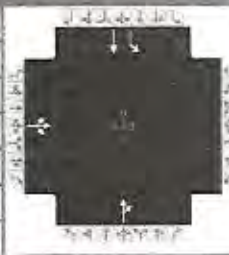
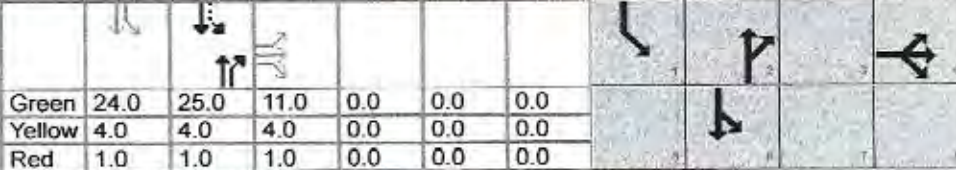
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4				2	1	6
Case Number		12.0				8.3	1.0	4.0
Phase Duration, s		20.0				26.0	29.0	55.0
Change Period, (Y+R <sub>c</sub> ), s		5.0				5.0	5.0	5.0
Max Allow Headway (MAH), s		3.2				0.0	3.1	0.0
Queue Clearance Time (g <sub>s</sub> ), s		5.2					12.2	
Green Extension Time (g <sub>e</sub> ), s		0.1				0.0	0.8	0.0
Phase Call Probability		1.00					1.00	
Max Out Probability		0.00					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				2	12		1	6	
Adjusted Flow Rate (v), veh/h		87						72		477	33	
Adjusted Saturation Flow Rate (s), veh/h/ln		1742						1845		1781	1870	
Queue Service Time (g <sub>s</sub> ), s		3.2						2.2		10.2	0.4	
Cycle Queue Clearance Time (g <sub>c</sub> ), s		3.2						2.2		10.2	0.4	
Green Ratio (g/C)		0.20						0.28		0.63	0.67	
Capacity (c), veh/h		348						517		999	1247	
Volume-to-Capacity Ratio (X)		0.250						0.139		0.477	0.026	
Back of Queue (Q), ft/ln (95 th percentile)		57.3						44.2		139.8	6.4	
Back of Queue (Q), veh/ln (95 th percentile)		2.3						1.7		5.5	0.3	
Queue Storage Ratio (RQ) (95 th percentile)		0.00						0.00		0.00	0.00	
Uniform Delay (d <sub>1</sub> ), s/veh		25.3						20.2		7.3	4.2	
Incremental Delay (d <sub>2</sub> ), s/veh		0.1						0.6		0.1	0.0	
Initial Queue Delay (d <sub>3</sub> ), s/veh		0.0						0.0		0.0	0.0	
Control Delay (d), s/veh		25.4						20.8		7.5	4.3	
Level of Service (LOS)		C						C		A	A	
Approach Delay, s/veh / LOS	25.4	C	0.0				20.8	C		7.3	A	
Intersection Delay, s/veh / LOS	11.1						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.72	B	1.95	B	1.40	A	1.34	A
Bicycle LOS Score / LOS	0.63	A			0.61	A	1.33	A



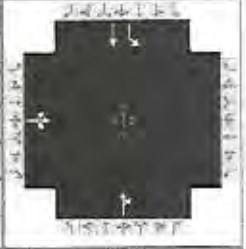
## HCS7 Signalized Intersection Results Summary

General Information				Intersection Information											
Agency	Solaegui Engineers			Duration, h	0.250										
Analyst	MSH	Analysis Date	Feb 3, 2021	Area Type	Other										
Jurisdiction	Washoe County	Time Period	AM Peak Hour	PHF	0.92										
Urban Street		Analysis Year	2028 Base	Analysis Period	1 > 7:00										
Intersection	Red Rock & US-395 SB...	File Name	RrSb28ax.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		170	0	15					20	30	855	50			
Signal Information															
Cycle, s	75.0	Reference Phase	2												
Offset, s	0	Reference Point	End												
Uncoordinated	No	Simult. Gap E/W	On												
Force Mode	Fixed	Simult. Gap N/S	On												
Green	24.0	25.0	11.0	0.0	0.0	0.0	0.0								
Yellow	4.0	4.0	4.0	0.0	0.0	0.0	0.0								
Red	1.0	1.0	1.0	0.0	0.0	0.0	0.0								
Timer Results				EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase					4				2	1	6				
Case Number					12.0				8.3	1.0	4.0				
Phase Duration, s					16.0				30.0	29.0	59.0				
Change Period, (Y+Rc), s					5.0				5.0	5.0	5.0				
Max Allow Headway (MAH), s					3.2				0.0	3.1	0.0				
Queue Clearance Time (gs), s					10.4					26.0					
Green Extension Time (ge), s					0.0				0.0	0.0	0.0				
Phase Call Probability					1.00					1.00					
Max Out Probability					1.00					1.00					
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					2	12	1	6			
Adjusted Flow Rate (v), veh/h		201						54			929	54			
Adjusted Saturation Flow Rate (s), veh/h/ln		1728						1652			1781	1870			
Queue Service Time (gs), s		8.4						1.7			24.0	0.6			
Cycle Queue Clearance Time (gc), s		8.4						1.7			24.0	0.6			
Green Ratio (g/C)		0.15						0.33			0.68	0.72			
Capacity (c), veh/h		253						551			1085	1347			
Volume-to-Capacity Ratio (X)		0.793						0.099			0.856	0.040			
Back of Queue (Q), ft/ln (95th percentile)		197.8						30.2			348.1	7.9			
Back of Queue (Q), veh/ln (95th percentile)		7.8						1.2			13.7	0.3			
Queue Storage Ratio (RQ) (95th percentile)		0.00						0.00			0.00	0.00			
Uniform Delay (d1), s/veh		30.9						17.2			8.7	3.0			
Incremental Delay (d2), s/veh		14.6						0.4			6.6	0.1			
Initial Queue Delay (d3), s/veh		0.0						0.0			0.0	0.0			
Control Delay (d), s/veh		45.5						17.6			15.3	3.1			
Level of Service (LOS)		D						B			B	A			
Approach Delay, s/veh / LOS		45.5		D	0.0			17.6		B	14.6		B		
Intersection Delay, s/veh / LOS		19.7						B							
Multimodal Results				EB			WB			NB			SB		
Pedestrian LOS Score / LOS		1.72		B	1.95		B	1.39		A	1.32		A		
Bicycle LOS Score / LOS		0.82		A				0.58		A	2.11		B		



## HCS7 Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	Solaegui Engineers			Duration, h	0.250		
Analyst	MSH	Analysis Date	Feb 3, 2021	Area Type	Other		
Jurisdiction	Washoe County	Time Period	PM Peak Hour	PHF	0.92		
Urban Street		Analysis Year	2028 Base	Analysis Period	1> 7:00		
Intersection	Red Rock & US-395 SB...	File Name	RrSb28px.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	60	0	10					60	10	470	30	

Signal Information													
Cycle, s	75.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On	Green	24.0	21.0	15.0	0.0	0.0	0.0	0.0		
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	4.0	4.0	0.0	0.0	0.0	0.0		
				Red	1.0	1.0	1.0	0.0	0.0	0.0	0.0		

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4				2	1	6
Case Number		12.0				8.3	1.0	4.0
Phase Duration, s		20.0				26.0	29.0	55.0
Change Period, (Y+R <sub>c</sub> ), s		5.0				5.0	5.0	5.0
Max Allow Headway (MAH), s		3.2				0.0	3.1	0.0
Queue Clearance Time (g <sub>s</sub> ), s		4.8					13.3	
Green Extension Time (g <sub>e</sub> ), s		0.1				0.0	0.9	0.0
Phase Call Probability		1.00					1.00	
Max Out Probability		0.00					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				2	12		1	6	
Adjusted Flow Rate (v), veh/h	76						76			511 33		
Adjusted Saturation Flow Rate (s), veh/h/ln	1720						1813			1781 1870		
Queue Service Time (g <sub>s</sub> ), s	2.8						2.4			11.3 0.4		
Cycle Queue Clearance Time (g <sub>c</sub> ), s	2.8						2.4			11.3 0.4		
Green Ratio (g/C)	0.20						0.28			0.63 0.67		
Capacity (c), veh/h	344						508			995 1247		
Volume-to-Capacity Ratio (X)	0.221						0.150			0.514 0.026		
Back of Queue (Q), ft/ln (95 th percentile)	49.8						47.1			154.4 6.4		
Back of Queue (Q), veh/ln (95 th percentile)	2.0						1.9			6.1 0.3		
Queue Storage Ratio (RQ) (95 th percentile)	0.00						0.00			0.00 0.00		
Uniform Delay (d <sub>1</sub> ), s/veh	25.1						20.3			7.5 4.2		
Incremental Delay (d <sub>2</sub> ), s/veh	0.1						0.6			0.2 0.0		
Initial Queue Delay (d <sub>3</sub> ), s/veh	0.0						0.0			0.0 0.0		
Control Delay (d), s/veh	25.2						20.9			7.7 4.3		
Level of Service (LOS)	C						C			A A		
Approach Delay, s/veh / LOS	25.2	C	0.0				20.9	C		7.5	A	
Intersection Delay, s/veh / LOS	10.9						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.72	B	1.95	B	1.40	A	1.34	A
Bicycle LOS Score / LOS	0.61	A			0.61	A	1.38	A



## HCS7 Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	Solaegui Engineers			Duration, h	0.250		
Analyst	MSH	Analysis Date	Feb 3, 2021	Area Type	Other		
Jurisdiction	Washoe County	Time Period	AM Peak Hour	PHF	0.92		
Urban Street		Analysis Year	2028 Base + Project	Analysis Period	1 > 7:00		
Intersection	Red Rock & US-395 SB...	File Name	RrSb28aw.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	179	0	15					21	30	979	54	

Signal Information												
Cycle, s	75.0	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	On	Green	24.0	25.0	11.0	0.0	0.0	0.0		
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	4.0	4.0	0.0	0.0	0.0		
				Red	1.0	1.0	1.0	0.0	0.0	0.0		

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4				2	1	6
Case Number		12.0				8.3	1.0	4.0
Phase Duration, s		16.0				30.0	29.0	59.0
Change Period, (Y+R <sub>c</sub> ), s		5.0				5.0	5.0	5.0
Max Allow Headway (MAH), s		3.2				0.0	3.1	0.0
Queue Clearance Time (g <sub>s</sub> ), s		10.6					26.0	
Green Extension Time (g <sub>e</sub> ), s		0.0				0.0	0.0	0.0
Phase Call Probability		1.00					1.00	
Max Out Probability		1.00					1.00	

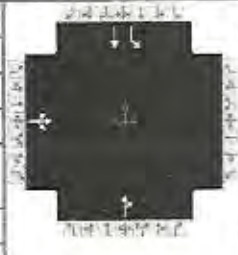
Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement	7	4	14					2	12	1	6	
Adjusted Flow Rate (v), veh/h	205						55			1064 59		
Adjusted Saturation Flow Rate (s), veh/h/ln	1736						1656			1781 1870		
Queue Service Time (g <sub>s</sub> ), s	8.6						1.7			24.0 0.7		
Cycle Queue Clearance Time (g <sub>c</sub> ), s	8.6						1.7			24.0 0.7		
Green Ratio (g/C)	0.15						0.33			0.68 0.72		
Capacity (c), veh/h	255						552			1084 1347		
Volume-to-Capacity Ratio (X)	0.807						0.100			0.981 0.044		
Back of Queue (Q), ft/ln (95 th percentile)	204.4						30.8			578 8.6		
Back of Queue (Q), veh/ln (95 th percentile)	8.0						1.2			22.8 0.3		
Queue Storage Ratio (RQ) (95 th percentile)	0.00						0.00			0.00 0.00		
Uniform Delay (d <sub>1</sub> ), s/veh	31.0						17.2			12.0 3.0		
Incremental Delay (d <sub>2</sub> ), s/veh	16.1						0.4			22.7 0.1		
Initial Queue Delay (d <sub>3</sub> ), s/veh	0.0						0.0			0.0 0.0		
Control Delay (d), s/veh	47.0						17.6			34.8 3.1		
Level of Service (LOS)	D						B			C A		
Approach Delay, s/veh / LOS	47.0	D		0.0			17.6	B		33.1	C	
Intersection Delay, s/veh / LOS	34.6						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.72	B	1.95	B	1.39	A	1.33	A
Bicycle LOS Score / LOS	0.83	A			0.58	A	2.34	B



## HCS7 Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	Solaegui Engineers			Duration, h	0.250		
Analyst	MSH	Analysis Date	Feb 3, 2021	Area Type	Other		
Jurisdiction	Washoe County	Time Period	PM Peak Hour	PHF	0.92		
Urban Street		Analysis Year	2028 Base + Project	Analysis Period	1 > 7:00		
Intersection	Red Rock & US-395 SB...	File Name	RrSb28pw.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	89	0	10					65	10	549	33	

Signal Information													
Cycle, s	75.0	Reference Phase	2	Green	24.0	21.0	15.0	0.0	0.0	0.0			
Offset, s	0	Reference Point	End	Yellow	4.0	4.0	4.0	0.0	0.0	0.0			
Uncoordinated	No	Simult. Gap E/W	On	Red	1.0	1.0	1.0	0.0	0.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	On										

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4				2	1	6
Case Number		12.0				8.3	1.0	4.0
Phase Duration, s		20.0				26.0	29.0	55.0
Change Period, (Y+R <sub>c</sub> ), s		5.0				5.0	5.0	5.0
Max Allow Headway (MAH), s		3.2				0.0	3.1	0.0
Queue Clearance Time (g <sub>s</sub> ), s		6.0					16.1	
Green Extension Time (g <sub>e</sub> ), s		0.1				0.0	0.9	0.0
Phase Call Probability		1.00					1.00	
Max Out Probability		0.00					0.09	

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14				2	12		1	6	
Adjusted Flow Rate (v), veh/h		108					82			597	36	
Adjusted Saturation Flow Rate (s), veh/h/ln		1731					1816			1781	1870	
Queue Service Time (g <sub>s</sub> ), s		4.0					2.5			14.1	0.5	
Cycle Queue Clearance Time (g <sub>c</sub> ), s		4.0					2.5			14.1	0.5	
Green Ratio (g/C)		0.20					0.28			0.63	0.67	
Capacity (c), veh/h		346					509			990	1247	
Volume-to-Capacity Ratio (X)		0.311					0.160			0.603	0.029	
Back of Queue (Q), ft/ln (95 th percentile)		71.9					50.7			197.9	7.1	
Back of Queue (Q), veh/ln (95 th percentile)		2.8					2.0			7.8	0.3	
Queue Storage Ratio (RQ) (95 th percentile)		0.00					0.00			0.00	0.00	
Uniform Delay (d <sub>1</sub> ), s/veh		25.6					20.4			8.1	4.2	
Incremental Delay (d <sub>2</sub> ), s/veh		0.2					0.7			0.7	0.0	
Initial Queue Delay (d <sub>3</sub> ), s/veh		0.0					0.0			0.0	0.0	
Control Delay (d), s/veh		25.8					21.0			8.8	4.3	
Level of Service (LOS)		C					C			A	A	
Approach Delay, s/veh / LOS	25.8	C		0.0			21.0	C		8.6	A	
Intersection Delay, s/veh / LOS	12.1						B					

Multimodal Results	EB	WB	NB	SB
Pedestrian LOS Score / LOS	1.72 B	1.95 B	1.40 A	1.34 A
Bicycle LOS Score / LOS	0.67 A		0.62 A	1.53 B

**WTM21-006**  
**EXHIBIT D**



# HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	MSH	Intersection	Red Rock/US-395 NB Ramps
Agency/Co.	Solaegui Engineers	Jurisdiction	Washoe County
Date Performed	2/3/2021	East/West Street	US-395 NB Ramps
Analysis Year	2021	North/South Street	Red Rock Road
Time Analyzed	AM Existing	Peak Hour Factor	0.92
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	0	0		0	1	0	0	1	1	0	0	0	1	1
Configuration							LTR			L	T				T	R
Volume (veh/h)						14	0	219		2	119				662	40
Percent Heavy Vehicles (%)						2	2	2		2						
Proportion Time Blocked																
Percent Grade (%)							-2									
Right Turn Channelized															No	
Median Type   Storage							Undivided									

## Critical and Follow-up Headways

Base Critical Headway (sec)						7.1	6.5	6.2			4.1					
Critical Headway (sec)						6.72	6.12	6.02			4.12					
Base Follow-Up Headway (sec)						3.5	4.0	3.3			2.2					
Follow-Up Headway (sec)						3.52	4.02	3.32			2.22					

## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)							253				2					
Capacity, c (veh/h)							822				849					
v/c Ratio							0.31				0.00					
95% Queue Length, Q <sub>95</sub> (veh)							1.3				0.0					
Control Delay (s/veh)							11.3				9.3					
Level of Service (LOS)							B				A					
Approach Delay (s/veh)							11.3				0.2					
Approach LOS							B									



# HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	MSH	Intersection	Red Rock/US-395 NB Ramps
Agency/Co.	Solaegui Engineers	Jurisdiction	Washoe County
Date Performed	2/3/2021	East/West Street	US-395 NB Ramps
Analysis Year	2021	North/South Street	Red Rock Road
Time Analyzed	PM Existing	Peak Hour Factor	0.92
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	10	1	2	3	4	4	5	6	
Number of Lanes		0	0	0		0	1	0	0	1	1	0	0	0	1	1	
Configuration							LTR			L	T				T	R	
Volume (veh/h)						8	0	522		26	77				379	76	
Percent Heavy Vehicles (%)						2	2	2		2							
Proportion Time Blocked																	
Percent Grade (%)							-2										
Right Turn Channelized																	No
Median Type   Storage	Undivided																

## Critical and Follow-up Headways

Base Critical Headway (sec)						7.1	6.5	6.2		4.1							
Critical Headway (sec)						6.72	6.12	6.02		4.12							
Base Follow-Up Headway (sec)						3.5	4.0	3.3		2.2							
Follow-Up Headway (sec)						3.52	4.02	3.32		2.22							

## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						576				28							
Capacity, c (veh/h)						961				1068							
v/c Ratio						0.60				0.03							
95% Queue Length, Q <sub>95</sub> (veh)						4.1				0.1							
Control Delay (s/veh)						14.2				8.5							
Level of Service (LOS)								B		A							
Approach Delay (s/veh)						14.2				2.1							
Approach LOS						B				A							



# HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	MSH	Intersection	Red Rock/US-395 NB Ramps
Agency/Co.	Solaegui Engineers	Jurisdiction	Washoe County
Date Performed	2/3/2021	East/West Street	US-395 NB Ramps
Analysis Year	2021	North/South Street	Red Rock Road
Time Analyzed	AM Existing + Project	Peak Hour Factor	0.92
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	0	0		0	1	0	0	1	1	0	0	0	1	1
Configuration							LTR			L	T				T	R
Volume (veh/h)						14	0	259		2	129				786	66
Percent Heavy Vehicles (%)						2	2	2		2						
Proportion Time Blocked																
Percent Grade (%)							-2									
Right Turn Channelized															No	
Median Type   Storage							Undivided									

## Critical and Follow-up Headways

Base Critical Headway (sec)						7.1	6.5	6.2		4.1						
Critical Headway (sec)						6.72	6.12	6.02		4.12						
Base Follow-Up Headway (sec)						3.5	4.0	3.3		2.2						
Follow-Up Headway (sec)						3.52	4.02	3.32		2.22						

## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)							297			2						
Capacity, c (veh/h)							796			738						
v/c Ratio							0.37			0.00						
95% Queue Length, Q <sub>95</sub> (veh)							1.7			0.0						
Control Delay (s/veh)							12.2			9.9						
Level of Service (LOS)							B			A						
Approach Delay (s/veh)							12.2			0.2						
Approach LOS							B									



# HCS7 Two-Way Stop-Control Report

## General Information

Analyst	MSH
Agency/Co.	Solaegui Engineers
Date Performed	2/3/2021
Analysis Year	2021
Time Analyzed	PM Existing + Project
Intersection Orientation	North-South
Project Description	

## Site Information

Intersection	Red Rock/US-395 NB Ramps
Jurisdiction	Washoe County
East/West Street	US-395 NB Ramps
North/South Street	Red Rock Road
Peak Hour Factor	0.92
Analysis Time Period (hrs)	0.25

## 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	0	0		0	1	0	0	1	1	0	0	0	1	1	
Configuration							LTR			L	T				T	R	
Volume (veh/h)						8	0	657		26	111				461	93	
Percent Heavy Vehicles (%)						2	2	2		2							
Proportion Time Blocked																	
Percent Grade (%)								-2									
Right Turn Channelized																	No
Median Type   Storage								Undivided									

## Critical and Follow-up Headways

Base Critical Headway (sec)						7.1	6.5	6.2		4.1							
Critical Headway (sec)						6.72	6.12	6.02		4.12							
Base Follow-Up Headway (sec)						3.5	4.0	3.3		2.2							
Follow-Up Headway (sec)						3.52	4.02	3.32		2.22							

## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						723				28							
Capacity, c (veh/h)						919				975							
v/c Ratio						0.79				0.03							
95% Queue Length, Q <sub>95</sub> (veh)						8.3				0.1							
Control Delay (s/veh)						21.7				8.8							
Level of Service (LOS)						C				A							
Approach Delay (s/veh)						21.7				1.7							
Approach LOS						C											



# HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	MSH	Intersection	Red Rock/US-395 NB Ramps
Agency/Co.	Solaegui Engineers	Jurisdiction	Washoe County
Date Performed	2/3/2021	East/West Street	US-395 NB Ramps
Analysis Year	2028	North/South Street	Red Rock Road
Time Analyzed	AM Base	Peak Hour Factor	0.92
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									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	0	0		0	1	0	0	1	1	0	0	0	1	1
Configuration							LTR			L	T				T	R
Volume (veh/h)						20	0	255		10	180				885	40
Percent Heavy Vehicles (%)						2	2	2		2						
Proportion Time Blocked																
Percent Grade (%)							-2									
Right Turn Channelized															No	
Median Type   Storage							Undivided									

## Critical and Follow-up Headways

Base Critical Headway (sec)						7.1	6.5	6.2		4.1						
Critical Headway (sec)						6.72	6.12	6.02		4.12						
Base Follow-Up Headway (sec)						3.5	4.0	3.3		2.2						
Follow-Up Headway (sec)						3.52	4.02	3.32		2.22						

## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)							299			11						
Capacity, c (veh/h)							674			689						
v/c Ratio							0.44			0.02						
95% Queue Length, Q <sub>95</sub> (veh)							2.3			0.0						
Control Delay (s/veh)							14.5			10.3						
Level of Service (LOS)							B			B						
Approach Delay (s/veh)							14.5			0.5						
Approach LOS							B									



# HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	MSH	Intersection	Red Rock/US-395 NB Ramps
Agency/Co.	Solaegui Engineers	Jurisdiction	Washoe County
Date Performed	2/3/2021	East/West Street	US-395 NB Ramps
Analysis Year	2028	North/South Street	Red Rock Road
Time Analyzed	PM Base	Peak Hour Factor	0.92
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	10	1	2	3	4	5	6		
Number of Lanes		0	0	0		0	1	0	0	1	1	0	0	0	1	1	
Configuration							LTR			L	T				T	R	
Volume (veh/h)						10	0	795		30	90				490	160	
Percent Heavy Vehicles (%)						2	2	2		2							
Proportion Time Blocked																	
Percent Grade (%)								-2									
Right Turn Channelized																	No
Median Type   Storage								Undivided									

## Critical and Follow-up Headways

Base Critical Headway (sec)						7.1	6.5	6.2		4.1							
Critical Headway (sec)						6.72	6.12	6.02		4.12							
Base Follow-Up Headway (sec)						3.5	4.0	3.3		2.2							
Follow-Up Headway (sec)						3.52	4.02	3.32		2.22							

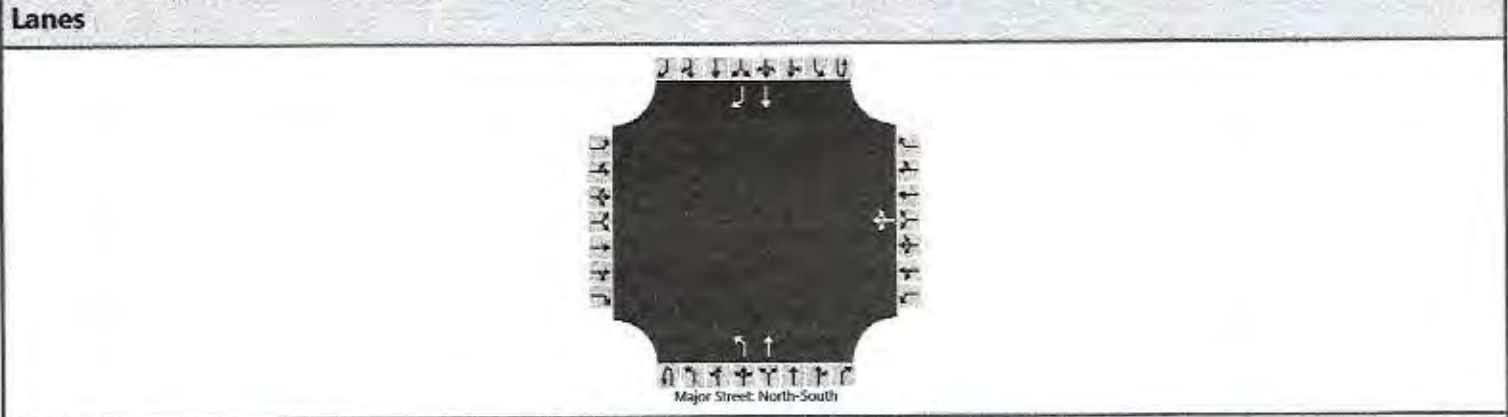
## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)							875			33							
Capacity, c (veh/h)							940			891							
v/c Ratio							0.93			0.04							
95% Queue Length, Q <sub>95</sub> (veh)							14.5			0.1							
Control Delay (s/veh)							36.2			9.2							
Level of Service (LOS)							E			A							
Approach Delay (s/veh)							36.2			2.3							
Approach LOS							E										



# HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	MSH	Intersection	Red Rock/US-395 NB Ramps
Agency/Co.	Solaegui Engineers	Jurisdiction	Washoe County
Date Performed	2/3/2021	East/West Street	US-395 NB Ramps
Analysis Year	2028	North/South Street	Red Rock Road
Time Analyzed	AM Base + Project	Peak Hour Factor	0.92
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description			



**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
Priority		10	11	12		7	8	9								
Number of Lanes		0	0	0		0	1	0	0	1	1	0	0	0	1	1
Configuration							LTR			L	T				T	R
Volume (veh/h)						20	0	295		10	190				1009	66
Percent Heavy Vehicles (%)						2	2	2		2						
Proportion Time Blocked																
Percent Grade (%)							-2									
Right Turn Channelized															No	
Median Type   Storage							Undivided									

**Critical and Follow-up Headways**

Base Critical Headway (sec)						7.1	6.5	6.2		4.1						
Critical Headway (sec)						6.72	6.12	6.02		4.12						
Base Follow-Up Headway (sec)						3.5	4.0	3.3		2.2						
Follow-Up Headway (sec)						3.52	4.02	3.32		2.22						

**Delay, Queue Length, and Level of Service**

Flow Rate, v (veh/h)						342				11						
Capacity, c (veh/h)						644				597						
v/c Ratio						0.53				0.02						
95% Queue Length, Q <sub>95</sub> (veh)						3.1				0.1						
Control Delay (s/veh)						16.7				11.1						
Level of Service (LOS)						C				B						
Approach Delay (s/veh)						16.7				0.6						
Approach LOS						C										



# HCS7 Two-Way Stop-Control Report

## General Information

Analyst	MSH
Agency/Co.	Solaegui Engineers
Date Performed	2/3/2021
Analysis Year	2028
Time Analyzed	PM Base + Project
Intersection Orientation	North-South
Project Description	

## Site Information

Intersection	Red Rock/US-395 NB Ramps
Jurisdiction	Washoe County
East/West Street	US-395 NB Ramps
North/South Street	Red Rock Road
Peak Hour Factor	0.92
Analysis Time Period (hrs)	0.25

## 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	0	0		0	1	0	0	1	1	0	0	0	1	1
Configuration							LTR			L	T				T	R
Volume (veh/h)						10	0	930		30	124				572	177
Percent Heavy Vehicles (%)						2	2	2		2						
Proportion Time Blocked																
Percent Grade (%)					-2											
Right Turn Channelized													No			
Median Type   Storage	Undivided															

## Critical and Follow-up Headways

Base Critical Headway (sec)						7.1	6.5	6.2		4.1						
Critical Headway (sec)						6.72	6.12	6.02		4.12						
Base Follow-Up Headway (sec)						3.5	4.0	3.3		2.2						
Follow-Up Headway (sec)						3.52	4.02	3.32		2.22						

## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						1022				33						
Capacity, c (veh/h)						898				812						
v/c Ratio						1.14				0.04						
95% Queue Length, Q <sub>95</sub> (veh)						28.8				0.1						
Control Delay (s/veh)						95.1				9.6						
Level of Service (LOS)						F				A						
Approach Delay (s/veh)					95.1				1.9							
Approach LOS					F											



# HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	MSH	Intersection	Red Rock/US-395 NB Ramps
Agency/Co.	Solaegui Engineers	Jurisdiction	Washoe County
Date Performed	2/3/2021	East/West Street	US-395 NB Ramps
Analysis Year	2028	North/South Street	Red Rock Road
Time Analyzed	AM Base	Peak Hour Factor	0.92
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Free WB Right		

## 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	10	1	2	3	4	5	6		
Number of Lanes		0	0	0		0	1	0	0	1	1	0	0	0	1	1	
Configuration						LT				L	T				T	R	
Volume (veh/h)						20	0			10	180				885	40	
Percent Heavy Vehicles (%)						2	2			2							
Proportion Time Blocked																	
Percent Grade (%)							-2										
Right Turn Channelized																No	
Median Type   Storage						Undivided											

## Critical and Follow-up Headways

Base Critical Headway (sec)						7.1	6.5			4.1							
Critical Headway (sec)						6.72	6.12			4.12							
Base Follow-Up Headway (sec)						3.5	4.0			2.2							
Follow-Up Headway (sec)						3.52	4.02			2.22							

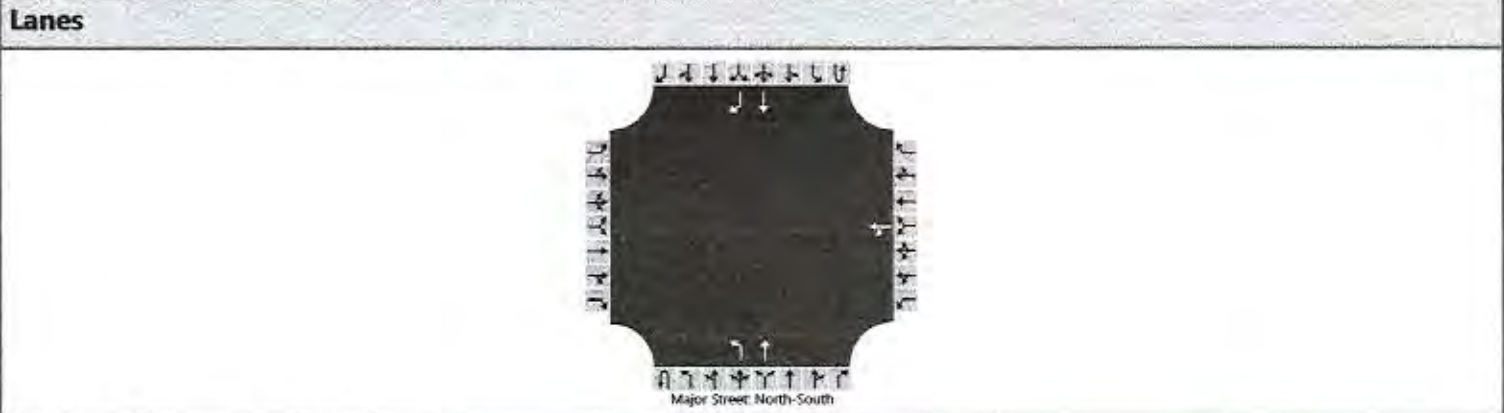
## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						22				11							
Capacity, c (veh/h)						182				689							
v/c Ratio						0.12				0.02							
95% Queue Length, Q <sub>95</sub> (veh)						0.4				0.0							
Control Delay (s/veh)						27.4				10.3							
Level of Service (LOS)						D				B							
Approach Delay (s/veh)						27.4				0.5							
Approach LOS						D											



# HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	MSH	Intersection	Red Rock/US-395 NB Ramps
Agency/Co.	Solaegui Engineers	Jurisdiction	Washoe County
Date Performed	2/3/2021	East/West Street	US-395 NB Ramps
Analysis Year	2028	North/South Street	Red Rock Road
Time Analyzed	PM Base	Peak Hour Factor	0.92
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Free WB Right		



**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	10	1	2	3	4	4	5	6	
Number of Lanes		0	0	0		0	1	0	0	1	1	0	0	0	1	1	
Configuration						LT				L	T				T	R	
Volume (veh/h)						10	0			30	90				490	160	
Percent Heavy Vehicles (%)						2	2			2							
Proportion Time Blocked																	
Percent Grade (%)						-2											
Right Turn Channelized																	No
Median Type   Storage						Undivided											

**Critical and Follow-up Headways**

Base Critical Headway (sec)						7.1	6.5			4.1							
Critical Headway (sec)						6.72	6.12			4.12							
Base Follow-Up Headway (sec)						3.5	4.0			2.2							
Follow-Up Headway (sec)						3.52	4.02			2.22							

**Delay, Queue Length, and Level of Service**

Flow Rate, v (veh/h)						11				33							
Capacity, c (veh/h)						330				891							
v/c Ratio						0.03				0.04							
95% Queue Length, Q <sub>95</sub> (veh)						0.1				0.1							
Control Delay (s/veh)						16.3				9.2							
Level of Service (LOS)						C				A							
Approach Delay (s/veh)						16.3				2.3							
Approach LOS						C				A							



# HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	MSH	Intersection	Red Rock/US-395 NB Ramps
Agency/Co.	Solaegui Engineers	Jurisdiction	Washoe County
Date Performed	2/3/2021	East/West Street	US-395 NB Ramps
Analysis Year	2028	North/South Street	Red Rock Road
Time Analyzed	AM Base + Project	Peak Hour Factor	0.92
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Free WB Right		

## 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	0	0		0	1	0	0	1	1	0	0	0	1	1
Configuration						LT				L	T				T	R
Volume (veh/h)						20	0			10	190				1009	66
Percent Heavy Vehicles (%)						2	2			2						
Proportion Time Blocked																
Percent Grade (%)							-2									
Right Turn Channelized															No	
Median Type   Storage							Undivided									

## Critical and Follow-up Headways

Base Critical Headway (sec)						7.1	6.5			4.1						
Critical Headway (sec)						6.72	6.12			4.12						
Base Follow-Up Headway (sec)						3.5	4.0			2.2						
Follow-Up Headway (sec)						3.52	4.02			2.22						

## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						22				11						
Capacity, c (veh/h)						144				597						
v/c Ratio						0.15				0.02						
95% Queue Length, Q <sub>95</sub> (veh)						0.5				0.1						
Control Delay (s/veh)						34.4				11.1						
Level of Service (LOS)						D				B						
Approach Delay (s/veh)							34.4				0.6					
Approach LOS							D									



# HCS7 Two-Way Stop-Control Report

## General Information

Analyst	MSH
Agency/Co.	Solaegui Engineers
Date Performed	2/3/2021
Analysis Year	2028
Time Analyzed	PM Base + Project
Intersection Orientation	North-South
Project Description	Free WB Right

## Site Information

Intersection	Red Rock/US-395 NB Ramps
Jurisdiction	Washoe County
East/West Street	US-395 NB Ramps
North/South Street	Red Rock Road
Peak Hour Factor	0.92
Analysis Time Period (hrs)	0.25

## 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	0	0		0	1	0	0	1	1	0	0	0	1	1
Configuration						LT				L	T				T	R
Volume (veh/h)						10	0			30	124				572	177
Percent Heavy Vehicles (%)						2	2			2						
Proportion Time Blocked																
Percent Grade (%)							-2									
Right Turn Channelized															No	
Median Type   Storage							Undivided									

## Critical and Follow-up Headways

Base Critical Headway (sec)						7.1	6.5			4.1						
Critical Headway (sec)						6.72	6.12			4.12						
Base Follow-Up Headway (sec)						3.5	4.0			2.2						
Follow-Up Headway (sec)						3.52	4.02			2.22						

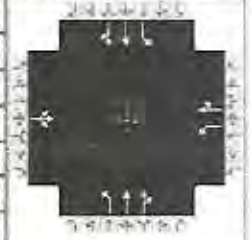
## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						11				33						
Capacity, c (veh/h)						271				812						
v/c Ratio						0.04				0.04						
95% Queue Length, Q <sub>95</sub> (veh)						0.1				0.1						
Control Delay (s/veh)						18.9				9.6						
Level of Service (LOS)						C				A						
Approach Delay (s/veh)							18.9				1.9					
Approach LOS							C									



## HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Solaegui Engineers			Duration, h	0.250
Analyst	MSH	Analysis Date	Feb 3, 2021	Area Type	Other
Jurisdiction	Washoe County	Time Period	AM Peak Hour	PHF	0.92
Urban Street		Analysis Year	Existing	Analysis Period	1> 7:00
Intersection	Red Rock & Silver Lake	File Name	RrSI18ax.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	2	2	24	197	12	19	40	221	54	14	451	5

Signal Information													
Cycle, s	75.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On	Green	6.0	26.0	6.0	22.0	0.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	4.0	0.0	4.0	0.0	0.0			
				Red	1.0	1.0	0.0	1.0	0.0	0.0			

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4	3	8	5	2	1	6
Case Number		8.3	1.0	4.0	1.1	4.0	1.1	4.0
Phase Duration, s		27.0	6.0	33.0	11.0	31.0	11.0	31.0
Change Period, (Y+R <sub>c</sub> ), s		5.0	0.0	5.0	5.0	5.0	5.0	5.0
Max Allow Headway (MAH), s		3.3	3.1	3.3	3.1	0.0	3.1	0.0
Queue Clearance Time (g <sub>s</sub> ), s		3.0	8.0	3.0	3.1		2.4	
Green Extension Time (g <sub>e</sub> ), s		0.1	0.0	0.1	0.0	0.0	0.0	0.0
Phase Call Probability		1.00	1.00	1.00	1.00		1.00	
Max Out Probability		0.00	1.00	0.00	1.00		0.32	

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	30			214	34		43	147	141	15	248	247
Adjusted Saturation Flow Rate (s), veh/h/ln	1579			1781	1664		1781	1870	1741	1781	1870	1861
Queue Service Time (g <sub>s</sub> ), s	0.0			6.0	1.0		1.1	4.2	4.3	0.4	7.5	7.5
Cycle Queue Clearance Time (g <sub>c</sub> ), s	1.0			6.0	1.0		1.1	4.2	4.3	0.4	7.5	7.5
Green Ratio (g/C)	0.29			0.40	0.37		0.43	0.35	0.35	0.43	0.35	0.35
Capacity (c), veh/h	515			625	621		437	648	604	525	648	645
Volume-to-Capacity Ratio (X)	0.059			0.343	0.054		0.100	0.226	0.234	0.029	0.383	0.383
Back of Queue (Q), ft/ln (95 th percentile)	16.6			105.1	15.7		18.1	83	80.8	6.2	151.3	150.8
Back of Queue (Q), veh/ln (95 th percentile)	0.7			4.1	0.6		0.7	3.3	3.2	0.2	6.0	5.9
Queue Storage Ratio (RQ) (95 th percentile)	0.00			0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d <sub>1</sub> ), s/veh	19.1			15.5	15.0		13.3	17.4	17.4	12.7	18.5	18.5
Incremental Delay (d <sub>2</sub> ), s/veh	0.0			0.1	0.0		0.0	0.8	0.9	0.0	1.7	1.7
Initial Queue Delay (d <sub>3</sub> ), s/veh	0.0			0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	19.1			15.6	15.0		13.3	18.2	18.3	12.7	20.2	20.2
Level of Service (LOS)	B			B	B		B	B	B	B	C	C
Approach Delay, s/veh / LOS	19.1	B		15.5	B		17.6	B		20.0	B	
Intersection Delay, s/veh / LOS	18.3						B					

Multimodal Results	EB			WB			NB			SB		
Pedestrian LOS Score / LOS	2.29	B		2.27	B		1.91	B		1.68	B	
Bicycle LOS Score / LOS	0.54	A		0.90	A		0.76	A		0.91	A	



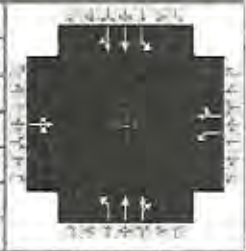
## HCS7 Signalized Intersection Results Summary

### General Information

Agency	Solaegui Engineers		
Analyst	MSH	Analysis Date	Feb 3, 2021
Jurisdiction	Washoe County	Time Period	PM Peak Hour
Urban Street		Analysis Year	Existing
Intersection	Red Rock & Silver Lake	File Name	RrSI18px.xus
Project Description			

### Intersection Information

Duration, h	0.250
Area Type	Other
PHF	0.92
Analysis Period	1 > 7:00



### Demand Information

Approach Movement	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	15	7	21	77	16	27	68	364	163	28	312	9

### Signal Information

Cycle, s	75.0	Reference Phase	2									
Offset, s	0	Reference Point	End	Green	6.0	26.0	6.0	22.0	0.0	0.0		
Uncoordinated	No	Simult. Gap EW	On	Yellow	4.0	4.0	0.0	4.0	0.0	0.0		
Force Mode	Fixed	Simult. Gap N/S	On	Red	1.0	1.0	0.0	1.0	0.0	0.0		

### Timer Results

	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4	3	8	5	2	1	6
Case Number		8.3	1.0	4.0	1.1	4.0	1.1	4.0
Phase Duration, s		27.0	6.0	33.0	11.0	31.0	11.0	31.0
Change Period, (Y+Rc), s		5.0	0.0	5.0	5.0	5.0	5.0	5.0
Max Allow Headway (MAH), s		3.3	3.1	3.3	3.1	0.0	3.1	0.0
Queue Clearance Time (gs), s		3.5	4.2	3.4	3.9		2.7	
Green Extension Time (ge), s		0.1	0.0	0.2	0.0	0.0	0.0	0.0
Phase Call Probability		1.00	1.00	1.00	1.00		1.00	
Max Out Probability		0.00	1.00	0.00	1.00		0.78	

### Movement Group Results

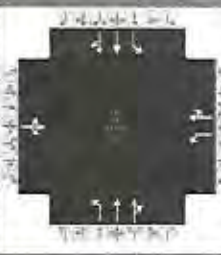
Approach Movement	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h	47			84	47		74	296	266	30	175	174
Adjusted Saturation Flow Rate (s), veh/h/ln	1547			1781	1659		1781	1870	1645	1781	1870	1848
Queue Service Time (gs), s	0.0			2.2	1.4		1.9	9.2	9.5	0.7	5.1	5.1
Cycle Queue Clearance Time (gc), s	1.5			2.2	1.4		1.9	9.2	9.5	0.7	5.1	5.1
Green Ratio (g/C)	0.29			0.40	0.37		0.43	0.35	0.35	0.43	0.35	0.35
Capacity (c), veh/h	519			615	619		499	648	570	403	648	640
Volume-to-Capacity Ratio (X)	0.090			0.136	0.075		0.148	0.456	0.467	0.076	0.270	0.271
Back of Queue (Q), ft/ln (95 th percentile)	25.6			37.8	22		31.3	187.8	171.8	12.6	101.2	100.5
Back of Queue (Q), veh/ln (95 th percentile)	1.0			1.5	0.9		1.2	7.4	6.8	0.5	4.0	4.0
Queue Storage Ratio (RQ) (95 th percentile)	0.00			0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d1), s/veh	19.3			14.3	15.2		13.2	19.0	19.1	13.4	17.7	17.7
Incremental Delay (d2), s/veh	0.0			0.0	0.0		0.1	2.3	2.7	0.0	1.0	1.0
Initial Queue Delay (d3), s/veh	0.0			0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	19.3			14.3	15.2		13.3	21.3	21.8	13.5	18.7	18.7
Level of Service (LOS)	B			B	B		B	C	C	B	B	B
Approach Delay, s/veh / LOS	19.3	B		14.6	B		20.6	C			18.3	B
Intersection Delay, s/veh / LOS	19.2						B					

### Multimodal Results

	EB			WB			NB			SB		
Pedestrian LOS Score / LOS	2.29	B		2.27	B		1.91	B			1.68	B
Bicycle LOS Score / LOS	0.56	A		0.70	A		1.01	A			0.80	A



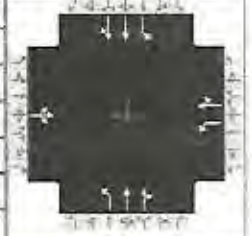
## HCS7 Signalized Intersection Results Summary

General Information				Intersection Information											
Agency	Solaegui Engineers			Duration, h	0.250										
Analyst	MSH	Analysis Date	Feb 3, 2021	Area Type	Other										
Jurisdiction	Washoe County	Time Period	AM Peak Hour	PHF	0.92										
Urban Street		Analysis Year	Existing + Project	Analysis Period	1 > 7:00										
Intersection	Red Rock & Silver Lake	File Name	RrSI18aw.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		2	2	24	197	12	21	40	271	54	20	601	5		
Signal Information															
Cycle, s	75.0	Reference Phase	2												
Offset, s	0	Reference Point	End												
Uncoordinated	No	Simult. Gap EW	On	Green	6.0	26.0	6.0	22.0	0.0	0.0					
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	4.0	0.0	4.0	0.0	0.0					
				Red	1.0	1.0	0.0	1.0	0.0	0.0					
Timer Results				EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase					4	3	8	5	2	1	6				
Case Number					8.3	1.0	4.0	1.1	4.0	1.1	4.0				
Phase Duration, s					27.0	6.0	33.0	11.0	31.0	11.0	31.0				
Change Period, (Y+R <sub>c</sub> ), s					5.0	0.0	5.0	5.0	5.0	5.0	5.0				
Max Allow Headway (MAH), s					3.3	3.1	3.3	3.1	0.0	3.1	0.0				
Queue Clearance Time (g <sub>z</sub> ), s					3.0	8.0	3.0	3.1		2.5					
Green Extension Time (g <sub>e</sub> ), s					0.1	0.0	0.1	0.0	0.0	0.0	0.0				
Phase Call Probability					1.00	1.00	1.00	1.00		1.00					
Max Out Probability					0.00	1.00	0.00	1.00		0.49					
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		30			214	36		43	174	168	22	330	329		
Adjusted Saturation Flow Rate (s), veh/h/ln		1579			1781	1657		1781	1870	1760	1781	1870	1864		
Queue Service Time (g <sub>s</sub> ), s		0.0			6.0	1.0		1.1	5.0	5.2	0.5	10.5	10.5		
Cycle Queue Clearance Time (g <sub>c</sub> ), s		1.0			6.0	1.0		1.1	5.0	5.2	0.5	10.5	10.5		
Green Ratio (g/C)		0.29			0.40	0.37		0.43	0.35	0.35	0.43	0.35	0.35		
Capacity (c), veh/h		515			625	618		378	648	610	499	648	646		
Volume-to-Capacity Ratio (X)		0.059			0.343	0.058		0.115	0.269	0.276	0.044	0.509	0.509		
Back of Queue (Q), ft/ln (95 th percentile)		16.6			105.1	16.7		18.1	100.4	97.7	8.9	210	209.5		
Back of Queue (Q), veh/ln (95 th percentile)		0.7			4.1	0.7		0.7	4.0	3.8	0.4	8.3	8.2		
Queue Storage Ratio (RQ) (95 th percentile)		0.00			0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00		
Uniform Delay (d <sub>1</sub> ), s/veh		19.1			15.5	15.1		13.7	17.7	17.7	12.8	19.4	19.4		
Incremental Delay (d <sub>2</sub> ), s/veh		0.0			0.1	0.0		0.0	1.0	1.1	0.0	2.8	2.9		
Initial Queue Delay (d <sub>3</sub> ), s/veh		0.0			0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		
Control Delay (d), s/veh		19.1			15.6	15.1		13.8	18.7	18.8	12.8	22.3	22.3		
Level of Service (LOS)		B			B	B		B	B	B	B	C	C		
Approach Delay, s/veh / LOS		19.1	B		15.5	B		18.2	B		22.0	C			
Intersection Delay, s/veh / LOS		19.6						B							
Multimodal Results				EB			WB			NB			SB		
Pedestrian LOS Score / LOS		2.29	B		2.27	B		1.91	B		1.68	B			
Bicycle LOS Score / LOS		0.54	A		0.90	A		0.81	A		1.05	A			



## HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Solaegui Engineers			Duration, h	0.250
Analyst	MSH	Analysis Date	Feb 3, 2021	Area Type	Other
Jurisdiction	Washoe County	Time Period	PM Peak Hour	PHF	0.92
Urban Street		Analysis Year	Existing + Project	Analysis Period	1> 7:00
Intersection	Red Rock & Silver Lake	File Name	RrSI18pw.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	15	7	21	77	16	34	68	533	163	32	411	9

Signal Information				EB		WB		NB		SB	
Cycle, s	75.0	Reference Phase	2	Green	6.0	26.0	6.0	22.0	0.0	0.0	0.0
Offset, s	0	Reference Point	End	Yellow	4.0	4.0	0.0	4.0	0.0	0.0	0.0
Uncoordinated	No	Simult. Gap E/W	On	Red	1.0	1.0	0.0	1.0	0.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	On								

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4	3	8	5	2	1	6
Case Number		8.3	1.0	4.0	1.1	4.0	1.1	4.0
Phase Duration, s		27.0	6.0	33.0	11.0	31.0	11.0	31.0
Change Period, (Y+R <sub>c</sub> ), s		5.0	0.0	5.0	5.0	5.0	5.0	5.0
Max Allow Headway (MAH), s		3.3	3.1	3.3	3.1	0.0	3.1	0.0
Queue Clearance Time (g <sub>s</sub> ), s		3.5	4.2	3.6	3.9		2.9	
Green Extension Time (g <sub>e</sub> ), s		0.2	0.0	0.2	0.0	0.0	0.0	0.0
Phase Call Probability		1.00	1.00	1.00	1.00		1.00	
Max Out Probability		0.00	1.00	0.00	1.00		0.96	

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	47			84	54		74	390	356	35	229	227
Adjusted Saturation Flow Rate (s), veh/h/ln	1544			1781	1644		1781	1870	1696	1781	1870	1853
Queue Service Time (g <sub>s</sub> ), s	0.0			2.2	1.6		1.9	12.9	13.0	0.9	6.8	6.9
Cycle Queue Clearance Time (g <sub>c</sub> ), s	1.5			2.2	1.6		1.9	12.9	13.0	0.9	6.8	6.9
Green Ratio (g/C)	0.29			0.40	0.37		0.43	0.35	0.35	0.43	0.35	0.35
Capacity (c), veh/h	518			615	614		452	648	588	343	648	642
Volume-to-Capacity Ratio (X)	0.090			0.136	0.089		0.163	0.602	0.605	0.101	0.353	0.354
Back of Queue (Q), ft/ln (95 th percentile)	25.6			37.8	25.7		31.3	251.3	236.3	14.5	137.5	136.7
Back of Queue (Q), veh/ln (95 th percentile)	1.0			1.5	1.0		1.2	9.9	9.3	0.6	5.4	5.4
Queue Storage Ratio (RQ) (95 th percentile)	0.00			0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d <sub>1</sub> ), s/veh	19.3			14.3	15.2		13.4	20.2	20.3	14.1	18.2	18.2
Incremental Delay (d <sub>2</sub> ), s/veh	0.0			0.0	0.0		0.1	4.1	4.6	0.0	1.5	1.5
Initial Queue Delay (d <sub>3</sub> ), s/veh	0.0			0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	19.3			14.3	15.3		13.5	24.3	24.8	14.2	19.7	19.8
Level of Service (LOS)	B			B	B		B	C	C	B	B	B
Approach Delay, s/veh / LOS	19.3	B		14.7	B		23.6	C		19.4	B	
Intersection Delay, s/veh / LOS	21.2						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.29	B	2.27	B	1.91	B	1.68	B
Bicycle LOS Score / LOS	0.56	A	0.72	A	1.16	A	0.89	A



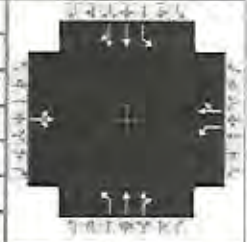
## HCS7 Signalized Intersection Results Summary

General Information					Intersection Information											
Agency	Solaegui Engineers				Duration, h	0.250										
Analyst	MSH	Analysis Date	Feb 3, 2021		Area Type	Other										
Jurisdiction	Washoe County		Time Period	AM Peak Hour		PHF	0.92									
Urban Street			Analysis Year	2028 Base		Analysis Period	1> 7:00									
Intersection	Red Rock & Silver Lake		File Name	RrSI28ax.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					10	5	30	240	15	30	40	335	60	55	655	20
Signal Information																
Cycle, s	75.0	Reference Phase	2													
Offset, s	0	Reference Point	End													
Uncoordinated	No	Simult. Gap E/W	On	Green	6.0	26.0	6.0	22.0	0.0	0.0						
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	4.0	0.0	4.0	0.0	0.0						
				Red	1.0	1.0	0.0	1.0	0.0	0.0						
Timer Results					EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase						4	3	8	5	2	1	6				
Case Number						8.3	1.0	4.0	1.1	4.0	1.1	4.0				
Phase Duration, s						27.0	6.0	33.0	11.0	31.0	11.0	31.0				
Change Period, (Y+R <sub>c</sub> ), s						5.0	0.0	5.0	5.0	5.0	5.0	5.0				
Max Allow Headway (MAH), s						3.3	3.1	3.3	3.1	0.0	3.1	0.0				
Queue Clearance Time (g <sub>s</sub> ), s						3.6	8.0	3.4	3.1		3.5					
Green Extension Time (g <sub>e</sub> ), s						0.1	0.0	0.2	0.0	0.0	0.0	0.0				
Phase Call Probability						1.00	1.00	1.00	1.00		1.00					
Max Out Probability						0.00	1.00	0.00	1.00		1.00					
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					49			261	49	43	213	205	60	369	365	
Adjusted Saturation Flow Rate (s), veh/h/ln					1564			1781	1648	1781	1870	1768	1781	1870	1846	
Queue Service Time (g <sub>s</sub> ), s					0.0			6.0	1.4	1.1	6.3	6.4	1.5	12.0	12.1	
Cycle Queue Clearance Time (g <sub>c</sub> ), s					1.6			6.0	1.4	1.1	6.3	6.4	1.5	12.0	12.1	
Green Ratio (g/C)					0.29			0.40	0.37	0.43	0.35	0.35	0.43	0.35	0.35	
Capacity (c), veh/h					518			611	615	354	648	613	465	648	640	
Volume-to-Capacity Ratio (X)					0.095			0.427	0.080	0.123	0.329	0.335	0.129	0.569	0.570	
Back of Queue (Q), ft/ln (95 th percentile)					26.9			131.9	23	18.1	126.5	122.7	25.2	236.3	234.6	
Back of Queue (Q), veh/ln (95 th percentile)					1.1			5.2	0.9	0.7	5.0	4.8	1.0	9.3	9.2	
Queue Storage Ratio (RQ) (95 th percentile)					0.00			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Uniform Delay (d <sub>1</sub> ), s/veh					19.3			16.6	15.2	14.0	18.1	18.1	13.3	19.9	19.9	
Incremental Delay (d <sub>2</sub> ), s/veh					0.0			0.2	0.0	0.1	1.4	1.5	0.0	3.6	3.7	
Initial Queue Delay (d <sub>3</sub> ), s/veh					0.0			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Control Delay (d), s/veh					19.3			16.7	15.2	14.1	19.4	19.6	13.3	23.5	23.6	
Level of Service (LOS)					B			B	B	B	B	B	B	C	C	
Approach Delay, s/veh / LOS					19.3	B		16.5	B		19.0	B		22.8	C	
Intersection Delay, s/veh / LOS					20.4						C					
Multimodal Results					EB			WB			NB			SB		
Pedestrian LOS Score / LOS					2.29	B		2.27	B		1.91	B		1.68	B	
Bicycle LOS Score / LOS					0.57	A		1.00	A		0.87	A		1.14	A	



## HCS7 Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	Solaegui Engineers			Duration, h	0.250		
Analyst	MSH	Analysis Date	Feb 3, 2021	Area Type	Other		
Jurisdiction	Washoe County	Time Period	PM Peak Hour	PHF	0.92		
Urban Street		Analysis Year	2028 Base	Analysis Period	1> 7:00		
Intersection	Red Rock & Silver Lake	File Name	RrSI28px.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	30	10	20	150	15	70	70	615	200	30	480	10

Signal Information				EB				WB				NB				SB			
Cycle, s	75.0	Reference Phase	2																
Offset, s	0	Reference Point	End																
Uncoordinated	No	Simult. Gap E/W	On	Green	6.0	26.0	6.0	22.0	0.0	0.0									
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	4.0	0.0	4.0	0.0	0.0									
				Red	1.0	1.0	0.0	1.0	0.0	0.0									

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4	3	8	5	2	1	6
Case Number		8.3	1.0	4.0	1.1	4.0	1.1	4.0
Phase Duration, s		27.0	6.0	33.0	11.0	31.0	11.0	31.0
Change Period, (Y+R <sub>c</sub> ), s		5.0	0.0	5.0	5.0	5.0	5.0	5.0
Max Allow Headway (MAH), s		3.3	3.1	3.3	3.1	0.0	3.1	0.0
Queue Clearance Time (g <sub>s</sub> ), s		4.1	6.5	4.9	3.9		2.8	
Green Extension Time (g <sub>e</sub> ), s		0.3	0.0	0.3	0.0	0.0	0.0	0.0
Phase Call Probability		1.00	1.00	1.00	1.00		1.00	
Max Out Probability		0.00	1.00	0.00	1.00		0.87	

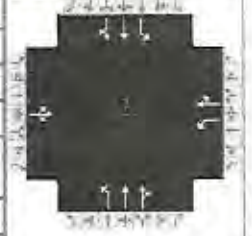
Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h		65		163	92		76	440	402	33	267	265
Adjusted Saturation Flow Rate (s), veh/h/ln		1478		1781	1603		1781	1870	1708	1781	1870	1854
Queue Service Time (g <sub>s</sub> ), s		0.1		4.5	2.9		1.9	15.1	15.1	0.8	8.2	8.2
Cycle Queue Clearance Time (g <sub>c</sub> ), s		2.1		4.5	2.9		1.9	15.1	15.1	0.8	8.2	8.2
Green Ratio (g/C)		0.29		0.40	0.37		0.43	0.35	0.35	0.43	0.35	0.35
Capacity (c), veh/h		506		604	598		422	648	592	316	648	643
Volume-to-Capacity Ratio (X)		0.129		0.270	0.154		0.180	0.679	0.680	0.103	0.412	0.413
Back of Queue (Q), ft/ln (95 th percentile)		36.3		77.3	44.8		32.4	289.8	272.6	13.5	165.6	164.6
Back of Queue (Q), veh/ln (95 th percentile)		1.4		3.0	1.8		1.3	11.4	10.7	0.5	6.5	6.5
Queue Storage Ratio (RQ) (95 th percentile)		0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d <sub>1</sub> ), s/veh		19.5		15.0	15.6		13.6	20.9	20.9	14.6	18.7	18.7
Incremental Delay (d <sub>2</sub> ), s/veh		0.0		0.1	0.0		0.1	5.6	6.2	0.1	1.9	2.0
Initial Queue Delay (d <sub>3</sub> ), s/veh		0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh		19.5		15.1	15.7		13.7	26.6	27.1	14.7	20.6	20.6
Level of Service (LOS)		B		B	B		B	C	C	B	C	C
Approach Delay, s/veh / LOS	19.5		B	15.3		B	25.7		C	20.3		C
Intersection Delay, s/veh / LOS	22.3						C					

Multimodal Results	EB			WB			NB			SB		
Pedestrian LOS Score / LOS	2.33		B	2.27		B	1.91		B	1.68		B
Bicycle LOS Score / LOS	0.60		A	0.91		A	1.25		A	0.95		A



## HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Solaegui Engineers			Duration, h	0.250
Analyst	MSH	Analysis Date	Feb 3, 2021	Area Type	Other
Jurisdiction	Washoe County	Time Period	AM Peak Hour	PHF	0.92
Urban Street		Analysis Year	2028 Base + Project	Analysis Period	1 > 7:00
Intersection	Red Rock & Silver Lake	File Name	RrSI28aw.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	10	5	30	240	15	32	40	385	60	61	805	20

Signal Information													
Cycle, s	75.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On	Green	6.0	26.0	6.0	22.0	0.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	4.0	0.0	4.0	0.0	0.0			
				Red	1.0	1.0	0.0	1.0	0.0	0.0			

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4	3	8	5	2	1	6
Case Number		8.3	1.0	4.0	1.1	4.0	1.1	4.0
Phase Duration, s		27.0	6.0	33.0	11.0	31.0	11.0	31.0
Change Period, (Y+Rc), s		5.0	0.0	5.0	5.0	5.0	5.0	5.0
Max Allow Headway (MAH), s		3.3	3.1	3.3	3.1	0.0	3.1	0.0
Queue Clearance Time (gs), s		3.6	8.0	3.5	3.1		3.7	
Green Extension Time (ge), s		0.2	0.0	0.2	0.0	0.0	0.0	0.0
Phase Call Probability		1.00	1.00	1.00	1.00		1.00	
Max Out Probability		0.00	1.00	0.00	1.00		1.00	

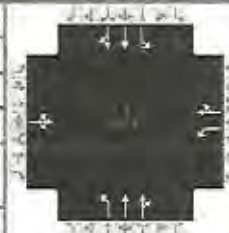
Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h		49		261	51		43	241	232	66	451	446
Adjusted Saturation Flow Rate (s), veh/h/ln		1564		1781	1644		1781	1870	1779	1781	1870	1851
Queue Service Time (gs), s		0.0		6.0	1.5		1.1	7.2	7.3	1.7	15.6	15.6
Cycle Queue Clearance Time (gc), s		1.6		6.0	1.5		1.1	7.2	7.3	1.7	15.6	15.6
Green Ratio (g/C)		0.29		0.40	0.37		0.43	0.35	0.35	0.43	0.35	0.35
Capacity (c), veh/h		517		611	614		308	648	617	443	648	642
Volume-to-Capacity Ratio (X)		0.095		0.427	0.083		0.141	0.371	0.376	0.150	0.695	0.695
Back of Queue (Q), ft/ln (95 th percentile)		26.9		131.9	24.1		18.2	145.8	141.6	28	298.9	296.7
Back of Queue (Q), veh/ln (95 th percentile)		1.1		5.2	0.9		0.7	5.7	5.6	1.1	11.8	11.7
Queue Storage Ratio (RQ) (95 th percentile)		0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d1), s/veh		19.3		16.6	15.2		14.8	18.4	18.4	13.4	21.1	21.1
Incremental Delay (d2), s/veh		0.0		0.2	0.0		0.1	1.6	1.7	0.1	6.1	6.1
Initial Queue Delay (d3), s/veh		0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh		19.3		16.7	15.2		14.9	20.0	20.2	13.5	27.2	27.2
Level of Service (LOS)		B		B	B		B	C	C	B	C	C
Approach Delay, s/veh / LOS	19.3		B	16.5		B	19.6		B	26.2		C
Intersection Delay, s/veh / LOS	22.6						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.29	B	2.27	B	1.91	B	1.68	B
Bicycle LOS Score / LOS	0.57	A	1.00	A	0.91	A	1.28	A



## HCS7 Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	Solaegui Engineers			Duration, h	0.250		
Analyst	MSH	Analysis Date	Feb 3, 2021	Area Type	Other		
Jurisdiction	Washoe County	Time Period	PM Peak Hour	PHF	0.92		
Urban Street		Analysis Year	2028 Base + Project	Analysis Period	1> 7:00		
Intersection	Red Rock & Silver Lake	File Name	RrSI28pw.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	30	10	20	150	15	77	70	784	200	34	579	10

Signal Information													
Cycle, s	75.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On	Green	6.0	26.0	6.0	22.0	0.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	4.0	0.0	4.0	0.0	0.0			
				Red	1.0	1.0	0.0	1.0	0.0	0.0			

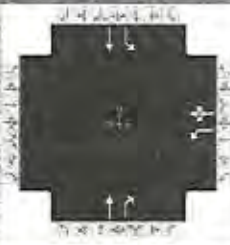
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4	3	8	5	2	1	6
Case Number		8.3	1.0	4.0	1.1	4.0	1.1	4.0
Phase Duration, s		27.0	6.0	33.0	11.0	31.0	11.0	31.0
Change Period, (Y+R <sub>c</sub> ), s		5.0	0.0	5.0	5.0	5.0	5.0	5.0
Max Allow Headway (MAH), s		3.3	3.1	3.3	3.1	0.0	3.1	0.0
Queue Clearance Time (g <sub>s</sub> ), s		4.1	6.5	5.1	3.9		2.9	
Green Extension Time (g <sub>e</sub> ), s		0.3	0.0	0.3	0.0	0.0	0.0	0.0
Phase Call Probability		1.00	1.00	1.00	1.00		1.00	
Max Out Probability		0.00	1.00	0.00	1.00		1.00	

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		65		163	100		76	532	494	37	321	319
Adjusted Saturation Flow Rate (s), veh/h/ln		1473		1781	1599		1781	1870	1736	1781	1870	1856
Queue Service Time (g <sub>s</sub> ), s		0.1		4.5	3.1		1.9	19.5	19.5	0.9	10.2	10.2
Cycle Queue Clearance Time (g <sub>c</sub> ), s		2.1		4.5	3.1		1.9	19.5	19.5	0.9	10.2	10.2
Green Ratio (g/C)		0.29		0.40	0.37		0.43	0.35	0.35	0.43	0.35	0.35
Capacity (c), veh/h		504		604	597		384	648	602	272	648	644
Volume-to-Capacity Ratio (X)		0.129		0.270	0.168		0.198	0.821	0.821	0.136	0.495	0.496
Back of Queue (Q), ft/ln (95 th percentile)		36.3		77.3	48.8		32.4	379.7	361.3	15.4	204.5	203.6
Back of Queue (Q), veh/ln (95 th percentile)		1.4		3.0	1.9		1.3	15.0	14.2	0.6	8.1	8.0
Queue Storage Ratio (RQ) (95 th percentile)		0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d <sub>1</sub> ), s/veh		19.5		15.0	15.7		14.0	22.4	22.4	15.9	19.3	19.3
Incremental Delay (d <sub>2</sub> ), s/veh		0.0		0.1	0.0		0.1	11.2	11.9	0.1	2.7	2.7
Initial Queue Delay (d <sub>3</sub> ), s/veh		0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh		19.5		15.1	15.8		14.1	33.5	34.3	16.0	22.0	22.0
Level of Service (LOS)		B		B	B		B	C	C	B	C	C
Approach Delay, s/veh / LOS	19.5		B	15.3		B	32.5		C	21.7		C
Intersection Delay, s/veh / LOS	26.5						C					

Multimodal Results	EB		WB		NB		SB	
	Pedestrian LOS Score / LOS	2.33	B	2.27	B	1.91	B	1.68
Bicycle LOS Score / LOS	0.60	A	0.92	A	1.40	A	1.05	A



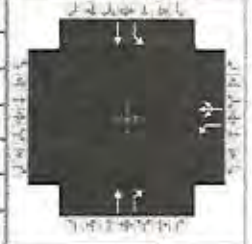
## HCS7 Signalized Intersection Results Summary

General Information				Intersection Information															
Agency	Solaegui Engineers			Duration, h	0.250														
Analyst	MSH	Analysis Date	Feb 3, 2021	Area Type	Other														
Jurisdiction	Washoe County	Time Period	AM Peak Hour	PHF	0.92														
Urban Street		Analysis Year	Existing	Analysis Period	1 > 7:00														
Intersection	Red Rock & Moya	File Name	RrMo18ax.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							216	0	12		76	177	26	214					
Signal Information																			
Cycle, s	75.0	Reference Phase	2																
Offset, s	0	Reference Point	End																
Uncoordinated	No	Simult. Gap E/W	On	Green	6.0	32.0	22.0	0.0	0.0	0.0									
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	4.0	4.0	0.0	0.0	0.0									
				Red	1.0	1.0	1.0	0.0	0.0	0.0									
Timer Results				EBL		EBT		WBL		WBT		NBL		NBT		SBL		SBT	
Assigned Phase								8				2		1		6			
Case Number								10.0				7.3		1.0		4.0			
Phase Duration, s								27.0				37.0		11.0		48.0			
Change Period, (Y+R <sub>c</sub> ), s								5.0				5.0		5.0		5.0			
Max Allow Headway (MAH), s								3.2				0.0		3.1		0.0			
Queue Clearance Time (g <sub>c</sub> ), s								10.1						2.6					
Green Extension Time (g <sub>e</sub> ), s								0.4				0.0		0.0		0.0			
Phase Call Probability								1.00						1.00					
Max Out Probability								0.00						0.54					
Movement Group Results				EB			WB			NB			SB						
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R				
Assigned Movement							3	8	18		2	12	1	6					
Adjusted Flow Rate (v), veh/h							235	13		83	149	28	233						
Adjusted Saturation Flow Rate (s), veh/h/ln							1766	1530		1870	1537	1781	1870						
Queue Service Time (g <sub>s</sub> ), s							8.1	0.5		2.0	4.6	0.6	4.5						
Cycle Queue Clearance Time (g <sub>c</sub> ), s							8.1	0.5		2.0	4.6	0.6	4.5						
Green Ratio (g/C)							0.29	0.29		0.43	0.43	0.53	0.57						
Capacity (c), veh/h							518	449		798	656	765	1072						
Volume-to-Capacity Ratio (X)							0.453	0.029		0.104	0.227	0.037	0.217						
Back of Queue (Q), ft/ln (95 th percentile)							145.2	7		37.5	73.3	8.6	76.3						
Back of Queue (Q), veh/ln (95 th percentile)							5.7	0.3		1.5	2.9	0.3	3.0						
Queue Storage Ratio (RQ) (95 th percentile)							0.00	0.00		0.00	0.00	0.00	0.00						
Uniform Delay (d <sub>1</sub> ), s/veh							21.6	18.9		12.9	13.6	8.4	7.8						
Incremental Delay (d <sub>2</sub> ), s/veh							0.2	0.0		0.3	0.8	0.0	0.5						
Initial Queue Delay (d <sub>3</sub> ), s/veh							0.0	0.0		0.0	0.0	0.0	0.0						
Control Delay (d), s/veh							21.8	18.9		13.2	14.5	8.4	8.3						
Level of Service (LOS)							C	B		B	B	A	A						
Approach Delay, s/veh / LOS				0.0			21.7			C	14.0		B	8.3		A			
Intersection Delay, s/veh / LOS				14.5						B									
Multimodal Results				EB			WB			NB			SB						
Pedestrian LOS Score / LOS																			
Bicycle LOS Score / LOS																			



## HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Solaegui Engineers			Duration, h	0.250
Analyst	MSH	Analysis Date	Feb 3, 2021	Area Type	Other
Jurisdiction	Washoe County	Time Period	PM Peak Hour	PHF	0.92
Urban Street		Analysis Year	Existing	Analysis Period	1> 7:00
Intersection	Red Rock & Moya	File Name	RrMo18px.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				246	0	42		244	160	13	107	

Signal Information				Signal Timing (s)											
Cycle, s	75.0	Reference Phase	2												
Offset, s	0	Reference Point	End												
Uncoordinated	No	Simult. Gap E/W	On	Green	6.0	32.0	22.0	0.0	0.0	0.0					
				Yellow	4.0	4.0	4.0	0.0	0.0	0.0					
Force Mode	Fixed	Simult. Gap N/S	On	Red	1.0	1.0	1.0	0.0	0.0	0.0					

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase				8		2	1	6
Case Number				10.0		7.3	1.0	4.0
Phase Duration, s				27.0		37.0	11.0	48.0
Change Period, (Y+R <sub>c</sub> ), s				5.0		5.0	5.0	5.0
Max Allow Headway (MAH), s				3.2		0.0	3.1	0.0
Queue Clearance Time (g <sub>s</sub> ), s				11.5			2.3	
Green Extension Time (g <sub>e</sub> ), s				0.5		0.0	0.0	0.0
Phase Call Probability				1.00			1.00	
Max Out Probability				0.00			0.25	

Movement Group Results	EB			WB			NB			SB			
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R	
Assigned Movement				3	8	18		2	12	1	6		
Adjusted Flow Rate (v), veh/h				267	46			265	130	14	116		
Adjusted Saturation Flow Rate (s), veh/h/ln				1766	1530			1870	1537	1781	1870		
Queue Service Time (g <sub>s</sub> ), s				9.5	1.6			7.1	4.0	0.3	2.1		
Cycle Queue Clearance Time (g <sub>c</sub> ), s				9.5	1.6			7.1	4.0	0.3	2.1		
Green Ratio (g/C)				0.29	0.29			0.43	0.43	0.53	0.57		
Capacity (c), veh/h				518	449			798	656	608	1072		
Volume-to-Capacity Ratio (X)				0.516	0.102			0.332	0.199	0.023	0.108		
Back of Queue (Q), ft/ln (95 th percentile)				169.8	25.1			136	63.1	4.3	35.4		
Back of Queue (Q), veh/ln (95 th percentile)				6.7	1.0			5.4	2.5	0.2	1.4		
Queue Storage Ratio (RQ) (95 th percentile)				0.00	0.00			0.00	0.00	0.00	0.00		
Uniform Delay (d <sub>1</sub> ), s/veh				22.1	19.3			14.4	13.5	8.8	7.3		
Incremental Delay (d <sub>2</sub> ), s/veh				0.4	0.0			1.1	0.7	0.0	0.2		
Initial Queue Delay (d <sub>3</sub> ), s/veh				0.0	0.0			0.0	0.0	0.0	0.0		
Control Delay (d), s/veh				22.5	19.3			15.5	14.1	8.8	7.5		
Level of Service (LOS)				C	B			B	B	A	A		
Approach Delay, s/veh / LOS	0.0			22.0		C		15.0		B		7.6	A
Intersection Delay, s/veh / LOS	16.5						B						

Multimodal Results	EB	WB	NB	SB
Pedestrian LOS Score / LOS				
Bicycle LOS Score / LOS				



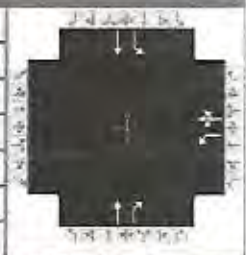
## HCS7 Signalized Intersection Results Summary

General Information				Intersection Information											
Agency	Solaegui Engineers			Duration, h	0.250										
Analyst	MSH	Analysis Date	Feb 3, 2021	Area Type	Other										
Jurisdiction	Washoe County	Time Period	AM Peak Hour	PHF	0.92										
Urban Street		Analysis Year	Existing + Project	Analysis Period	1> 7:00										
Intersection	Red Rock & Moya	File Name	RrMo18aw.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							216	0	25		128	177	66	370	
Signal Information															
Cycle, s	75.0	Reference Phase	2												
Offset, s	0	Reference Point	End												
Uncoordinated	No	Simult. Gap E/W	On	Green	6.0	32.0	22.0	0.0	0.0	0.0					
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	4.0	4.0	0.0	0.0	0.0					
				Red	1.0	1.0	1.0	0.0	0.0	0.0					
Timer Results				EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase							8		2	1	6				
Case Number							10.0		7.3	1.0	4.0				
Phase Duration, s							27.0		37.0	11.0	48.0				
Change Period, ( Y+R <sub>c</sub> ), s							5.0		5.0	5.0	5.0				
Max Allow Headway ( MAH ), s							3.2		0.0	3.1	0.0				
Queue Clearance Time ( g <sub>s</sub> ), s							10.1			3.5					
Green Extension Time ( g <sub>e</sub> ), s							0.4		0.0	0.0	0.0				
Phase Call Probability							1.00			1.00					
Max Out Probability							0.00			1.00					
Movement Group Results				EB			WB			NB			SB		
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement							3	8	18		2	12	1	6	
Adjusted Flow Rate ( v ), veh/h							235	27		139	192	72	402		
Adjusted Saturation Flow Rate ( s ), veh/h/ln							1766	1530		1870	1537	1781	1870		
Queue Service Time ( g <sub>s</sub> ), s							8.1	1.0		3.5	6.2	1.5	8.8		
Cycle Queue Clearance Time ( g <sub>c</sub> ), s							8.1	1.0		3.5	6.2	1.5	8.8		
Green Ratio ( g/C )							0.29	0.29		0.43	0.43	0.53	0.57		
Capacity ( c ), veh/h							518	449		798	656	714	1072		
Volume-to-Capacity Ratio ( X )							0.453	0.061		0.174	0.293	0.100	0.375		
Back of Queue ( Q ), ft/ln ( 95 th percentile)							145.2	14.8		65.4	98.1	22.5	148.5		
Back of Queue ( Q ), veh/ln ( 95 th percentile)							5.7	0.6		2.6	3.9	0.9	5.8		
Queue Storage Ratio ( RQ ) ( 95 th percentile)							0.00	0.00		0.00	0.00	0.00	0.00		
Uniform Delay ( d <sub>1</sub> ), s/veh							21.6	19.1		13.3	14.1	8.7	8.7		
Incremental Delay ( d <sub>2</sub> ), s/veh							0.2	0.0		0.5	1.1	0.0	1.0		
Initial Queue Delay ( d <sub>3</sub> ), s/veh							0.0	0.0		0.0	0.0	0.0	0.0		
Control Delay ( d ), s/veh							21.8	19.1		13.8	15.2	8.7	9.7		
Level of Service ( LOS )							C	B		B	B	A	A		
Approach Delay, s/veh / LOS				0.0			21.5	C		14.6	B		9.6	A	
Intersection Delay, s/veh / LOS				14.1				B							
Multimodal Results				EB			WB			NB			SB		
Pedestrian LOS Score / LOS															
Bicycle LOS Score / LOS															



## HCS7 Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	Solaegui Engineers			Duration, h	0.250		
Analyst	MSH	Analysis Date	Feb 3, 2021	Area Type	Other		
Jurisdiction	Washoe County	Time Period	PM Peak Hour	PHF	0.92		
Urban Street		Analysis Year	Existing + Project	Analysis Period	1 > 7:00		
Intersection	Red Rock & Moya	File Name	RrMo18pw.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				246	0	86		420	160		39	210

Signal Information												
Cycle, s	75.0	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	On	Green	6.0	32.0	22.0	0.0	0.0	0.0		
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	4.0	4.0	0.0	0.0	0.0		
				Red	1.0	1.0	1.0	0.0	0.0	0.0		


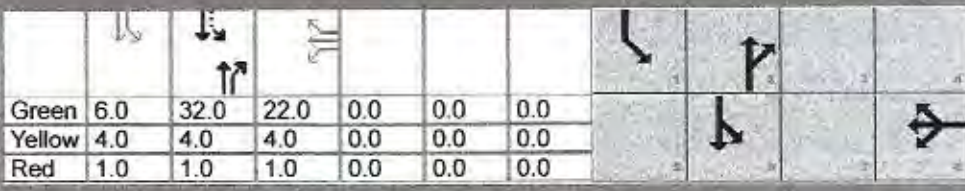
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase				8		2	1	6
Case Number				10.0		7.3	1.0	4.0
Phase Duration, s				27.0		37.0	11.0	48.0
Change Period, (Y+R <sub>c</sub> ), s				5.0		5.0	5.0	5.0
Max Allow Headway (MAH), s				3.2		0.0	3.1	0.0
Queue Clearance Time (g <sub>e</sub> ), s				11.5			2.9	
Green Extension Time (g <sub>e</sub> ), s				0.6		0.0	0.0	0.0
Phase Call Probability				1.00			1.00	
Max Out Probability				0.01			0.96	

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement				3	8	18		2	12	1	6	
Adjusted Flow Rate (v), veh/h				267	93			457	130	42	228	
Adjusted Saturation Flow Rate (s), veh/h/ln				1766	1530			1870	1537	1781	1870	
Queue Service Time (g <sub>s</sub> ), s				9.5	3.4			13.9	4.0	0.9	4.4	
Cycle Queue Clearance Time (g <sub>c</sub> ), s				9.5	3.4			13.9	4.0	0.9	4.4	
Green Ratio (g/C)				0.29	0.29			0.43	0.43	0.53	0.57	
Capacity (c), veh/h				518	449			798	656	464	1072	
Volume-to-Capacity Ratio (X)				0.516	0.208			0.572	0.199	0.091	0.213	
Back of Queue (Q), ft/ln (95 th percentile)				169.8	53.3			253.9	63.1	13.2	74.6	
Back of Queue (Q), veh/ln (95 th percentile)				6.7	2.1			10.0	2.5	0.5	2.9	
Queue Storage Ratio (RQ) (95 th percentile)				0.00	0.00			0.00	0.00	0.00	0.00	
Uniform Delay (d <sub>1</sub> ), s/veh				22.1	19.9			16.3	13.5	10.1	7.8	
Incremental Delay (d <sub>2</sub> ), s/veh				0.4	0.1			3.0	0.7	0.0	0.5	
Initial Queue Delay (d <sub>3</sub> ), s/veh				0.0	0.0			0.0	0.0	0.0	0.0	
Control Delay (d), s/veh				22.5	20.0			19.3	14.1	10.2	8.2	
Level of Service (LOS)				C	C			B	B	B	A	
Approach Delay, s/veh / LOS	0.0			21.8		C		18.1		B	8.5	A
Intersection Delay, s/veh / LOS				17.1				B				

Multimodal Results	EB	WB	NB	SB
Pedestrian LOS Score / LOS				
Bicycle LOS Score / LOS				



## HCS7 Signalized Intersection Results Summary

General Information				Intersection Information											
Agency	Solaegui Engineers			Duration, h	0.250										
Analyst	MSH	Analysis Date	Feb 3, 2021	Area Type	Other										
Jurisdiction	Washoe County	Time Period	AM Peak Hour	PHF	0.92										
Urban Street		Analysis Year	2028 Base	Analysis Period	1> 7:00										
Intersection	Red Rock & Moya	File Name	RrMo28ax.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							240	0	40		195	180	70	490	
Signal Information															
Cycle, s	75.0	Reference Phase	2												
Offset, s	0	Reference Point	End												
Uncoordinated	No	Simult. Gap E/W	On	Green	6.0	32.0	22.0	0.0	0.0	0.0					
				Yellow	4.0	4.0	4.0	0.0	0.0	0.0					
Force Mode	Fixed	Simult. Gap N/S	On	Red	1.0	1.0	1.0	0.0	0.0	0.0					
Timer Results				EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase							8		2	1	6				
Case Number							10.0		7.3	1.0	4.0				
Phase Duration, s							27.0		37.0	11.0	48.0				
Change Period, ( Y+R <sub>c</sub> ), s							5.0		5.0	5.0	5.0				
Max Allow Headway ( MAH ), s							3.2		0.0	3.1	0.0				
Queue Clearance Time ( g <sub>s</sub> ), s							11.2			3.6					
Green Extension Time ( g <sub>e</sub> ), s							0.5		0.0	0.0	0.0				
Phase Call Probability							1.00			1.00					
Max Out Probability							0.00			1.00					
Movement Group Results				EB			WB			NB			SB		
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement							3	8	18		2	12	1	6	
Adjusted Flow Rate ( v ), veh/h							261	43			212	152	76	533	
Adjusted Saturation Flow Rate ( s ), veh/h/ln							1768	1530			1870	1537	1781	1870	
Queue Service Time ( g <sub>s</sub> ), s							9.2	1.5			5.5	4.7	1.6	12.7	
Cycle Queue Clearance Time ( g <sub>c</sub> ), s							9.2	1.5			5.5	4.7	1.6	12.7	
Green Ratio ( g/C )							0.29	0.29			0.43	0.43	0.53	0.57	
Capacity ( c ), veh/h							518	449			798	656	652	1072	
Volume-to-Capacity Ratio ( X )							0.504	0.097			0.266	0.232	0.117	0.497	
Back of Queue ( Q ), ft/ln ( 95 th percentile)							164.3	23.9			104.6	74.9	24	212.5	
Back of Queue ( Q ), veh/ln ( 95 th percentile)							6.5	0.9			4.1	2.9	0.9	8.4	
Queue Storage Ratio ( RQ ) ( 95 th percentile)							0.00	0.00			0.00	0.00	0.00	0.00	
Uniform Delay ( d <sub>1</sub> ), s/veh							22.0	19.3			13.9	13.7	8.9	9.5	
Incremental Delay ( d <sub>2</sub> ), s/veh							0.3	0.0			0.8	0.8	0.0	1.6	
Initial Queue Delay ( d <sub>3</sub> ), s/veh							0.0	0.0			0.0	0.0	0.0	0.0	
Control Delay ( d ), s/veh							22.3	19.3			14.7	14.5	9.0	11.2	
Level of Service ( LOS )							C	B			B	B	A	B	
Approach Delay, s/veh / LOS				0.0			21.9	C		14.6	B		10.9	B	
Intersection Delay, s/veh / LOS				14.6						B					
Multimodal Results				EB			WB			NB			SB		
Pedestrian LOS Score / LOS															
Bicycle LOS Score / LOS															



## HCS7 Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	Solaegui Engineers			Duration, h	0.250		
Analyst	MSH	Analysis Date	Feb 3, 2021	Area Type	Other		
Jurisdiction	Washoe County	Time Period	PM Peak Hour	PHF	0.92		
Urban Street		Analysis Year	2028 Base	Analysis Period	1> 7:00		
Intersection	Red Rock & Moya	File Name	RrMo28px.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				290	0	70		535	180	30	230	

Signal Information														
Cycle, s	75.0	Reference Phase	2											
Offset, s	0	Reference Point	End											
Uncoordinated	No	Simult. Gap E/W	On	Green	6.0	32.0	22.0	0.0	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	4.0	4.0	0.0	0.0	0.0				
				Red	1.0	1.0	1.0	0.0	0.0	0.0				

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase				8		2	1	6
Case Number				10.0		7.3	1.0	4.0
Phase Duration, s				27.0		37.0	11.0	48.0
Change Period, ( Y+R c ), s				5.0		5.0	5.0	5.0
Max Allow Headway ( MAH ), s				3.2		0.0	3.1	0.0
Queue Clearance Time ( g s ), s				13.5			2.7	
Green Extension Time ( g e ), s				0.6		0.0	0.0	0.0
Phase Call Probability				1.00			1.00	
Max Out Probability				0.03			0.65	

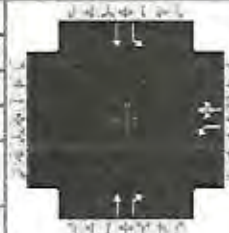
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement				3	8	18		2	12	1	6	
Adjusted Flow Rate ( v ), veh/h				315	76			582	152	33	250	
Adjusted Saturation Flow Rate ( s ), veh/h/ln				1766	1530			1870	1537	1781	1870	
Queue Service Time ( g s ), s				11.5	2.8			19.4	4.7	0.7	4.9	
Cycle Queue Clearance Time ( g c ), s				11.5	2.8			19.4	4.7	0.7	4.9	
Green Ratio ( g/C )				0.29	0.29			0.43	0.43	0.53	0.57	
Capacity ( c ), veh/h				518	449			798	656	378	1072	
Volume-to-Capacity Ratio ( X )				0.608	0.170			0.729	0.232	0.086	0.233	
Back of Queue ( Q ), ft/ln ( 95 th percentile)				208.4	42.8			344.8	74.9	10.1	83.1	
Back of Queue ( Q ), veh/ln ( 95 th percentile)				8.2	1.7			13.6	2.9	0.4	3.3	
Queue Storage Ratio ( RQ ) ( 95 th percentile)				0.00	0.00			0.00	0.00	0.00	0.00	
Uniform Delay ( d 1 ), s/veh				22.8	19.7			17.9	13.7	11.5	7.9	
Incremental Delay ( d 2 ), s/veh				1.5	0.1			5.8	0.8	0.0	0.5	
Initial Queue Delay ( d 3 ), s/veh				0.0	0.0			0.0	0.0	0.0	0.0	
Control Delay ( d ), s/veh				24.3	19.8			23.7	14.5	11.5	8.4	
Level of Service ( LOS )				C	B			C	B	B	A	
Approach Delay, s/veh / LOS	0.0			23.4	C		21.8	C		8.8	A	
Intersection Delay, s/veh / LOS				19.6						B		

Multimodal Results	EB	WB	NB	SB
Pedestrian LOS Score / LOS				
Bicycle LOS Score / LOS				



## HCS7 Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	Solaegui Engineers			Duration, h	0.250		
Analyst	MSH	Analysis Date	Feb 3, 2021	Area Type	Other		
Jurisdiction	Washoe County	Time Period	AM Peak Hour	PHF	0.92		
Urban Street		Analysis Year	2028 Base + Project	Analysis Period	1 > 7:00		
Intersection	Red Rock & Moya		File Name	RrMo28aw.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				240	0	53				247	180	110	646

Signal Information													
Cycle, s	75.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On	Green	6.0	32.0	22.0	0.0	0.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	4.0	4.0	0.0	0.0	0.0			
				Red	1.0	1.0	1.0	0.0	0.0	0.0			

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase				8		2	1	6
Case Number				10.0		7.3	1.0	4.0
Phase Duration, s				27.0		37.0	11.0	48.0
Change Period, (Y+R <sub>c</sub> ), s				5.0		5.0	5.0	5.0
Max Allow Headway (MAH), s				3.2		0.0	3.1	0.0
Queue Clearance Time (g <sub>s</sub> ), s				11.2			4.5	
Green Extension Time (g <sub>e</sub> ), s				0.5		0.0	0.0	0.0
Phase Call Probability				1.00			1.00	
Max Out Probability				0.00			1.00	

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement				3	8	18		2	12	1	6	
Adjusted Flow Rate (v), veh/h				261	58			268	152	120	702	
Adjusted Saturation Flow Rate (s), veh/h/ln				1766	1530			1870	1537	1781	1870	
Queue Service Time (g <sub>s</sub> ), s				9.2	2.1			7.2	4.7	2.5	19.2	
Cycle Queue Clearance Time (g <sub>c</sub> ), s				9.2	2.1			7.2	4.7	2.5	19.2	
Green Ratio (g/C)				0.29	0.29			0.43	0.43	0.53	0.57	
Capacity (c), veh/h				518	449			798	656	606	1072	
Volume-to-Capacity Ratio (X)				0.504	0.128			0.336	0.232	0.197	0.655	
Back of Queue (Q), ft/ln (95 th percentile)				164.3	32			138	74.9	38.7	302.1	
Back of Queue (Q), veh/ln (95 th percentile)				6.5	1.3			5.4	2.9	1.5	11.9	
Queue Storage Ratio (RQ) (95 th percentile)				0.00	0.00			0.00	0.00	0.00	0.00	
Uniform Delay (d <sub>1</sub> ), s/veh				22.0	19.5			14.4	13.7	9.4	10.9	
Incremental Delay (d <sub>2</sub> ), s/veh				0.3	0.0			1.1	0.8	0.1	3.1	
Initial Queue Delay (d <sub>3</sub> ), s/veh				0.0	0.0			0.0	0.0	0.0	0.0	
Control Delay (d), s/veh				22.3	19.5			15.5	14.5	9.4	14.1	
Level of Service (LOS)				C	B			B	B	A	B	
Approach Delay, s/veh / LOS	0.0			21.8		C	15.2		B	13.4		B
Intersection Delay, s/veh / LOS	15.6						B					

Multimodal Results	EB	WB	NB	SB
Pedestrian LOS Score / LOS				
Bicycle LOS Score / LOS				



## HCS7 Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	Solaegui Engineers			Duration, h	0.250		
Analyst	MSH	Analysis Date	Feb 3, 2021	Area Type	Other		
Jurisdiction	Washoe County	Time Period	PM Peak Hour	PHF	0.92		
Urban Street		Analysis Year	2028 Base + Project	Analysis Period	1> 7:00		
Intersection	Red Rock & Moya		File Name	RrMo28pw.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				290	0	114		711	180		56	333

Signal Information														
Cycle, s	75.0	Reference Phase	2											
Offset, s	0	Reference Point	End											
Uncoordinated	No	Simult. Gap E/W	On	Green	6.0	32.0	22.0	0.0	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	4.0	4.0	0.0	0.0	0.0				
				Red	1.0	1.0	1.0	0.0	0.0	0.0				

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase				8		2	1	6
Case Number				10.0		7.3	1.0	4.0
Phase Duration, s				27.0		37.0	11.0	48.0
Change Period, (Y+R <sub>c</sub> ), s				5.0		5.0	5.0	5.0
Max Allow Headway (MAH), s				3.2		0.0	3.1	0.0
Queue Clearance Time (g <sub>s</sub> ), s				13.5			3.2	
Green Extension Time (g <sub>e</sub> ), s				0.7		0.0	0.0	0.0
Phase Call Probability				1.00			1.00	
Max Out Probability				0.04			1.00	

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement				3	8	18		2	12	1	6	
Adjusted Flow Rate (v), veh/h				315	124			773	152	61	362	
Adjusted Saturation Flow Rate (s), veh/h/ln				1766	1530			1870	1537	1781	1870	
Queue Service Time (g <sub>s</sub> ), s				11.5	4.7			30.3	4.7	1.2	7.7	
Cycle Queue Clearance Time (g <sub>c</sub> ), s				11.5	4.7			30.3	4.7	1.2	7.7	
Green Ratio (g/C)				0.29	0.29			0.43	0.43	0.53	0.57	
Capacity (c), veh/h				518	449			798	656	255	1072	
Volume-to-Capacity Ratio (X)				0.608	0.276			0.968	0.232	0.239	0.338	
Back of Queue (Q), ft/ln (95 th percentile)				208.4	72.1			608.6	74.9	19.4	129.8	
Back of Queue (Q), veh/ln (95 th percentile)				8.2	2.8			24.0	2.9	0.8	5.1	
Queue Storage Ratio (RQ) (95 th percentile)				0.00	0.00			0.00	0.00	0.00	0.00	
Uniform Delay (d <sub>1</sub> ), s/veh				22.8	20.4			21.0	13.7	15.9	8.5	
Incremental Delay (d <sub>2</sub> ), s/veh				1.5	0.1			25.0	0.8	0.2	0.9	
Initial Queue Delay (d <sub>3</sub> ), s/veh				0.0	0.0			0.0	0.0	0.0	0.0	
Control Delay (d), s/veh				24.3	20.5			46.0	14.5	16.1	9.3	
Level of Service (LOS)				C	C			D	B	B	A	
Approach Delay, s/veh / LOS	0.0			23.2		C	40.9		D	10.3		B
Intersection Delay, s/veh / LOS				29.3						C		

Multimodal Results	EB	WB	NB	SB
Pedestrian LOS Score / LOS				
Bicycle LOS Score / LOS				

**WTM21-006**  
**EXHIBIT D**



# HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	MSH	Intersection	Red Rock & Osage
Agency/Co.	Solaegui Engineers	Jurisdiction	Washoe County
Date Performed	2/3/2021	East/West Street	Osage Road
Analysis Year	2021	North/South Street	Red Rock Road
Time Analyzed	AM Existing	Peak Hour Factor	0.92
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	10	1	2	3	4	5	6		
Number of Lanes		0	0	0		0	1	0	0	0	1	0	0	0	1	0	
Configuration							LR					TR		LT			
Volume (veh/h)						6		0			83	5		1	238		
Percent Heavy Vehicles (%)						2		2						2			
Proportion Time Blocked																	
Percent Grade (%)						0											
Right Turn Channelized																	
Median Type   Storage						Undivided											

## Critical and Follow-up Headways

Base Critical Headway (sec)						7.1		6.2							4.1		
Critical Headway (sec)						6.42		6.22							4.12		
Base Follow-Up Headway (sec)						3.5		3.3							2.2		
Follow-Up Headway (sec)						3.52		3.32							2.22		

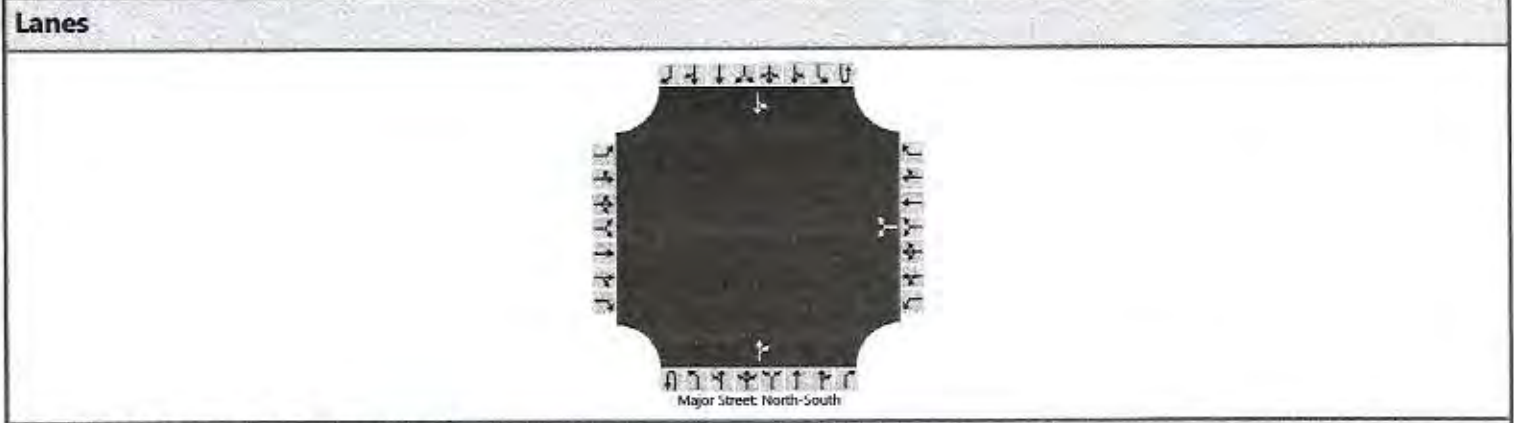
## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						7									1		
Capacity, c (veh/h)						643									1497		
v/c Ratio						0.01									0.00		
95% Queue Length, Q <sub>95</sub> (veh)						0.0									0.0		
Control Delay (s/veh)						10.7									7.4		
Level of Service (LOS)						B									A		
Approach Delay (s/veh)						10.7								0.0			
Approach LOS						B											



# HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	MSH	Intersection	Red Rock & Osage
Agency/Co.	Solaegui Engineers	Jurisdiction	Washoe County
Date Performed	2/3/2021	East/West Street	Osage Road
Analysis Year	2021	North/South Street	Red Rock Road
Time Analyzed	PM Existing	Peak Hour Factor	0.92
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description			



**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	0	0		0	1	0	0	0	1	0	0	0	1	0
Configuration							LR					TR			LT	
Volume (veh/h)						2		0			289	15			0	124
Percent Heavy Vehicles (%)						2		2							2	
Proportion Time Blocked																
Percent Grade (%)					0											
Right Turn Channelized																
Median Type   Storage	Undivided															

**Critical and Follow-up Headways**

Base Critical Headway (sec)						7.1		6.2							4.1	
Critical Headway (sec)						6.42		6.22							4.12	
Base Follow-Up Headway (sec)						3.5		3.3							2.2	
Follow-Up Headway (sec)						3.52		3.32							2.22	

**Delay, Queue Length, and Level of Service**

Flow Rate, v (veh/h)						2									0	
Capacity, c (veh/h)						561									1228	
v/c Ratio						0.00									0.00	
95% Queue Length, Q <sub>95</sub> (veh)						0.0									0.0	
Control Delay (s/veh)						11.4									7.9	
Level of Service (LOS)						B									A	
Approach Delay (s/veh)					11.4								0.0			
Approach LOS					B											



# HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	MSH	Intersection	Red Rock & Osage
Agency/Co.	Solaegui Engineers	Jurisdiction	Washoe County
Date Performed	2/3/2021	East/West Street	Osage Road
Analysis Year	2021	North/South Street	Red Rock Road
Time Analyzed	AM Existing + Project	Peak Hour Factor	0.92
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description			



**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	0	0		0	1	0	0	0	1	0	0	0	1	0
Configuration							LR					TR			LT	
Volume (veh/h)						6		0			148	5			1	434
Percent Heavy Vehicles (%)						2		2							2	
Proportion Time Blocked																
Percent Grade (%)							0									
Right Turn Channelized																
Median Type   Storage	Undivided															

**Critical and Follow-up Headways**

Base Critical Headway (sec)						7.1		6.2								4.1
Critical Headway (sec)						6.42		6.22								4.12
Base Follow-Up Headway (sec)						3.5		3.3								2.2
Follow-Up Headway (sec)						3.52		3.32								2.22

**Delay, Queue Length, and Level of Service**

Flow Rate, v (veh/h)						7										1
Capacity, c (veh/h)						440										1410
v/c Ratio						0.01										0.00
95% Queue Length, Q <sub>95</sub> (veh)						0.0										0.0
Control Delay (s/veh)						13.3										7.6
Level of Service (LOS)						B										A
Approach Delay (s/veh)					13.3								0.0			
Approach LOS					B											



# HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	MSH	Intersection	Red Rock & Osage
Agency/Co.	Solaegui Engineers	Jurisdiction	Washoe County
Date Performed	2/3/2021	East/West Street	Osage Road
Analysis Year	2021	North/South Street	Red Rock Road
Time Analyzed	PM Existing + Project	Peak Hour Factor	0.92
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description			



**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	0	0		0	1	0	0	0	1	0	0	0	1	0
Configuration							LR					TR			LT	
Volume (veh/h)						2		0			509	15			0	253
Percent Heavy Vehicles (%)						2		2							2	
Proportion Time Blocked																
Percent Grade (%)							0									
Right Turn Channelized																
Median Type   Storage							Undivided									

**Critical and Follow-up Headways**

Base Critical Headway (sec)						7.1		6.2							4.1	
Critical Headway (sec)						6.42		6.22							4.12	
Base Follow-Up Headway (sec)						3.5		3.3							2.2	
Follow-Up Headway (sec)						3.52		3.32							2.22	

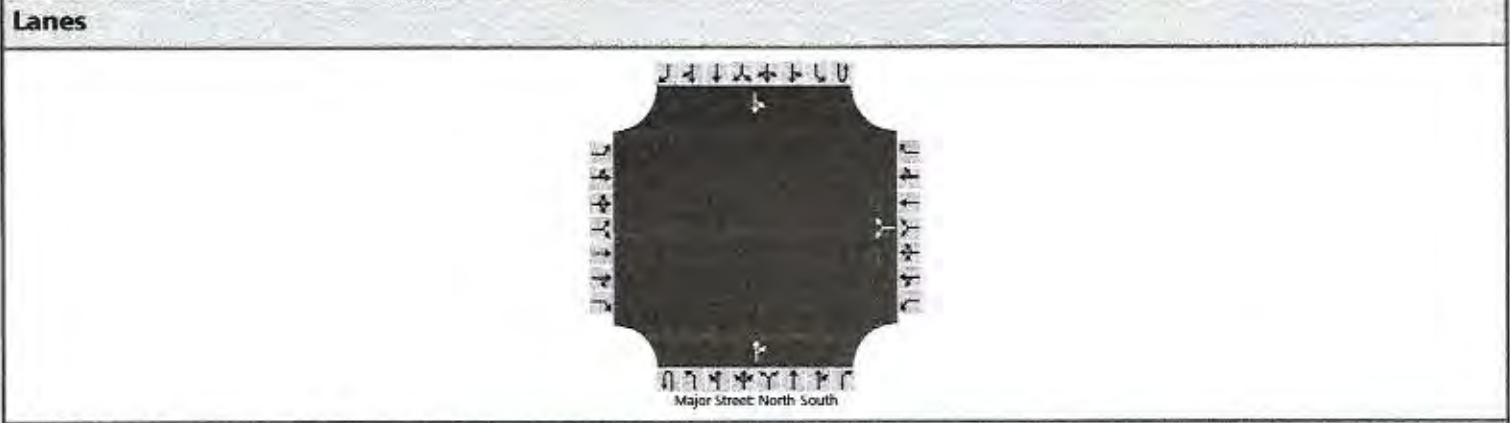
**Delay, Queue Length, and Level of Service**

Flow Rate, v (veh/h)						2									0	
Capacity, c (veh/h)						337									1002	
v/c Ratio						0.01									0.00	
95% Queue Length, Q <sub>95</sub> (veh)						0.0									0.0	
Control Delay (s/veh)						15.8									8.6	
Level of Service (LOS)						C									A	
Approach Delay (s/veh)						15.8									0.0	
Approach LOS						C										



# HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	MSH	Intersection	Red Rock & Osage
Agency/Co.	Solaegui Engineers	Jurisdiction	Washoe County
Date Performed	2/3/2021	East/West Street	Osage Road
Analysis Year	2028	North/South Street	Red Rock Road
Time Analyzed	AM Base	Peak Hour Factor	0.92
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description			



**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	0	0		0	1	0		0	1	0		0	1	0
Configuration							LR					TR			LT	
Volume (veh/h)						10		5			200	5			5	465
Percent Heavy Vehicles (%)						2		2							2	
Proportion Time Blocked																
Percent Grade (%)							0									
Right Turn Channelized																
Median Type   Storage							Undivided									

**Critical and Follow-up Headways**

Base Critical Headway (sec)						7.1		6.2							4.1	
Critical Headway (sec)						6.42		6.22							4.12	
Base Follow-Up Headway (sec)						3.5		3.3							2.2	
Follow-Up Headway (sec)						3.52		3.32							2.22	

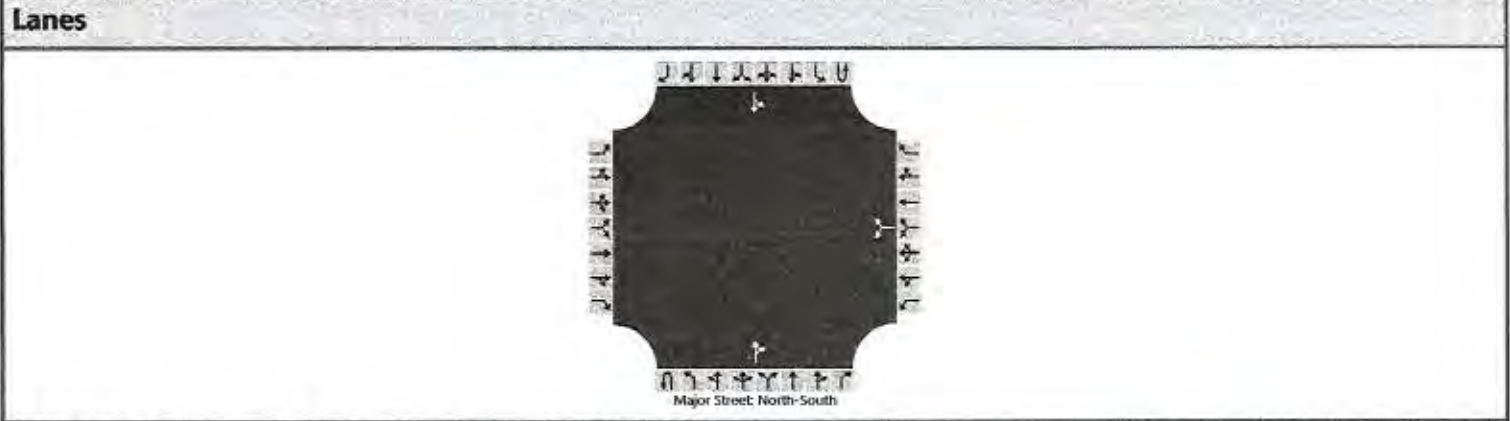
**Delay, Queue Length, and Level of Service**

Flow Rate, v (veh/h)							16								5	
Capacity, c (veh/h)							466								1345	
v/c Ratio							0.03								0.00	
95% Queue Length, Q <sub>95</sub> (veh)							0.1								0.0	
Control Delay (s/veh)							13.0								7.7	
Level of Service (LOS)							B								A	
Approach Delay (s/veh)							13.0								0.1	
Approach LOS							B									



# HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	MSH			Intersection	Red Rock & Osage		
Agency/Co.	Solaegui Engineers			Jurisdiction	Washoe County		
Date Performed	2/3/2021			East/West Street	Osage Road		
Analysis Year	2028			North/South Street	Red Rock Road		
Time Analyzed	PM Base			Peak Hour Factor	0.92		
Intersection Orientation	North-South			Analysis Time Period (hrs)	0.25		
Project Description							



**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	0	0		0	1	0	0	0	1	0	0	0	1	0
Configuration							LR					TR		LT		
Volume (veh/h)						5		5			540	15		5	245	
Percent Heavy Vehicles (%)						2		2						2		
Proportion Time Blocked																
Percent Grade (%)							0									
Right Turn Channelized																
Median Type   Storage	Undivided															

**Critical and Follow-up Headways**

Base Critical Headway (sec)						7.1		6.2							4.1	
Critical Headway (sec)						6.42		6.22							4.12	
Base Follow-Up Headway (sec)						3.5		3.3							2.2	
Follow-Up Headway (sec)						3.52		3.32							2.22	

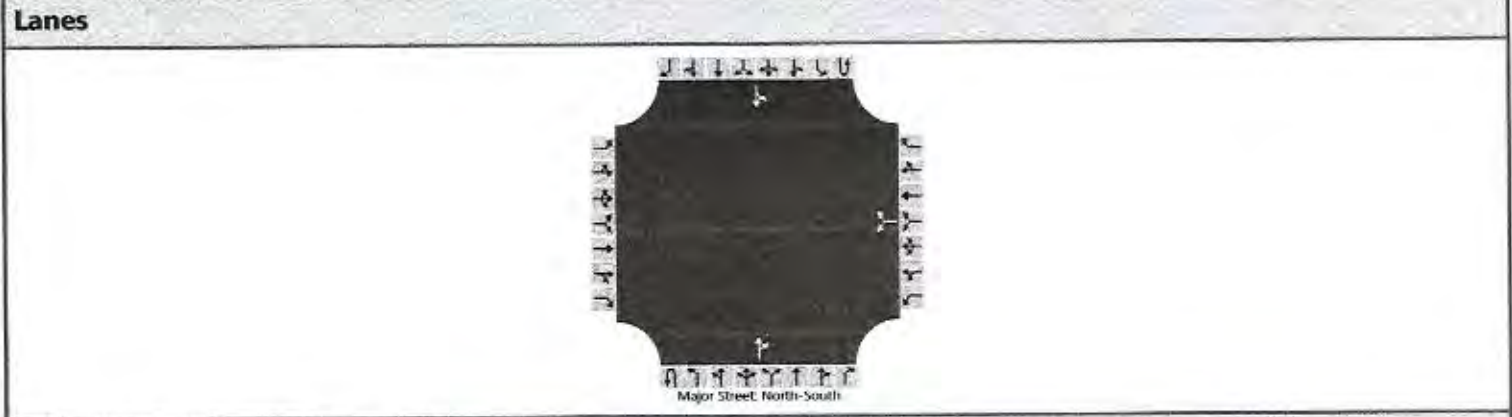
**Delay, Queue Length, and Level of Service**

Flow Rate, v (veh/h)						11									5	
Capacity, c (veh/h)						390									974	
v/c Ratio						0.03									0.01	
95% Queue Length, Q <sub>95</sub> (veh)						0.1									0.0	
Control Delay (s/veh)						14.5									8.7	
Level of Service (LOS)						B									A	
Approach Delay (s/veh)					14.5								0.2			
Approach LOS					B											



# HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	MSH	Intersection	Red Rock & Osage
Agency/Co.	Solaegui Engineers	Jurisdiction	Washoe County
Date Performed	2/3/2021	East/West Street	Osage Road
Analysis Year	2028	North/South Street	Red Rock Road
Time Analyzed	AM Base + Project	Peak Hour Factor	0.92
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description			



**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	0	0		0	1	0	0	0	1	0	0	0	1	0
Configuration							LR					TR			LT	
Volume (veh/h)						10		5			265	5		5	661	
Percent Heavy Vehicles (%)						2		2						2		
Proportion Time Blocked																
Percent Grade (%)							0									
Right Turn Channelized																
Median Type   Storage	Undivided															

**Critical and Follow-up Headways**

Base Critical Headway (sec)						7.1		6.2							4.1	
Critical Headway (sec)						6.42		6.22							4.12	
Base Follow-Up Headway (sec)						3.5		3.3							2.2	
Follow-Up Headway (sec)						3.52		3.32							2.22	

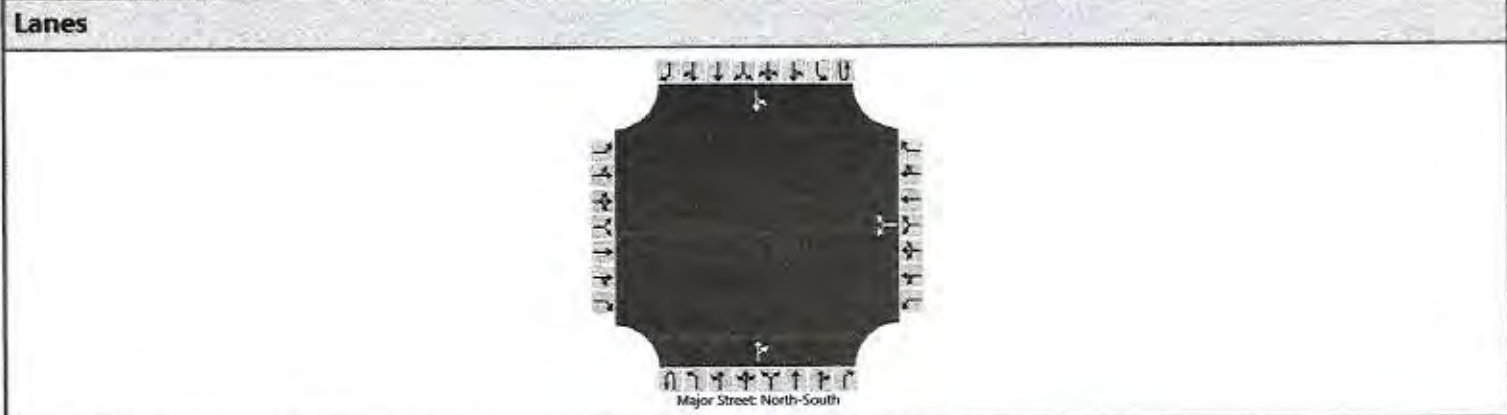
**Delay, Queue Length, and Level of Service**

Flow Rate, v (veh/h)							16								5	
Capacity, c (veh/h)							332								1267	
v/c Ratio							0.05								0.00	
95% Queue Length, Q <sub>95</sub> (veh)							0.2								0.0	
Control Delay (s/veh)							16.4								7.9	
Level of Service (LOS)							C								A	
Approach Delay (s/veh)					16.4								0.1			
Approach LOS					C											



# HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	MSH	Intersection	Red Rock & Osage
Agency/Co.	Solaegui Engineers	Jurisdiction	Washoe County
Date Performed	2/3/2021	East/West Street	Osage Road
Analysis Year	2028	North/South Street	Red Rock Road
Time Analyzed	PM Base + Project	Peak Hour Factor	0.92
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description			



**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	0	0		0	1	0	0	0	1	0	0	0	1	0
Configuration							LR					TR			LT	
Volume (veh/h)						5		5			760	15			5	374
Percent Heavy Vehicles (%)						2		2							2	
Proportion Time Blocked																
Percent Grade (%)							0									
Right Turn Channelized																
Median Type   Storage							Undivided									

**Critical and Follow-up Headways**

Base Critical Headway (sec)						7.1		6.2							4.1	
Critical Headway (sec)						6.42		6.22							4.12	
Base Follow-Up Headway (sec)						3.5		3.3							2.2	
Follow-Up Headway (sec)						3.52		3.32							2.22	

**Delay, Queue Length, and Level of Service**

Flow Rate, v (veh/h)							11								5	
Capacity, c (veh/h)							249								793	
v/c Ratio							0.04								0.01	
95% Queue Length, Q <sub>95</sub> (veh)							0.1								0.0	
Control Delay (s/veh)							20.1								9.6	
Level of Service (LOS)							C								A	
Approach Delay (s/veh)							20.1								0.2	
Approach LOS							C									



# HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	MSH	Intersection	Red Rock & Bighorn
Agency/Co.	Solaegui Engineers	Jurisdiction	Washoe County
Date Performed	2/3/2021	East/West Street	Bighorn Drive
Analysis Year	2021	North/South Street	Red Rock Road
Time Analyzed	AM Existing	Peak Hour Factor	0.92
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	0		0	0	0	0	0	1	0	0	0	1	0
Configuration			LR							LT						TR
Volume (veh/h)		1		25						4	73				207	1
Percent Heavy Vehicles (%)		2		2						2						
Proportion Time Blocked																
Percent Grade (%)	0															
Right Turn Channelized																
Median Type   Storage	Undivided															

## Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.42		6.22						4.12						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.52		3.32						2.22						

## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			28							4						
Capacity, c (veh/h)			807							1341						
v/c Ratio			0.04							0.00						
95% Queue Length, Q <sub>95</sub> (veh)			0.1							0.0						
Control Delay (s/veh)			9.6							7.7						
Level of Service (LOS)			A							A						
Approach Delay (s/veh)	9.6								0.4							
Approach LOS	A															



# HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	MSH			Intersection	Red Rock & Bighorn		
Agency/Co.	Solaegui Engineers			Jurisdiction	Washoe County		
Date Performed	2/3/2021			East/West Street	Bighorn Drive		
Analysis Year	2021			North/South Street	Red Rock Road		
Time Analyzed	PM Existing			Peak Hour Factor	0.92		
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	0		0	0	0	0	0	1	0	0	0	1	0	
Configuration			LR							LT						TR	
Volume (veh/h)		0		5						29	242				105	1	
Percent Heavy Vehicles (%)		2		2						2							
Proportion Time Blocked																	
Percent Grade (%)		0															
Right Turn Channelized																	
Median Type   Storage		Undivided															

## Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.42		6.22						4.12						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.52		3.32						2.22						

## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			5							32							
Capacity, c (veh/h)			937							1472							
v/c Ratio			0.01							0.02							
95% Queue Length, Q <sub>95</sub> (veh)			0.0							0.1							
Control Delay (s/veh)			8.9							7.5							
Level of Service (LOS)			A							A							
Approach Delay (s/veh)		8.9								1.0							
Approach LOS		A															



# HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	MSH			Intersection	Red Rock & Bighorn		
Agency/Co.	Solaegui Engineers			Jurisdiction	Washoe County		
Date Performed	2/3/2021			East/West Street	Bighorn Drive		
Analysis Year	2021			North/South Street	Red Rock Road		
Time Analyzed	AM Existing + Project			Peak Hour Factor	0.92		
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	10	1	2	3	4	4	5	6	
Number of Lanes		0	1	0		0	0	0	0	0	1	0	0	0	1	0	
Configuration			LR							LT						TR	
Volume (veh/h)		1		25						4	138				403	1	
Percent Heavy Vehicles (%)		2		2						2							
Proportion Time Blocked																	
Percent Grade (%)		0															
Right Turn Channelized																	
Median Type   Storage		Undivided															

## Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.42		6.22						4.12						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.52		3.32						2.22						

## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			28							4								
Capacity, c (veh/h)			610							1120								
v/c Ratio			0.05							0.00								
95% Queue Length, Q <sub>95</sub> (veh)			0.1							0.0								
Control Delay (s/veh)			11.2							8.2								
Level of Service (LOS)			B							A								
Approach Delay (s/veh)		11.2									0.3							
Approach LOS		B									A							



# HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	MSH			Intersection	Red Rock & Bighorn		
Agency/Co.	Solaegui Engineers			Jurisdiction	Washoe County		
Date Performed	2/3/2021			East/West Street	Bighorn Drive		
Analysis Year	2021			North/South Street	Red Rock Road		
Time Analyzed	PM Existing + Project			Peak Hour Factor	0.92		
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	0		0	0	0	0	0	1	0	0	0	1	0
Configuration			LR							LT						TR
Volume (veh/h)		0		5						29	462				234	1
Percent Heavy Vehicles (%)		2		2						2						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized																
Median Type   Storage		Undivided														

## Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.42		6.22						4.12						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.52		3.32						2.22						

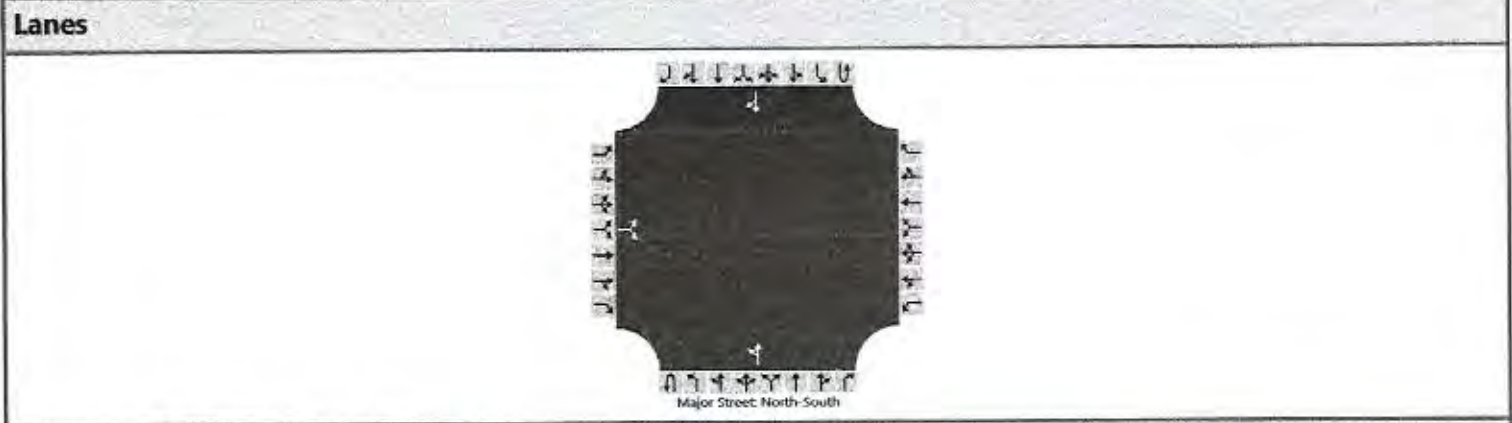
## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			5							32						
Capacity, c (veh/h)			783							1308						
v/c Ratio			0.01							0.02						
95% Queue Length, Q <sub>95</sub> (veh)			0.0							0.1						
Control Delay (s/veh)			9.6							7.8						
Level of Service (LOS)			A							A						
Approach Delay (s/veh)		9.6								0.7						
Approach LOS		A														



# HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	MSH	Intersection	Red Rock & Bighorn
Agency/Co.	Solaegui Engineers	Jurisdiction	Washoe County
Date Performed	2/3/2021	East/West Street	Bighorn Drive
Analysis Year	2028	North/South Street	Red Rock Road
Time Analyzed	AM Base	Peak Hour Factor	0.92
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description			



**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	0		0	0	0	0	0	1	0	0	0	1	0
Configuration			LR							LT						TR
Volume (veh/h)		5		25						5	205				435	5
Percent Heavy Vehicles (%)		2		2						2						
Proportion Time Blocked																
Percent Grade (%)	0															
Right Turn Channelized																
Median Type   Storage	Undivided															

**Critical and Follow-up Headways**

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.42		6.22						4.12						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.52		3.32						2.22						

**Delay, Queue Length, and Level of Service**

Flow Rate, v (veh/h)			33							5						
Capacity, c (veh/h)			545							1083						
v/c Ratio			0.06							0.01						
95% Queue Length, Q <sub>95</sub> (veh)			0.2							0.0						
Control Delay (s/veh)			12.0							8.3						
Level of Service (LOS)			B							A						
Approach Delay (s/veh)	12.0								0.2							
Approach LOS	B															



# HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	MSH	Intersection	Red Rock & Bighorn
Agency/Co.	Solaegui Engineers	Jurisdiction	Washoe County
Date Performed	2/3/2021	East/West Street	Bighorn Drive
Analysis Year	2028	North/South Street	Red Rock Road
Time Analyzed	PM Existing	Peak Hour Factor	0.92
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	10	1	2	3	4	4	5	6	
Number of Lanes		0	1	0		0	0	0	0	0	1	0	0	0	1	0	
Configuration			LR							LT						TR	
Volume (veh/h)		5		5						30	505				215	5	
Percent Heavy Vehicles (%)		2		2						2							
Proportion Time Blocked																	
Percent Grade (%)		0															
Right Turn Channelized																	
Median Type   Storage		Undivided															

## Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1							
Critical Headway (sec)		6.42		6.22						4.12							
Base Follow-Up Headway (sec)		3.5		3.3						2.2							
Follow-Up Headway (sec)		3.52		3.32						2.22							

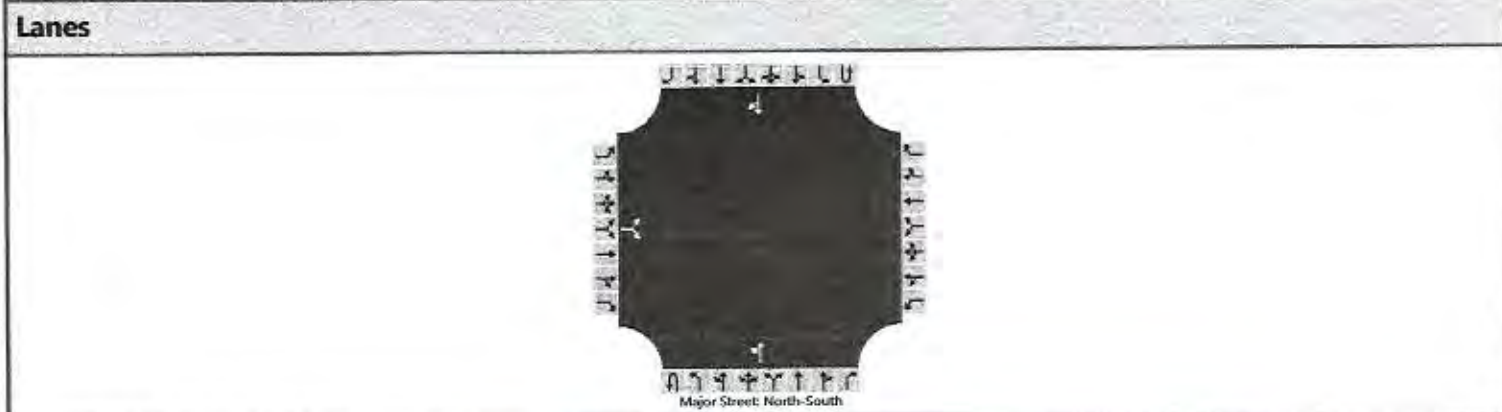
## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			11							33							
Capacity, c (veh/h)			456							1327							
v/c Ratio			0.02							0.02							
95% Queue Length, Q <sub>95</sub> (veh)			0.1							0.1							
Control Delay (s/veh)			13.1							7.8							
Level of Service (LOS)			B							A							
Approach Delay (s/veh)		13.1								0.7							
Approach LOS		B								A							



# HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	MSH	Intersection	Red Rock & Bighorn				
Agency/Co.	Solaegui Engineers	Jurisdiction	Washoe County				
Date Performed	2/3/2021	East/West Street	Bighorn Drive				
Analysis Year	2028	North/South Street	Red Rock Road				
Time Analyzed	AM Base + Project	Peak Hour Factor	0.92				
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25				
Project Description							



**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	0		0	0	0	0	0	1	0	0	0	1	0	
Configuration			LR							LT						TR	
Volume (veh/h)		5		25						5	270				631	5	
Percent Heavy Vehicles (%)		2		2						2							
Proportion Time Blocked																	
Percent Grade (%)		0															
Right Turn Channelized																	
Median Type   Storage		Undivided															

**Critical and Follow-up Headways**

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.42		6.22						4.12						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.52		3.32						2.22						

**Delay, Queue Length, and Level of Service**

Flow Rate, v (veh/h)			33							5								
Capacity, c (veh/h)			402							903								
v/c Ratio			0.08							0.01								
95% Queue Length, Q <sub>95</sub> (veh)			0.3							0.0								
Control Delay (s/veh)			14.7							9.0								
Level of Service (LOS)			B							A								
Approach Delay (s/veh)		14.7									0.2							
Approach LOS		B																



# HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	MSH			Intersection	Red Rock & Bighorn		
Agency/Co.	Solaegui Engineers			Jurisdiction	Washoe County		
Date Performed	2/3/2021			East/West Street	Bighorn Drive		
Analysis Year	2028			North/South Street	Red Rock Road		
Time Analyzed	PM Existing + Project			Peak Hour Factor	0.92		
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	10U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	0		0	1	0		0	1	0
Configuration			LR							LT						TR
Volume (veh/h)		5		5						30	725				344	5
Percent Heavy Vehicles (%)		2		2						2						
Proportion Time Blocked																
Percent Grade (%)	0															
Right Turn Channelized																
Median Type   Storage	Undivided															

## Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2							4.1					
Critical Headway (sec)		6.42		6.22							4.12					
Base Follow-Up Headway (sec)		3.5		3.3							2.2					
Follow-Up Headway (sec)		3.52		3.32							2.22					

## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			11								33					
Capacity, c (veh/h)			292								1178					
v/c Ratio			0.04								0.03					
95% Queue Length, Q <sub>95</sub> (veh)			0.1								0.1					
Control Delay (s/veh)			17.8								8.1					
Level of Service (LOS)			C								A					
Approach Delay (s/veh)	17.8								0.7							
Approach LOS	C															



# HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	MSH	Intersection	Red Rock & Plata Mesa
Agency/Co.	Solaegui Engineers	Jurisdiction	Washoe County
Date Performed	2/3/2021	East/West Street	Plata Mesa Drive
Analysis Year	2021	North/South Street	Red Rock Road
Time Analyzed	AM Existing	Peak Hour Factor	0.92
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	0		0	1	0	0	0	1	0	0	0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		0	0	1		55	0	0		1	58	15		0	152	0
Percent Heavy Vehicles (%)		2	2	2		2	2	2		2				2		
Proportion Time Blocked																
Percent Grade (%)		0				0										
Right Turn Channelized																
Median Type   Storage		Undivided														

## Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2		7.1	6.5	6.2		4.1				4.1		
Critical Headway (sec)		7.12	6.52	6.22		7.12	6.52	6.22		4.12				4.12		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.52	4.02	3.32		3.52	4.02	3.32		2.22				2.22		

## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			1				60				1				0	
Capacity, c (veh/h)			879				713				1412				1517	
v/c Ratio			0.00				0.08				0.00				0.00	
95% Queue Length, Q <sub>95</sub> (veh)			0.0				0.3				0.0				0.0	
Control Delay (s/veh)			9.1				10.5				7.6				7.4	
Level of Service (LOS)			A				B				A				A	
Approach Delay (s/veh)		9.1				10.5				0.1				0.0		
Approach LOS		A				B										



# HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	MSH			Intersection	Red Rock & Plata Mesa		
Agency/Co.	Solaegui Engineers			Jurisdiction	Washoe County		
Date Performed	2/3/2021			East/West Street	Plata Mesa Drive		
Analysis Year	2021			North/South Street	Red Rock Road		
Time Analyzed	PM Existing			Peak Hour Factor	0.92		
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	0		0	1	0	0	0	1	0	0	0	1	0	
Configuration			LTR				LTR				LTR				LTR		
Volume (veh/h)		0	0	1		24	0	0		3	177	62		3	82	0	
Percent Heavy Vehicles (%)		2	2	2		2	2	2		2				2			
Proportion Time Blocked																	
Percent Grade (%)		0				0											
Right Turn Channelized																	
Median Type   Storage		Undivided															

## Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2		7.1	6.5	6.2		4.1				4.1			
Critical Headway (sec)		7.12	6.52	6.22		7.12	6.52	6.22		4.12				4.12			
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2			
Follow-Up Headway (sec)		3.52	4.02	3.32		3.52	4.02	3.32		2.22				2.22			

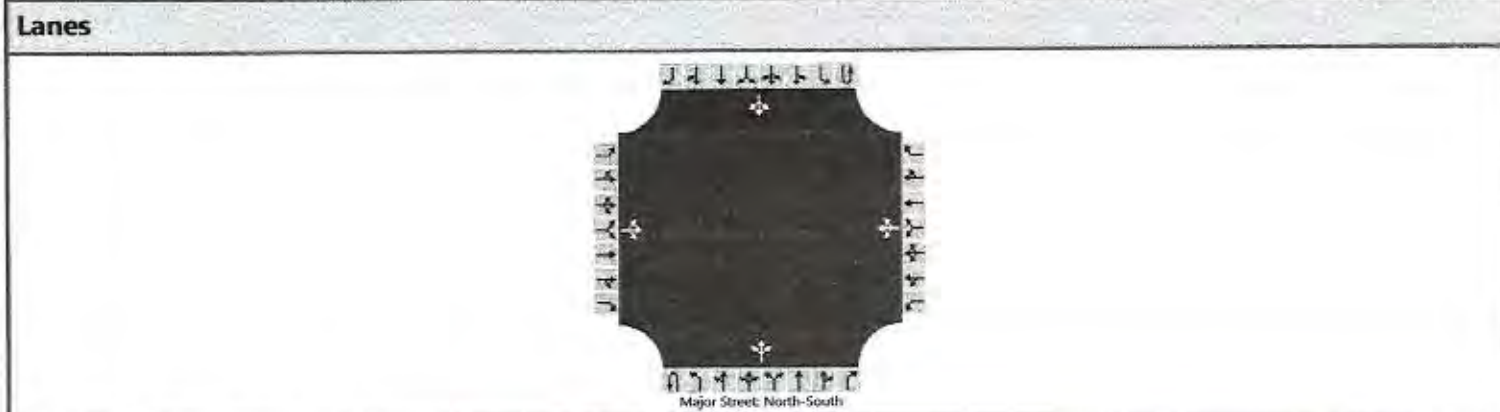
## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			1			26				3				3			
Capacity, c (veh/h)			968			621				1505				1304			
v/c Ratio			0.00			0.04				0.00				0.00			
95% Queue Length, Q <sub>95</sub> (veh)			0.0			0.1				0.0				0.0			
Control Delay (s/veh)			8.7			11.1				7.4				7.8			
Level of Service (LOS)			A			B				A				A			
Approach Delay (s/veh)		8.7				11.1				0.1				0.3			
Approach LOS		A				B											



# HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	MSH	Intersection	Red Rock & Plata Mesa
Agency/Co.	Solaegui Engineers	Jurisdiction	Washoe County
Date Performed	2/3/2021	East/West Street	Plata Mesa Drive
Analysis Year	2021	North/South Street	Red Rock Road
Time Analyzed	AM Existing + Project	Peak Hour Factor	0.92
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description			



**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	0		0	1	0	0	0	1	0	0	0	1	0	
Configuration			LTR				LTR				LTR				LTR		
Volume (veh/h)		0	0	1		55	0	0		1	123	15		0	348	0	
Percent Heavy Vehicles (%)		2	2	2		2	2	2		2				2			
Proportion Time Blocked																	
Percent Grade (%)		0				0											
Right Turn Channelized																	
Median Type   Storage		Undivided															

**Critical and Follow-up Headways**

Base Critical Headway (sec)		7.1	6.5	6.2		7.1	6.5	6.2		4.1				4.1			
Critical Headway (sec)		7.12	6.52	6.22		7.12	6.52	6.22		4.12				4.12			
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2			
Follow-Up Headway (sec)		3.52	4.02	3.32		3.52	4.02	3.32		2.22				2.22			

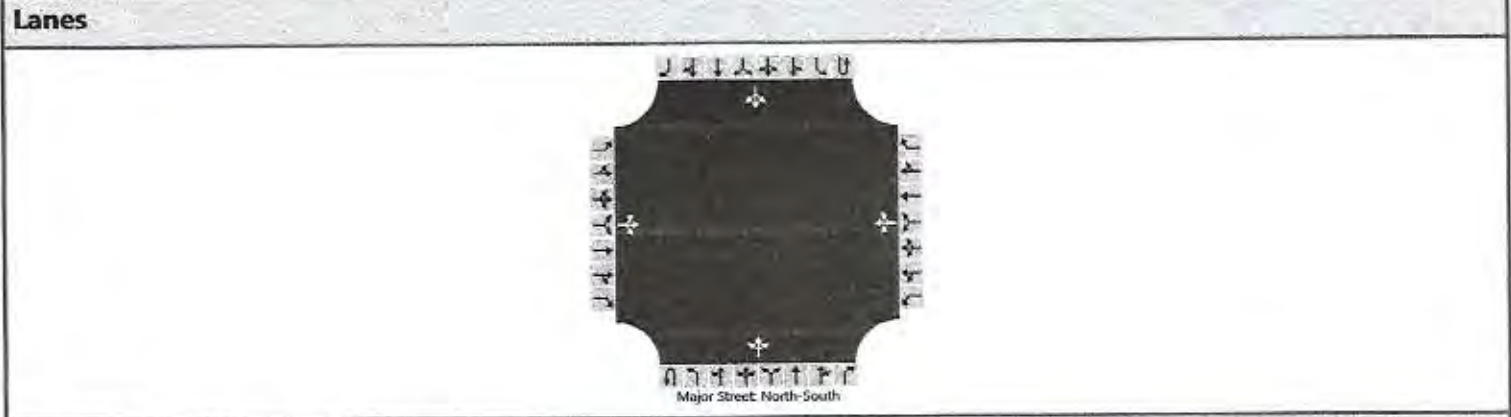
**Delay, Queue Length, and Level of Service**

Flow Rate, v (veh/h)			1			60				1					0		
Capacity, c (veh/h)			668			463				1179					1430		
v/c Ratio			0.00			0.13				0.00					0.00		
95% Queue Length, Q <sub>95</sub> (veh)			0.0			0.4				0.0					0.0		
Control Delay (s/veh)			10.4			13.9				8.1					7.5		
Level of Service (LOS)			B			B				A					A		
Approach Delay (s/veh)		10.4				13.9				0.1				0.0			
Approach LOS		B				B											



# HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	MSH	Intersection	Red Rock & Plata Mesa
Agency/Co.	Solaegui Engineers	Jurisdiction	Washoe County
Date Performed	2/3/2021	East/West Street	Plata Mesa Drive
Analysis Year	2021	North/South Street	Red Rock Road
Time Analyzed	PM Existing + Project	Peak Hour Factor	0.92
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description			



**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	0		0	1	0	0	0	1	0	0	0	1	0	
Configuration			LTR				LTR				LTR				LTR		
Volume (veh/h)		0	0	1		24	0	0		3	397	62		3	211	0	
Percent Heavy Vehicles (%)		2	2	2		2	2	2		2				2			
Proportion Time Blocked																	
Percent Grade (%)		0				0											
Right Turn Channelized																	
Median Type   Storage		Undivided															

**Critical and Follow-up Headways**

Base Critical Headway (sec)		7.1	6.5	6.2		7.1	6.5	6.2		4.1					4.1		
Critical Headway (sec)		7.12	6.52	6.22		7.12	6.52	6.22		4.12					4.12		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2					2.2		
Follow-Up Headway (sec)		3.52	4.02	3.32		3.52	4.02	3.32		2.22					2.22		

**Delay, Queue Length, and Level of Service**

Flow Rate, v (veh/h)			1				26				3				3		
Capacity, c (veh/h)			809				347				1338				1064		
v/c Ratio			0.00				0.08				0.00				0.00		
95% Queue Length, Q <sub>95</sub> (veh)			0.0				0.2				0.0				0.0		
Control Delay (s/veh)			9.5				16.2				7.7				8.4		
Level of Service (LOS)			A				C				A				A		
Approach Delay (s/veh)		9.5				16.2				0.1				0.1			
Approach LOS		A				C											



# HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	MSH	Intersection	Red Rock & Plata Mesa
Agency/Co.	Solaegui Engineers	Jurisdiction	Washoe County
Date Performed	2/3/2021	East/West Street	Plata Mesa Drive
Analysis Year	2028	North/South Street	Red Rock Road
Time Analyzed	AM Base	Peak Hour Factor	0.92
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description			



**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	0		0	1	0	0	0	1	0	0	0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		5	0	5		55	0	5		5	190	15		5	380	5
Percent Heavy Vehicles (%)		2	2	2		2	2	2		2				2		
Proportion Time Blocked																
Percent Grade (%)	0				0											
Right Turn Channelized																
Median Type   Storage	Undivided															

**Critical and Follow-up Headways**

Base Critical Headway (sec)		7.1	6.5	6.2		7.1	6.5	6.2		4.1				4.1		
Critical Headway (sec)		7.12	6.52	6.22		7.12	6.52	6.22		4.12				4.12		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.52	4.02	3.32		3.52	4.02	3.32		2.22				2.22		

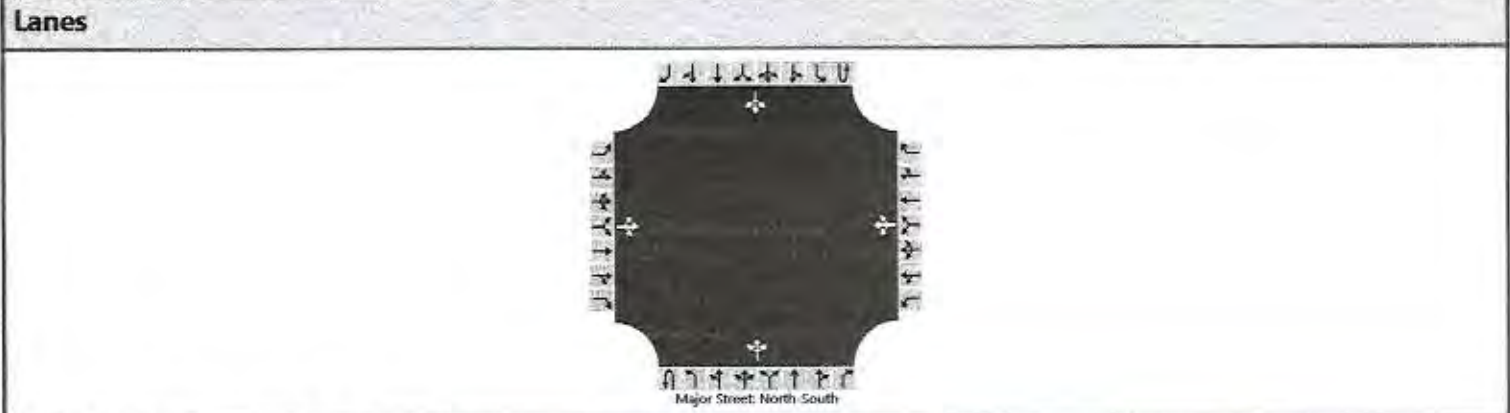
**Delay, Queue Length, and Level of Service**

Flow Rate, v (veh/h)			11				65				5				5	
Capacity, c (veh/h)			471				391				1140				1345	
v/c Ratio			0.02				0.17				0.00				0.00	
95% Queue Length, Q <sub>95</sub> (veh)			0.1				0.6				0.0				0.0	
Control Delay (s/veh)			12.8				16.0				8.2				7.7	
Level of Service (LOS)			B				C				A				A	
Approach Delay (s/veh)	12.8				16.0				0.2				0.1			
Approach LOS	B				C											



# HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	MSH			Intersection	Red Rock & Plata Mesa		
Agency/Co.	Solaegui Engineers			Jurisdiction	Washoe County		
Date Performed	2/3/2021			East/West Street	Plata Mesa Drive		
Analysis Year	2028			North/South Street	Red Rock Road		
Time Analyzed	PM Base			Peak Hour Factor	0.92		
Intersection Orientation	North-South			Analysis Time Period (hrs)	0.25		
Project Description							



**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	0		0	1	0	0	0	1	0	0	0	1	0	
Configuration			LTR				LTR				LTR				LTR		
Volume (veh/h)		5	0	5		25	0	5		5	440	65		5	190	5	
Percent Heavy Vehicles (%)		2	2	2		2	2	2		2				2			
Proportion Time Blocked																	
Percent Grade (%)		0				0											
Right Turn Channelized																	
Median Type   Storage		Undivided															

**Critical and Follow-up Headways**

Base Critical Headway (sec)		7.1	6.5	6.2		7.1	6.5	6.2		4.1				4.1		
Critical Headway (sec)		7.12	6.52	6.22		7.12	6.52	6.22		4.12				4.12		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.52	4.02	3.32		3.52	4.02	3.32		2.22				2.22		

**Delay, Queue Length, and Level of Service**

Flow Rate, v (veh/h)			11				33				5				5		
Capacity, c (veh/h)			465				348				1357				1020		
v/c Ratio			0.02				0.09				0.00				0.01		
95% Queue Length, Q <sub>95</sub> (veh)			0.1				0.3				0.0				0.0		
Control Delay (s/veh)			12.9				16.4				7.7				8.5		
Level of Service (LOS)			B				C				A				A		
Approach Delay (s/veh)		12.9				16.4				0.1				0.3			
Approach LOS		B				C											



# HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	MSH	Intersection	Red Rock & Plata Mesa
Agency/Co.	Solaegui Engineers	Jurisdiction	Washoe County
Date Performed	2/3/2021	East/West Street	Plata Mesa Drive
Analysis Year	2028	North/South Street	Red Rock Road
Time Analyzed	AM Base + Project	Peak Hour Factor	0.92
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	0		0	1	0	0	0	1	0	0	0	1	0	
Configuration			LTR				LTR				LTR				LTR		
Volume (veh/h)		5	0	5		55	0	5		5	255	15		5	576	5	
Percent Heavy Vehicles (%)		2	2	2		2	2	2		2				2			
Proportion Time Blocked																	
Percent Grade (%)		0				0											
Right Turn Channelized																	
Median Type   Storage		Undivided															

## Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2		7.1	6.5	6.2		4.1				4.1			
Critical Headway (sec)		7.12	6.52	6.22		7.12	6.52	6.22		4.12				4.12			
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2			
Follow-Up Headway (sec)		3.52	4.02	3.32		3.52	4.02	3.32		2.22				2.22			

## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			11				65				5				5		
Capacity, c (veh/h)			320				253				950				1267		
v/c Ratio			0.03				0.26				0.01				0.00		
95% Queue Length, Q <sub>95</sub> (veh)			0.1				1.0				0.0				0.0		
Control Delay (s/veh)			16.6				24.1				8.8				7.9		
Level of Service (LOS)			C				C				A				A		
Approach Delay (s/veh)		16.6				24.1				0.2				0.1			
Approach LOS		C				C											



# HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	MSH	Intersection	Red Rock & Plata Mesa
Agency/Co.	Solaegui Engineers	Jurisdiction	Washoe County
Date Performed	2/3/2021	East/West Street	Plata Mesa Drive
Analysis Year	2028	North/South Street	Red Rock Road
Time Analyzed	PM Base + Project	Peak Hour Factor	0.92
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	10	1	2	3	4	5	6		
Number of Lanes		0	1	0		0	1	0	0	0	1	0	0	0	1	0	
Configuration			LTR				LTR				LTR				LTR		
Volume (veh/h)		5	0	5		25	0	5		5	660	65		5	319	5	
Percent Heavy Vehicles (%)		2	2	2		2	2	2		2				2			
Proportion Time Blocked																	
Percent Grade (%)		0				0											
Right Turn Channelized																	
Median Type   Storage		Undivided															

## Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2		7.1	6.5	6.2		4.1				4.1			
Critical Headway (sec)		7.12	6.52	6.22		7.12	6.52	6.22		4.12				4.12			
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2			
Follow-Up Headway (sec)		3.52	4.02	3.32		3.52	4.02	3.32		2.22				2.22			

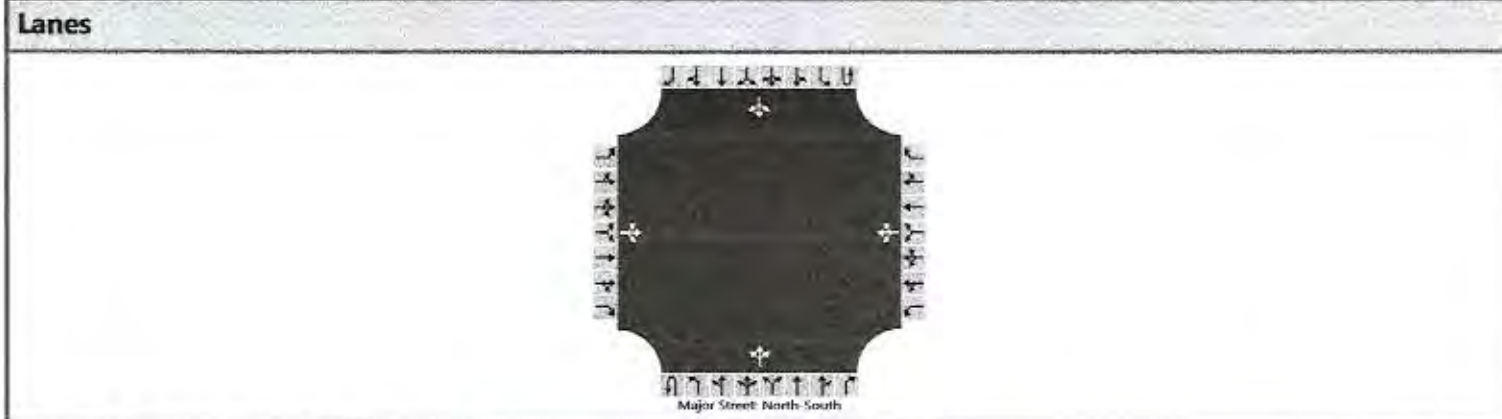
## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			11			33				5				5			
Capacity, c (veh/h)			282			214				1206				831			
v/c Ratio			0.04			0.15				0.00				0.01			
95% Queue Length, Q <sub>95</sub> (veh)			0.1			0.5				0.0				0.0			
Control Delay (s/veh)			18.3			24.9				8.0				9.4			
Level of Service (LOS)			C			C				A				A			
Approach Delay (s/veh)		18.3				24.9				0.1				0.2			
Approach LOS		C				C											



# HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	MSH	Intersection	Red Rock & Silver Knolls
Agency/Co.	Solaegui Engineers	Jurisdiction	Washoe County
Date Performed	2/3/2021	East/West Street	Silver Knolls Boulevard
Analysis Year	2021	North/South Street	Red Rock Road
Time Analyzed	AM Existing	Peak Hour Factor	0.92
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description			



**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	0		0	1	0	0	0	1	0	0	0	1	0	
Configuration			LTR				LTR				LTR				LTR		
Volume (veh/h)		0	0	1		16	0	0		1	38	2		0	110	0	
Percent Heavy Vehicles (%)		2	2	2		2	2	2		2				2			
Proportion Time Blocked																	
Percent Grade (%)		0				0											
Right Turn Channelized																	
Median Type   Storage		Undivided															

**Critical and Follow-up Headways**

Base Critical Headway (sec)		7.1	6.5	6.2		7.1	6.5	6.2		4.1				4.1		
Critical Headway (sec)		7.12	6.52	6.22		7.12	6.52	6.22		4.12				4.12		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.52	4.02	3.32		3.52	4.02	3.32		2.22				2.22		

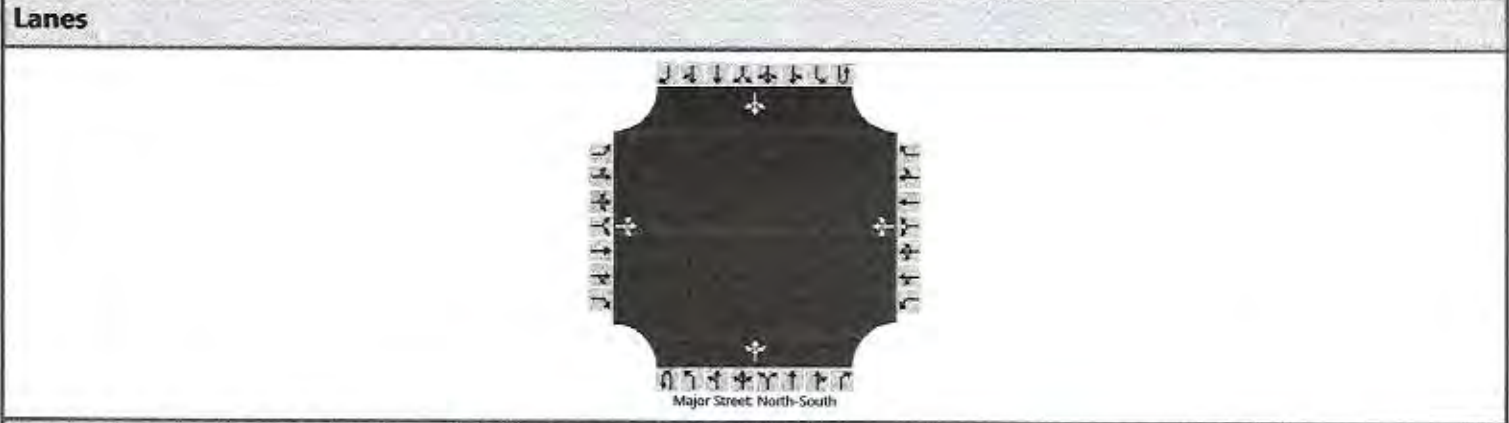
**Delay, Queue Length, and Level of Service**

Flow Rate, v (veh/h)			1				17				1				0		
Capacity, c (veh/h)			931				798				1467				1564		
v/c Ratio			0.00				0.02				0.00				0.00		
95% Queue Length, Q <sub>95</sub> (veh)			0.0				0.1				0.0				0.0		
Control Delay (s/veh)			8.9				9.6				7.5				7.3		
Level of Service (LOS)			A				A				A				A		
Approach Delay (s/veh)		8.9				9.6				0.2				0.0			
Approach LOS		A				A											



# HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	MSH	Intersection	Red Rock & Silver Knolls
Agency/Co.	Solaegui Engineers	Jurisdiction	Washoe County
Date Performed	2/3/2021	East/West Street	Silver Knolls Boulevard
Analysis Year	2021	North/South Street	Red Rock Road
Time Analyzed	PM Existing	Peak Hour Factor	0.92
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description			



**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	10	1	2	3	4	5	6		
Number of Lanes		0	1	0		0	1	0	0	0	1	0	0	0	1	0	
Configuration			LTR				LTR				LTR				LTR		
Volume (veh/h)		0	0	1		10	0	0		0	133	5		0	61	0	
Percent Heavy Vehicles (%)		2	2	2		2	2	2		2				2			
Proportion Time Blocked																	
Percent Grade (%)		0				0											
Right Turn Channelized																	
Median Type   Storage		Undivided															

**Critical and Follow-up Headways**

Base Critical Headway (sec)		7.1	6.5	6.2		7.1	6.5	6.2		4.1				4.1			
Critical Headway (sec)		7.12	6.52	6.22		7.12	6.52	6.22		4.12				4.12			
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2			
Follow-Up Headway (sec)		3.52	4.02	3.32		3.52	4.02	3.32		2.22				2.22			

**Delay, Queue Length, and Level of Service**

Flow Rate, v (veh/h)			1			11				0				0			
Capacity, c (veh/h)			997			741				1534				1430			
v/c Ratio			0.00			0.01				0.00				0.00			
95% Queue Length, Q <sub>95</sub> (veh)			0.0			0.0				0.0				0.0			
Control Delay (s/veh)			8.6			9.9				7.3				7.5			
Level of Service (LOS)			A			A				A				A			
Approach Delay (s/veh)		8.6				9.9				0.0				0.0			
Approach LOS		A				A											



# HCS7 Two-Way Stop-Control Report

## General Information

Analyst	MSH
Agency/Co.	Solaegui Engineers
Date Performed	2/3/2021
Analysis Year	2021
Time Analyzed	AM Existing + Project
Intersection Orientation	North-South
Project Description	

## Site Information

Intersection	Red Rock & Silver Knolls
Jurisdiction	Washoe County
East/West Street	Silver Knolls Boulevard
North/South Street	Red Rock Road
Peak Hour Factor	0.92
Analysis Time Period (hrs)	0.25

## 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	0		0	1	0	0	0	1	0	0	0	1	0	
Configuration			LTR				LTR				LTR				LTR		
Volume (veh/h)		0	0	1		16	0	0		1	103	2		0	306	0	
Percent Heavy Vehicles (%)		2	2	2		2	2	2		2				2			
Proportion Time Blocked																	
Percent Grade (%)		0				0											
Right Turn Channelized																	
Median Type   Storage		Undivided															

## Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2		7.1	6.5	6.2		4.1					4.1		
Critical Headway (sec)		7.12	6.52	6.22		7.12	6.52	6.22		4.12					4.12		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2					2.2		
Follow-Up Headway (sec)		3.52	4.02	3.32		3.52	4.02	3.32		2.22					2.22		

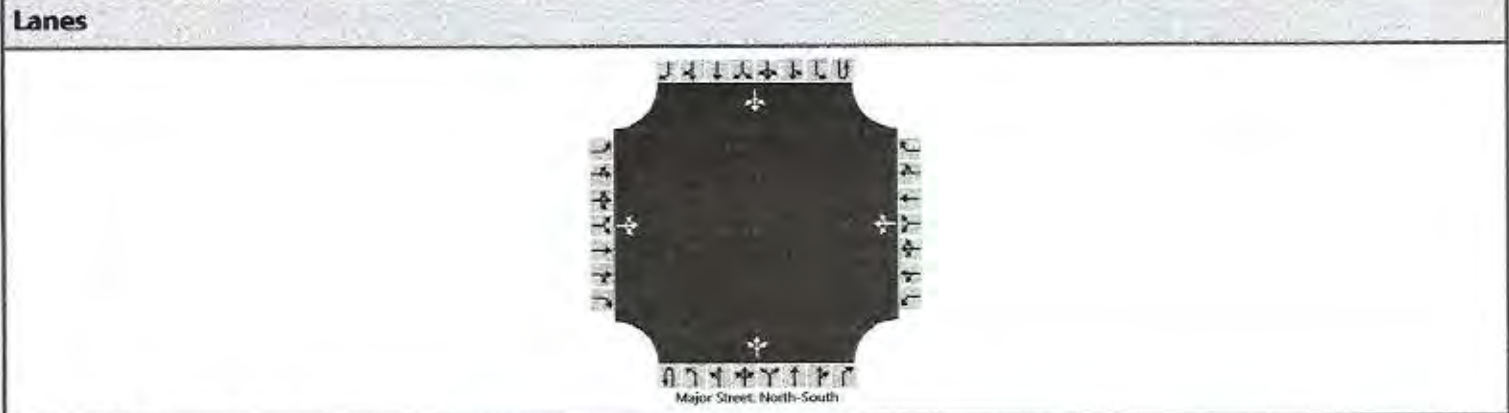
## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			1			17				1					0		
Capacity, c (veh/h)			709			519				1226					1474		
v/c Ratio			0.00			0.03				0.00					0.00		
95% Queue Length, Q <sub>95</sub> (veh)			0.0			0.1				0.0					0.0		
Control Delay (s/veh)			10.1			12.2				7.9					7.4		
Level of Service (LOS)			B			B				A					A		
Approach Delay (s/veh)		10.1				12.2				0.1				0.0			
Approach LOS		B				B											



# HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	MSH	Intersection	Red Rock & Silver Knolls
Agency/Co.	Solaegui Engineers	Jurisdiction	Washoe County
Date Performed	2/3/2021	East/West Street	Silver Knolls Boulevard
Analysis Year	2021	North/South Street	Red Rock Road
Time Analyzed	PM Existing + Project	Peak Hour Factor	0.92
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description			



**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	0		0	1	0	0	0	1	0	0	0	1	0	
Configuration			LTR				LTR				LTR				LTR		
Volume (veh/h)		0	0	1		10	0	0		0	353	5		0	190	0	
Percent Heavy Vehicles (%)		2	2	2		2	2	2		2				2			
Proportion Time Blocked																	
Percent Grade (%)		0				0											
Right Turn Channelized																	
Median Type   Storage		Undivided															

**Critical and Follow-up Headways**

Base Critical Headway (sec)		7.1	6.5	6.2		7.1	6.5	6.2		4.1				4.1		
Critical Headway (sec)		7.12	6.52	6.22		7.12	6.52	6.22		4.12				4.12		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.52	4.02	3.32		3.52	4.02	3.32		2.22				2.22		

**Delay, Queue Length, and Level of Service**

Flow Rate, v (veh/h)			1				11				0				0		
Capacity, c (veh/h)			833				416				1364				1168		
v/c Ratio			0.00				0.03				0.00				0.00		
95% Queue Length, Q <sub>95</sub> (veh)			0.0				0.1				0.0				0.0		
Control Delay (s/veh)			9.3				13.9				7.6				8.1		
Level of Service (LOS)			A				B				A				A		
Approach Delay (s/veh)		9.3				13.9				0.0				0.0			
Approach LOS		A				B											



# HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	MSH	Intersection	Red Rock & Silver Knolls
Agency/Co.	Solaegui Engineers	Jurisdiction	Washoe County
Date Performed	2/3/2021	East/West Street	Silver Knolls Boulevard
Analysis Year	2028	North/South Street	Red Rock Road
Time Analyzed	AM Base	Peak Hour Factor	0.92
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description			



**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	
Priority		10	11	12		7	8	9									
Number of Lanes		0	1	0		0	1	0		0	1	0		0	1	0	
Configuration			LTR				LTR				LTR				LTR		
Volume (veh/h)		5	0	5		15	0	5		5	105	5		5	325	5	
Percent Heavy Vehicles (%)		2	2	2		2	2	2		2				2			
Proportion Time Blocked																	
Percent Grade (%)		0				0											
Right Turn Channelized																	
Median Type   Storage		Undivided															

**Critical and Follow-up Headways**

Base Critical Headway (sec)		7.1	6.5	6.2		7.1	6.5	6.2		4.1				4.1		
Critical Headway (sec)		7.12	6.52	6.22		7.12	6.52	6.22		4.12				4.12		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.52	4.02	3.32		3.52	4.02	3.32		2.22				2.22		

**Delay, Queue Length, and Level of Service**

Flow Rate, v (veh/h)			11				22				5				5		
Capacity, c (veh/h)			563				542				1199				1467		
v/c Ratio			0.02				0.04				0.00				0.00		
95% Queue Length, Q <sub>95</sub> (veh)			0.1				0.1				0.0				0.0		
Control Delay (s/veh)			11.5				11.9				8.0				7.5		
Level of Service (LOS)			B				B				A				A		
Approach Delay (s/veh)		11.5				11.9				0.4				0.1			
Approach LOS		B				B				A				A			



# HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	MSH	Intersection	Red Rock & Silver Knolls
Agency/Co.	Solaegui Engineers	Jurisdiction	Washoe County
Date Performed	2/3/2021	East/West Street	Silver Knolls Boulevard
Analysis Year	2028	North/South Street	Red Rock Road
Time Analyzed	PM Base	Peak Hour Factor	0.92
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	0		0	1	0	0	0	1	0	0	0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		5	0	5		10	0	5		5	325	5		5	145	5
Percent Heavy Vehicles (%)		2	2	2		2	2	2		2				2		
Proportion Time Blocked																
Percent Grade (%)	0				0											
Right Turn Channelized																
Median Type   Storage	Undivided															

## Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2		7.1	6.5	6.2		4.1				4.1		
Critical Headway (sec)		7.12	6.52	6.22		7.12	6.52	6.22		4.12				4.12		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.52	4.02	3.32		3.52	4.02	3.32		2.22				2.22		

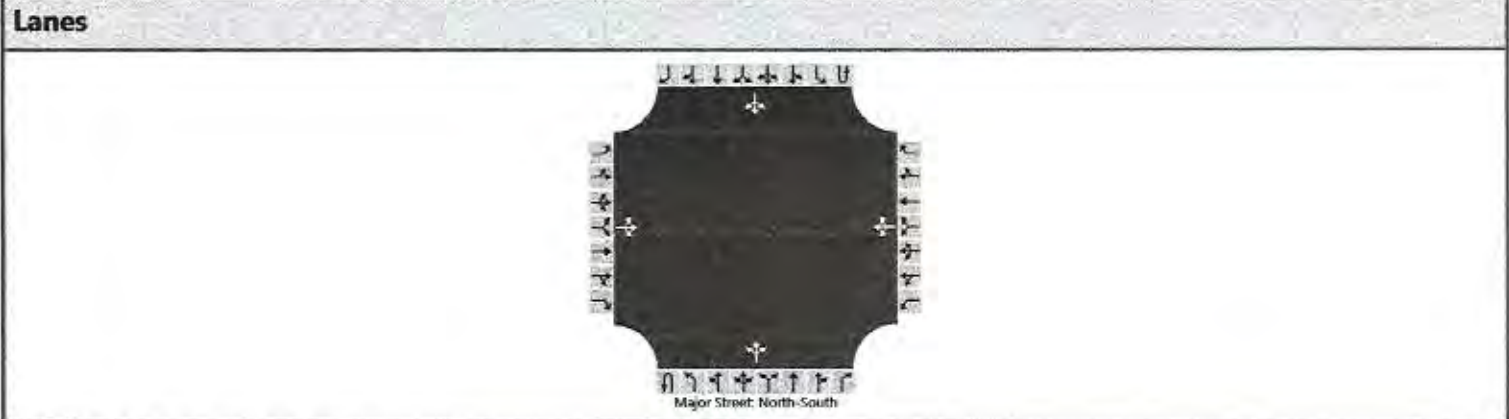
## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			11				16				5				5	
Capacity, c (veh/h)			592				505				1414				1199	
v/c Ratio			0.02				0.03				0.00				0.00	
95% Queue Length, Q <sub>95</sub> (veh)			0.1				0.1				0.0				0.0	
Control Delay (s/veh)			11.2				12.4				7.6				8.0	
Level of Service (LOS)			B				B				A				A	
Approach Delay (s/veh)	11.2				12.4				0.1				0.3			
Approach LOS	B				B											



# HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	MSH	Intersection	Red Rock & Silver Knolls
Agency/Co.	Solaegui Engineers	Jurisdiction	Washoe County
Date Performed	2/3/2021	East/West Street	Silver Knolls Boulevard
Analysis Year	2028	North/South Street	Red Rock Road
Time Analyzed	AM Base + Project	Peak Hour Factor	0.92
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description			



**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	0		0	1	0	0	0	1	0	0	0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		5	0	5		15	0	5		5	170	5		5	521	5
Percent Heavy Vehicles (%)		2	2	2		2	2	2		2				2		
Proportion Time Blocked																
Percent Grade (%)	0				0											
Right Turn Channelized																
Median Type   Storage	Undivided															

**Critical and Follow-up Headways**

Base Critical Headway (sec)		7.1	6.5	6.2		7.1	6.5	6.2		4.1				4.1		
Critical Headway (sec)		7.12	6.52	6.22		7.12	6.52	6.22		4.12				4.12		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.52	4.02	3.32		3.52	4.02	3.32		2.22				2.22		

**Delay, Queue Length, and Level of Service**

Flow Rate, v (veh/h)			11				22			5				5		
Capacity, c (veh/h)			387				365			1000				1382		
v/c Ratio			0.03				0.06			0.01				0.00		
95% Queue Length, Q <sub>95</sub> (veh)			0.1				0.2			0.0				0.0		
Control Delay (s/veh)			14.6				15.5			8.6				7.6		
Level of Service (LOS)			B				C			A				A		
Approach Delay (s/veh)		14.6				15.5				0.3				0.1		
Approach LOS		B				C										



# HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	MSH	Intersection	Red Rock & Silver Knolls
Agency/Co.	Solaegui Engineers	Jurisdiction	Washoe County
Date Performed	2/3/2021	East/West Street	Silver Knolls Boulevard
Analysis Year	2028	North/South Street	Red Rock Road
Time Analyzed	PM Base + Project	Peak Hour Factor	0.92
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description			



**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	0		0	1	0	0	0	1	0	0	0	1	0	
Configuration			LTR				LTR				LTR				LTR		
Volume (veh/h)		5	0	5		10	0	5		5	545	5		5	274	5	
Percent Heavy Vehicles (%)		2	2	2		2	2	2		2				2			
Proportion Time Blocked																	
Percent Grade (%)		0				0											
Right Turn Channelized																	
Median Type   Storage	Undivided																

**Critical and Follow-up Headways**

Base Critical Headway (sec)		7.1	6.5	6.2		7.1	6.5	6.2		4.1				4.1		
Critical Headway (sec)		7.12	6.52	6.22		7.12	6.52	6.22		4.12				4.12		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.52	4.02	3.32		3.52	4.02	3.32		2.22				2.22		

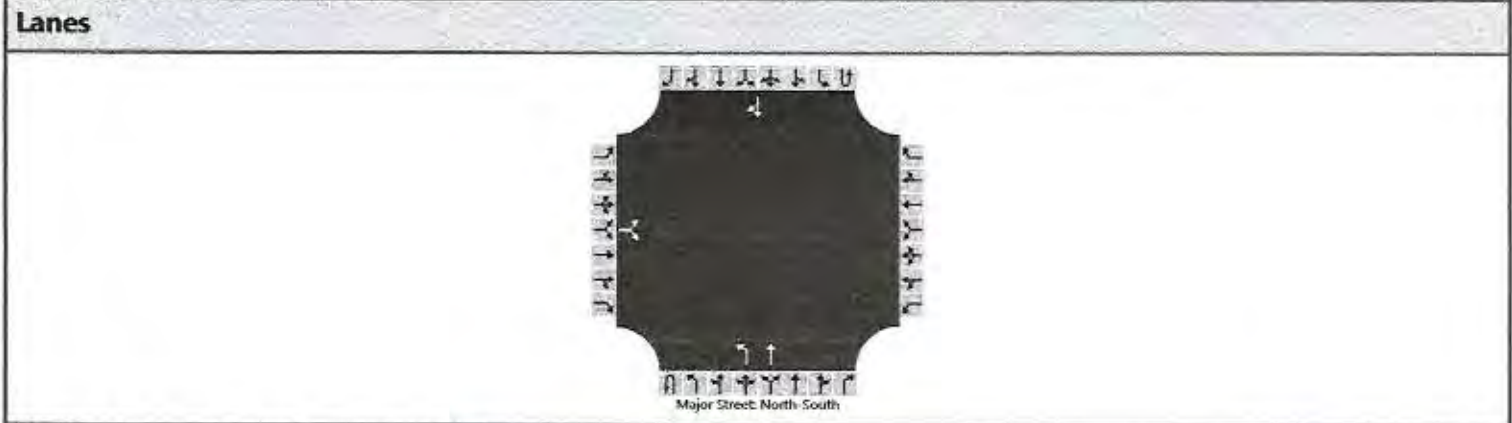
**Delay, Queue Length, and Level of Service**

Flow Rate, v (veh/h)			11				16				5				5		
Capacity, c (veh/h)			369				298				1257				978		
v/c Ratio			0.03				0.05				0.00				0.01		
95% Queue Length, Q <sub>95</sub> (veh)			0.1				0.2				0.0				0.0		
Control Delay (s/veh)			15.0				17.8				7.9				8.7		
Level of Service (LOS)			C				C				A				A		
Approach Delay (s/veh)		15.0				17.8				0.1				0.2			
Approach LOS		C				C											



# HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	MSH	Intersection	Red Rock & Silver Hills
Agency/Co.	Solaegui Engineers	Jurisdiction	Washoe County
Date Performed	2/3/2021	East/West Street	Silver Hills Parkway
Analysis Year	2021	North/South Street	Red Rock Road
Time Analyzed	AM Existing + Project	Peak Hour Factor	0.92
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description			



**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	10	1	2	3	4	5	6		
Number of Lanes		0	1	0		0	0	0	0	1	1	0	0	0	1	0	
Configuration			LR							L	T						TR
Volume (veh/h)		4		196						65	38				110	2	
Percent Heavy Vehicles (%)		2		2						2							
Proportion Time Blocked																	
Percent Grade (%)		0															
Right Turn Channelized																	
Median Type   Storage		Undivided															

**Critical and Follow-up Headways**

Base Critical Headway (sec)		7.1		6.2						4.1							
Critical Headway (sec)		6.42		6.22						4.12							
Base Follow-Up Headway (sec)		3.5		3.3						2.2							
Follow-Up Headway (sec)		3.52		3.32						2.22							

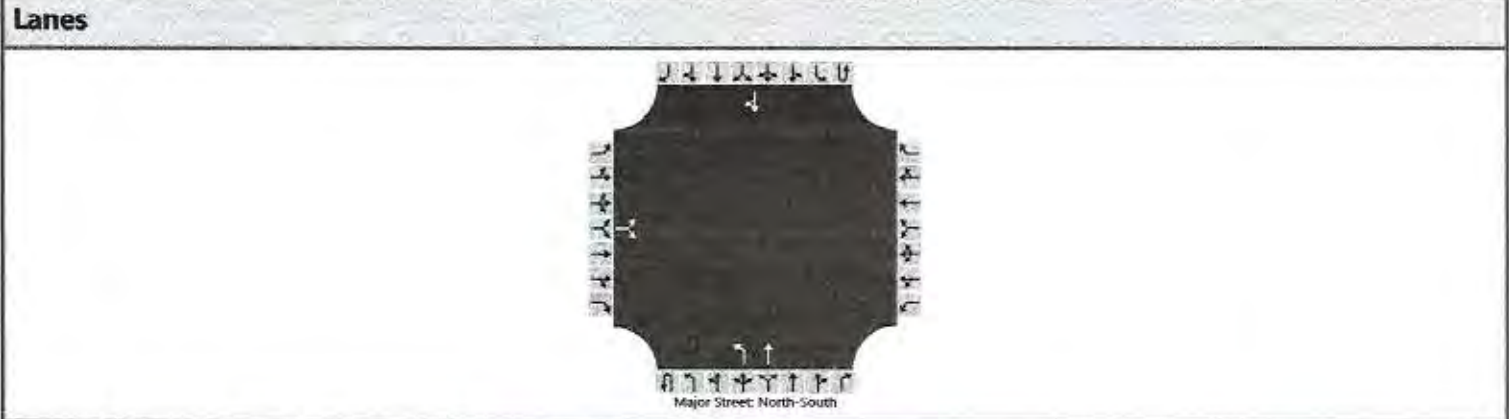
**Delay, Queue Length, and Level of Service**

Flow Rate, v (veh/h)			217							71							
Capacity, c (veh/h)			922							1464							
v/c Ratio			0.24							0.05							
95% Queue Length, Q <sub>95</sub> (veh)			0.9							0.2							
Control Delay (s/veh)			10.1							7.6							
Level of Service (LOS)			B							A							
Approach Delay (s/veh)		10.1								4.8							
Approach LOS		B								A							



# HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	MSH	Intersection	Red Rock & Silver Hills
Agency/Co.	Solaegui Engineers	Jurisdiction	Washoe County
Date Performed	2/3/2021	East/West Street	Silver Hills Parkway
Analysis Year	2021	North/South Street	Red Rock Road
Time Analyzed	PM Existing + Project	Peak Hour Factor	0.92
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description			



**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	10	1	2	3	4	5	6	
Number of Lanes		0	1	0		0	0	0	0	1	1	0	0	0	1	0
Configuration			LR							L	T					TR
Volume (veh/h)		3		129						220	133				61	5
Percent Heavy Vehicles (%)		2		2						2						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized																
Median Type   Storage		Undivided														

**Critical and Follow-up Headways**

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.42		6.22						4.12						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.52		3.32						2.22						

**Delay, Queue Length, and Level of Service**

Flow Rate, v (veh/h)			143							239						
Capacity, c (veh/h)			953							1527						
v/c Ratio			0.15							0.16						
95% Queue Length, Q <sub>95</sub> (veh)			0.5							0.6						
Control Delay (s/veh)			9.4							7.8						
Level of Service (LOS)			A							A						
Approach Delay (s/veh)		9.4								4.9						
Approach LOS		A								A						



# HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	MSH	Intersection	Red Rock & Silver Hills
Agency/Co.	Solaegui Engineers	Jurisdiction	Washoe County
Date Performed	2/3/2021	East/West Street	Silver Hills Parkway
Analysis Year	2028	North/South Street	Red Rock Road
Time Analyzed	AM Base + Project	Peak Hour Factor	0.92
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	0		0	0	0	0	1	1	0	0	0	1	0
Configuration			LR							L	T					TR
Volume (veh/h)		4		196						65	115				335	2
Percent Heavy Vehicles (%)		2		2						2						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized																
Median Type   Storage		Undivided														

## Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.42		6.22						4.12						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.52		3.32						2.22						

## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			217							71						
Capacity, c (veh/h)			671							1191						
v/c Ratio			0.32							0.06						
95% Queue Length, Q <sub>95</sub> (veh)			1.4							0.2						
Control Delay (s/veh)			12.9							8.2						
Level of Service (LOS)			B							A						
Approach Delay (s/veh)		12.9								3.0						
Approach LOS		B								A						



# HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	MSH			Intersection	Red Rock & Silver Hills		
Agency/Co.	Solaegui Engineers			Jurisdiction	Washoe County		
Date Performed	2/3/2021			East/West Street	Silver Hills Parkway		
Analysis Year	2028			North/South Street	Red Rock Road		
Time Analyzed	PM Base + Project			Peak Hour Factor	0.92		
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	0		0	0	0	0	1	1	0	0	0	1	0
Configuration			LR							L	T					TR
Volume (veh/h)		3		129						220	335				155	5
Percent Heavy Vehicles (%)		2		2						2						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized																
Median Type   Storage		Undivided														

## Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.42		6.22						4.12						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.52		3.32						2.22						

## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			143							239						
Capacity, c (veh/h)			817							1401						
v/c Ratio			0.18							0.17						
95% Queue Length, Q <sub>95</sub> (veh)			0.6							0.6						
Control Delay (s/veh)			10.3							8.1						
Level of Service (LOS)			B							A						
Approach Delay (s/veh)		10.3								3.2						
Approach LOS		B								A						