ECHEVERRIA SILVER LAKE INDUSTRIAL

Planned Unit Development Handbook

Prepared for:

City of Reno

Approved March 28, 2012

Recording requested by and return to:

Wood Rodgers, Inc.
Attn: Andy Durling
5440 Reno Corporate Drive
Reno, NV 89511

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Requested By
ECHEVERRIA GROUP
Washoe County Recorder
Kathryn L. Burke - Recorder
Fee: $229.00 RPTT: $0.00
Page 1 of 191

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Echeverria Silver Lake Industrial
Planned Unit Development Handbook

This page added to provide additional information required by NRS 111.312 Sections 1-2.
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5440 Reno Corporate Drive
Reno, NV 89511

NOTICE OF DESIGN GUIDELINES FOR
ECHEVERRIA SILVER LAKE INDUSTRIAL PLANNED UNIT DEVELOPMENT

Notice is hereby given that the Planned Unit Development Guidelines for the Echeverria Silver Lake Industrial Planned Unit Development have been established, effective March 28, 2012. A copy of the guidelines are attached hereto and incorporated herein.

DATED this 30 day of March, 2012.

PETER ECHEVERRIA FAMILY LIMITED PARTNERSHIP, a Nevada limited partnership

By _____
John Echeverria

State of Nevada)
) ss
County of Washoe)

On this 30 day of march, 2012, personally appeared before me, a Notary Public, personally known to me (or proved) to be the person whose name is subscribed to the above instrument who acknowledged to me that he executed this instrument.

In witness whereof, I have hereunto set my hand and affixed my official stamp at my office in the Count of Washoe the day and year in this certificate first above written.

_____ (Seal)
Signature of Notary Public

AMBER HARMON
Notary Public - State of Nevada
Appointment Recorded in Washoe County
No: 01-71967-2 - Expires November 17, 2013

TABLE OF CONTENTS PAGE

I. INTRODUCTION 1
a. Objective 1
b. Project Location 1
c. Site Conditions 2
c. Site Conditions 3
d. Project Development Concept 3
e. Development Schedule 3
f. Administration 5
g. Review Process 5
h. Conflicts 5
i. Modifications 6
II. INFRASTRUCTURE 6
a. Access 6
b. Sanitary Sewer Service 6
c. Water Service 6
d. Other Utilities 6
e. Traffic 6
III. DESIGN STANDARDS 7
a. Industrial Site Planning Standards 7
1. Permitted Uses 7
2. Minimum Lot Size 8
3. Minimum Lot Width 8
4. Building Setbacks 8
5. Site Coverage 8
6. Building Height 8
7. Architecture 8
8. Landscaping 19
9. Service Areas 21
10. Parking 22
11. Pedestrian Access 22
12. Fencing 22
13. Exterior Lighting 22
14. Signage 23

15. Employee Trip Reduction Program 23
b. Open Space Design Standards 24
1. Permitted Uses 24
2. Building Setbacks 24
3. Building Height 24
The maximum building height shall be 20-feet. 24
4. Parking 24
5. Signage 24
6. Trails 24
7. Landscaping 24
IV. GRADING AND DRAINAGEWAY TREATMENTS 28
a. Grading 28
b. Drainageway Treatments 28

APPENDICES:

Appendix 1 – Council Decision & Certification Letter and Zoning Ordinance
Appendix 2 – Legal Description
Appendix 3 – Traffic Impact Analysis
Appendix 4 – Infrastructure Feasibility Study

I. INTRODUCTION

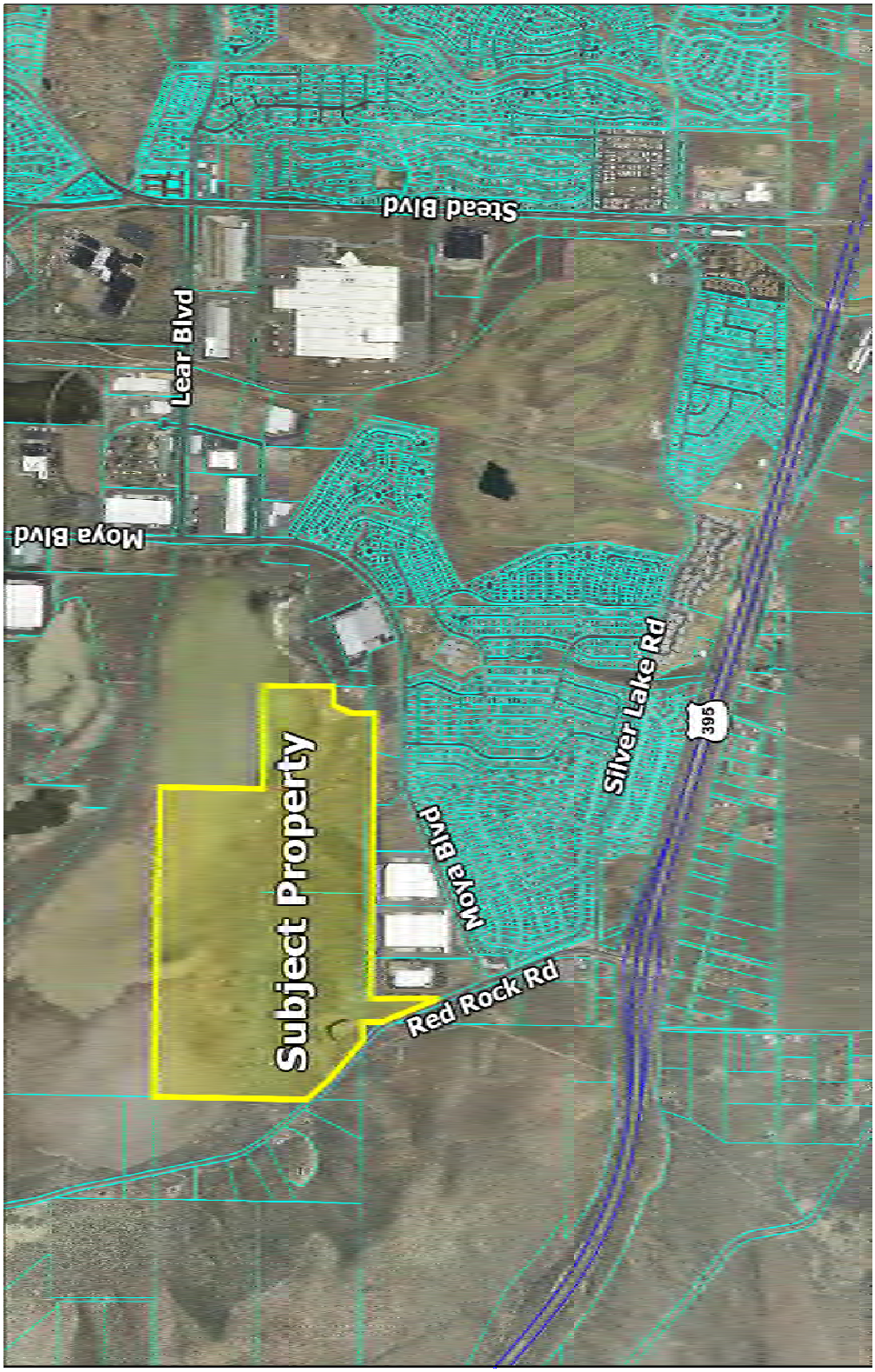
a. Objective

The objective of the Echeverria Silver Lake Industrial (ESLI) PUD is to establish design standards for the development of an integrated business/industrial park on the property that will address the following:

- Compatibility with similar uses found in the adjacent IDI Stead Business Center PUD to the south;
- Compatibility with residentially zoned property adjacent to and on the other side of Red Rock Road to the west;
- Sensitivity to and connectivity with adjacent open space features including Silver Lake and its associated floodplain and wetlands to the north and east and spring fed stock pond to the west;
- Utilization of sensitive grading, Low Impact Development (LID), cut and fill practices, and drainage way modifications required for development of the site.

b. Project Location

The 285.6± acre property is located east of Red Rock Road approximately 1,450 feet north of the intersection of Red Rock Road and Moya Boulevard. Unincorporated properties adjacent to the west and across Red Rock Road contain single family residences. A portion of Silver Lake is located on the northern portion of the Planned Unit Development, with the remainder of the lake located on adjoining properties to the north and east. Adjacent properties to the south are developed with industrial uses (refer to Vicinity Map on page 2).



Echeverria Silver Lake Property
Vicinity Map

c. Site Conditions

The 285.6± acre site is undeveloped. The site is relatively flat and slopes gently to the north, averaging between 1 percent and 2 percent toward Silver Lake. The northerly portion of the site is in Flood Zone AE. Industrial developed portions of the site will require fills to remove the property from the Flood Zone and cuts to create an area for flood volume replacement. Grading modifications and an extension of the existing major drainage way channel to convey on and off-site flows through the industrial site to Silver Lake will also be necessary. Standards to address flood plain and major drainageway grading are contained in this PUD.

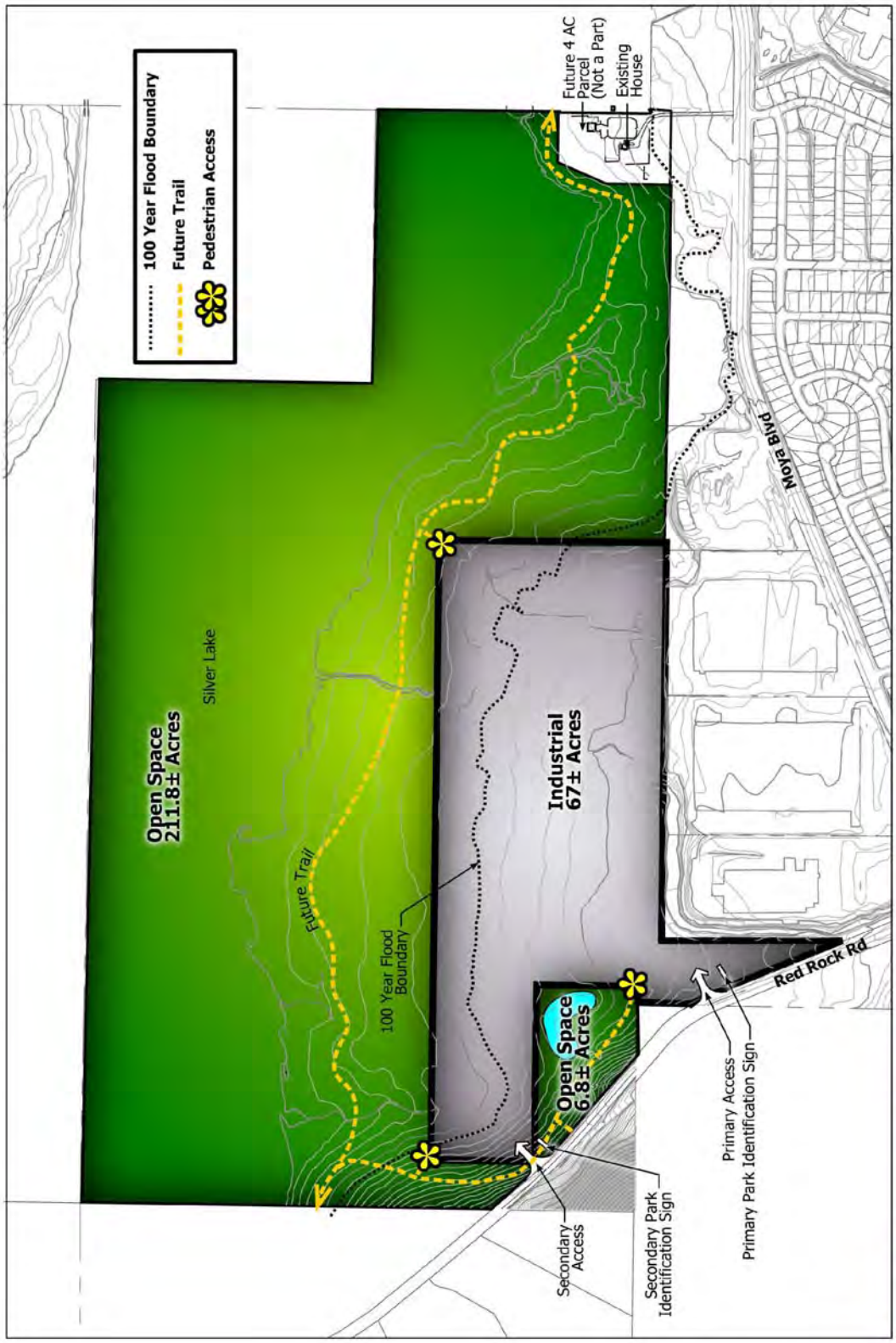
d. Project Development Concept

The Echeverria Silver Lake Industrial (ESLI) Planned Unit Development (PUD) concept is to develop a cohesive business/industrial park and open space on the property (Please refer to the Land Use Plan on page 4). The majority of the property (218.6± acres) will remain as open space and may include trails and trail heads, as well as other recreational amenities to be planned and developed by the Washoe County Parks and Open Space Program, in conjunction with the Nevada Land Conservancy.

The Industrial portion (67± acres) of the PUD will not exceed 1,250,000 gross square feet of building area. Primary and secondary access for the industrial is planned from Red Rock Road. The industrial park may include a mix of building sizes, but could accommodate one large building, as market trends may dictate. Actual building size, configuration and location will be determined at the time of building permit to meet the needs of future users. Development must be in accordance with the design standards outlined in this PUD.

e. Development Schedule

Build out of the project will be dependent on market conditions and is estimated to be approximately 7-10 years. It is anticipated that the initial construction will include mass grading, drainage channel improvements, access improvements and extension of utilities although phasing of these improvements is also possible. Development of the individual building sites will depend on the requirements of future users.



Echeverria Silver Lake Property
Land Use Plan

f. Administration

The ESLI PUD shall be administered by the Zoning Administrator or his/her designee as defined in the City of Reno Annexation and Land Development Code. The administrator shall have the authority to reasonably interpret and apply this PUD handbook.

There shall be a master developer in place from the first phase of development of the PUD. This master developer shall continue throughout the development of the PUD until and unless a master property owners association or other entity is created to serve the role of master developer. The role of the master developer, for the purposes of this PUD, shall be:

- To prescribe and administer methods and procedures to ensure and control the quality of development that occurs within the ESLI PUD;
- Maintain all common area improvements, storm drain and/or constructed drainage channels, detention and/or other flood control facilities;
- Establish an Architectural Review Committee to maintain consistent project architecture.

Only the master developer or its authorized designee or assignee may initiate an amendment to the PUD handbook. At such time as the Open Space area is dedicated to a public entity or non-profit land conservancy, the master developer shall transfer the master developer responsibilities for the open space areas to that entity. The 218.6± acres of designated open space shall be deed restricted in accordance with RMC 18.12.101(f), as amended.

g. Review Process

Prior to the submittal of a development application to the City, the development shall be reviewed by the master developer at their sole discretion. Each development application submitted to the City shall include written documentation of approval from the master developer. The construction of individual projects, including accessory structures shall follow the City of Reno building permit process. Written approval by the master developer does not constitute City approval of a development application.

Unless otherwise specified in this PUD, individual projects conforming to the standards and requirements contained herein, shall not require subsequent Special Use Permit approval such as: non-residential uses adjacent to residentially zoned property, hours of operation, grading resulting in cuts over 20 feet or fills over 10 feet, modifications to major drainage ways or any other criteria outlined in RMC Title 18. Projects, however, will require approval of grading and building permits or variances by the City of Reno.

Appeals:

The applicant or developer may appeal any decision, comment, or recommendation of the Administrator in accordance with RMC Section 18.06.208, as amended.

h. Conflicts

In the event of a conflict between these design standards and City Code, these standards shall govern development of the ESLI PUD. When a specific standard is not addressed by the PUD, then the applicable section of Reno Municipal Code Title 18, as amended, at the time of review shall prevail.

i. Modifications

The Administrator shall have the ability to grant minor deviations as outlined in RMC 18.06.411(a)(1), as amended. Minor deviations shall be subject to written approval from the master developer. Deviations of 10% or more shall conform to the City of Reno Variance process as outlined in RMC 18.06.408, as amended.

II. INFRASTRUCTURE

a. Access

Primary access to the Industrial Park will be from Red Rock Road near the southern boundary of the property. A secondary access point is planned from Red Rock Road near the northern boundary of the site. It is also possible that a secondary access point to Moya Boulevard may be available near the easterly boundary of the property. Primary and secondary access will be in accordance with City of Reno public works and fire department requirements.

b. Sanitary Sewer Service

Sanitary sewer service to the site will be provided by the City of Reno with treatment at the Reno/Stead Water Reclamation facility. Sewer is in close proximity to the site, however, line extensions and improvements will be required to accommodate the project.

c. Water Service

The site is currently within the water service area of the Washoe County Department of Water Resources (WCDWR). However, Truckee Meadows Water Authority (TMWA) facilities which could serve the property are located in close proximity to the property. Water service will require coordination with WCDWR and TMWA.

d. Other Utilities

Electric and gas service will be provided by NV Energy. Telephone and cable television service will be provided by AT&T and Charter. Services are located in close proximity to the property.

e. Traffic

As the project develops, it shall conform to the conditions and recommendations of the Traffic Impact Analysis contained in Appendix 3 of this PUD. The development is projected to generate approximately 6,200 Average Daily Trips (ADT) with 563 AM and 588 PM Peak Hour Trips (PHT). With each building permit, a trip generation letter is required to identify the total traffic generated by the development based on use. The total development may not exceed 6,200 ADT without an amendment to this PUD handbook. Any increase in the Peak Hour Trips must include a revised traffic analysis to demonstrate compliance with the RTC Level of Service (LOS) standards.

III. DESIGN STANDARDS

a. Industrial Site Planning Standards

1. Permitted Uses

Only the following uses are permitted in the Echeverria Silver Lake Industrial PUD:

- Call Center
- Custom & Craft Work
- Financial Institution
- Freestanding Automated Teller Machine
- Household Goods, Light Service, Repair & Assembly
- Laboratory
- Office (Professional and Medical)
- Recording Studio
- Restaurant with Alcohol Service
- Restaurant without Alcohol Service
- Sale of Low Volume Bulky Goods
- TV Broadcasting & Other Communication Service
- Commercial Amusement/Recreation (Indoor)
- Fitness Center
- Gun Range (Indoor)
- Church/House of Worship
- Communication Facility, Equipment Only
- Government Facility
- Post Office
- Public Transit or School Bus Shelter
- School, Vocational/Trade
- Utility Box/Well House, Back-up Generator, Pumping or Booster Station
- Utilities, Major (Special Use Permit required)
- Bus or other Transportation Terminal
- Food Processing/Wholesale Bakery
- Indoor Manufacturing, Processing, Assembly or Fabrication
- Maintenance, Repair or Renovation Business (Indoor)
- Mini-warehouse
- Outdoor Storage, accessory to a permitted use only (Screened per Section III (c).)
- Printing & Publishing
- Rental Store, w/Outdoor storage; Truck Rental (Outdoor storage Screened per Section III (c))
- Salvage or Reclamation of Products (Indoors)
- Showroom
- Taxidermist
- Temporary Construction Structures
- Truck Terminal
- Warehouse/Distribution Center
- Welding Repair (indoor only)

- Wholesale of construction materials
- Wholesale of products manufactured or assemble on site

Uses listed above are as defined in RMC 18.24, as amended, at the time a development permit (grading, site improvement, and/or building permit) is submitted for City review. Additional uses beyond those listed above may be allowed by the administrator in accordance with RMC 18.08.201(4), as amended. Accessory uses shall be permitted for uses allowed above as defined by RMC Table 18.08-5, as amended.

2. Minimum Lot Size

Minimum lot size shall be ½ acre (lot size may be reduced in accordance with RMC 18.12.101(b), as amended).

3. Minimum Lot Width

Minimum lot width shall be 50 feet (lot width may be reduced in accordance with RMC 18.12.101(b), as amended).

4. Building Setbacks

Building setbacks shall be as follows:

- Front: 15 feet
- Front if adjacent to OS portions of this PUD or Red Rock Road: 20 feet
- Side: 10 feet
- Side if adjacent to OS portions of this PUD: 15 feet
- Rear: 10 feet
- Rear if adjacent to OS portions of this PUD: 15 feet

5. Site Coverage

Each site building permit shall identify required yards, landscape area and parking as specified herein. The maximum building square footage for the 67± acre industrial site is 1,250,000 square feet. A cumulative total of the existing, proposed, and remaining square footage must be provided to the administrator with each new building permit application.

6. Building Height

Buildings shall be limited to 40 feet in height, as defined in RMC 18.24.108, as amended.

7. Architecture

Architectural styles may vary from parcel to parcel within the industrial portion of the PUD. However, architecture must be consistent within each individual parcel. Examples of conceptual architectural treatments are provided on pages 10 through 17. The following industrial architectural standards shall apply:

a. Building articulation and architectural interest shall be provided on the perimeter building elevations facing west toward Red Rock Road as follows:

- Horizontal articulation[1]: No plane of a building wall shall extend for a horizontal distance greater than three times the height of the wall without providing an off-

set of 15 percent of the wall's height, and that new wall plane shall extend for a distance equal to at least 25 percent of the maximum length of the first plane.

- Vertical articulation[1]: No wall shall extend for a horizontal distance greater than three times the height of the wall without changing height by a minimum of 15 percent of the wall's height.

- Parapet walls, or other methods, must be provided to screen roof mounted mechanical equipment in accordance with RMC 18.12.1208(c), as amended.

- Truck docks, loading areas, storage areas, platforms, and other such areas shall be located on the side(s) or rear(s) of buildings where possible. If these areas are facing public roadways, they must be screened consistent with RMC 18.12.1208(1)(c) and 18.12.1208 (2), as amended. This may include a combination of awnings and architectural treatments above the truck docks and/or additional landscape screening. Refer to Sections III(a)(8) and III(a)(9) of this PUD for specific landscape standards. The Administrator may approve alternative methods proposed by the applicant at the time of building permit where grade or distance separation can be shown to not have a visual impact to adjacent roadways.

b. Building articulation and exterior interest shall be provided on all sides of structures facing Open Space as follows:

- Horizontal Articulation[1]: No plane of a building wall shall extend for a horizontal distance greater than three times the height of the wall without incorporating an architectural feature that provides visual interest. This may include a combination of articulated wall plane(s) (minimum 2-feet), faux windows, accent painting, awnings, medallions, scoring, and/or other architectural features, to the approval of the Zoning Administrator.

- Vertical articulation[1]: No wall shall extend for a horizontal distance greater than three times the height of the wall without changing height by a minimum of 3-feet.

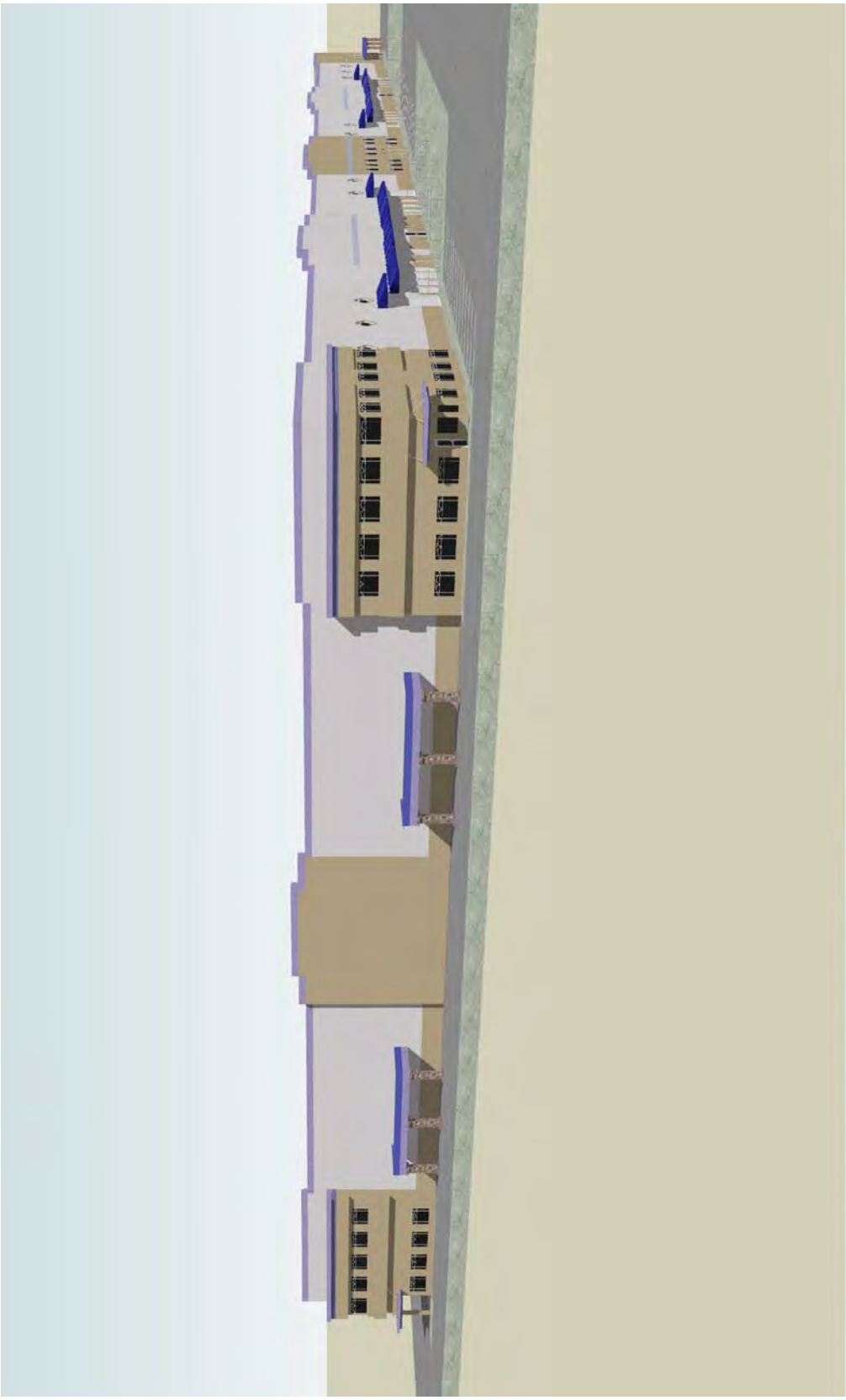
- Parapet walls, or other methods, must be provided to screen roof mounted mechanical equipment.

- Truck docks loading areas, storage areas, platforms, and other such areas shall be located on the side(s) or rear(s) of buildings where possible. If these areas are facing open space they must be screened consistent with RMC 18.12.1208(1)(c) and 18.12.1208 (2), as amended. Architectural treatments may include a combination of awnings, accent painting and/or other architectural treatments above the truck docks. Refer to Sections III(a)(8) and III(a)(9) of this PUD for specific landscape standards. The Administrator may approve alternative methods proposed by the applicant at the time of building permit where grade or distance separation can be shown to not have a visual impact to adjacent roadways.

NOTES:

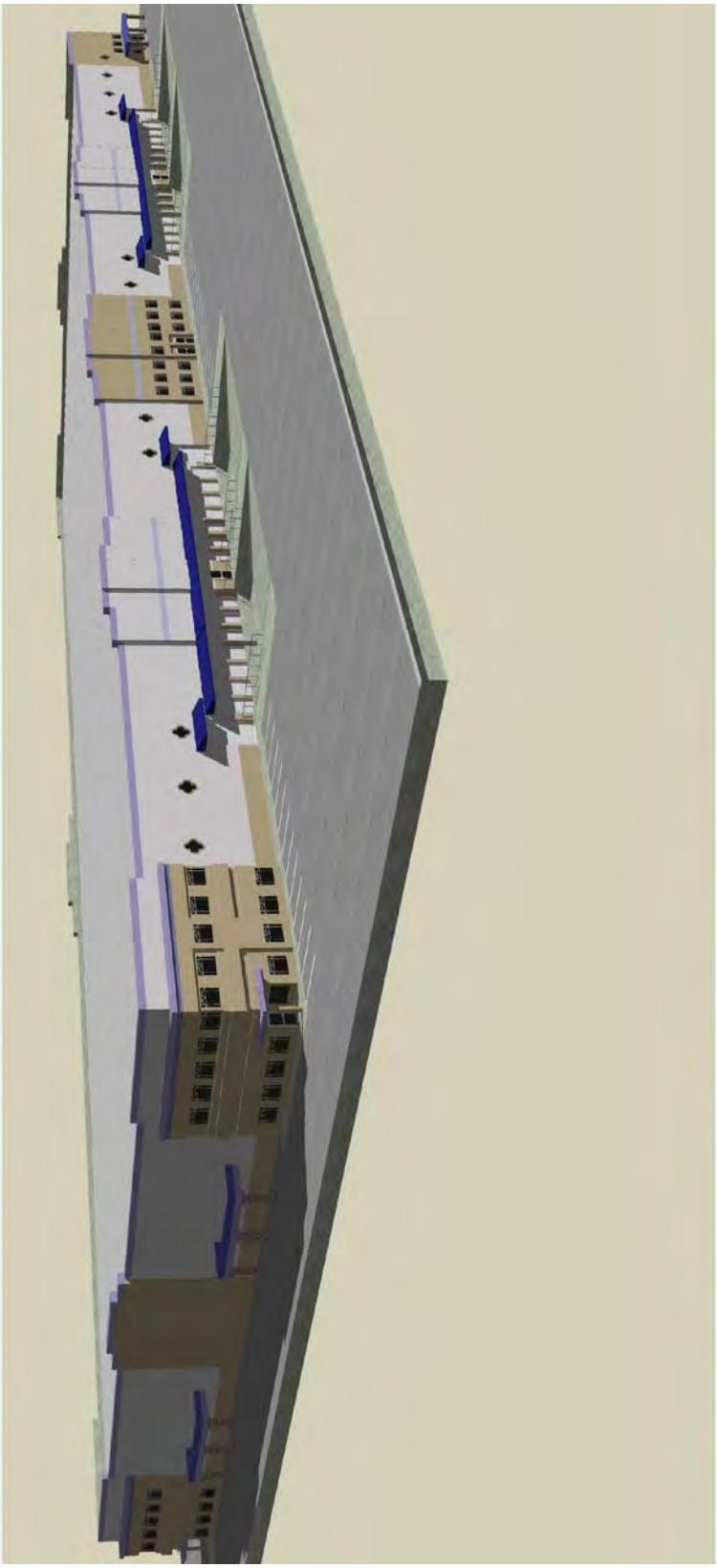
1 – The horizontal and vertical articulation requirements described above may be averaged over each individual wall plane to avoid a monotonous pattern to the approval of the Zoning Administrator.

Example Front Elevation

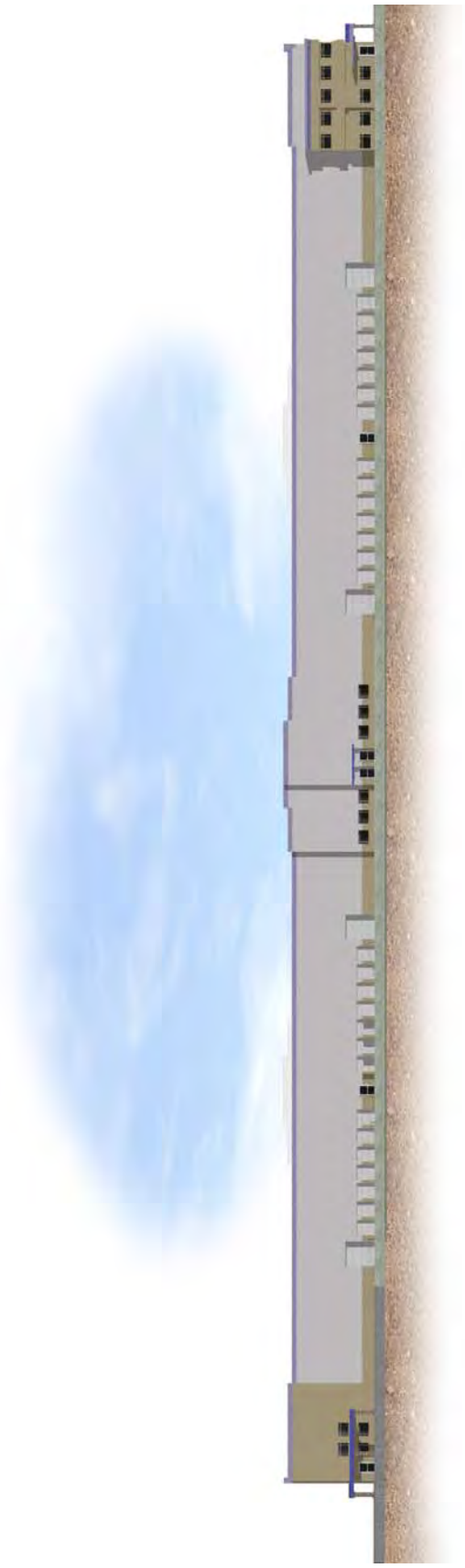


Example Front Perspective

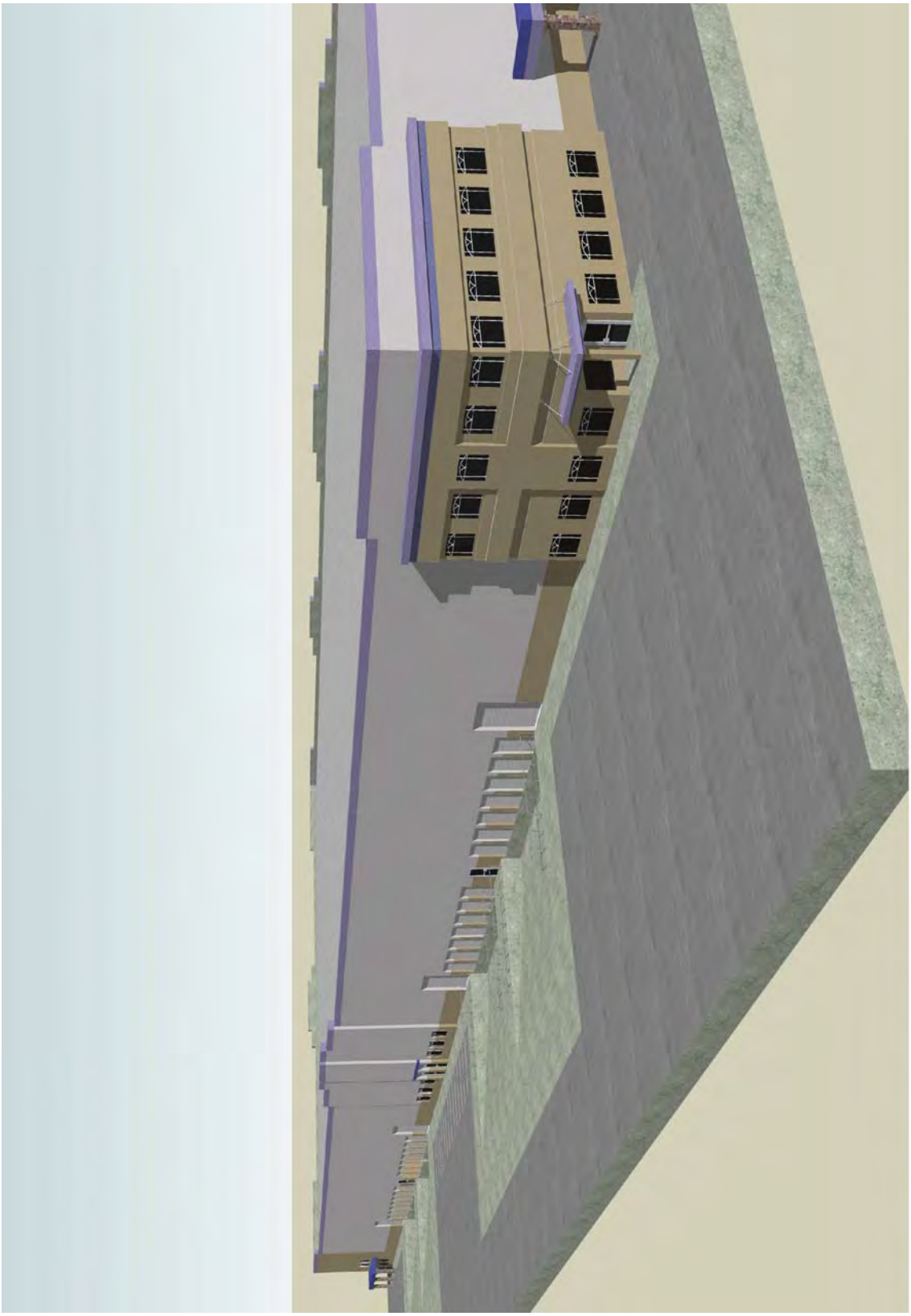
Example Side Elevation (Adjacent to Open Space)



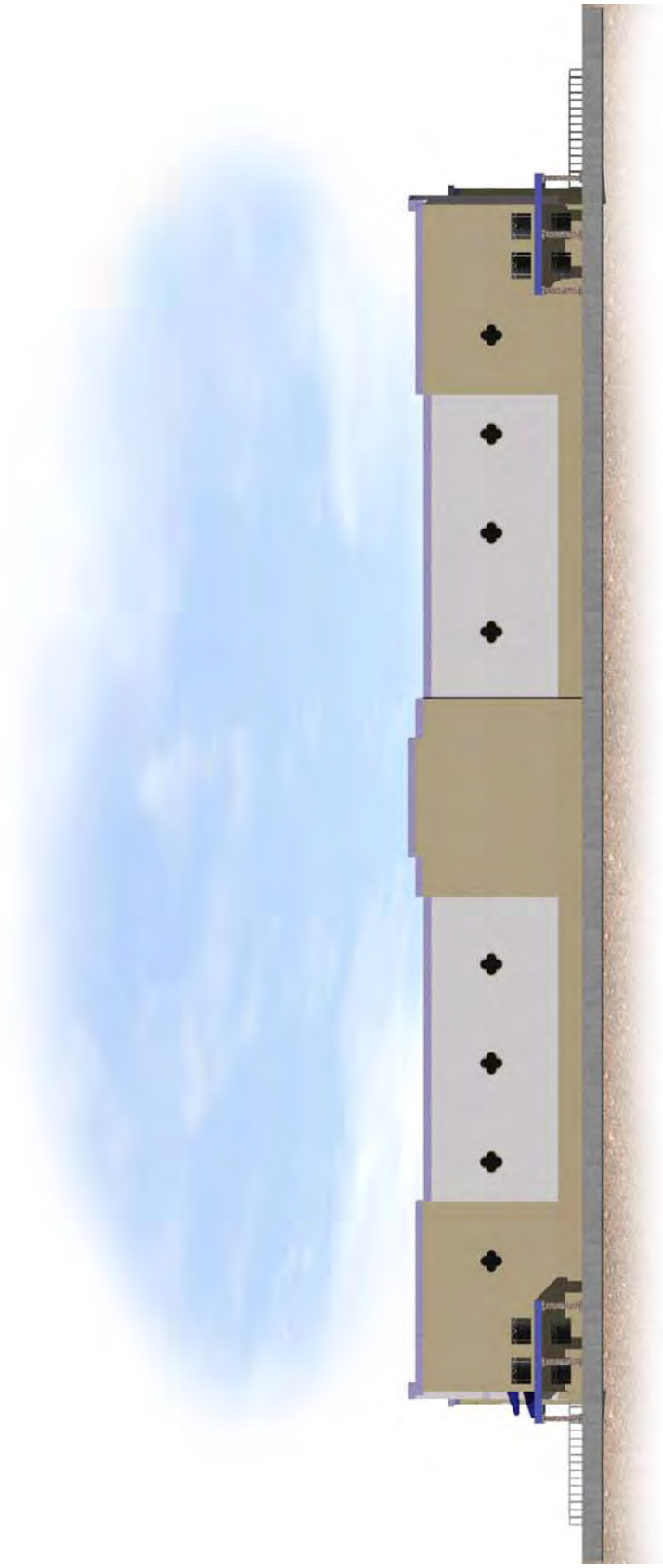
Example Side Perspective (Adjacent to Open Space)



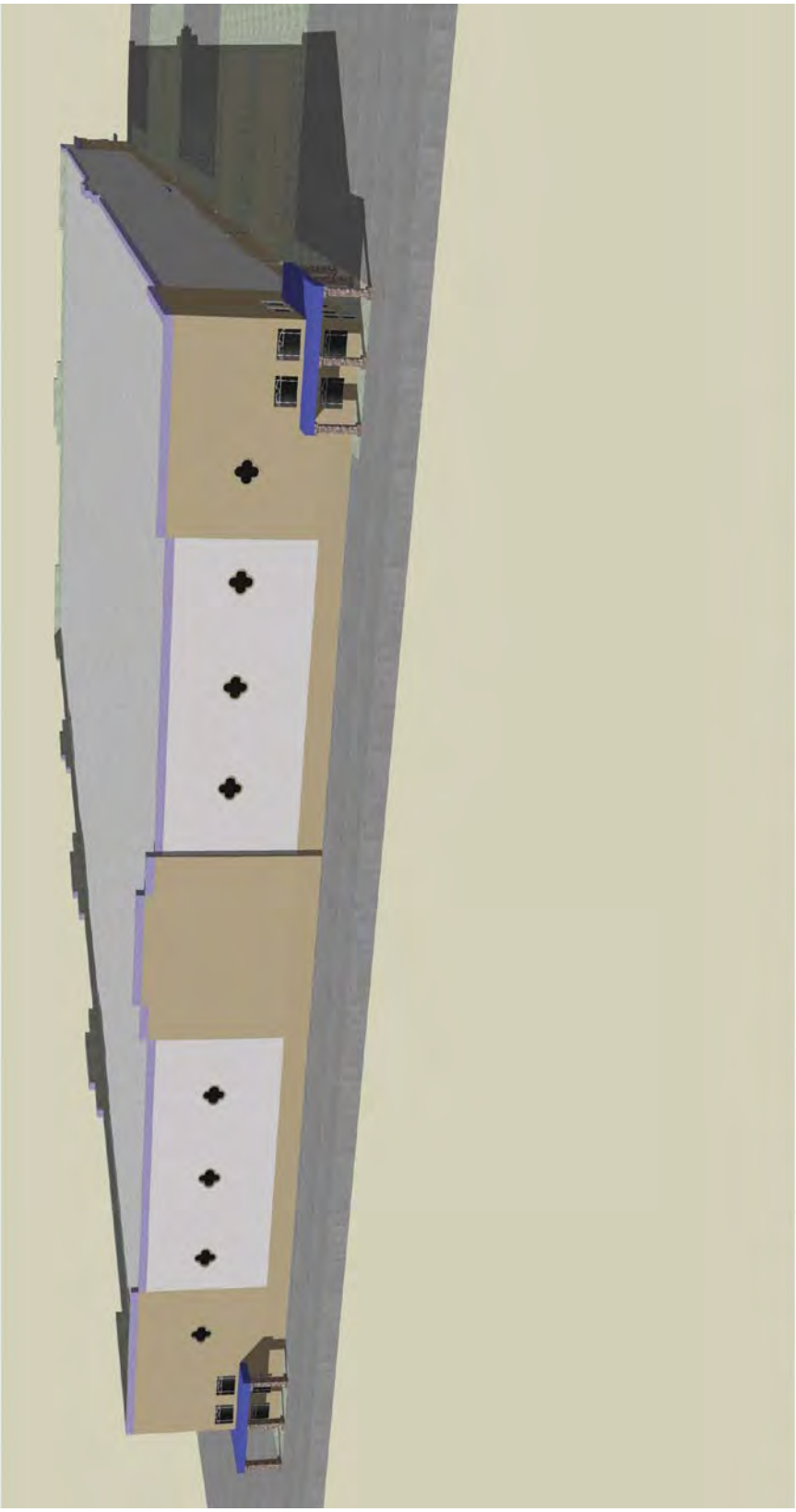
Example Side Elevation (Interior)



Example Side Perspective (Interior)



Example Rear Elevation (Adjacent to Open Space)



Example Rear Perspective (Adjacent to Open Space)

c. All wall elevations located on the interior of the site facing south or facing internal buildings (i.e. not facing west toward Red Rock Road or north and east toward the Open Space) shall provide consistent color and materials as the perimeter wall elevations and the required wrapped architectural treatment from the exterior elevation to a logical terminus point on the interior elevation, but are not required to meet the exterior building articulation standards above.

d. All buildings must comply with the following architectural standards:

- Exterior and accent materials include glass, stone, pre-cast concrete, concrete block, stucco, EIFS, brick and composition panels. The use of exterior wood, vinyl or metal siding is not allowed.

- The main surface color of the buildings shall be neutral earth tones consistent with the surrounding area. Accent colors, consistent with main the building color palette are encouraged. All flashing, sheet metal, vent stacks and pipes shall be painted to match the main surface or accent colors of the buildings.

- Roofs may be flat, sloping or pitched. Pitched roof materials shall be limited to standing seam or flat seam configuration metal. Colors shall be approved by the ARC, which are consistent with the main building. All roof mounted mechanical equipment and appurtenances shall be screened from view of public streets and the OS portions of the project. The equipment and/or screening shall be colored to match the building. Methods of screening and colors shall be provided with each building permit application, including site lines and roof cross sections, as deemed appropriate by the administrator.

- Articulation elements on the exterior building elevations shall not end at the corner of the building. These elements must wrap around each building corner and be extended to a logical terminus on the interior elevation, to the satisfaction of the zoning administrator. (See pages 14 and 16 for wrap around treatment examples.)

- Four (4) sided color elevations shall be provided with each new building permit application.

8. Landscaping

- Formal Landscaping:

<u>Required Landscape Area:</u> The entire required front yard setback area shall be landscaped. A minimum of one tree for every 300 square feet of required front yard landscaped area and six shrubs per tree shall be provided for required landscape areas, except as specified below. Tree grouping and berming are encouraged, especially on the perimeter of the site adjacent to open space.

Building Entrances:
A minimum 10 foot wide landscaped area shall be provided adjacent to the front of each building to separate the front of the buildings (i.e. building entrances) from access roads and parking. The landscaped area may include a combination of planting areas, sidewalk and decorative paving.

Employee/Visitor Parking Areas: A minimum of one tree for every ten parking spaces is required. Trees may be placed in parking lot edge locations including adjacent to building entrances or in islands. Trees within edge locations or islands shall be located within a maximum of 75 feet of each parking space. Islands and parking lot edges shall be a minimum of 10 feet in width. Islands must be a minimum of 126 square feet in area. Areas designated for truck trailer parking and loading are exempt from interior landscape island requirements; however, the 10 foot landscaped edge shall be required.

Minimum Plant Material Standards: A mix of evergreen and deciduous plant materials shall be provided. 70% of the required trees shall be large trees with a minimum caliper of 2 ½ inches (deciduous) or have a minimum height of 10 feet (evergreen) while 30% may be smaller trees with a minimum caliper of 1 inch (deciduous) or a minimum height of 6 feet (evergreen). At a minimum, shrubs must include a 50/50 mix of 50% 1 gallon and 50% 5 gallon sizes. Decorative paving, rock or other inert materials, up to 25% of the required landscape area may be provided.

- Informal/Native Landscaping:

Perimeter Buffer Requirements: The required setback areas for development located along the western, northern and eastern Industrial boundary, adjacent to OS portions of the PUD, shall be planted with native vegetation. Perimeter buffer areas are intended to provide a transition from the developed portions of the site to the natural open spaces beyond the property. Trees shall be planted in the buffer areas with one tree required per 50 linear feet. Trees shall be evergreen, a minimum of 6-feet in height. Tree groupings installed in raised berms are encouraged. When grouped, trees shall be placed at the ends of buildings and where views into loading and truck dock areas can be screened more effectively. The setback and all areas disturbed by project grading shall be seeded with a native seed blend and planted with native shrubs at a density of 1 shrub per 75 square feet of required buffer/disturbed area. The intent is to achieve a natural vs. formal landscape appearance similar in concept to that shown in the exhibit below, Native Vegetation Buffering Concept.

Native Vegetation Buffering Concept

9. Service Areas

Outdoor Storage: Outdoor storage shall be located to the side or rear of the primary building and shall be screened with solid view screening fencing – 15-feet of perimeter landscape, consistent with the perimeter buffer requirements, must be installed along the outside edge of all screening fences. Only materials actively used in the business may be stored. Stacked material shall not exceed the height of the screening wall or fence. Outdoor storage areas shall not exceed 20% of any parcel.

Loading Areas: Loading areas and loading docks shall be located to the side or rear of the primary building. Where adjacent to the OS portions of the PUD, setbacks shall be landscaped per perimeter buffer requirements, however, the number of trees required shall be increased to one tree per 30 linear feet. Trees shall be grouped to offer the greatest screening potential. Where loading areas are not directly adjacent and views into the loading areas are partially screened by a building, the open view line shall be screened by tree groupings (the number of trees required shall remain consistent with required number of trees for the Perimeter Buffer Requirements).

Mechanical Equipment: Mechanical equipment located on rooftops, at ground level and at any other position upon the structure shall be screened from view of Red Rock Road, Moya Boulevard and the OS portions of the PUD with solid view screening materials. Screening shall be architecturally compatible with the structure, including colors.

Trash Receptacles: Trash receptacles shall be enclosed on three sides with CMU or similar material with a solid view screen gate to provide opaque screening. Trash enclosures shall be consistent in materials and colors to the main building. Enclosures shall be located in side or rear yard areas, maintaining setbacks and perimeter buffering requirements as described within the PUD.

10. Parking

Parking requirements shall be in accordance with RMC Article XI: Off-Street Parking and Loading, Chapter 18.12.1101 through 18.12.1108, as amended.

11. Pedestrian Access

With development of each parcel located adjacent to open space, pedestrian access to adjacent planned trails shall be provided at up to three locations as conceptually depicted on the Land Use Plan on page 4. Pedestrian trailhead access at these locations shall be a minimum of 15 feet in width and shall include a 4 foot wide aggregate base trail extending to the industrial property line and native vegetation. Small directional signs identifying the trailhead, consistent with the trail signs utilized on the open space trail system shall be provided for informational purposes. Pedestrian trailhead accesses shall be built at the time of construction of the building adjacent to a planned trailhead location. If the trails within the open space have not been constructed by Washoe County at the time of construction, the trail heads shall be built with an earthen trail extended to the Industrial property line. If the trails within the open space exist adjacent to an industrial site at the time of construction, then the developer of the industrial site shall construct the trail head and extend an earthen trail to connect with the open space trail network, in coordination with Washoe County (for the purposes of this specific standard, “adjacent trail” shall mean a trail within 250-feet of the pedestrian trailhead access location).

The Zoning Administrator may allow fewer trailhead access locations if it can be determined that fewer locations are logical based upon the final development plan for the industrial park.

12. Fencing

Fencing may be used for safety and security and shall be used for screening as follows:

- Materials may include masonry, pre-cast stamped concrete panels, wood or chain link with slats consistent with the main color of the building.
- The maximum fence height shall be eight feet. As permitted by RMC 18.12.1401 (c) (2), as amended, barbwire may be used in the industrial portion of the PUD as long as the total fence height does not exceed nine feet.
- Fencing shall be located behind the front building setback line and inside required side and rear landscaped areas where adjacent to the OS zoned property or Red Rock Road.
- Outdoor storage areas shall be screened by solid fencing.
- The Zoning Administrator may grant alternative fencing materials, including open view fencing, with the submittal of a building permit that proposes a mix of fencing and landscape that achieves appropriate screening.

13. Exterior Lighting

Lighting shall ensure adequate levels are achieved with minimal impacts to adjacent properties, especially on the west side of Red Rock Road. Site lighting may include exterior building lights, bollard lighting and light fixtures and standards to illuminate building entrances, parking, loading

and yard areas. Light fixtures and standards shall not exceed 20 feet in height. Shoebox style light fixtures shall be required and directed downward and shielded. Site lighting for each project shall be consistent in color and style and shall be approved by the ARC. All exterior lighting shall utilize dark skies lighting techniques, which shall be verified with each building permit. Each permit containing exterior lighting shall provide a photometric plan showing the entire spill of lighting at ground level in foot candles. Lighting shall not exceed 0.5 foot candles at any perimeter property line of the industrial portion of the PUD.

14. Signage

Signage will include freestanding monument signs, building wall signs and directional signs. Signs shall be consistent for each project. A signage package for each project must be approved by the master developer at their sole discretion.

Industrial Park Identification Signs: One double sided monument sign identifying the Industrial Park will be permitted near the main entrance along Red Rock Road. The sign shall not exceed 120 square feet in size with a maximum height of 10 feet. Materials may include stone, masonry, brick or equivalent. A second park identification monument sign is allowed at the secondary access to the site with a maximum height of 8-feet, not to exceed 100 square feet in size. Please refer to the Land Use Plan on page 4 for approximate park identification signage locations. Lighting shall be indirect from ground mounted light sources and shielded.

Individual Building Signage:

Monument Signs: Each individual building may have one monument sign not to exceed 100 square feet in size and 8-feet in height. Materials may include stone, masonry, brick or equivalent. Lighting shall be indirect and shielded.

Wall Signs: Signs identifying a business may be placed on two sides of the building and may include corporate logos. One square foot of sign area per lineal foot of building façade is permitted with a maximum of 100 square feet per sign. Individual letters (not to exceed 60 inches in height) are preferred. Internal illumination is permitted.

Directional Signs: Maximum 20 sq. ft. on-site directional signs are permitted subject to approval by the master developer.

15. Employee Trip Reduction Program

The Master developer shall coordinate with the Regional Transportation Commission to develop an overall Employee Trip Reduction (ETR) Program for the business/industrial park. The ETR program must be approved to the satisfaction of the Zoning Administrator prior to the issuance of the first building permit (excluding grading).

b. Open Space Design Standards

1. Permitted Uses

Permitted uses in the Open Space portions of the PUD are limited to the following:

- Trail(s)
- Trail head(s)
- Public park or recreation area
- Utility box/well house, back-up generator, pumping, or booster station
- Utility installations, other than listed
- Temporary stockpiling (subject to RMC 18.08.204(d)(8), as amended)

2. Building Setbacks

All buildings shall be setback a minimum of 20-feet from an adjacent property line.

3. Building Height

The maximum building height shall be 20-feet.

4. Parking

Parking requirements shall be in accordance with RMC Article XI: Off-Street Parking and Loading, Chapter 18.12.1101 through 18.12.108, as amended.

5. Signage

One 6-foot tall, 50 sq. ft. monument sign shall be permitted at trail head or public access locations, not to exceed two per parcel. Interpretive and directional signage shall be allowed. All open space signs shall be consistent with parks signs to be installed by Washoe County.

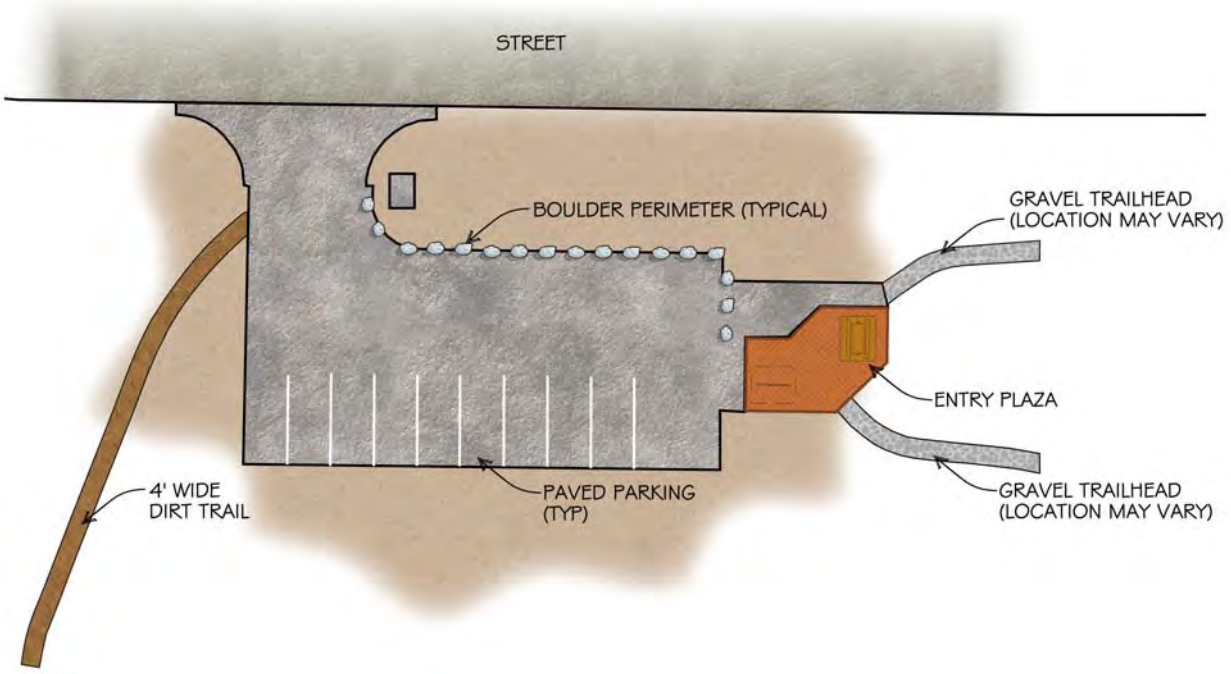
6. Trails

Trails within the open space areas shall be constructed by Washoe County, in conjunction with the Silver Lake trail system. Trails and trail head locations are depicted on the Land Use Plan on page 4 of the PUD. Final locations and alignments will be determined at the time of building permit. The following details shall guide the development of trails and trail heads built by Washoe County.

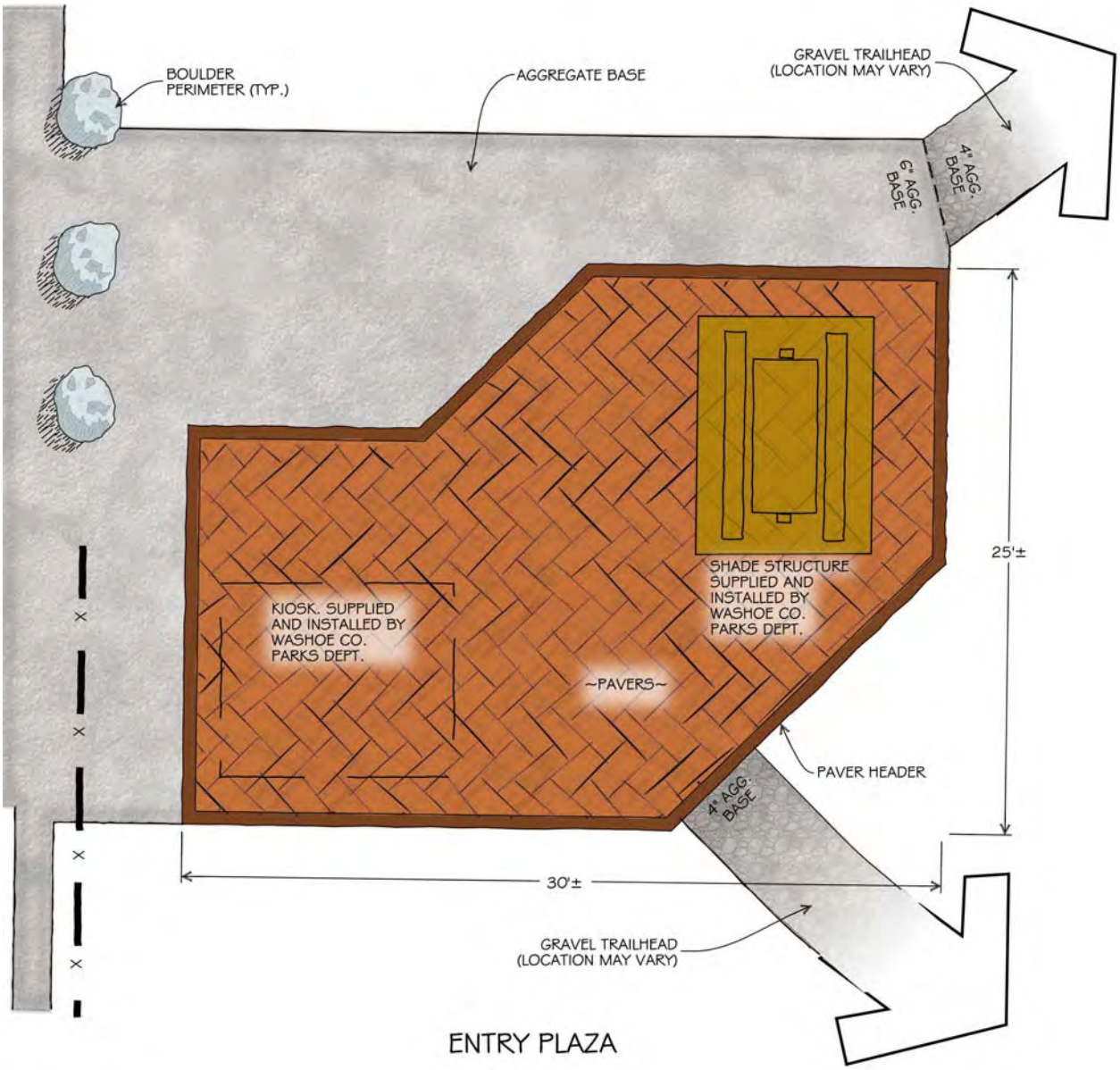
7. Landscaping

Trailhead plazas and parking areas shall be landscaped as follows:

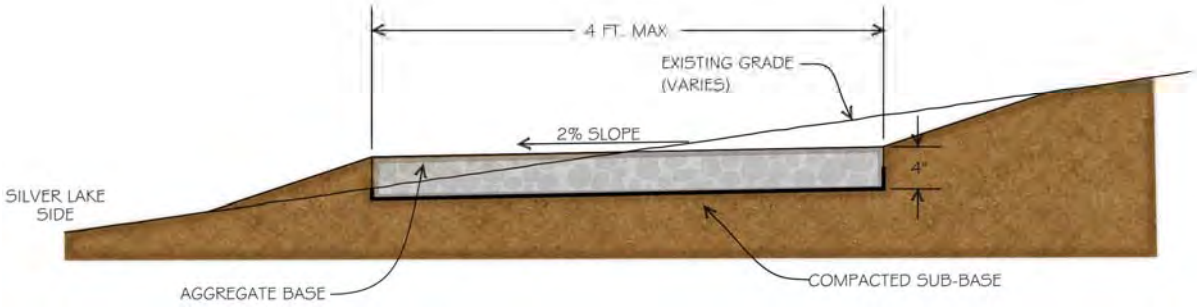
- Disturbed areas shall be revegetated with a native seed mix.
- Deciduous shade trees shall be provided at a rate of 1 tree for every 2,000 s.f. of disturbed area (for the trailhead plaza and parking lot) and native shrub plugs provided at a rate of 6 plugs per tree. Trees shall be a minimum 1” caliper.
- Temporary irrigation shall be used to ensure revegetation and tree/shrub establishment.



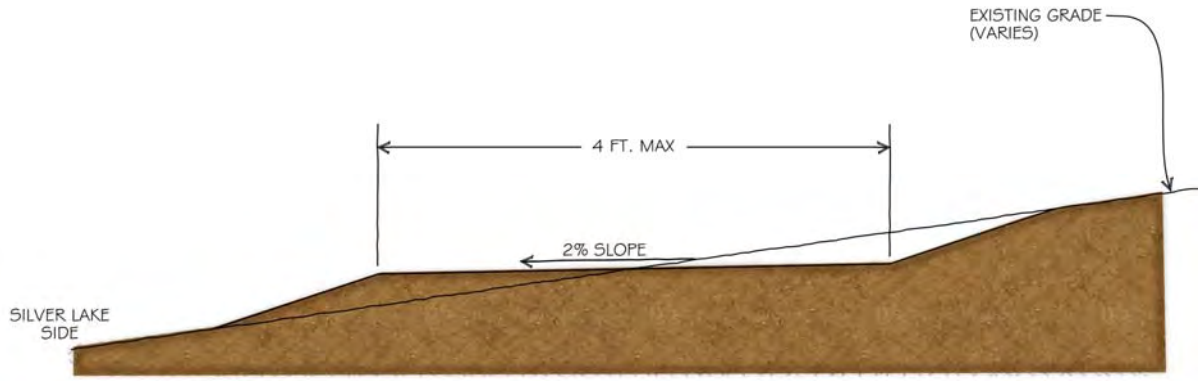
Trail Head and Parking Lot



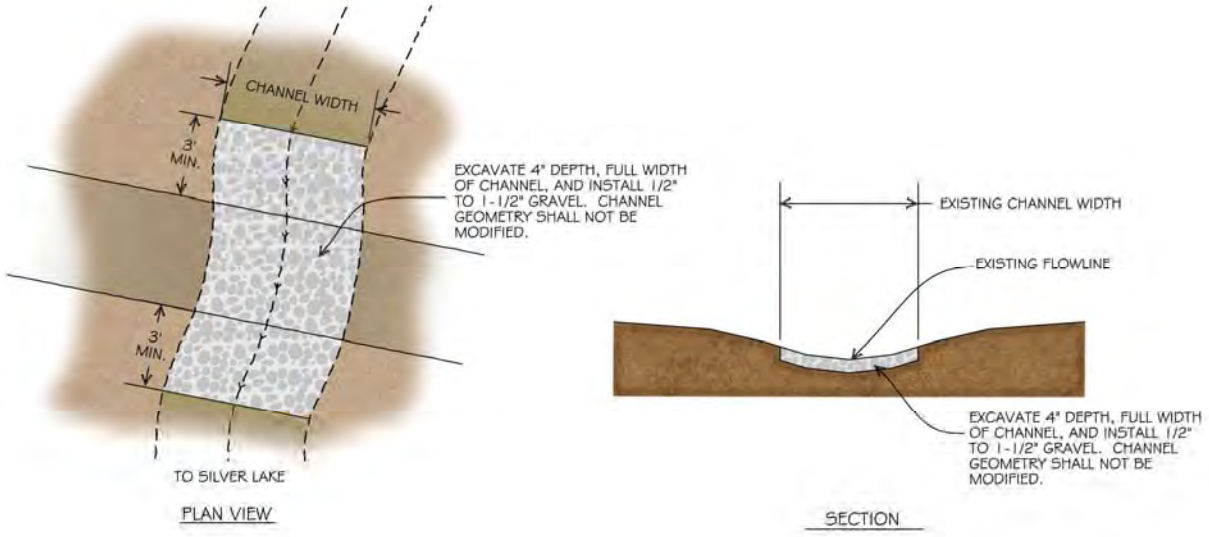
Trail Head and Plaza



Trail with Base Material



Earthen Trail



Earthen Trail Channel Crossing

IV. GRADING AND DRAINAGEWAY TREATMENTS

a. Grading

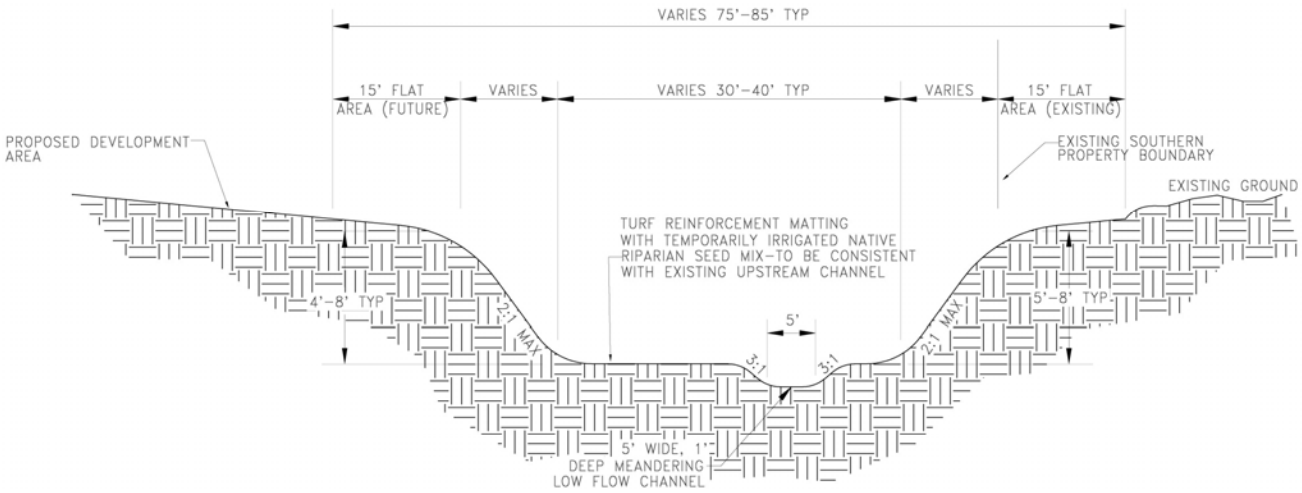
Grading shall be in accordance with City of Reno requirements. It is anticipated that the site can be balanced using "sawtooth" grading techniques with the material to be excavated from the volume replacement area planned for the northeast portion of the site. Slopes along the exterior of the grading areas will be treated per City of Reno standards. Pad grading that is not immediately developed will be treated for dust control and erosion control, in accordance with the current City code.

b. Drainageway Treatments

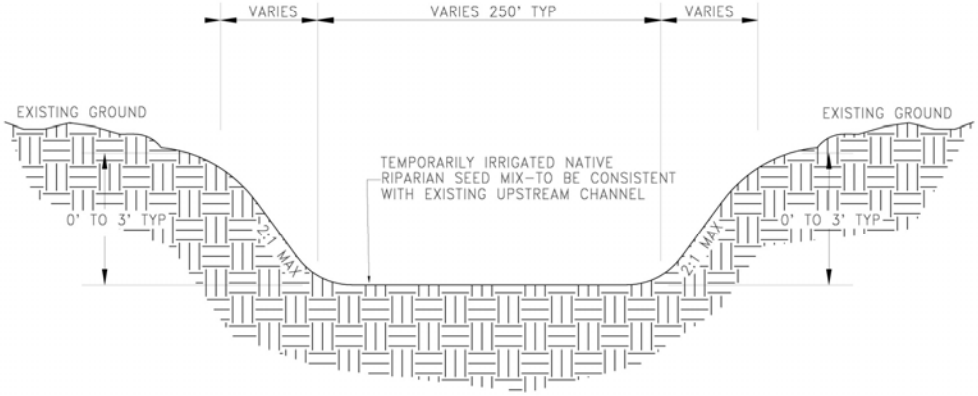
Modifications to the existing major drainage way (drains an area over 100 acres in size), which enters the site from the south, are necessary to convey offsite flows around the Industrial portion of the site to Silver Lake. Additionally, a volume replacement area will be constructed at the terminus of the channel as it enters Silver Lake. This volume area will also act to diffuse flows as they enter the lake. Final plans for the construction of the major drainage way extension shall be provided at the time of the first grading permit for the industrial portion of the PUD. The channel must be constructed prior to the issuance of a certificate of occupancy for the first building or the Administrator may grant phasing of the construction of the major drainage way extension to coincide with the phasing of buildings within the industrial portion of the PUD.

Proposed treatments and requirements for the proposed channel shall be in accordance with Channel Grading Concept and Preliminary Major Drainage Way Plans (Refer to Pages 29 and 30) as follows:

- The proposed drainage way will remain open and shall not be piped. One culvert crossing may be permitted if necessary for access and utility crossing.
- The channel section shall provide for a meandering low flow channel. The low flow channel shall be created using vegetation and lining as needed for erosion control.
- The upstream drainage channel that will be extended through this project is comprised of mostly native plant life. The proposed channel improvements will include a combination (as applicable) of turf reinforcement matting (TRM) lining, seeding with a mix that is consistent with upland and riparian plant life within the area, topsoil covering, and temporary irrigation to assure plant growth and a channel type consistent with the existing upstream channel.
- Maintenance access along the northern edge of the channel shall be provided.
- Channel side slopes shall be varied with a maximum slope of 2:1.
- Fencing along the channel may be provided, if necessary.
- Fifteen feet of flat area shall be provided on the north side of the 100-year flood flow area on the modified portions of the channel.
- All channel improvements shall be bonded or otherwise secured to ensure proper establishment of revegetation in accordance with RMC 18.12.402(3), as amended.

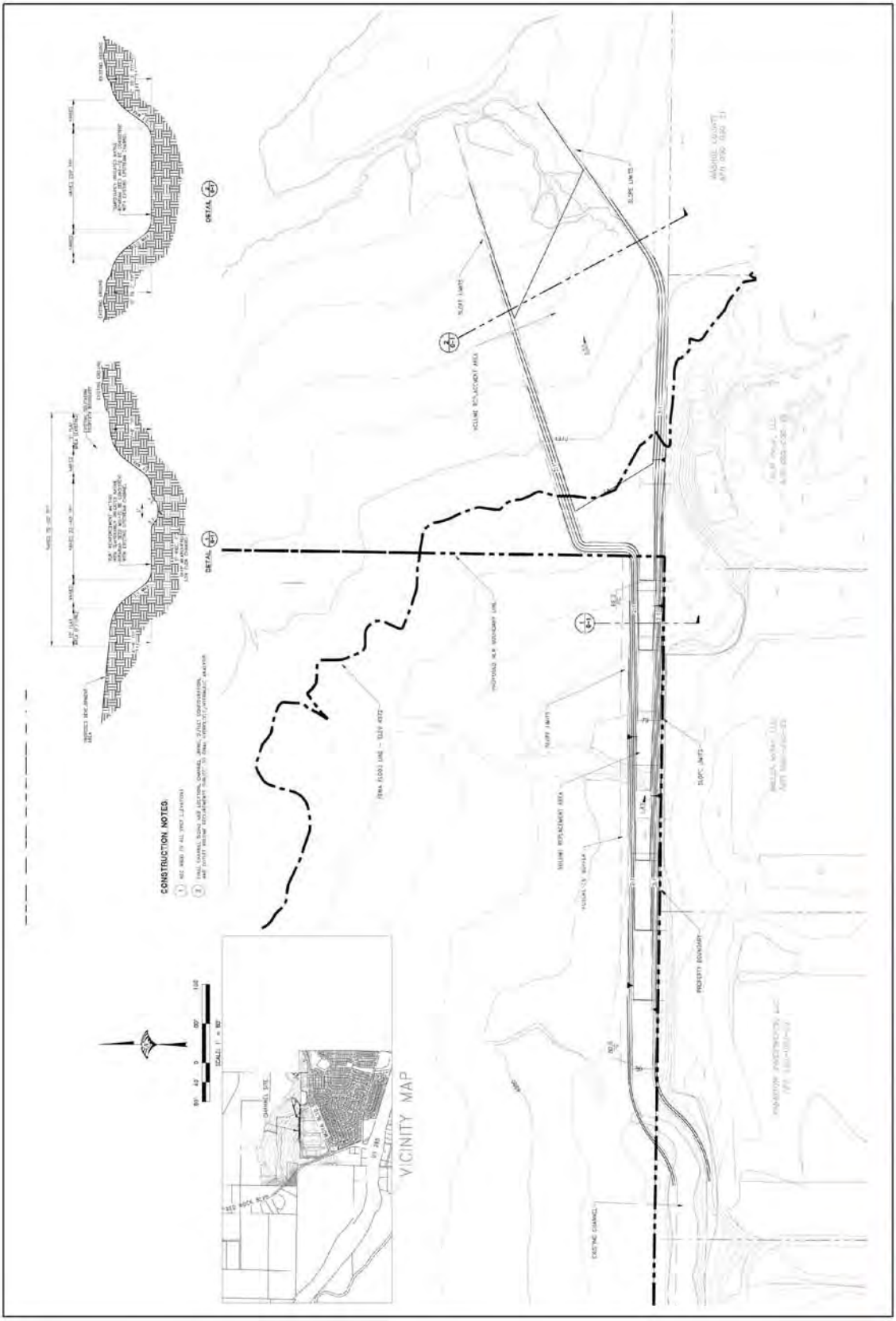


DETAIL 1/G-1



DETAIL 2/G-1

Channel Grading Concept



Preliminary Major Drainageway Plan and Volume Replacement

APPENDIX 1

Council Decision & Certification Letter and Zoning Ordinance

Lynnette R. Jones
City Clerk
(775) 334-20300
JonesL@reno.gov

Beverly Beaty-Benadom
Deputy City Clerk
(775) 334-2030
Beaty-BenadomB@reno.gov

Office of the City Clerk
Central Cashiering (775) 32032
Parking Tickets (775) 334-2293

FILED THIS DATE
3 / 29 / 12
BY: BBB
CITY CLERK

March 29, 2012

Peter Echeverria Family Ltd. Partnership
ATTN: John Echeverria
9432 Double R Boulevard
Reno, NV 89521

RE: Case No. LDC10-00017 (Echeverria Silver Lake PUD) – Zoning Map Amendment
– NOTICE OF FINAL ACTION, DECISION OR ORDER

Dear Applicant:

At a regular meeting held March 28, 2012, the Reno City Council passed and adopted Ordinance No. 6226, approving the zoning map amendment for the above referenced case.

Sincerely,

Beverly Beaty-Benadom for
Lynnette R. Jones
City Clerk

LRJ:bbb

xc: Community Development
Jeff Mann, Parks, Recreation & Community Services
Vern Kloos, Community Development
Andy Durling, Wood Rodgers

Lynnette R. Jones
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(775) 334-20300
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Beverly Beaty-Benadom
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(775) 334-2030
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Office of the City Clerk
Central Cashiering (775) 334-2032
Parking Tickets (775) 334-2293

FILED THIS DATE
3 / 29 / 12
BY: BBB
CITY CLERK

March 29, 2012

Peter Echeverria Family Ltd. Partnership
ATTN: John Echeverria
9432 Double R Boulevard
Reno, NV 89521

RE: Case No. LDC10-00017 (Echeverria Silver Lake PUD) – Certification of PUD Handbook

Dear Applicant:

At a regular meeting held March 28, 2012, the Reno City Council certified the Echeverria Silver Lake Planned Unit Development (PUD) Handbook. The amendment was tentatively approved by the City Council on March 14, 2012.

In order to effectuate the PUD, the Handbook must be recorded at the Washoe County Recorder's Office in accordance with NRS 278A.

Sincerely,

Beverly Beaty-Benadom for
Lynnette R. Jones
City Clerk

LRJ:bbb

xc: Community Development
Jeff Mann, Parks, Recreation & Community Services
Vern Kloos, Community Development
Andy Durling, Wood Rodgers

APPENDIX 2

Legal Description

LEGAL DESCRITPTION
FOR
PLANNED UNIT DEVELOPMENT

All that certain real property situate within a portion of the North One-Half (N 1/2) of Section One (1), Township Twenty (20) North, Range Eighteen (18) East, and the South One-Half (S 1/2) of Section Thirty-Six (36), Township Twenty-One (21) North, Range Eighteen (18) East, Mount Diablo Meridian, City of Reno, Washoe County, Nevada, being a portion of the land described in Deed Document No. 2009134, recorded on July 2, 1996, in the Official Records of Washoe County, Nevada, and being more particularly described as follows:

BEGINNING at the Northwest corner of said Section One (1), being a 2 ½" G.L.O. brass cap set in concrete;
THENCE departing said corner and proceeding along the South line of said Section Thirty-Six (36), North 89°08'12" West a distance of 251.29 feet to the northeasterly right-of-way of Red Rock Road;
THENCE continuing along said northeasterly right-of-way, North 48°52'09" West a distance of 622.87 feet to the beginning of a tangent curve;
THENCE 141.15 feet along the arc of a 960.00 foot radius curve to the right through a central angle of 08°25'27";
THENCE North 40°26'42" West a distance of 260.75 feet to the West line of said Section Thirty-Six (36);
THENCE departing said northeasterly right-of-way and proceeding along the West line of said Section Thirty-Six (36), North 00°57'45" East a distance of 1962.91 feet to the West One-Quarter (W 1/4) corner of said Section, being a 2 ½" G.L.O. brass cap;
THENCE departing said West line and proceeding along the East-West Center of Section line of said Section Thirty-Six (36), South 88°54'02" East a distance of 3966.20 feet to the Center East One-Sixteenth (CE 1/16) corner of said Section, being a 2 ½" G.L.O. brass cap set in concrete;
THENCE proceeding along the East One-Sixteenth line of said Section Thirty-Six (36), South 00°49'38" West a distance of 1321.90 feet to the Southeast One-Sixteenth (SE 1/16) corner of said Section;
THENCE proceeding along South One-Sixteenth line of said Section Thirty-Six (36), South 89°01'12" East a distance of 1320.91 feet to the East line of said section, being the South One-Sixteenth (S 1/16) corner of said Section;
THENCE proceeding along said East line, South 00°49'08" West a distance of 877.70 feet;
THENCE departing said East line, North 89°12'57" West a distance of 240.90 feet;
THENCE South 23°52'47" West a distance of 254.04 feet;
THENCE South 00°47'03" West a distance of 307.57 feet;
THENCE North 89°09'33" West a distance of 3646.02 feet;
THENCE South 00°19'43" West a distance of 873.16 feet to said northeasterly right-of-way;
THENCE continuing along said northeasterly right-of-way, North 22°05'12" West a distance of 662.09 feet to the beginning of a tangent curve;
THENCE 123.89 feet along the arc of a 740.00 foot radius curve to the left through a central angle of 09°35'32";
THENCE departing said northeasterly right-of-way, North 01°02'12" East a distance of 255.53 feet to the **POINT OF BEGINNING**;

Containing 285.63 acres of land, more or less.

LEGAL DESCRITPTION
FOR
PLANNED UNIT DEVELOPMENT

.

BASIS OF BEARINGS:
The Grid Bearing of South 86°59'47" East between Washoe County Continuously Operating Reference Stations (CORS) "RSTEAD" & "SSB2" based on the Nevada State Plane Coordinate System, West Zone, North American Datum of 1983/1994, High Accuracy Reference Network (NAD 83/94-HARN).

Prepared by:
Wood Rodgers, Inc.
5440 Reno Corporate Dr.
Reno, NV 89511

PROFESSIONAL LAND SURVEYOR - STATE OF NEVADA
KEVIN M. ALMETER
Exp: 12/31/12
No. 19052

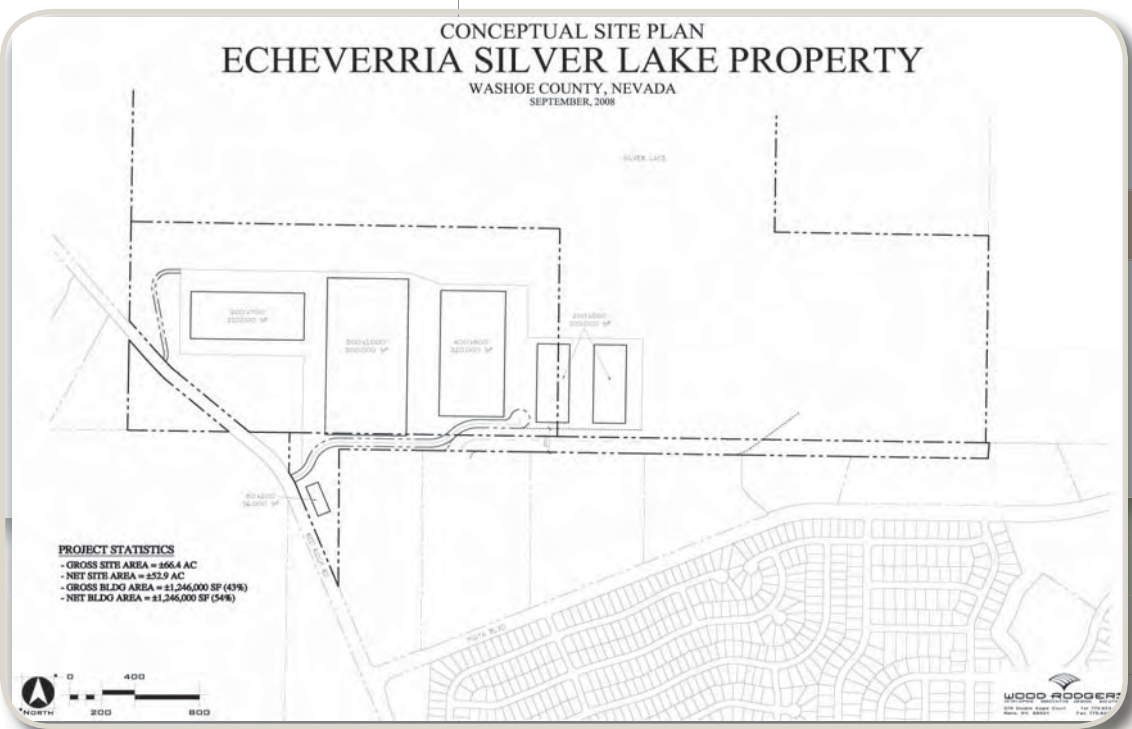
6/24/11

Kevin M. Almeter, P.L.S.
Nevada Certificate No. 19052

APPENDIX 3

Traffic Report

ECHEVERRIA SILVER LAKE PROPERTY
TRAFFIC IMPACT STUDY



Prepared For:

Wood Rodgers
575 Double Eagle Court
Reno, NV 89521

Submitted by:

Fehr & Peers
50 W. Liberty Street, Suite 301
Reno, NV 89501

January 2009

FEHR & PEERS
TRANSPORTATION CONSULTANTS

ECHEVERRIA SILVER LAKE PROPERTY

TRAFFIC IMPACT STUDY

Prepared For:
Wood Rogers
575 Double Eagle Court
Reno, NV 89521

Prepared By:
Fehr & Peers
50 West Liberty Street, Suite 301
Reno, NV 89501
(775) 826-3200

PROFESSIONAL ENGINEER - STATE OF NEVADA
LOREN EDWARD CHILSON
Exp: 12-31-10
CIVIL
No. 15619
1-26-09

January 26, 2009

TABLE OF CONTENTS

Executive Summary ..... **i**
Project Description i
Study Area i
Existing Conditions i
Project Conditions ii
Recommended Improvements ii
2018 Background and plus Project Conditions iii
2030 Background and plus Project Conditions iv
2040 Background and plus Project Conditions iv

1. Introduction **1**
Study Purpose 1
Study Locations and Analysis Scenarios 1
Analysis Methodology 3
Level of Service (LOS) Standards 5

2. Existing Conditions **6**
Current Land Use Zoning 6
Roadway System 6
Transit Service 6
Bicycle and Pedestrian Facilities 6
Existing Traffic Volumes 7
Existing Intersection Operations 8

3. Project Traffic **9**
Project Description 9
Trip Generation 9
Trip Distribution and Assignment 10

4. Existing plus Project Conditions **11**
Existing Plus Project Traffic 11
Existing Plus Project Intersection Operations 11
Recommended Improvements 11

5. 2018 Background and Plus Project Conditions **13**
Roadway Segment Analysis 13

6. 2030 Background and Plus Project Conditions **14**
Roadway Segment Analysis 14

7. 2040 Background and Plus Project Conditions **15**
Roadway Segment Analysis 15

8. Conclusions And Recommendations **16**
Project Trips 16
Project Access Configurations 16
Intersection Operations 16
Recommended Improvements 16
2018, 2030, and 2040 Background and Plus Project Conditions 17

LIST OF FIGURES

Figure 1 – Vicinity Map

Figure 2 – Site Plan

Figure 3 – Existing Volumes and Lane Configuration

Figure 4 – Project Trip Distribution and Assignment

Figure 5 – Existing plus Project Traffic Volumes

LIST OF TABLES

Table 1 – Intersection Level of Service Definitions 3

Table 2 – RTC Average Daily Traffic Roadway Level of Service Thresholds By Facility Type 4

Table 3 – Existing Levels of Service Results 8

Table 4 – Trip Generation Estimates 9

Table 5 – Existing Plus Project Levels of Service Results 11

Table 6 – 2018 Roadway Segment Analysis 13

Table 7 – 2030 Roadway Segment Analysis 14

Table 8 – 2040 Roadway Segment Analysis 15

APPENDICES

APPENDIX A – Existing Traffic Volumes

APPENDIX B – RTC Model Volumes

APPENDIX C – Existing Conditions Intersection Technical Calculations

APPENDIX D – Project Trip Generation Calculations

APPENDIX E – Existing Plus Project Intersection Technical Calculations

APPENDIX F – Peak Hour Signal Warrants

APPENDIX G – Signalized Intersection Mitigation Technical Calculations

APPENDIX H – Roundabout Intersection Mitigation Technical Calculations

EXECUTIVE SUMMARY

This study evaluates the traffic impacts associated with the proposed Echeverria Silver Lake project located in Washoe County, Nevada. Intersection operations were analyzed in the project vicinity for existing and existing plus project conditions. Roadway segment analysis was performed for the 2018, 2030, and 2040 year conditions.

PROJECT DESCRIPTION

The project site is located on the east side of Red Rock Road north of Moya Boulevard (see **Figure 1**). The proposed project consists of 1,246,000 square feet of regional warehousing/industrial buildings as shown on **Figure 2**.

STUDY AREA

The following six intersections were analyzed during the weekday morning (7:00 to 9:00 AM) and evening (4:00 to 6:00 PM) peak periods to determine whether the proposed project will have any significant traffic impacts on the surrounding roadway network.

1. Red Rock Road / US 395 Southbound Ramps
2. Red Rock Road / US 395 Northbound Ramps
3. Red Rock Road / Silver Lake Road
4. Red Rock Road / Moya Boulevard
5. Red Rock Road / Driveway A (South Access)
6. Red Rock Road / Driveway B (North Access)

The following four roadway segments were analyzed based on daily traffic with and without the project through 2040:

1. Red Rock Road – from US 395 SB Ramps to US 395 NB Ramps
2. Red Rock Road – from US 395 NB Ramps to Silver Lake Road
3. Red Rock Road – from Silver Lake Road to Moya Boulevard
4. Red Rock Road – north of Moya Boulevard

EXISTING CONDITIONS

The Red Rock Road/US 395 Northbound ramps intersection and Red Rock Road/Moya Boulevard intersections currently operate at acceptable levels of service (LOS) during the AM and PM peak hours.

The eastbound movement (off-ramp) at the Red Rock Road/US 395 Southbound ramps intersection experiences LOS ‘F’ conditions during the AM and PM peak hours. All other movements operate at acceptable levels of service.

The westbound movement at the Red Rock Road/Silver Lake Road intersection operates at LOS 'F' during the AM and PM peak hours. All other movements operate at acceptable levels of service.

PROJECT CONDITIONS

Project Trip Generation

The Echeverria Silver Lake Project, as proposed, is estimated to generate approximately 6,180 daily, 561 AM peak hour trips (460 inbound, 101 outbound) and 586 PM peak hour trips (146 inbound, 439 outbound).

Intersection Operations

With the addition of project traffic the Red Rock Road/Silver Lake Road and Red Rock Road/US 395 SB Ramps intersections will continue to operate at level of service 'F' during the weekday AM and PM peak periods and be further impacted by the addition of project traffic. All other study intersections will operate at acceptable levels of service.

RECOMMENDED IMPROVEMENTS

The Red Rock Road/Silver Lake Road and Red Rock Road/US 395 SB Ramps intersections will require improvements to operate acceptably with the addition of project generated traffic.

Since these intersections are presently operating with LOS 'F' conditions, the construction of any new development in this area would require mitigation. This finding is consistent with studies performed for other proposed (but not yet built) projects in the immediate vicinity. In this light, the project has some responsibility for mitigation at these intersections but not the full construction cost. The mitigation measures discussed below could be funded through 1) payment of Regional Road Impact Fees (RRIF) or 2) a Capitol Contribution Front Ending Agreement (CCFEA) since Red Rock Road is a regional roadway, or 3) through a cost sharing agreement between local developments and agencies, which can be difficult to negotiate and execute.

We analyzed two potential improvement options for the intersections, roundabouts and traffic signals.

Red Rock Road/Silver Lake Road Intersection

<u>Roundabout</u>

A roundabout (shown in **Appendix H**) with single lane eastbound and westbound approaches, and double lane northbound and southbound approaches is expected to function at LOS 'A' with the addition of project traffic during the AM and PM peak hour periods. A roundabout would provide a safer intersection than a traffic signal and not cause unnecessary off-peak delay.

<u>Traffic Signal</u>

A signal was analyzed as an improvement option at this intersection for "plus project" conditions. The plus project intersection volumes meet the Peak-hour signal warrant. The Red Rock Road/Silver Lake Road intersection is expected to operate at LOS 'A' with existing lane configurations and the addition of a traffic

signal during the AM and PM peak hour periods. Detailed intersection LOS calculation worksheets are provided in **Appendix G.**

Red Rock Road/US 395 Southbound Ramps Intersection

Roundabout

A roundabout (shown in **Appendix H**) with a single lane approaches and departures is theoretically shown to function at LOS B with the addition of project generated traffic during the AM and PM peak hours. However, the calculations do not account for the fact that the southbound left-turn movement will "take over" the roundabout and gaps will not be created for eastbound (off-ramp) traffic. Realistically a roundabout may not improve operations much compared to the existing control.

Traffic Signal

The southbound off-ramp (side street approach) does not have sufficient volume to meet the Peak-hour signal warrant in the "plus project" scenario. We do not recommend signalization of this intersection at this time since 1) it does not meet the signal warrants, 2) the LOS 'F" conditions only exist for two hours per day, 3) a signal would create delay for all movements 24 hours per day, and 4) signalization of this off-ramp would be inconsistent with the other interchanges in this area. The Nevada Department of Transportation (NDOT) has not signalized the Stead Boulevard, Lemmon Valley, or Golden Valley southbound US 395 ramp terminals which all experience the same or worse conditions as the Red Rock Road southbound ramp terminal.

Fortunately, improvements at the Red Rock Road/Silver Lake intersection will create some gaps in southbound traffic having positive affect (reducing delay) at the southbound ramps intersection.

Project Access Configurations

Driveway A (south access) and Driveway B (north access) should both be constructed as full movement intersections with side-street stop-control. The south access should be constructed as a typical street approach and the north access could be constructed with a commercial driveway approach based on the projected volumes. The availability of two access points to the site will better disperse traffic onto Red Rock Road than a single approach.

2018 BACKGROUND AND PLUS PROJECT CONDITIONS

The 2018 roadway segment analysis was based on the projected growth in the Regional Transportation Commission (RTC) travel demand model between years 2008 and 2018. The roadway segment north of Moya Boulevard, to the south project access, will not operate at acceptable levels of service with the addition of project generated trips. All other studied roadway segments (see **Table 6**) will operate at level of service C or better with or without the project.

The 2040 RTP shows a widening of Red Rock Road from 2 to 4 lanes between Moya Blvd and the Evans Ranch access before the year 2030. This planned improvement would alleviate the unacceptable LOS conditions when constructed. If Red Rock Road has not been widened by Evans Ranch or the RTC by the time the Echeverria project increases traffic volumes to LOS 'E' levels (policy LOS) we recommend this project construct the additional two travel lanes from Moya Boulevard to the south project access under a CCFEA agreement.

2030 BACKGROUND AND PLUS PROJECT CONDITIONS

Year 2030 volumes were based on the RTC travel demand model. **Table 7** displays the 2030 background and 2030 plus project daily traffic volumes and level of service for both scenarios. The level of service analysis assumes that all 2008-2030 planned improvements, as identified in the *2040 Regional Transportation Plan* and listed in the "RTC Planned Improvements" section, are constructed.

The RTC modeled 2030 conditions assume the following roadway network improvements:

Segment	Limits	Nominal Improvements
Red Rock Road	Evans Ranch Access to Moya Boulevard	Widen from 2 to 4 lanes

With this improvement the roadway segment north of Moya Boulevard will operate at acceptable levels of service in the year 2030 with or with out the project. All other 2030 studied roadway segments will also operate at acceptable levels of service.

2040 BACKGROUND AND PLUS PROJECT CONDITIONS

The 2040 roadway segment analysis was based on the projected growth in the Regional Transportation Commission (RTC) travel demand model between years 2008 and 2040. All studied roadway segments will operate at acceptable levels of service with or without the project (see **Table 6**).

1. INTRODUCTION

STUDY PURPOSE

This study evaluates the potential impacts to local roadways and intersections resulting from construction of the Echeverria Silver Lake Project. The study of anticipated traffic impacts was undertaken for planning purposes and to assist in determining what traffic controls or mitigation may be needed to reduce potential impacts.

The project site is located on the east side of Red Rock Road north of Moya Boulevard (see **Figure 1**). The proposed project consists of 1,246,000 square feet of warehousing/industrial development as shown on **Figure 2**. Two access points are proposed for the development on Red Rock Road; Driveway A the south access and Driveway B the north access.

STUDY LOCATIONS AND ANALYSIS SCENARIOS

Intersections

The following six intersections were identified for this study because they reflect the primary routes providing local access to the project site (i.e. Red Rock Road) and the major regional transportation corridor (US 395). The locations of these intersections are presented on **Figure 1**.

1. Red Rock Road / US 395 Southbound Ramps
2. Red Rock Road / US 395 Northbound Ramps
3. Red Rock Road / Silver Lake Road
4. Red Rock Road / Moya Boulevard
5. Red Rock Road / Driveway A (South Access)
6. Red Rock Road / Driveway B (North Access)

Roadway Segments

The following four roadway segments were analyzed based on daily traffic with and without the project through 2040:

1. Red Rock Road – from US 395 SB Ramps to US 395 NB Ramps
2. Red Rock Road – from US 395 NB Ramps to Silver Lake Road
3. Red Rock Road – from Silver Lake Road to Moya Boulevard
4. Red Rock Road – north of Moya Boulevard

Scenarios

For this analysis, the following scenarios were evaluated:

- ***Existing Conditions*** – Existing volumes obtained from our traffic counts, representing the peak hour during the AM and PM commute periods.
- ***Existing Plus Project Conditions*** – Existing conditions plus traffic associated with the Echeverria Silver Lake Project.
- ***2018 Background and 2018 Plus Project Roadway Segment Conditions*** – The 2018 conditions are based on the projected growth in the Regional Transportation Commission (RTC) travel demand model between years 2008 and 2018. The specified roadway segments were analyzed with and without project generated trips.
- ***2030 Background and 2030 Plus Project Roadway Segment Conditions*** – The 2030 conditions are based on the projected growth in the Regional Transportation Commission (RTC) travel demand model between years 2008 and 2030. The specified roadway segments were analyzed with and without project generated trips.
- ***2040 Background and 2040 Plus Project Roadway Segment Conditions*** – The 2040 conditions are based on the projected growth in the Regional Transportation Commission (RTC) travel demand model between years 2008 and 2040. The specified roadway segments were analyzed with and without project generated trips.

ANALYSIS METHODOLOGY

Transportation engineers and planners commonly use the term level of service (LOS) to measure and describe the operational status of the local roadway network. An intersection or roadway segment's level of service can range from LOS A (indicating free-flow traffic conditions with little or no delay), to LOS F (representing oversaturated conditions where traffic flows exceed design capacity, resulting in long queues and delays). The analysis methods presented in the Transportation Research Board's 2000 Highway Capacity Manual (HCM) were used to calculate LOS for signalized and unsignalized intersections.

Signalized Intersections

We analyzed signalized intersections using the methodology contained in Highway Capacity Manual (HCM) 2000 (Transportation Research Board, 2000). This methodology determines the level of service by comparing the average control delay for all vehicles approaching the intersection to the delay thresholds shown in **Table 1**.

TABLE 1
INTERSECTION LEVEL OF SERVICE DEFINITIONS

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

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

Unsignalized Intersections

Unsignalized (side-street stop-controlled) intersection level of service calculations were conducted using the method in Chapter 17 of the 2000 Highway Capacity Manual. The LOS rating is based on the average control delay expressed in seconds per vehicle. At side-street stop-controlled intersections, the control delay (and LOS) is calculated for each controlled movement, the left-turn movement from the

major street, and for the entire intersection. For controlled approaches composed of a single lane, the control delay is computed as the average of all movements in that lane. **Table 1** presents the thresholds for unsignalized intersections.

Table 2 presents the Level of Service thresholds for roadway segments as established in the 2040 RTP.

TABLE 2
RTC AVERAGE DAILY TRAFFIC ROADWAY LEVEL OF SERVICE THRESHOLDS BY FACILITY TYPE

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

1 Contact the RTC Planning Department for LOS threshold for collector facilities with access controls other than ultra-low access control.

Source: *Washoe County 2040 Regional Transportation Plan, RTC,* Draft

LEVEL OF SERVICE (LOS) STANDARDS

The *Washoe County 2040 Regional Transportation Plan* establishes level of service standards for regional roadways and intersections as follows:

- All regional roadway facilities projected to carry less than 27,000 ADT at the latest RTP horizon – LOS D or better.
- All regional roadway facilities projected to carry 27,000 or more ADT at the latest RTP horizon – LOS E or better
- All intersections should be designed to provide a level of service consistent with maintaining the policy level of the intersecting roadways.

A project would therefore impact traffic operations if it degraded conditions on roadway segments or at the studied intersections from acceptable levels of service to unacceptable levels or further degraded segments or intersections already operating at unacceptable levels. For this analysis LOS E was used as the peak hour operations criteria for all of the studied intersections since Red Rock Road is projected to carry more than 27,000 ADT in the project vicinity by 2040.

2. EXISTING CONDITIONS

This chapter describes the transportation characteristics of the project study area including current land use zoning, area roadways, existing traffic volumes, and existing bicycle, pedestrian and transit facilities.

CURRENT LAND USE ZONING

Vehicle trips were calculated for the current zoning of the project site using average trips rates in *Trip Generation* (Institute of Transportation Engineers (ITE), Seventh Edition, 2003). The project site is currently zoned as General Rural which allows for one Dwelling Unit per 40 acres of land; therefore, the current zoning allows for 6 homes which would result in approximately 57 daily trips.

ROADWAY SYSTEM

A brief description of the key roadways in the study area is provided below.

US 395 is a four- to eight-lane freeway running generally in a north-south direction located south of the project site. US 395 extends through Nevada into California to the north and south. In the project study area US 395 is a four-lane freeway with a posted speed limit of 65 miles per hour (mph).

Moya Boulevard is a two-lane roadway that extends from Red Rock Road to Echo Avenue. Moya Blvd is designated a minor arterial in the City of Reno *Master Plan* and as a "low access control arterial" in the 2040 RTP. The posted speed limit is 35 mph east of Red Rock Road.

Red Rock Road is a two-lane north/south roadway west of the project site, with a four-lane section south of Moya Boulevard and north or the US 395 northbound ramps. Red Rock Road north of US 395 has a functional classification of minor arterial in the City of Reno *Master Plan* and as a rural highway with moderate access control in the 2040 RTP. Red Rock Road has a posted speed limit of 40 mph adjacent to the project site.

Silver Lake Road is a two-lane east/west street running parallel to US 395 south of the project site. Silver Lake Road extends from Red Rock Road at the west to the North Valleys Regional Sports Complex at the east. Silver Lake Road between Red Rock Road and Sky Vista Parkway has a functional classification of minor arterial in the City of Reno *Master Plan* and as a "low access control collector" in the 2040 RTP. To the east of Red Rock Road, Silver Lake Road has a posted speed limit of 35 mph.

TRANSIT SERVICE

The Regional Transportation Commission (RTC) of Washoe County operates the RTC/RIDE transit service in the Reno/Sparks metropolitan area. There are currently no routes providing bus service near the project vicinity.

BICYCLE AND PEDESTRIAN FACILITIES

Sidewalks are provided on Silver Lake Road, and portions of Moya Boulevard and Red Rock Road south of the project area. There are no sidewalks or bike lanes adjacent to the project site as Red Rock Road has a rural roadway cross section north of Moya Blvd.

EXISTING TRAFFIC VOLUMES

Intersection turning movement counts were collected in May 2007 during the AM peak period (7:00 AM to 9:00 PM) and the PM peak period (4:00 PM to 6:00 PM). Volumes in this area have not changed significantly since 2007 as there has been little to no development in the last year around Silver Lake. The existing traffic volumes and lane configurations for the existing studied intersections are displayed on **Figure 3**. Existing traffic volume data is provided in **Appendix A**.

EXISTING INTERSECTION OPERATIONS

Existing intersection operations were evaluated for the weekday AM and PM peak hours at the study intersections using the lane configurations, traffic control, and volumes shown on **Figure 3**. **Table 3** summarizes the intersection analysis results.

For unsignalized intersections the overall intersection operations are presented, as well as the highest delay values of the "controlled" movements. The "controlled" movements are the movements on the minor approach with the stop signs or the left-turn movement from the major street approach.

The Red Rock Road/US 395 Northbound ramps intersection and Red Rock Road/Moya Boulevard intersections currently operate at acceptable levels of service (LOS) during the AM and PM peak hours.

The eastbound movement (off-ramp) at the Red Rock Road/US 395 Southbound ramps intersection experiences LOS 'F' conditions during the AM and PM peak hours. All other movements operate at acceptable levels of service.

The westbound movement at the Red Rock Road/Silver Lake Road intersection operates at LOS 'F' during the AM and PM peak hours. All other movements operate at acceptable levels of service.

TABLE 3
EXISTING LEVELS OF SERVICE RESULTS

Intersection	Control [1]	Peak Hour	Existing	
			Delay [2]	LOS
Red Rock Road / Moya Boulevard	SSSC	AM PM	6 (WBL – 11) 4 (WBL – 13)	A (B) A (B)
Red Rock Road / Silver Lake Road	SSSC	AM PM	28 (WBL >50) 7 (WBL >50)	D (F) A (F)
Red Rock Road / US 395 Northbound Ramps	SSSC	AM PM	2 (WB – 11) 11 (WB – 21)	A (B) B (C)
Red Rock Road / US 395 Southbound Ramps	SSSC	AM PM	>50 (EB >50) 28 (EB >50)	F (F) D (F)
Red Rock Road / North Access	N/A	N/A	N/A	N/A
Red Rock Road / South Access	N/A	N/A	N/A	N/A

Note:
1. SSSC = Side-street stop-controlled
2. 3 (EB – 5) = overall intersection delay (worst movement or approach – worst movement or approach delay)

Source: Fehr & Peers, June 2007.

3. PROJECT TRAFFIC

This chapter provides an overview of the proposed project and describes the methods used to estimate project traffic. The project traffic estimates are used to evaluate potential impacts on the surrounding roadway network.

PROJECT DESCRIPTION

The project site is located on the east side of Red Rock Road north of Moya Boulevard (see **Figure 1**). The proposed project consists of 1,246,000 square feet of regional warehousing/industrial development as shown on **Figure 2**. There are two access points proposed for the development from Red Rock Road, Driveway A (south access) and Driveway B (north access).

TRIP GENERATION

Peak hour trip generation estimates were developed using standard trip generation rate data published in the Institute of Transportation Engineers' (ITE) 2003 *Trip Generation* (7th Edition) for warehousing (Land Use code 150). The trip generation rates and AM and PM peak hour inbound/outbound splits are presented in **Table 4**.

TABLE 4
TRIP GENERATION ESTIMATES

Land Use	Size	Daily	AM Peak Hour			PM Peak Hour		
			In	Out	Total	In	Out	Total
Warehousing	1,246 ksf	6,180	460	101	561	146	439	586

Note:
Daily Rate: ITE = 4.96
AM Rate: ITE = 0.45, (inbound = 82%, outbound = 18%)
PM rate: ITE = 0.47, (inbound = 25%, outbound = 75%)

Source: *Trip Generation* (7th Edition) (Institute of Transportation Engineers, 2003); Fehr & Peers, 2008.

The proposed project is estimated to generate approximately 6,180 daily trips, 561 AM peak hour trips (460 inbound, 101 outbound) and 586 PM peak hour trips (146 inbound, 439 outbound).

TRIP DISTRIBUTION AND ASSIGNMENT

The trip distribution for the project was determined based on the location of the development in relation to complementary land uses (residential), existing counts, and regional travel patterns. The following trip distribution percentages were used for the plus Project analyses:

- 80 percent to/from the south on US 395
- 15 percent to/from the north on US 395
- 5 percent to/from the east on Moya Boulevard

Figure 4 presents the trip distribution and assignment for the development.

PROJECT ACCESS

Driveway A (south access) and Driveway B (north access) should both be constructed as full movement intersections with side-street stop-control. The south access should be constructed as a typical street approach and the north access could be constructed with a commercial driveway approach based on the projected volumes. The availability of two access points to the site will better disperse traffic onto Red Rock Road than a single approach.

4. EXISTING PLUS PROJECT CONDITIONS

EXISTING PLUS PROJECT TRAFFIC

The project trips shown on **Figure 4** were added to the existing intersection peak-hour volumes illustrated on **Figure 3** to obtain peak-hour volumes for Existing Plus Project conditions. The resulting traffic volumes are shown on **Figure 5**.

EXISTING PLUS PROJECT INTERSECTION OPERATIONS

With the addition of project traffic the Red Rock Road/Silver Lake Road and Red Rock Road/US 395 SB Ramps intersections will continue to operate at LOS 'F' conditions during the weekday AM and PM peak periods. All other intersections are anticipated to operate at acceptable levels of service. The Existing Plus Project intersection analysis results are provided in **Table 5**.

TABLE 5
EXISTING PLUS PROJECT LEVELS OF SERVICE RESULTS

Intersection	Control [1]	Peak Hour	Existing		Existing Plus Project	
			Delay [2]	LOS	Delay [2]	LOS
1. Red Rock Road / Moya Boulevard	SSSC	AM PM	6 (WBL – 11) 4 (WBL – 13)	A (B) A (B)	9 (WBL– 29) 5 (WBL – 17)	A (D) A (C)
2. Red Rock Road / Silver Lake Road	SSSC	AM PM	28 (WBL >50) 7 (WBL >50)	D (F) A (F)	>50(WBL >50) 22 (WBL >50)	F (F) C (F)
3. Red Rock Road / US 395 Northbound Ramps	SSSC	AM PM	2 (WB – 11) 11 (WB – 21)	A (B) B (C)	7 (WB – 20) 19 (WB – 48)	A (C) C (E)
4. Red Rock Road / US 395 Southbound Ramps	SSSC	AM PM	>50 (EB >50) 28 (EB >50)	F (F) D (F)	>50 (EB >50) >50 (EB >50)	F (F) F (F)
5. Red Rock Road / Driveway A	SSSC	AM PM	N/A	N/A	1 (WBL - 13) 12 (WBL - 34)	A (B) B (D)
6. Red Rock Road / Driveway B	SSSC	AM PM	N/A	N/A	1 (WBL - 11) 2 (WBL - 12)	A (B) A (B)

Note:
1. SSSC = Side-street stop-controlled
2. 3 (EB – 5) = overall intersection delay (worst movement or approach – worst movement or approach delay)

Source: Fehr & Peers, June 2007.

RECOMMENDED IMPROVEMENTS

The Red Rock Road/Silver Lake Road and Red Rock Road/US 395 SB Ramps intersections will require improvements to operate acceptably with the addition of project generated traffic.

Since these intersections are presently operating with LOS 'F' conditions, the construction of any new development in this area would require mitigation. This finding is consistent with studies performed for

other proposed (but not yet built) projects in the immediate vicinity. In this light, the project has some responsibility for mitigation at these intersections but not the full construction cost. The mitigation measures discussed below could be funded through 1) payment of Regional Road Impact Fees (RRIF) or 2) a Capitol Contribution Front Ending Agreement (CCFEA) since Red Rock Road is a regional roadway, or 3) through a cost sharing agreement between local developments and agencies, which can be difficult to negotiate and execute.

We analyzed two potential improvement options for the intersections, roundabouts and traffic signals.

Red Rock Road/Silver Lake Road Intersection

Roundabout

A roundabout (shown in **Appendix H**) with single lane eastbound and westbound approaches, and double lane northbound and southbound approaches is expected to function at LOS 'A' with the addition of project traffic during the AM and PM peak hour periods. A roundabout would provide a safer intersection than a traffic signal and not cause unnecessary off-peak delay.

Traffic Signal

A signal was analyzed as an improvement option at this intersection for "plus project" conditions. The plus project intersection volumes meet the Peak-hour signal warrant. The Red Rock Road/Silver Lake Road intersection is expected to operate at LOS 'A' with existing lane configurations and the addition of a traffic signal during the AM and PM peak hour periods. Detailed intersection LOS calculation worksheets are provided in **Appendix G.**

Red Rock Road/US 395 Southbound Ramps Intersection

Roundabout

A roundabout (shown in **Appendix H**) with a single lane approaches and departures is theoretically shown to function at LOS 'B' with the addition of project generated traffic during the AM and PM peak hours. However, the calculations do not account for the fact that the southbound left-turn movement will "take over" the roundabout and gaps will not be created for eastbound (off-ramp) traffic. Realistically a roundabout may not improve operations much compared to the existing control.

Traffic Signal

The southbound off-ramp (side street approach) does not have sufficient volume to meet the Peak-hour signal warrant in the "plus project" scenario. We do not recommend signalization of this intersection at this time since 1) it does not meet the signal warrants, 2) the LOS 'F" conditions only exist for about two hours per day, 3) a signal would create delay for all movements 24 hours per day, and 4) signalization of this off-ramp would be inconsistent with the other interchanges in this area. The Nevada Department of Transportation (NDOT) has not signalized the Stead Boulevard, Lemmon Valley, or Golden Valley southbound US 395 ramp terminals which all experience the same or worse conditions as the Red Rock Road southbound ramp terminal.

Fortunately, improvements at the Red Rock Road/Silver Lake intersection will create some gaps in southbound traffic having positive affect (reducing delay) at the southbound ramps intersection.

5. 2018 BACKGROUND AND PLUS PROJECT CONDITIONS

This chapter evaluates the studied roadway segments under 2018 background and 2018 background plus project conditions.

ROADWAY SEGMENT ANALYSIS

The roadway segment analysis was based on the projected growth in the Regional Transportation Commission (RTC) travel demand model between years 2008 and 2018. The roadway segment north of Moya Boulevard, to the south project access, will not operate at acceptable levels of service with the addition of project generated trips. All other studied roadway segments will operate at level of service C or better with or without the project. **Table 6** displays the 2018 background and 2018 plus project daily traffic volumes and level of service for both scenarios.

TABLE 6
2018 ROADWAY SEGMENT ANALYSIS

Class	Segment	# of Lanes	w/o Project	LOS	Plus Project	LOS
MAC	Red Rock Road– US 395 SB Ramps to US 395 NB Ramps	2	9,800	C	12,735	C
MAC	Red Rock Road– US 395 NB Ramps to Silver Lake Rd	4	19,300	C	25,171	C
MAC	Red Rock Road– Silver Lake Rd to Moya Blvd	4	13,800	C	19,671	C
MAC	Red Rock Road– North of Moya Blvd	2	12,800	C	18,980	F

The 2040 RTP shows a widening of Red Rock Road from 2 to 4 lanes between Moya Blvd and the Evans Ranch access before the year 2030. This planned improvement would alleviate the unacceptable LOS conditions when constructed. If Red Rock Road has not been widened by Evans Ranch or the RTC by the time the Echeverria project increases traffic volumes to LOS 'E' levels (policy LOS) we recommend this project construct the additional two travel lanes from Moya Boulevard to the south project access under a CCFEA agreement.

6. 2030 BACKGROUND AND PLUS PROJECT CONDITIONS

This chapter evaluates the studied roadways under 2030 background and 2030 background plus project conditions.

ROADWAY SEGMENT ANALYSIS

Year 2030 volumes were based on the RTC travel demand model. **Table 7** displays the 2030 background and 2030 plus project daily traffic volumes and level of service for both scenarios. The level of service analysis assumes that all 2008-2030 planned improvements, as identified in the *2040 Regional Transportation Plan* and listed in the "RTC Planned Improvements" section, are constructed.

The RTC modeled 2030 conditions assume the following roadway network improvements:

Segment	Limits	Nominal Improvements
Red Rock Road	Evans Ranch Access to Moya Blvd.	Widen from 2 to 4 lanes

With this improvement the roadway segment north of Moya Boulevard will operate at acceptable levels of service in the year 2030 with or with out the project. All other 2030 studied roadway segments will operate at acceptable levels of service.

TABLE 7
2030 ROADWAY SEGMENT ANALYSIS

Class	Segment	# of Lanes	w/o Project	LOS	Plus Project	LOS
MAC	Red Rock Road– US 395 SB Ramps to US 395 NB Ramps	2	13,300	C	16,235	D
MAC	Red Rock Road– US 395 NB Ramps to Silver Lake Rd	4	26,700	C	32,571	D
MAC	Red Rock Road– Silver Lake Rd to Moya Blvd	4	21,900	C	27,771	C
MAC	Red Rock Road– North of Moya Blvd	4	23,200	C	29,380	C

7. 2040 BACKGROUND AND PLUS PROJECT CONDITIONS

This chapter evaluates the studied roadways under 2040 background and 2040 background plus project conditions.

ROADWAY SEGMENT ANALYSIS

Year 2040 volumes were based on the RTC travel demand model. **Table 8** displays the 2040 background and 2040 plus project daily traffic volumes and level of service for both scenarios. The level of service analysis assumes that all 2008-2040 planned improvements, as identified in the *2040 Regional Transportation Plan* and listed in the "RTC Planned Improvements" section, are constructed.

The RTC modeled 2040 conditions assume the following roadway network improvement:

Segment	Limits	Nominal Improvements
Red Rock Road	Evans Ranch Access to Moya Blvd.	Widen from 2 to 4 lanes

TABLE 8
2040 ROADWAY SEGMENT ANALYSIS

Class	Segment	# of Lanes	w/o Project	LOS	Plus Project	LOS
MAC	Red Rock Road– US 395 SB Ramps to US 395 NB Ramps	2	13,600	C	16,535	D
MAC	Red Rock Road– US 395 NB Ramps to Silver Lake Rd	4	27,600	C	33,471	D
MAC	Red Rock Road– Silver Lake Rd to Moya Blvd	4	22,100	C	27,971	C
MAC	Red Rock Road– North of Moya Blvd	4	23,100	C	29,280	C

All studied segments are shown to operate at acceptable LOS with or without the project through 2040.

8. CONCLUSIONS AND RECOMMENDATIONS

PROJECT TRIPS

The proposed 1,246,000 square foot warehousing/industrial development project is estimated to generate approximately 6,180 daily trips, 561 AM peak hour trips (460 inbound, 101 outbound) and 586 PM peak hour trips (146 inbound, 439 outbound).

PROJECT ACCESS CONFIGURATIONS

Driveway A (south access) and Driveway B (north access) should both be constructed as full movement intersections with side-street stop-control. The south access should be constructed as a typical street approach and the north access could be constructed with a commercial driveway approach based on the projected volumes. The availability of two access points to the site will better disperse traffic onto Red Rock Road than a single approach.

INTERSECTION OPERATIONS

The Red Rock Road/Silver Lake Road and Red Rock Road/US 395 SB Ramps intersections are currently operating with LOS 'F" conditions and will require improvements to operate acceptably with the addition of project generated traffic. All other study intersections will operate at acceptable levels of service with the project. We analyzed two potential improvement options for the impacted intersections, roundabouts and traffic signals.

RECOMMENDED IMPROVEMENTS

Since these intersections are presently operating with LOS 'F' conditions, the construction of any new development in this area would require mitigation. This finding is consistent with studies performed for other proposed (but not yet built) projects in the immediate vicinity. In this light, the project has some responsibility for mitigation at these intersections but not the full construction cost. The mitigation measures discussed below could be funded through 1) payment of Regional Road Impact Fees (RRIF) or 2) a Capitol Contribution Front Ending Agreement (CCFEA) since Red Rock Road is a regional roadway, or 3) through a cost sharing agreement between local developments and agencies, which can be difficult to negotiate and execute.

Red Rock Road/Silver Lake Road Intersection

Roundabout

A roundabout (shown in **Appendix H**) with single lane eastbound and westbound approaches, and double lane northbound and southbound approaches is expected to function at LOS 'A' with the addition of project traffic during the AM and PM peak hour periods. A roundabout would provide a safer intersection than a traffic signal and not cause unnecessary off-peak delay. We recommend a two-lane roundabout as the preferred alternative at this location.

Traffic Signal

A signal was analyzed as an improvement option at this intersection for "plus project" conditions. The plus project intersection volumes meet the Peak-hour signal warrant. The Red Rock Road/Silver Lake Road intersection is expected to operate at LOS 'A' with existing lane configurations and the addition of a

traffic signal during the AM and PM peak hour periods. Detailed intersection LOS calculation worksheets are provided in **Appendix G.**

Red Rock Road/US 395 Southbound Ramps Intersection

Roundabout

A roundabout (shown in **Appendix H**) with a single lane approaches and departures is theoretically shown to function at LOS B with the addition of project generated traffic during the AM and PM peak hours. However, the calculations do not account for the fact that the southbound left-turn movement will "take over" the roundabout and gaps will not be created for eastbound (off-ramp) traffic. Realistically a roundabout may not improve operations much compared to the existing control.

Traffic Signal

The southbound off-ramp (side street approach) does not have sufficient volume to meet the Peak-hour signal warrant in the "plus project" scenario. We do not recommend signalization of this intersection at this time since 1) it does not meet the signal warrants, 2) the LOS 'F" conditions only exist for two hours per day, 3) a signal would create delay for all movements 24 hours per day, and 4) signalization of this off-ramp would be inconsistent with the other interchanges in this area. The Nevada Department of Transportation (NDOT) has not signalized the Stead Boulevard, Lemmon Valley, or Golden Valley southbound US 395 ramp terminals which all experience the same or worse conditions as the Red Rock Road southbound ramp terminal.

Fortunately, improvements at the Red Rock Road/Silver Lake intersection will create some gaps in southbound traffic having positive affect (reducing delay) at the southbound ramps intersection.

2018, 2030, AND 2040 BACKGROUND AND PLUS PROJECT CONDITIONS

The segment of Red Rock Road between Moya Boulevard and the south project access will reach unacceptable levels of service by 2018 with the addition of project generated trips. All other studied roadway segments will operate at level of service C or better, with or without the project, through 2018. The 2040 RTP shows a widening of Red Rock Road from 2 to 4 lanes between Moya Blvd and the Evans Ranch access before the year 2030. This planned improvement would alleviate the unacceptable LOS conditions when constructed. If Red Rock Road has not been widened by Evans Ranch or the RTC by the time the Echeverria project increases traffic volumes to LOS 'E' levels (policy LOS) we recommend this project construct the additional two travel lanes from Moya Boulevard to the south project access under a CCFEA agreement.

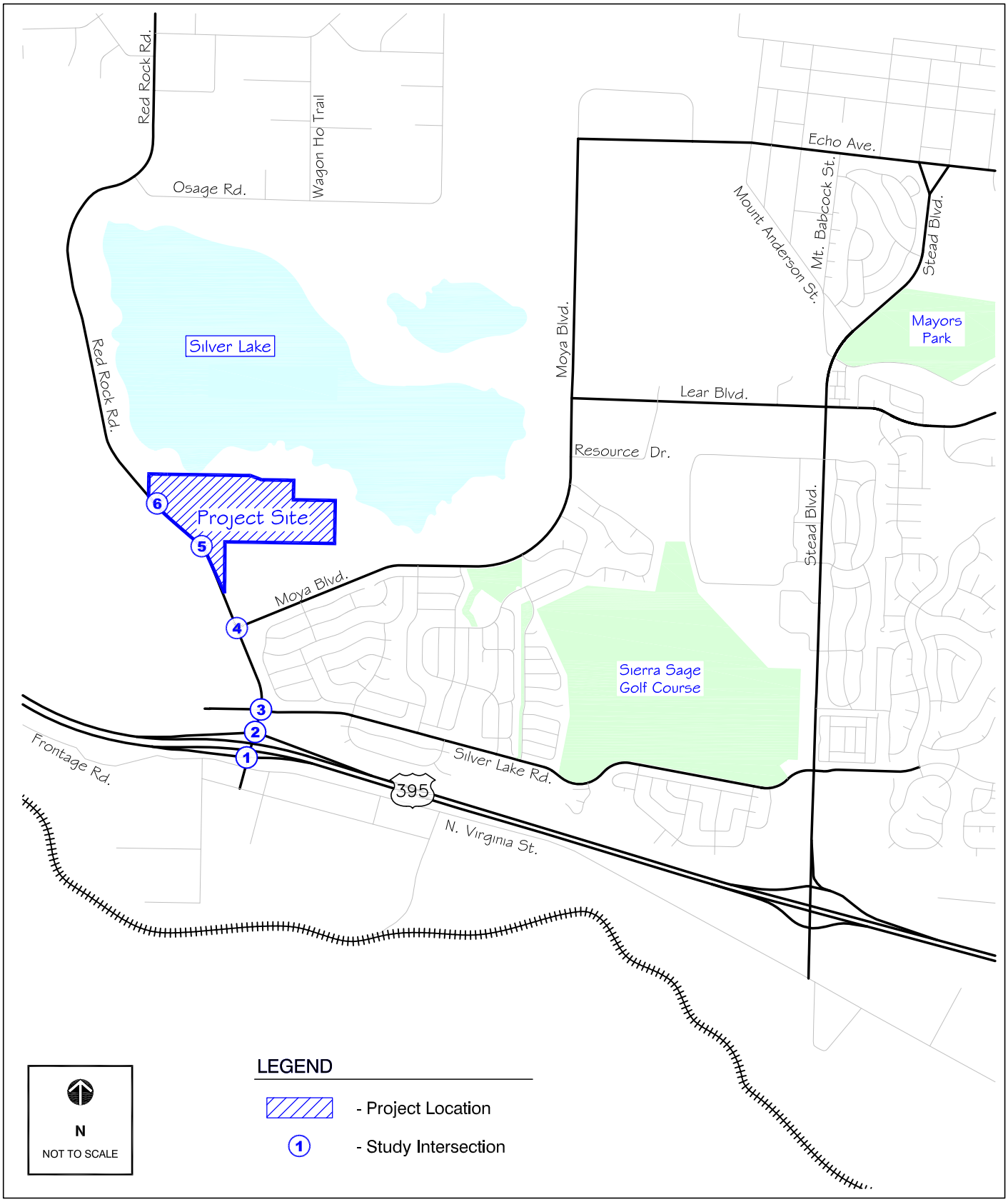
The RTC modeled 2030 conditions assume the following roadway network improvement:

Segment	Limits	Nominal Improvements
Red Rock Road	Evans Ranch Access to Moya Blvd.	Widen from 2 to 4 lanes

With this improvement the roadway segment north of Moya Boulevard will operate at acceptable levels of service in the year 2030 with or with out the project. All other 2030 studied roadway segments will operate at acceptable levels of service.

With this planned widening, all studied segments are also shown to operate at acceptable LOS, with or without the project, through 2040.

FIGURES



FEHR & PEERS
TRANSPORTATION CONSULTANTS

Dec 02, 2008 JEM
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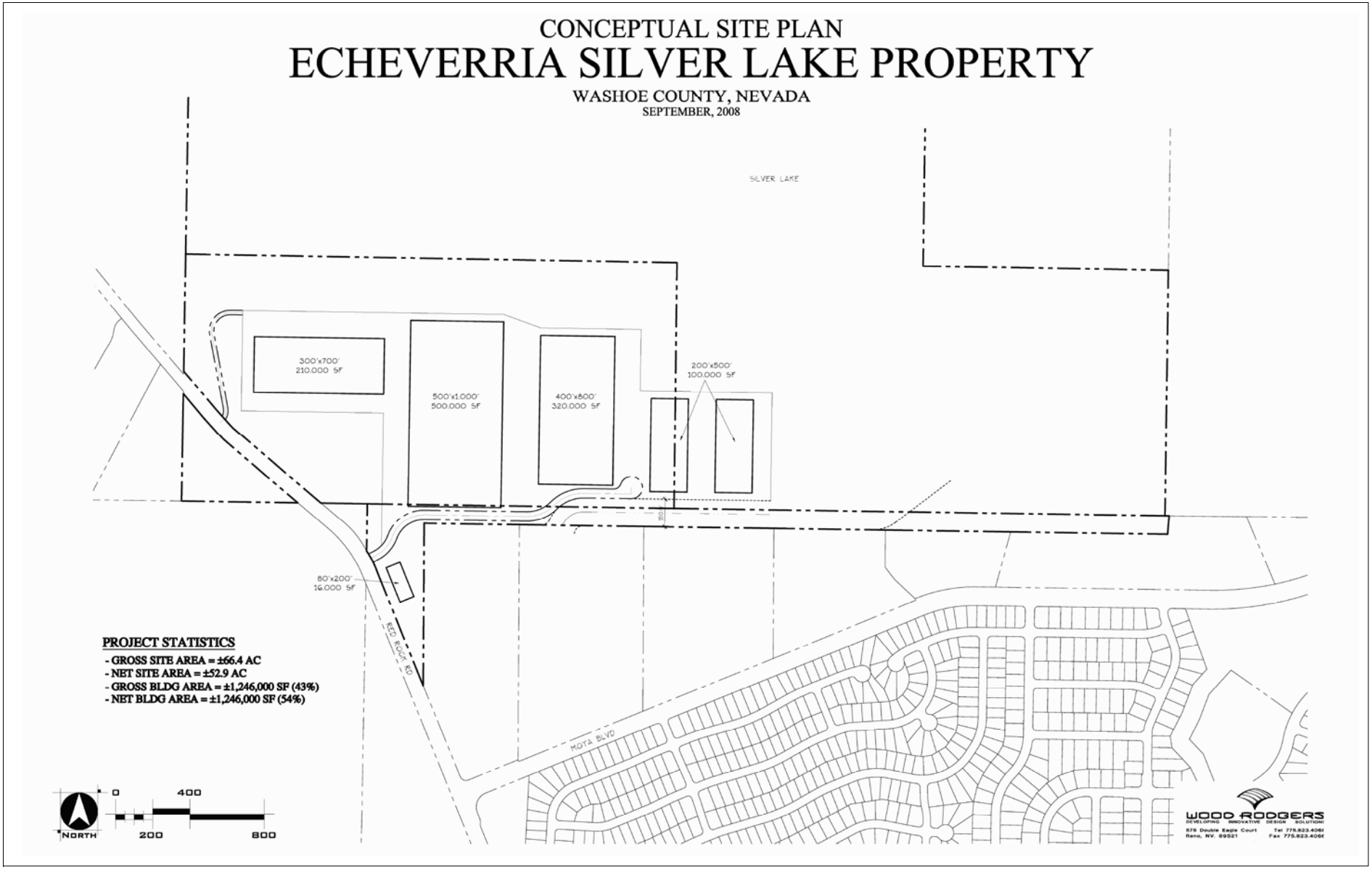
Echeverria Silver Lake Property
Vicinity Map

Figure 1



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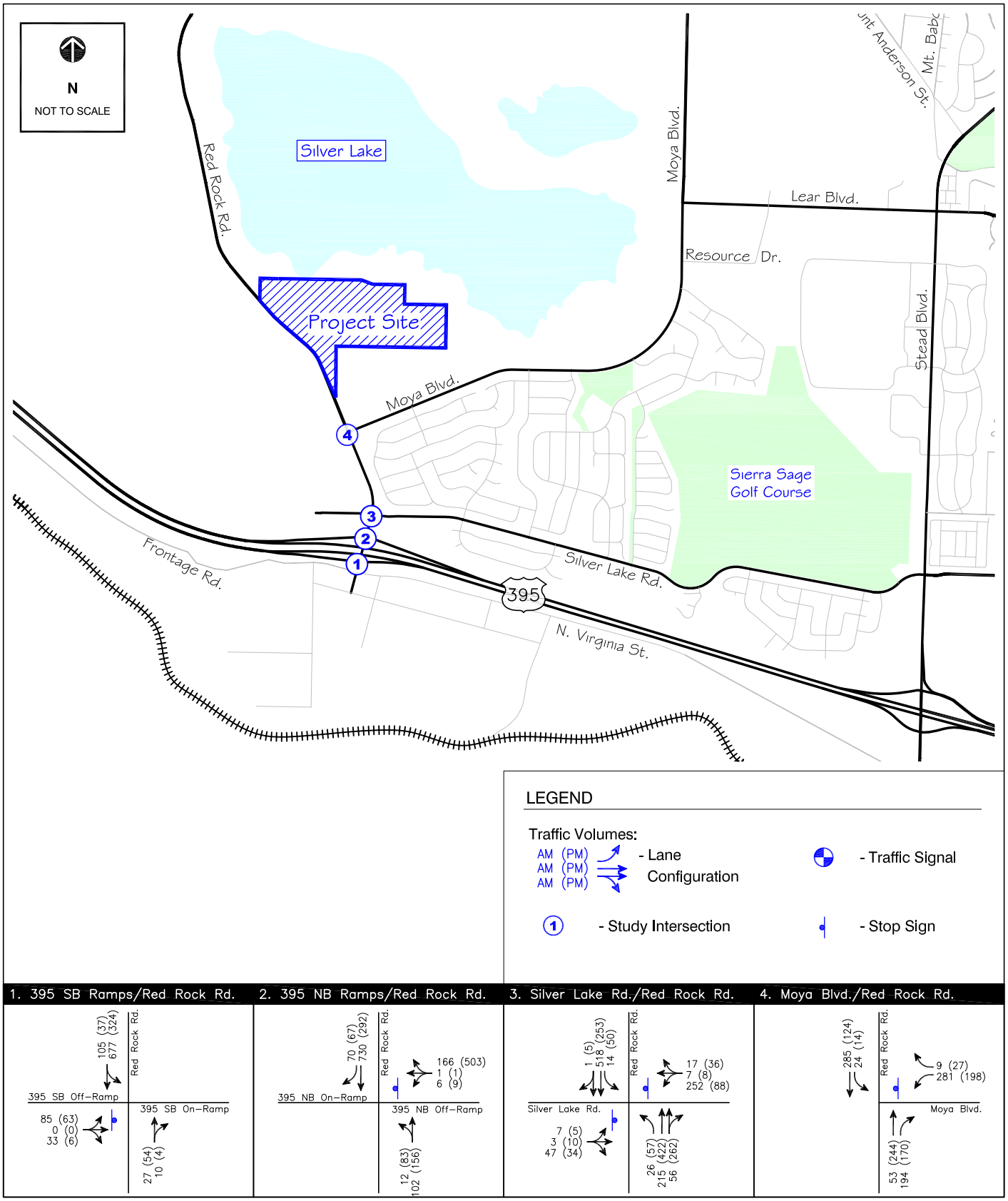
Echeverria Silver Lake Property
Site Plan

Figure 2



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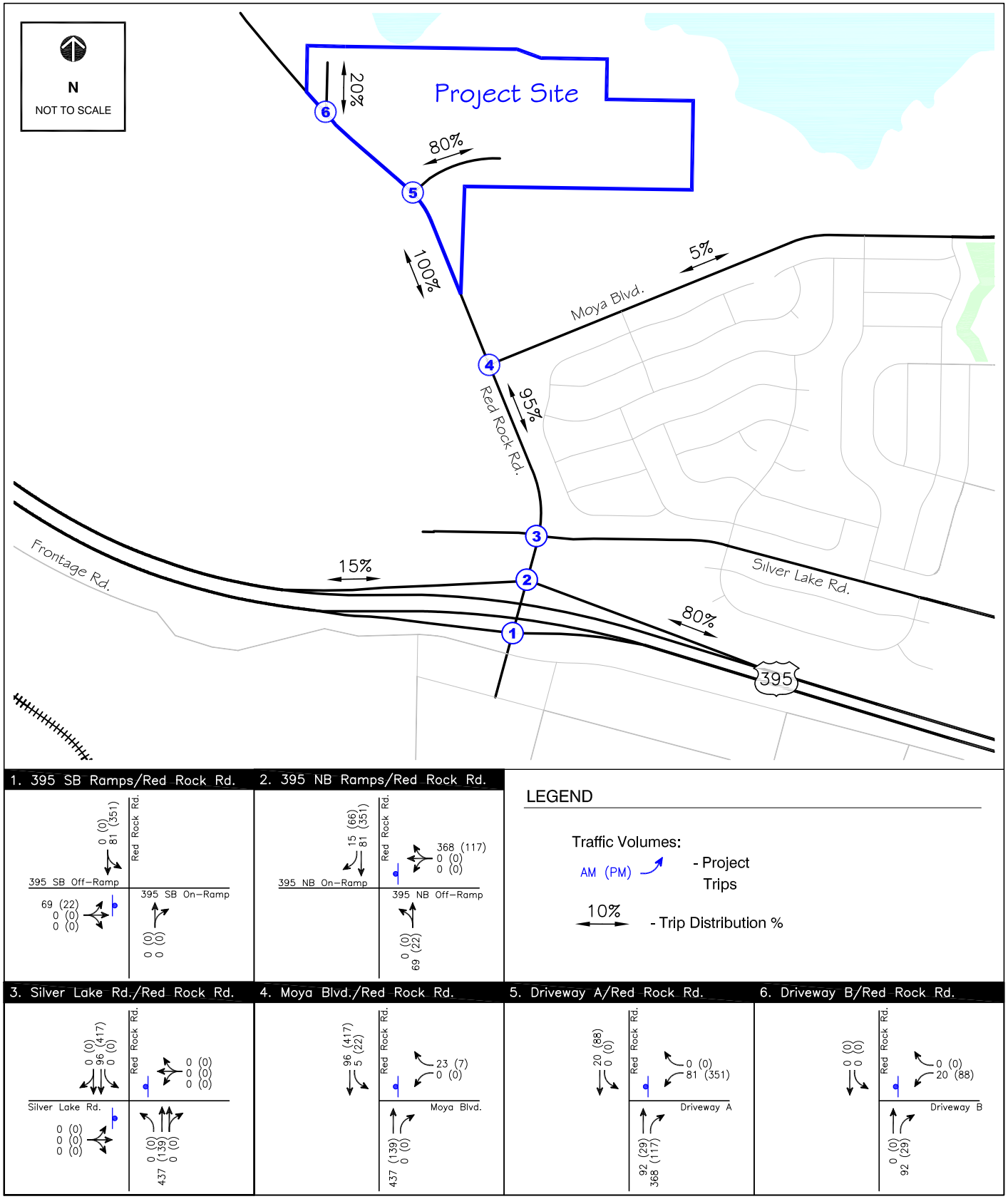
Echeverria Silver Lake Property
Existing Volumes, Lane Configurations, and Traffic Control

Figure 3



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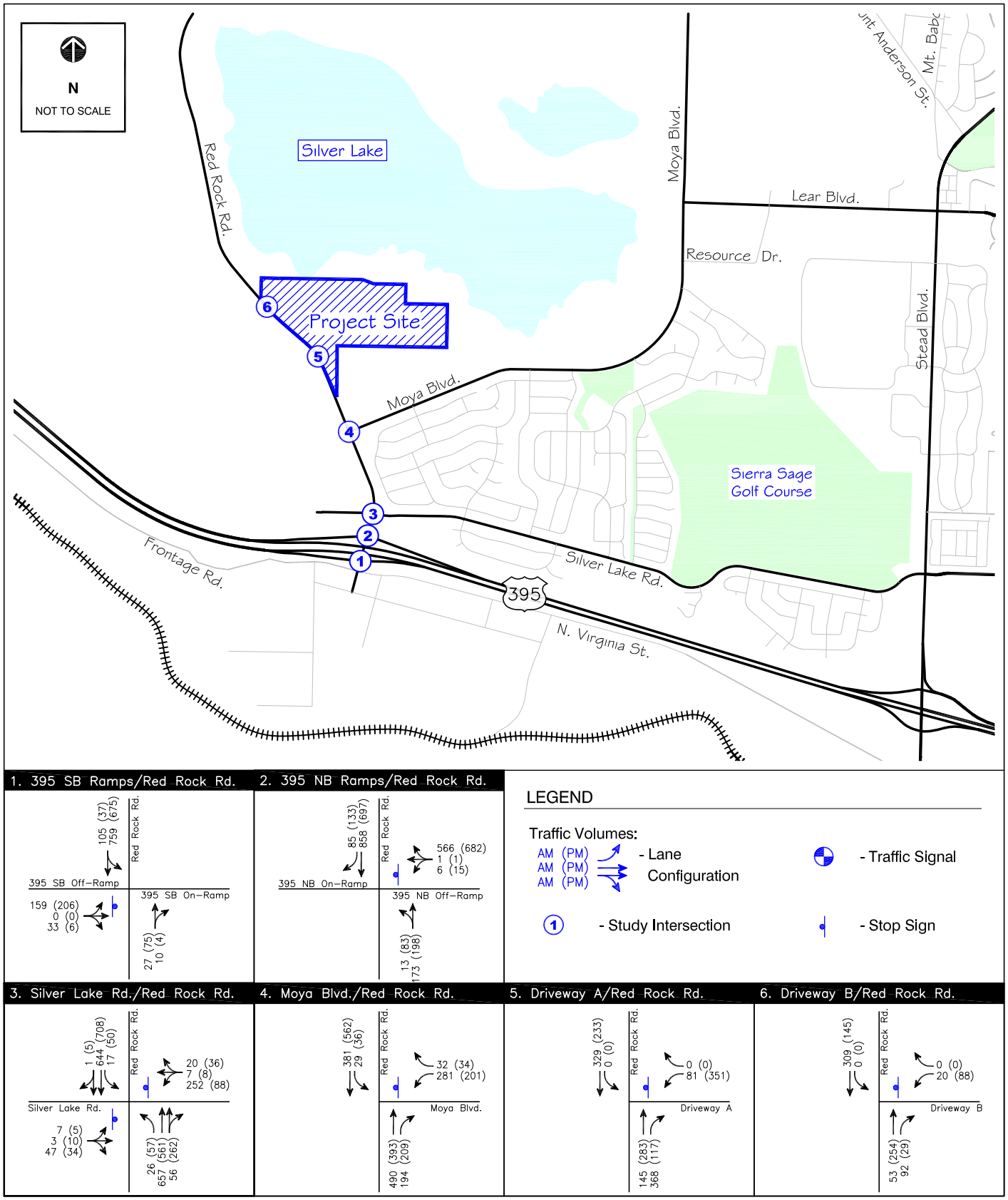
Echeverria Silver Lake Property
Project Trip Distribution and Assignments

Figure 4



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Echeverria Silver Lake Property
Existing Plus Project Traffic Volumes

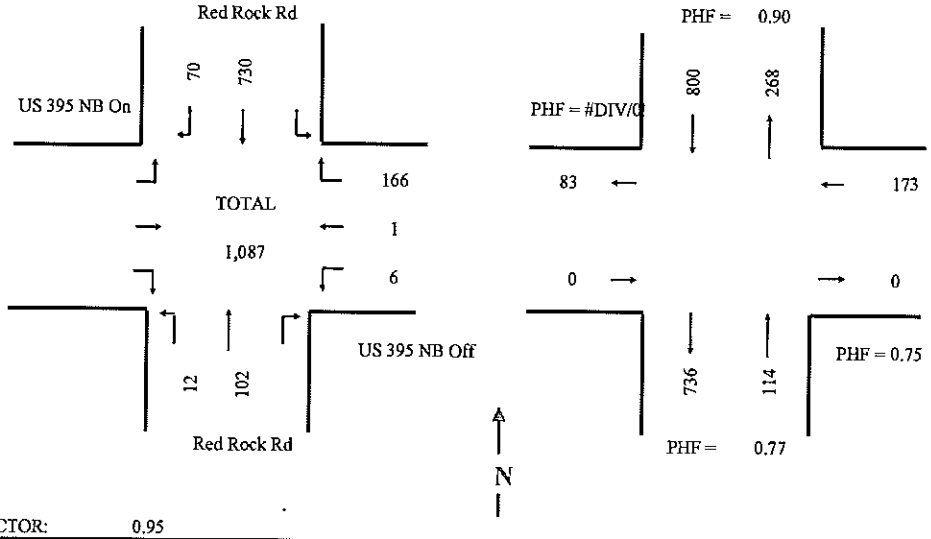
Figure 5

APPENDIX A:
EXISTING TRAFFIC VOLUMES

INTERSECTION TURNING MOVEMENT SUMMARY

INTERSECTION:	Red Rock Road / US 395 Northbound Ramps	TIME:	7:00 AM to 9:00 AM
JURISDICTION:		DATE:	
PROJECT TITLE:	Echeverria Silver Lake Property	PROJECT NO:	RN08-0411

PEAK HOUR PERIOD: 7:00 AM to 8:00 AM
PEAK 15 MINUTE PERIOD: 7:15 AM to 7:30 AM



INTERSECTION
PEAK HOUR FACTOR: 0.95

RUNNING COUNTS	US 395 NB On Eastbound			US 395 NB Off Westbound			Red Rock Rd Northbound			Red Rock Rd Southbound			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
Period End	A	B	C	D	E	F	G	H	I	J	K	L	TOTAL
7:15 AM				1	0	57	3	34			160	12	267
7:30 AM				2	0	95	6	56			369	24	552
7:45 AM				4	1	122	8	83			567	39	824
8:00 AM				6	1	166	12	102			730	70	1087
8:15 AM				8	1	217	12	124			844	84	1290
8:30 AM				10	1	264	17	149			973	92	1506
8:45 AM				10	1	306	18	171			1107	101	1714
9:00 AM				11	1	348	20	186			1215	113	1894

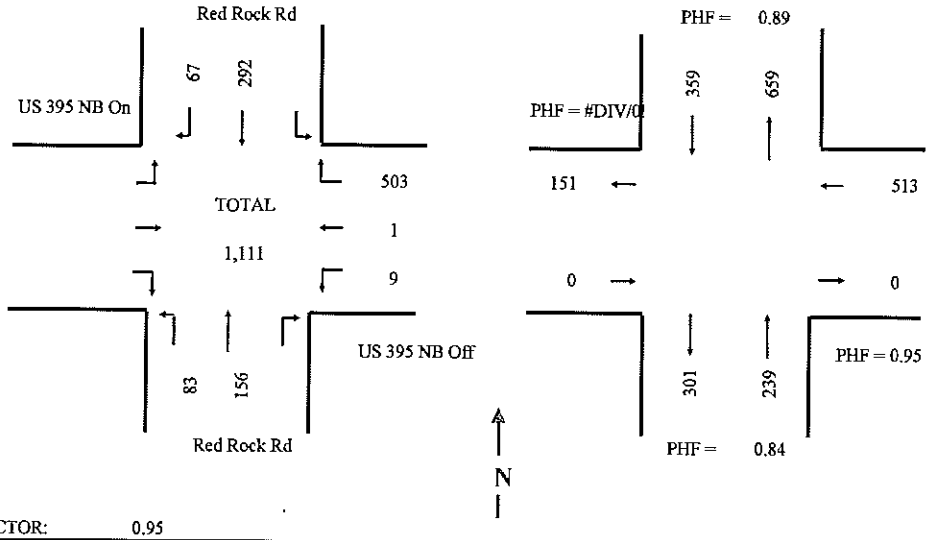
PERIOD COUNTS													
Period End	A	B	C	D	E	F	G	H	I	J	K	L	TOTAL
7:15 AM				1	0	57	3	34			160	12	267
7:30 AM				1	0	38	3	22			209	12	285
7:45 AM				2	1	27	2	27			198	15	272
8:00 AM				2	0	44	4	19			163	31	263
8:15 AM				2	0	51	0	22			114	14	203
8:30 AM				2	0	47	5	25			129	8	216
8:45 AM				0	0	42	1	22			134	9	208
9:00 AM				1	0	42	2	15			108	12	180

HOURLY TOTALS													
Beginning At	A	B	C	D	E	F	G	H	I	J	K	L	TOTAL
7:00 AM				6	1	166	12	102			730	70	1087
7:15 AM				7	1	160	9	90			684	72	1023
7:30 AM				8	1	169	11	93			604	68	954
7:45 AM				6	0	184	10	88			540	62	890
8:00 AM				5	0	182	8	84			485	43	807

INTERSECTION TURNING MOVEMENT SUMMARY

INTERSECTION:	Red Rock Road / US 395 Northbound Ramps	TIME:	4:00 PM to 6:00 PM
JURISDICTION:		DATE:	Tue 5-15-07
PROJECT TITLE:	Echeverria Silver Lake Property	PROJECT NO:	RN08-0411

PEAK HOUR PERIOD: 5:00 PM to 6:00 PM
PEAK 15 MINUTE PERIOD: 5:45 PM to 6:00 PM



INTERSECTION
PEAK HOUR FACTOR: 0.95

RUNNING COUNTS	US 395 NB On Eastbound			US 395 NB Off Westbound			Red Rock Rd Northbound			Red Rock Rd Southbound			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
Period End	A	B	C	D	E	F	G	H	I	J	K	L	TOTAL
4:15 PM				0	0	138	10	17			73	29	267
4:30 PM				2	1	265	17	35			144	50	514
4:45 PM				3	3	418	25	57			232	74	812
5:00 PM				3	3	555	29	82			326	93	1091
5:15 PM				4	3	682	36	113			410	110	1358
5:30 PM				6	3	798	57	151			477	132	1624
5:45 PM				10	3	926	91	188			547	145	1910
6:00 PM				12	4	1058	112	238			618	160	2202

PERIOD COUNTS													
Period End	A	B	C	D	E	F	G	H	I	J	K	L	TOTAL
4:15 PM				0	0	138	10	17			73	29	267
4:30 PM				2	1	127	7	18			71	21	247
4:45 PM				1	2	153	8	22			88	24	298
5:00 PM				0	0	137	4	25			94	19	279
5:15 PM				1	0	127	7	31			84	17	267
5:30 PM				2	0	116	21	38			67	22	266
5:45 PM				4	0	128	34	37			70	13	286
6:00 PM				2	1	132	21	50			71	15	292

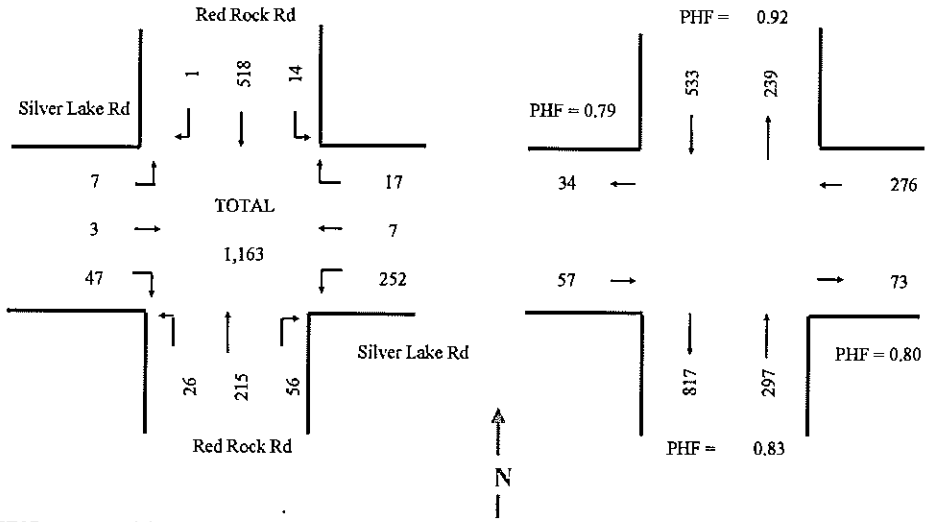
HOURLY TOTALS													
Beginning At	A	B	C	D	E	F	G	H	I	J	K	L	TOTAL
4:00 PM				3	3	555	29	82			326	93	1091
4:15 PM				4	3	544	26	96			337	81	1091
4:30 PM				4	2	533	40	116			333	82	1110
4:45 PM				7	0	508	66	131			315	71	1098
5:00 PM				9	1	503	83	156			292	67	1111

INTERSECTION TURNING MOVEMENT SUMMARY

INTERSECTION:	Red Rock Road / Silver Lake Road	TIME:	7:00 AM to 9:00 AM
JURISDICTION:		DATE:	Tues 5-8-07
PROJECT TITLE:	Echeverria Silver Lake Property	PROJECT NO:	RN08-0411

PEAK HOUR PERIOD: 7:00 AM to 8:00 AM

PEAK 15 MINUTE PERIOD: 7:30 AM to 7:45 AM



INTERSECTION PEAK HOUR FACTOR: 0.87

RUNNING COUNTS	Silver Lake Rd Eastbound Left	Thru	Right	Silver Lake Rd Westbound Left	Thru	Right	Red Rock Rd Northbound Left	Thru	Right	Red Rock Rd Southbound Left	Thru	Right	
Period End	A	B	C	D	E	F	G	H	I	J	K	L	TOTAL
7:15 AM	1	0	12	56	0	6	1	52	10	3	129	1	271
7:30 AM	2	0	22	128	1	11	7	105	29	5	272	1	583
7:45 AM	3	2	37	205	5	16	19	169	43	9	408	1	917
8:00 AM	7	3	47	252	7	17	26	215	56	14	518	1	1163
8:15 AM	8	3	53	305	9	19	34	269	72	15	601	3	1391
8:30 AM	10	4	64	339	15	23	41	298	90	20	689	4	1597
8:45 AM	10	4	73	370	18	25	45	331	100	23	768	4	1771
9:00 AM	11	6	80	403	23	29	55	372	117	32	854	5	1987

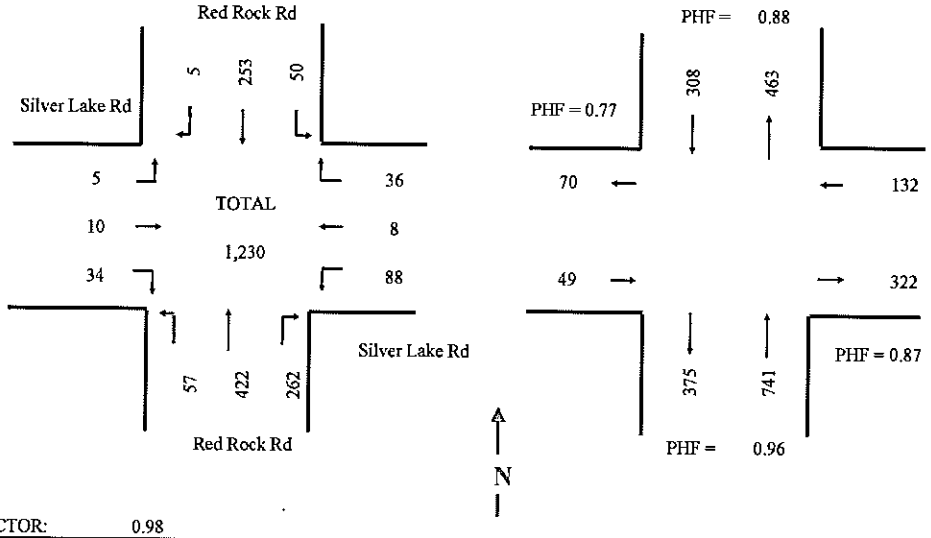
PERIOD COUNTS													
Period End	A	B	C	D	E	F	G	H	I	J	K	L	TOTAL
7:15 AM	1	0	12	56	0	6	1	52	10	3	129	1	271
7:30 AM	1	0	10	72	1	5	6	53	19	2	143	0	312
7:45 AM	1	2	15	77	4	5	12	64	14	4	136	0	334
8:00 AM	4	1	10	47	2	1	7	46	13	5	110	0	246
8:15 AM	1	0	6	53	2	2	8	54	16	1	83	2	228
8:30 AM	2	1	11	34	6	4	7	29	18	5	88	1	206
8:45 AM	0	0	9	31	3	2	4	33	10	3	79	0	174
9:00 AM	1	2	7	33	5	4	10	41	17	9	86	1	216

HOURLY TOTALS													
Beginning At	A	B	C	D	E	F	G	H	I	J	K	L	TOTAL
7:00 AM	7	3	47	252	7	17	26	215	56	14	518	1	1163
7:15 AM	7	3	41	249	9	13	33	217	62	12	472	2	1120
7:30 AM	8	4	42	211	14	12	34	193	61	15	417	3	1014
7:45 AM	7	2	36	165	13	9	26	162	57	14	360	3	854
8:00 AM	4	3	33	151	16	12	29	157	61	18	336	4	824

INTERSECTION TURNING MOVEMENT SUMMARY

INTERSECTION:	Red Rock Road / Silver Lake Road	TIME:	4:00 PM to 6:00 PM
JURISDICTION:		DATE:	Tue 5-8-07
PROJECT TITLE:	Echeverria Silver Lake Property	PROJECT NO:	RN08-0411

PEAK HOUR PERIOD: 5:00 PM to 6:00 PM
PEAK 15 MINUTE PERIOD: 5:00 PM to 5:15 PM



INTERSECTION
PEAK HOUR FACTOR: 0.98

RUNNING COUNTS	Silver Lake Rd Eastbound Left	Thru	Right	Silver Lake Rd Westbound Left	Thru	Right	Red Rock Rd Northbound Left	Thru	Right	Red Rock Rd Southbound Left	Thru	Right	
Period End	A	B	C	D	E	F	G	H	I	J	K	L	TOTAL
4:15 PM	0	3	9	28	7	5	10	94	41	9	87	0	293
4:30 PM	3	4	20	45	7	12	23	181	95	14	160	0	564
4:45 PM	4	4	28	65	10	17	34	299	142	18	227	0	848
5:00 PM	4	4	35	91	11	23	45	391	191	23	286	0	1104
5:15 PM	7	8	43	111	15	29	63	499	254	38	349	1	1417
5:30 PM	8	11	55	130	15	39	76	603	317	52	409	3	1718
5:45 PM	8	14	60	152	18	49	90	706	379	65	482	5	2028
6:00 PM	9	14	69	179	19	59	102	813	453	73	539	5	2334

PERIOD COUNTS													
Period End	A	B	C	D	E	F	G	H	I	J	K	L	TOTAL
4:15 PM	0	3	9	28	7	5	10	94	41	9	87	0	293
4:30 PM	3	1	11	17	0	7	13	87	54	5	73	0	271
4:45 PM	1	0	8	20	3	5	11	118	47	4	67	0	284
5:00 PM	0	0	7	26	1	6	11	92	49	5	59	0	256
5:15 PM	3	4	8	20	4	6	18	108	63	15	63	1	313
5:30 PM	1	3	12	19	0	10	13	104	63	14	60	2	301
5:45 PM	0	3	5	22	3	10	14	103	62	13	73	2	310
6:00 PM	1	0	9	27	1	10	12	107	74	8	57	0	306

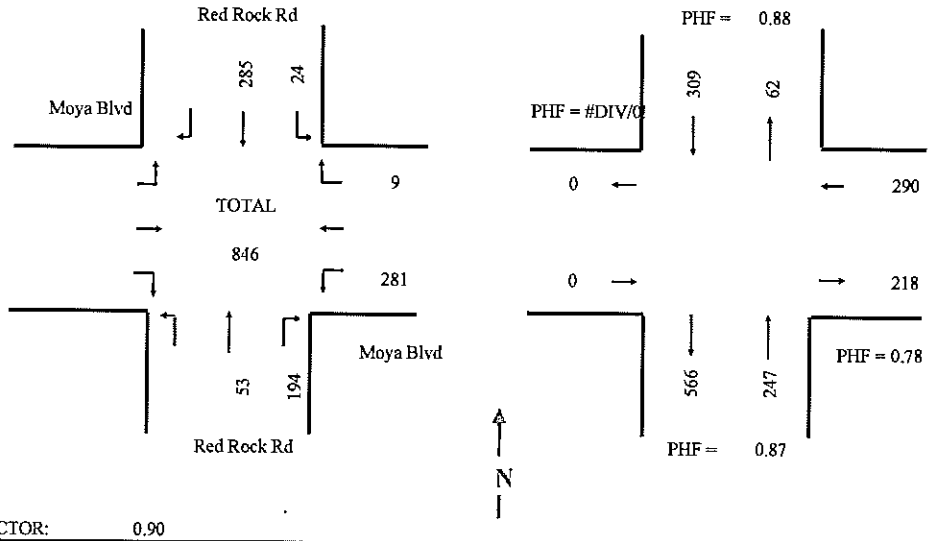
HOURLY TOTALS													
Beginning At	A	B	C	D	E	F	G	H	I	J	K	L	TOTAL
4:00 PM	4	4	35	91	11	23	45	391	191	23	286	0	1104
4:15 PM	7	5	34	83	8	24	53	405	213	29	262	1	1124
4:30 PM	5	7	35	85	8	27	53	422	222	38	249	3	1154
4:45 PM	4	10	32	87	8	32	56	407	237	47	255	5	1180
5:00 PM	5	10	34	88	8	36	57	422	262	50	253	5	1230

INTERSECTION TURNING MOVEMENT SUMMARY

INTERSECTION:	Red Rock Road / Moya Boulevard	TIME:	7:00 AM to 9:00 AM
JURISDICTION:		DATE:	Thurs 5-3-07
PROJECT TITLE:	Echeverria Silver Lake Property	PROJECT NO:	RN08-0411

PEAK HOUR PERIOD: 7:00 AM to 8:00 AM

PEAK 15 MINUTE PERIOD: 7:30 AM to 7:45 AM



INTERSECTION PEAK HOUR FACTOR: 0.90

RUNNING COUNTS	Moya Blvd Eastbound			Moya Blvd Westbound			Red Rock Rd Northbound			Red Rock Rd Southbound			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
Period End	A	B	C	D	E	F	G	H	I	J	K	L	TOTAL
7:15 AM				49		1		11	60	7	59		187
7:30 AM				133		1		27	105	10	144		420
7:45 AM				220		7		40	154	13	222		656
8:00 AM				281		9		53	194	24	285		846
8:15 AM				319		13		75	229	32	343		1011
8:30 AM				359		16		93	262	38	407		1175
8:45 AM				397		16		101	286	39	446		1285
9:00 AM				423		17		112	299	53	502		1406

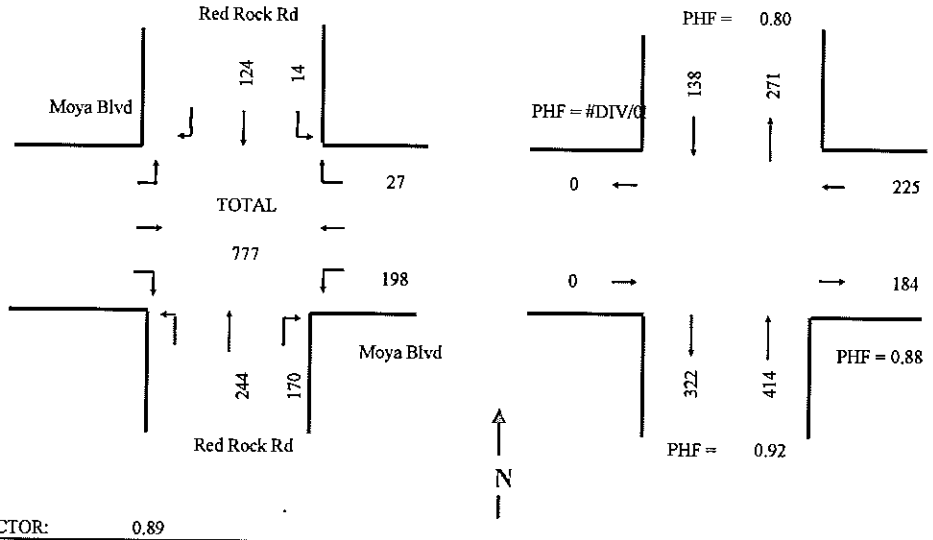
PERIOD COUNTS													
Period End	A	B	C	D	E	F	G	H	I	J	K	L	TOTAL
7:15 AM				49		1		11	60	7	59		187
7:30 AM				84		0		16	45	3	85		233
7:45 AM				87		6		13	49	3	78		236
8:00 AM				61		2		13	40	11	63		190
8:15 AM				38		4		22	35	8	58		165
8:30 AM				40		3		18	33	6	64		164
8:45 AM				38		0		8	24	1	39		110
9:00 AM				26		1		11	13	14	56		121

HOURLY TOTALS													
Beginning At	A	B	C	D	E	F	G	H	I	J	K	L	TOTAL
7:00 AM				281		9		53	194	24	285		846
7:15 AM				270		12		64	169	25	284		824
7:30 AM				226		15		66	157	28	263		755
7:45 AM				177		9		61	132	26	224		629
8:00 AM				142		8		59	105	29	217		560

INTERSECTION TURNING MOVEMENT SUMMARY

INTERSECTION:	Red Rock Road / Moya Boulevard	TIME:	4:00 PM to 6:00 PM
JURISDICTION:		DATE:	Wed 5-2-07
PROJECT TITLE:	Echeverria Silver Lake Property	PROJECT NO:	RN08-0411

PEAK HOUR PERIOD: 4:00 PM to 5:00 PM
PEAK 15 MINUTE PERIOD: 4:00 PM to 4:15 PM



INTERSECTION
PEAK HOUR FACTOR: 0.89

RUNNING COUNTS	Moya Blvd Eastbound			Moya Blvd Westbound			Red Rock Rd Northbound			Red Rock Rd Southbound			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
Period End	A	B	C	D	E	F	G	H	I	J	K	L	TOTAL
4:15 PM				57		7		69	43	4	39		219
4:30 PM				109		14		129	85	5	63		405
4:45 PM				157		19		179	127	10	94		586
5:00 PM				198		27		244	170	14	124		777
5:15 PM				255		34		317	208	15	148		977
5:30 PM				293		39		380	245	22	177		1156
5:45 PM				318		41		449	301	30	197		1336
6:00 PM				348		46		521	351	34	220		1520

PERIOD COUNTS													
Period End	A	B	C	D	E	F	G	H	I	J	K	L	TOTAL
4:15 PM				57		7		69	43	4	39		219
4:30 PM				52		7		60	42	1	24		186
4:45 PM				48		5		50	42	5	31		181
5:00 PM				41		8		65	43	4	30		191
5:15 PM				57		7		73	38	1	24		200
5:30 PM				38		5		63	37	7	29		179
5:45 PM				25		2		69	56	8	20		180
6:00 PM				30		5		72	50	4	23		184

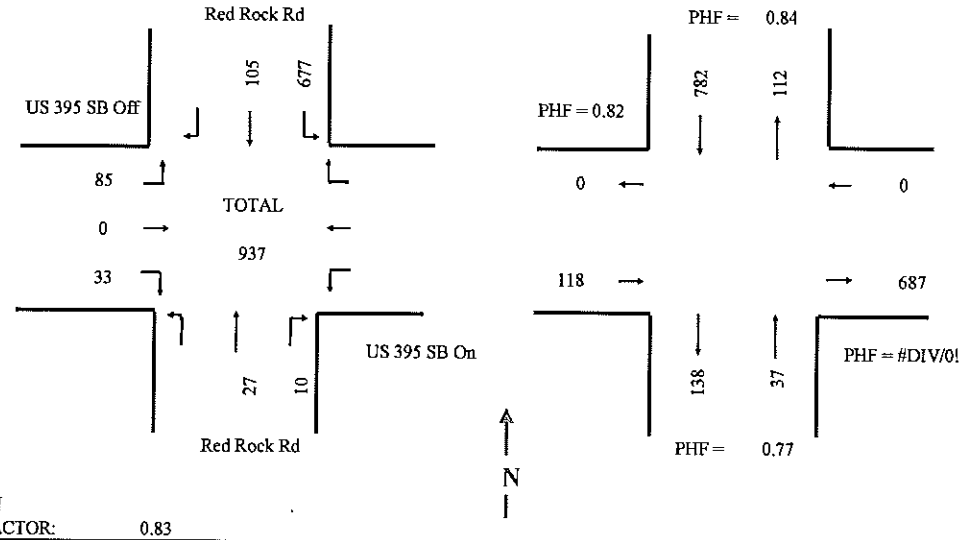
HOURLY TOTALS													
Beginning At	A	B	C	D	E	F	G	H	I	J	K	L	TOTAL
4:00 PM				198		27		244	170	14	124		777
4:15 PM				198		27		248	165	11	109		758
4:30 PM				184		25		251	160	17	114		751
4:45 PM				161		22		270	174	20	103		750
5:00 PM				150		19		277	181	20	96		743

INTERSECTION TURNING MOVEMENT SUMMARY

INTERSECTION:	Red Rock Road / US 395 Southbound Ramps	TIME:	7:00 AM to 9:00 AM
JURISDICTION:		DATE:	Tues 5-15-07
PROJECT TITLE:	Echeverria Silver Lake Property	PROJECT NO:	RN08-0411

PEAK HOUR PERIOD: 7:00 AM to 8:00 AM

PEAK 15 MINUTE PERIOD: 7:30 AM to 7:45 AM



INTERSECTION PEAK HOUR FACTOR: 0.83

RUNNING COUNTS	US 395 SB Off Eastbound			US 395 SB On Westbound			Red Rock Rd Northbound			Red Rock Rd Southbound			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
Period End	A	B	C	D	E	F	G	H	I	J	K	L	TOTAL
7:15 AM	26	0	3					7	4	150	11		201
7:30 AM	45	0	8					11	4	354	37		459
7:45 AM	67	0	22					19	8	549	76		741
8:00 AM	85	0	33					27	10	677	105		937
8:15 AM	107	0	40					31	12	805	118		1113
8:30 AM	118	0	42					37	14	925	125		1261
8:45 AM	129	1	44					43	14	1050	134		1415
9:00 AM	138	1	45					49	14	1184	143		1574

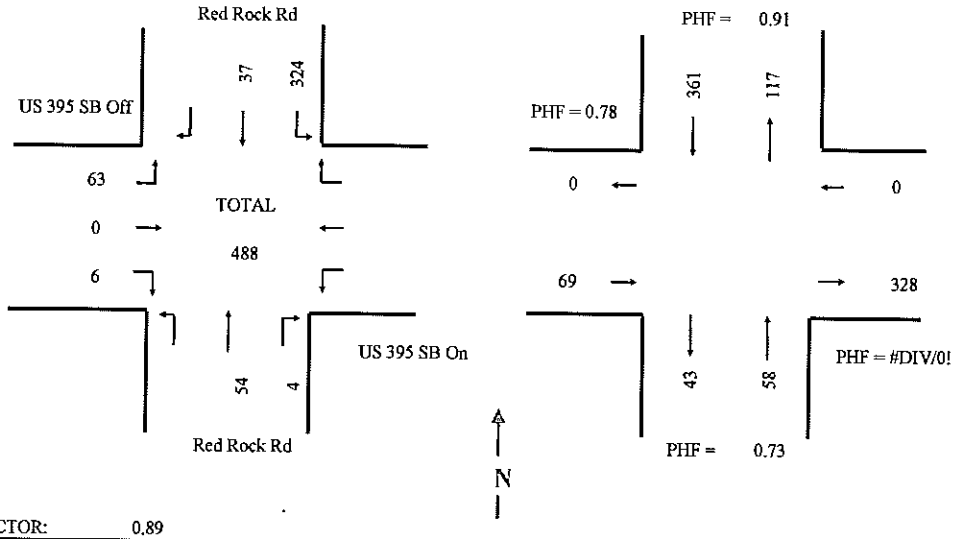
PERIOD COUNTS													
Period End	A	B	C	D	E	F	G	H	I	J	K	L	TOTAL
7:15 AM	26	0	3					7	4	150	11		201
7:30 AM	19	0	5					4	0	204	26		258
7:45 AM	22	0	14					8	4	195	39		282
8:00 AM	18	0	11					8	2	128	29		196
8:15 AM	22	0	7					4	2	128	13		176
8:30 AM	11	0	2					6	2	120	7		148
8:45 AM	11	1	2					6	0	125	9		154
9:00 AM	9	0	1					6	0	134	9		159

HOURLY TOTALS													
Beginning At	A	B	C	D	E	F	G	H	I	J	K	L	TOTAL
7:00 AM	85	0	33					27	10	677	105		937
7:15 AM	81	0	37					24	8	655	107		912
7:30 AM	73	0	34					26	10	571	88		802
7:45 AM	62	1	22					24	6	501	58		674
8:00 AM	53	1	12					22	4	507	38		637

INTERSECTION TURNING MOVEMENT SUMMARY

INTERSECTION:	Red Rock Road / US 395 Southbound Ramps	TIME:	4:00 PM to 6:00 PM
JURISDICTION:		DATE:	Thurs 5-17-07
PROJECT TITLE:	Echeverria Silver Lake Property	PROJECT NO:	RN08-0411

PEAK HOUR PERIOD: 4:00 PM to 5:00 PM
PEAK 15 MINUTE PERIOD: 4:00 PM to 4:15 PM



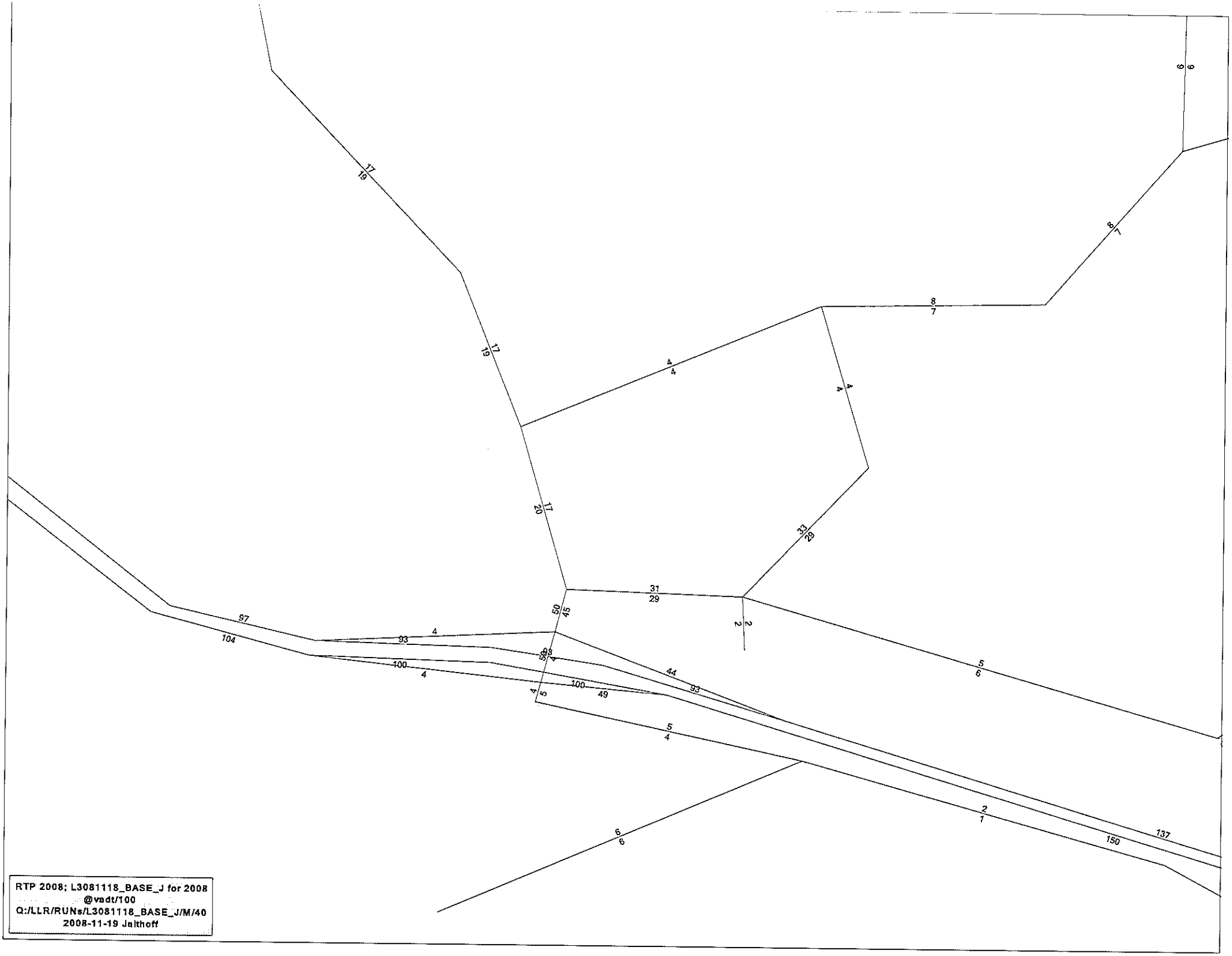
INTERSECTION
PEAK HOUR FACTOR: 0.89

RUNNING COUNTS	US 395 SB Off Eastbound Left	Thru	Right	US 395 SB On Westbound Left	Thru	Right	Red Rock Rd Northbound Left	Thru	Right	Red Rock Rd Southbound Left	Thru	Right	
Period End	A	B	C	D	E	F	G	H	I	J	K	L	TOTAL
4:15 PM	17	0	1					20	0	90	9		137
4:30 PM	28	0	1					29	1	159	17		235
4:45 PM	44	0	3					41	3	236	26		353
5:00 PM	63	0	6					54	4	324	37		488
5:15 PM	75	1	7					73	4	391	41		592
5:30 PM	87	1	8					94	5	453	49		697
5:45 PM	97	1	8					124	7	536	56		829
6:00 PM	109	1	9					142	8	593	60		922

PERIOD COUNTS													
Period End	A	B	C	D	E	F	G	H	I	J	K	L	TOTAL
4:15 PM	17	0	1					20	0	90	9		137
4:30 PM	11	0	0					9	1	69	8		98
4:45 PM	16	0	2					12	2	77	9		118
5:00 PM	19	0	3					13	1	88	11		135
5:15 PM	12	1	1					19	0	67	4		104
5:30 PM	12	0	1					21	1	62	8		105
5:45 PM	10	0	0					30	2	83	7		132
6:00 PM	12	0	1					18	1	57	4		93

HOURLY TOTALS													
Beginning At	A	B	C	D	E	F	G	H	I	J	K	L	TOTAL
4:00 PM	63	0	6					54	4	324	37		488
4:15 PM	58	1	6					53	4	301	32		455
4:30 PM	59	1	7					65	4	294	32		462
4:45 PM	53	1	5					83	4	300	30		476
5:00 PM	46	1	3					88	4	269	23		434

APPENDIX B:
RTC MODEL VOLUMES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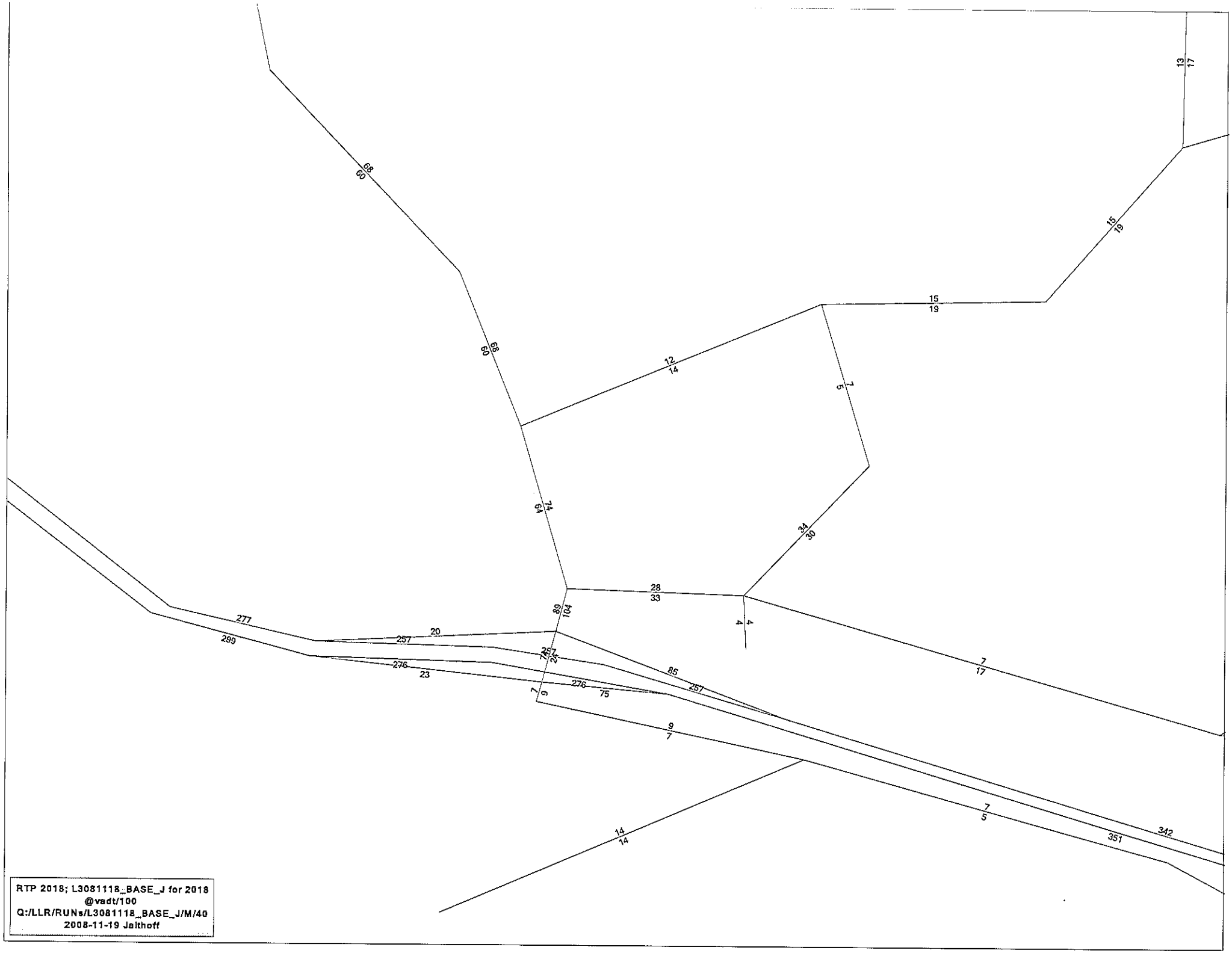
2008-11-19 Jalthoff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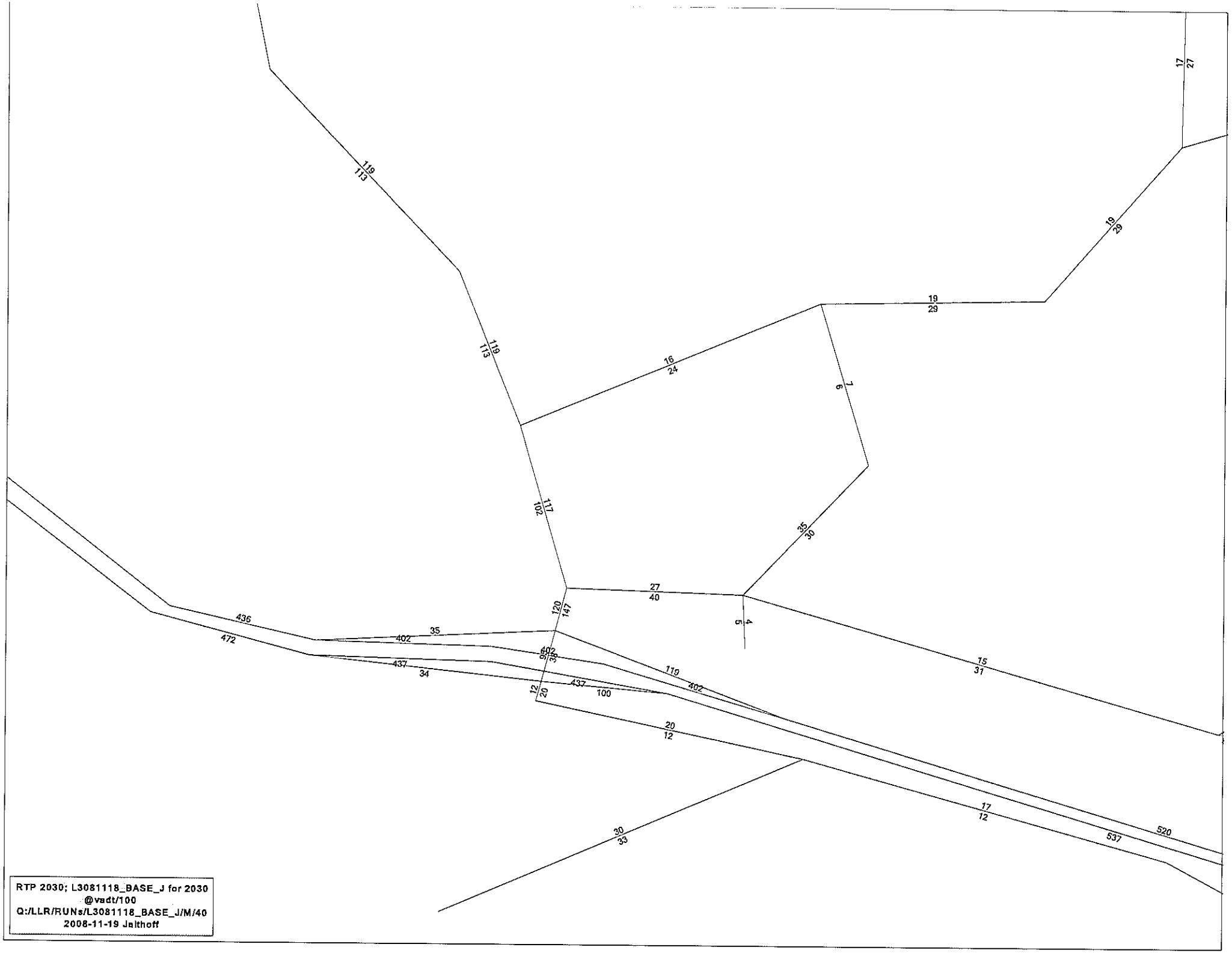
2008-11-19 Jalthoff



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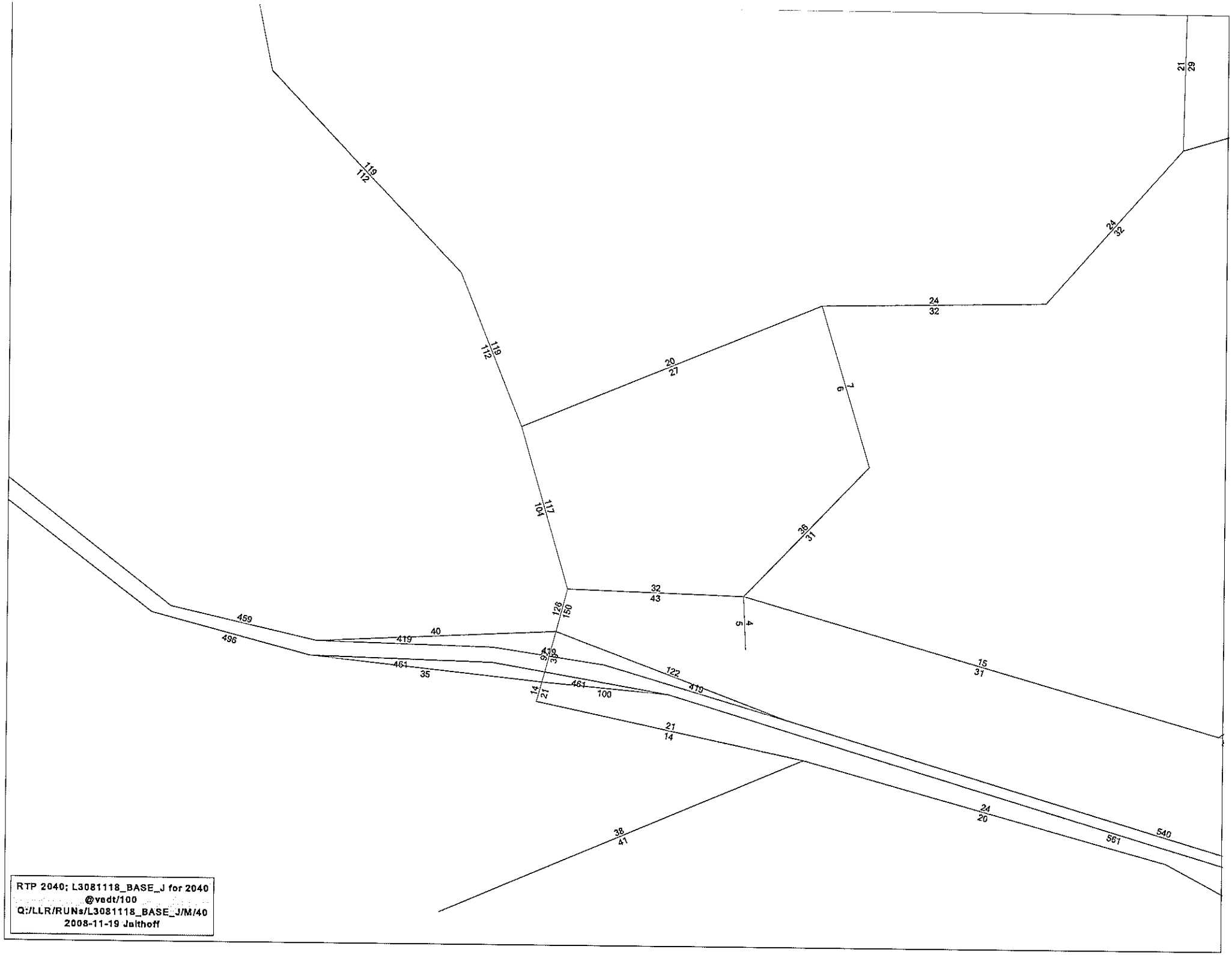
2008-11-19 Jalthoff


RTP 2040; L3081118_BASE_J for 2040
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2008-11-19 Jalthoff

APPENDIX C:
EXISTING CONDITIONS INTERSECTION TECHNICAL CALCULATIONS

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	281	9	53	194	24	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	312	10	59	216	27	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	112	59			274	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	112	59			274	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	64	99			98	
cM capacity (veh/h)	866	1007			1289	

Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	312	10	59	216	27	0
Volume Left	312	0	0	0	27	0
Volume Right	0	10	0	216	0	0
cSH	866	1007	1700	1700	1289	1700
Volume to Capacity	0.36	0.01	0.03	0.13	0.02	0.19
Queue Length 95th (ft)	41	1	0	0	2	0
Control Delay (s)	11.5	8.6	0.0	0.0	7.9	0.0
Lane LOS	B	A			A	
Approach Delay (s)	11.4		0.0		7.9	
Approach LOS	B					

Intersection Summary			
Average Delay	6.2		
Intersection Capacity Utilization	30.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	0	0	0	6	1	198	13	104	0	0	777	70
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	0	0	6	1	208	14	109	0	0	818	74
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1164	955	818	955	1028	109	892			109		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1164	955	818	955	1028	109	892			109		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	97	100	78	98			100		
cM capacity (veh/h)	131	254	376	235	230	944	760			1481		

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	216	123	818	74
Volume Left	6	14	0	0
Volume Right	208	0	0	74
cSH	856	760	1700	1700
Volume to Capacity	0.25	0.02	0.48	0.04
Queue Length 95th (ft)	25	1	0	0
Control Delay (s)	10.6	1.3	0.0	0.0
Lane LOS	B	A		
Approach Delay (s)	10.6	1.3	0.0	
Approach LOS	B			

Intersection Summary			
Average Delay	2.0		
Intersection Capacity Utilization	60.2%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	85	0	33	0	0	0	0	27	10	678	105	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	94	0	37	0	0	0	0	30	11	753	117	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1659	1664	117	1696	1659	36	117			41		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1659	1664	117	1696	1659	36	117			41		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	0	100	96	100	100	100	100			52		
cM capacity (veh/h)	48	50	935	44	51	1037	1472			1568		

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	131	41	870
Volume Left	94	0	753
Volume Right	37	11	0
cSH	66	1700	1568
Volume to Capacity	1.99	0.02	0.48
Queue Length 95th (ft)	305	0	68
Control Delay (s)	596.7	0.0	8.8
Lane LOS	F		A
Approach Delay (s)	596.7	0.0	8.8
Approach LOS	F		

Intersection Summary			
Average Delay	82.4		
Intersection Capacity Utilization	63.1%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	7	3	47	252	7	20	26	220	56	17	548	1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	8	3	52	280	8	22	29	244	62	19	609	1
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	853	1012	305	729	981	153	610			307		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	853	1012	305	729	981	153	610			307		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	97	99	92	0	97	97	97			98		
cM capacity (veh/h)	232	227	691	274	237	865	965			1251		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	63	310	29	163	144	19	406	204
Volume Left	8	280	29	0	0	19	0	0
Volume Right	52	22	0	0	62	0	0	1
cSH	512	287	965	1700	1700	1251	1700	1700
Volume to Capacity	0.12	1.08	0.03	0.10	0.08	0.02	0.24	0.12
Queue Length 95th (ft)	11	308	2	0	0	1	0	0
Control Delay (s)	13.0	115.7	8.8	0.0	0.0	7.9	0.0	0.0
Lane LOS	B	F	A			A		
Approach Delay (s)	13.0	115.7	0.8			0.2		
Approach LOS	B	F						

Intersection Summary			
Average Delay	27.7		
Intersection Capacity Utilization	50.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	201	27	254	209	14	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	223	30	282	232	16	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	313	282			514	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	313	282			514	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	67	96			99	
cM capacity (veh/h)	669	757			1051	

Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	223	30	282	232	16	0
Volume Left	223	0	0	0	16	0
Volume Right	0	30	0	232	0	0
cSH	669	757	1700	1700	1051	1700
Volume to Capacity	0.33	0.04	0.17	0.14	0.01	0.00
Queue Length 95th (ft)	37	3	0	0	1	0
Control Delay (s)	13.0	10.0	0.0	0.0	8.5	0.0
Lane LOS	B	A			A	
Approach Delay (s)	12.7		0.0		8.5	
Approach LOS	B					

Intersection Summary			
Average Delay	4.3		
Intersection Capacity Utilization	31.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	5	10	34	88	8	36	57	422	262	50	291	5
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	5	11	36	93	8	38	60	444	276	53	306	5
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	798	1254	156	1002	1119	360	312			720		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	798	1254	156	1002	1119	360	312			720		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	98	93	96	44	95	94	95			94		
cM capacity (veh/h)	231	153	862	164	184	637	1246			877		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	52	139	60	296	424	53	204	107
Volume Left	5	93	60	0	0	53	0	0
Volume Right	36	38	0	0	276	0	0	5
cSH	387	208	1246	1700	1700	877	1700	1700
Volume to Capacity	0.13	0.67	0.05	0.17	0.25	0.06	0.12	0.06
Queue Length 95th (ft)	11	102	4	0	0	5	0	0
Control Delay (s)	15.7	51.5	8.0	0.0	0.0	9.4	0.0	0.0
Lane LOS	C	F	A			A		
Approach Delay (s)	15.7	51.5	0.6			1.4		
Approach LOS	C	F						

Intersection Summary			
Average Delay	6.7		
Intersection Capacity Utilization	47.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	0	0	0	15	1	565	83	176	0	0	346	67
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	0	0	16	1	595	87	185	0	0	364	71
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1319	724	364	724	795	185	435			185		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1319	724	364	724	795	185	435			185		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	95	100	31	92			100		
cM capacity (veh/h)	38	325	681	321	295	857	1125			1389		

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	612	273	364	71
Volume Left	16	87	0	0
Volume Right	595	0	0	71
cSH	819	1125	1700	1700
Volume to Capacity	0.75	0.08	0.21	0.04
Queue Length 95th (ft)	174	6	0	0
Control Delay (s)	21.2	3.2	0.0	0.0
Lane LOS	C	A		
Approach Delay (s)	21.2	3.2	0.0	
Approach LOS	C			

Intersection Summary			
Average Delay	10.5		
Intersection Capacity Utilization	77.9%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	184	0	6	0	0	0	0	75	4	324	37	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	204	0	7	0	0	0	0	83	4	360	41	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	847	849	41	853	847	86	41			88		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	847	849	41	853	847	86	41			88		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	11	100	99	100	100	100	100			76		
cM capacity (veh/h)	230	227	1030	226	228	973	1568			1508		

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	211	88	401
Volume Left	204	0	360
Volume Right	7	4	0
cSH	236	1700	1508
Volume to Capacity	0.90	0.05	0.24
Queue Length 95th (ft)	187	0	23
Control Delay (s)	78.6	0.0	7.5
Lane LOS	F		A
Approach Delay (s)	78.6	0.0	7.5
Approach LOS	F		

Intersection Summary			
Average Delay	28.0		
Intersection Capacity Utilization	43.8%	ICU Level of Service	A
Analysis Period (min)	15		

APPENDIX D:
PROJECT TRIP GENERATION CALCULATIONS

Trip Generation
Echeverria Silver Lake Property

Project Trips

ITE Code	Land Use	Measure	Density	Daily Rate	AM Rate	In	Out	PM Rate	In	Out	Daily Trips	AM Trips	AM In	AM Out	PM Trips	PM In	PM Out
150	WareHousing	KSF	1246	4.96	0.45	82%	18%	0.47	25%	75%	6180	561	460	101	586	146	439
										New Trips	**6180**	**561**	**460**	**101**	**586**	**146**	**439**

Current Zoning

General Rural 1 unit per 40 acres

Site Area (Acre): 273

Trips Per Current Zoning

1 Unit

ITE Code	Land Use	Measure	Density	Daily Rate	AM Rate	In	Out	PM Rate	In	Out	Daily Trips	AM Trips	AM In	AM Out	PM Trips	PM In	PM Out
210	Single-Family detached housing	DU	6	9.57	0.75	25%	75%	1.01	63%	37%	57	5	1	3	6	4	2
										New Trips	**57**	**5**	**1**	**3**	**6**	**4**	**2**

APPENDIX E:
EXISTING PLUS PROJECT INTERSECTION CALCULATIONS

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	281	32	490	194	29	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	312	36	544	216	32	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	609	544			760	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	609	544			760	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	29	93			96	
cM capacity (veh/h)	441	539			852	

Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	312	36	544	216	32	0
Volume Left	312	0	0	0	32	0
Volume Right	0	36	0	216	0	0
cSH	441	539	1700	1700	852	1700
Volume to Capacity	0.71	0.07	0.32	0.13	0.04	0.25
Queue Length 95th (ft)	136	5	0	0	3	0
Control Delay (s)	30.6	12.2	0.0	0.0	9.4	0.0
Lane LOS	D	B			A	
Approach Delay (s)	28.7		0.0		9.4	
Approach LOS	D					

Intersection Summary			
Average Delay	9.0		
Intersection Capacity Utilization	48.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	0	0	0	6	1	566	13	173	0	0	858	85
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	0	0	6	1	596	14	182	0	0	903	89
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1709	1113	903	1113	1202	182	993			182		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1709	1113	903	1113	1202	182	993			182		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	97	99	31	98			100		
cM capacity (veh/h)	22	204	336	183	181	860	697			1393		

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	603	196	903	89
Volume Left	6	14	0	0
Volume Right	596	0	0	89
cSH	823	697	1700	1700
Volume to Capacity	0.73	0.02	0.53	0.05
Queue Length 95th (ft)	166	2	0	0
Control Delay (s)	20.4	0.9	0.0	0.0
Lane LOS	C	A		
Approach Delay (s)	20.4	0.9	0.0	
Approach LOS	C			

Intersection Summary			
Average Delay	7.0		
Intersection Capacity Utilization	87.2%	ICU Level of Service	E
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	159	0	33	0	0	0	0	27	10	759	105	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	177	0	37	0	0	0	0	30	11	843	117	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1839	1844	117	1876	1839	36	117			41		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1839	1844	117	1876	1839	36	117			41		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	0	100	96	100	100	100	100			46		
cM capacity (veh/h)	33	35	935	30	35	1037	1472			1568		

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	213	41	960
Volume Left	177	0	843
Volume Right	37	11	0
cSH	40	1700	1568
Volume to Capacity	5.33	0.02	0.54
Queue Length 95th (ft)	Err	0	84
Control Delay (s)	Err	0.0	9.4
Lane LOS	F		A
Approach Delay (s)	Err	0.0	9.4
Approach LOS	F		

Intersection Summary			
Average Delay	1763.9		
Intersection Capacity Utilization	71.7%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	7	3	47	252	7	20	26	657	56	17	644	1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	8	3	52	280	8	22	29	730	62	19	716	1
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1203	1604	358	1268	1573	396	717			792		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1203	1604	358	1268	1573	396	717			792		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	94	97	92	0	92	96	97			98		
cM capacity (veh/h)	122	99	638	107	103	603	880			824		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	63	310	29	487	306	19	477	240
Volume Left	8	280	29	0	0	19	0	0
Volume Right	52	22	0	0	62	0	0	1
cSH	353	114	880	1700	1700	824	1700	1700
Volume to Capacity	0.18	2.72	0.03	0.29	0.18	0.02	0.28	0.14
Queue Length 95th (ft)	16	714	3	0	0	2	0	0
Control Delay (s)	17.4	857.6	9.2	0.0	0.0	9.5	0.0	0.0
Lane LOS	C	F	A			A		
Approach Delay (s)	17.4	857.6	0.3			0.2		
Approach LOS	C	F						

Intersection Summary			
Average Delay	138.5		
Intersection Capacity Utilization	50.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	20	0	53	92	0	309
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	22	0	58	100	0	336
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	393	58			158	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	393	58			158	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	96	100			100	
cM capacity (veh/h)	611	1009			1422	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	22	58	100	0	336
Volume Left	22	0	0	0	0
Volume Right	0	0	100	0	0
cSH	611	1700	1700	1700	1700
Volume to Capacity	0.04	0.03	0.06	0.00	0.20
Queue Length 95th (ft)	3	0	0	0	0
Control Delay (s)	11.1	0.0	0.0	0.0	0.0
Lane LOS	B				
Approach Delay (s)	11.1	0.0		0.0	
Approach LOS	B				

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	26.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	81	0	145	368	0	329
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	88	0	158	400	0	358
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	515	158			558	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	515	158			558	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	83	100			100	
cM capacity (veh/h)	520	888			1013	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	88	158	400	0	358
Volume Left	88	0	0	0	0
Volume Right	0	0	400	0	0
cSH	520	1700	1700	1700	1700
Volume to Capacity	0.17	0.09	0.24	0.00	0.21
Queue Length 95th (ft)	15	0	0	0	0
Control Delay (s)	13.3	0.0	0.0	0.0	0.0
Lane LOS	B				
Approach Delay (s)	13.3	0.0		0.0	
Approach LOS	B				

Intersection Summary			
Average Delay	1.2		
Intersection Capacity Utilization	28.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	201	34	393	209	36	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	223	38	437	232	40	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	517	437			669	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	517	437			669	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	55	94			96	
cM capacity (veh/h)	496	620			921	

Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	223	38	437	232	40	0
Volume Left	223	0	0	0	40	0
Volume Right	0	38	0	232	0	0
cSH	496	620	1700	1700	921	1700
Volume to Capacity	0.45	0.06	0.26	0.14	0.04	0.00
Queue Length 95th (ft)	58	5	0	0	3	0
Control Delay (s)	18.1	11.2	0.0	0.0	9.1	0.0
Lane LOS	C	B			A	
Approach Delay (s)	17.1		0.0		9.1	
Approach LOS	C					

Intersection Summary			
Average Delay	5.0		
Intersection Capacity Utilization	45.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	5	10	34	88	8	36	57	561	262	50	708	5
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	5	11	36	93	8	38	60	591	276	53	745	5
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1311	1839	375	1367	1704	433	751			866		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1311	1839	375	1367	1704	433	751			866		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	94	84	94	0	89	93	93			93		
cM capacity (veh/h)	90	65	622	79	78	571	855			773		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	52	139	60	394	473	53	497	254
Volume Left	5	93	60	0	0	53	0	0
Volume Right	36	38	0	0	276	0	0	5
cSH	185	103	855	1700	1700	773	1700	1700
Volume to Capacity	0.28	1.35	0.07	0.23	0.28	0.07	0.29	0.15
Queue Length 95th (ft)	27	246	6	0	0	5	0	0
Control Delay (s)	31.8	285.7	9.5	0.0	0.0	10.0	0.0	0.0
Lane LOS	D	F	A			A		
Approach Delay (s)	31.8	285.7	0.6			0.7		
Approach LOS	D	F						

Intersection Summary			
Average Delay	22.1		
Intersection Capacity Utilization	51.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	0	0	0	15	1	682	83	198	0	0	697	133
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	0	0	16	1	718	87	208	0	0	734	140
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1835	1117	734	1117	1257	208	874			208		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1835	1117	734	1117	1257	208	874			208		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	91	99	14	89			100		
cM capacity (veh/h)	7	184	420	169	152	832	772			1362		

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	735	296	734	140
Volume Left	16	87	0	0
Volume Right	718	0	0	140
cSH	763	772	1700	1700
Volume to Capacity	0.96	0.11	0.43	0.08
Queue Length 95th (ft)	374	10	0	0
Control Delay (s)	47.5	4.0	0.0	0.0
Lane LOS	E	A		
Approach Delay (s)	47.5	4.0	0.0	
Approach LOS	E			

Intersection Summary			
Average Delay	18.9		
Intersection Capacity Utilization	104.8%	ICU Level of Service	G
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	206	0	6	0	0	0	0	75	4	675	37	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	229	0	7	0	0	0	0	83	4	750	41	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1627	1629	41	1633	1627	86	41			88		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1627	1629	41	1633	1627	86	41			88		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	0	100	99	100	100	100	100			50		
cM capacity (veh/h)	50	51	1030	49	51	973	1568			1508		

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	236	88	791
Volume Left	229	0	750
Volume Right	7	4	0
cSH	51	1700	1508
Volume to Capacity	4.60	0.05	0.50
Queue Length 95th (ft)	Err	0	72
Control Delay (s)	Err	0.0	9.5
Lane LOS	F		A
Approach Delay (s)	Err	0.0	9.5
Approach LOS	F		

Intersection Summary			
Average Delay	2120.2		
Intersection Capacity Utilization	64.4%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	88	0	254	29	0	145
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	96	0	276	32	0	158
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	434	276			308	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	434	276			308	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	83	100			100	
cM capacity (veh/h)	579	763			1253	

Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	96	0	276	32	0	158
Volume Left	96	0	0	0	0	0
Volume Right	0	0	0	32	0	0
cSH	579	1700	1700	1700	1700	1700
Volume to Capacity	0.17	0.00	0.16	0.02	0.00	0.09
Queue Length 95th (ft)	15	0	0	0	0	0
Control Delay (s)	12.4	0.0	0.0	0.0	0.0	0.0
Lane LOS	B	A				
Approach Delay (s)	12.4		0.0		0.0	
Approach LOS	B					

Intersection Summary			
Average Delay	2.1		
Intersection Capacity Utilization	24.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	351	0	283	117	0	233
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	382	0	308	127	0	253
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	561	308			435	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	561	308			435	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	22	100			100	
cM capacity (veh/h)	489	732			1125	

Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	382	0	308	127	0	253
Volume Left	382	0	0	0	0	0
Volume Right	0	0	0	127	0	0
cSH	489	1700	1700	1700	1700	1700
Volume to Capacity	0.78	0.00	0.18	0.07	0.00	0.15
Queue Length 95th (ft)	175	0	0	0	0	0
Control Delay (s)	33.9	0.0	0.0	0.0	0.0	0.0
Lane LOS	D	A				
Approach Delay (s)	33.9		0.0		0.0	
Approach LOS	D					

Intersection Summary			
Average Delay	12.1		
Intersection Capacity Utilization	41.0%	ICU Level of Service	A
Analysis Period (min)	15		

Warrant 3B: Peak Hour Volume

The peak hour volume warrant is satisfied when the plotted point representing the vehicles per hour on the major street (total of both approaches) and the corresponding vehicles per hour of the higher volume minor street approach (one direction only) for one hour (any four consecutive 15-minute periods) of an average day falls above the curve in Figure 4-5 for the existing combination of approach lanes.

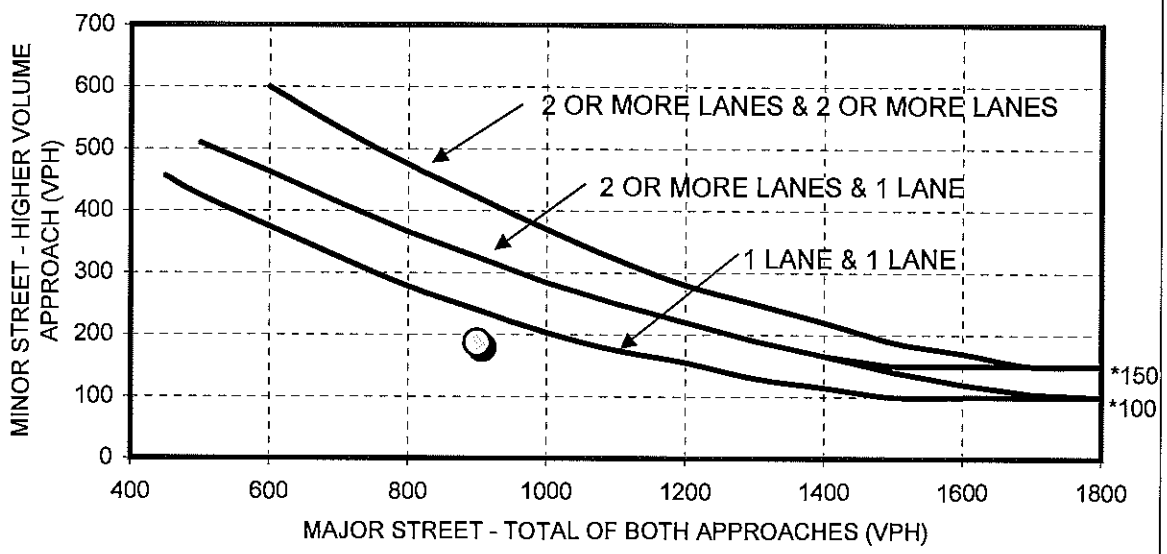
Analysis

	No of lanes
Major Street	1
Minor Street	1

Peak Hour

Time	Vehicles Per Hour	
	Major Street (Sum of both approaches)	Minor street (High volume approach)
7:00 AM	900	187

FIGURE 4C-3. PEAK HOUR VOLUME WARRANT



*Note: 150 vph applies as the lower threshold volume for a minor street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor street approach with one or lane.

O Peak Hour

Warrant	Not Met

Warrant 2: Four-Hour Vehicular Volumes

The Four Hour Volume Warrant is satisfied when each of any four hours of an average day the plotted points representing the vehicles per hour on the major street (total of both approaches) and the corresponding vehicles per hour on the higher volume minor street approach (one direction only) all fall above the curve in Figure 4C-1 for the existing combination of approach lanes.

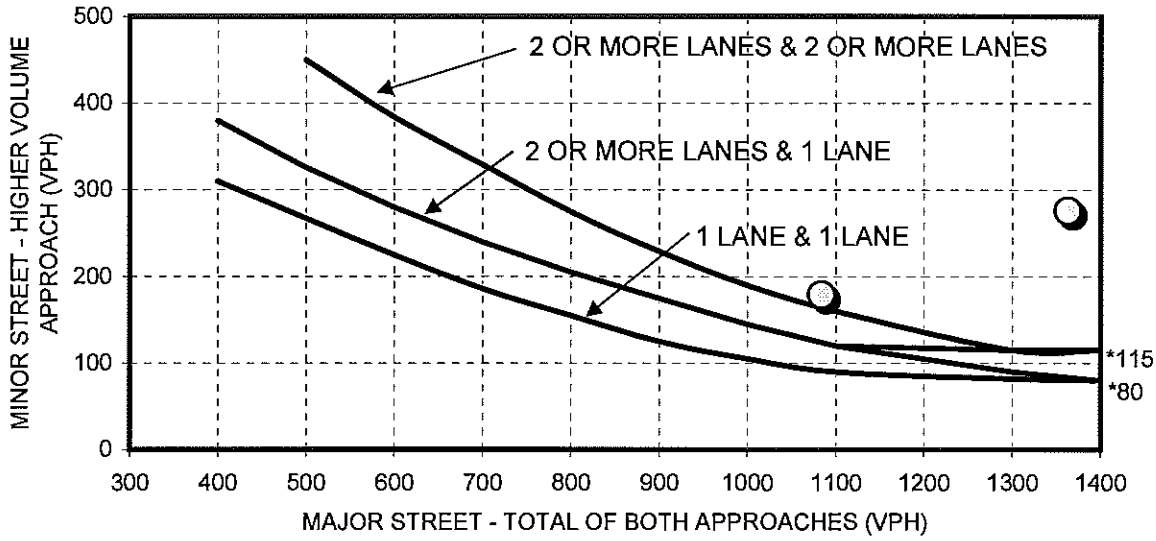
Analysis

	No of lanes
Major Street	2
Minor Street	1

Peak Four Hours

Time	Vehicles Per Hour	
	Major Street (Sum of both approaches)	Minor street (High volume approach)
7:00 AM	1,363	276
8:00 AM	1,084	179
5:00 PM	1,549	132
4:00 PM	1,492	125

FIGURE 4C-1. FOUR HOUR VOLUME WARRANT



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

O Peak Four Hours

Warrant	Met

Warrant 3B: Peak Hour Volume

The peak hour volume warrant is satisfied when the plotted point representing the vehicles per hour on the major street (total of both approaches) and the corresponding vehicles per hour of the higher volume minor street approach (one direction only) for one hour (any four consecutive 15-minute periods) of an average day falls above the curve in Figure 4-5 for the existing combination of approach lanes.

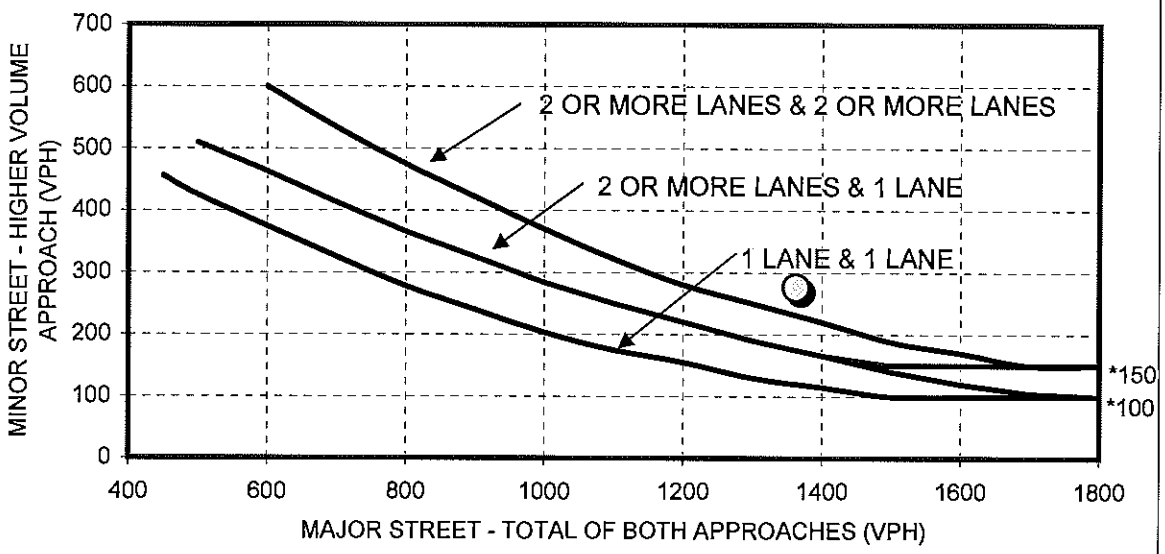
Analysis

	No of lanes
Major Street	2
Minor Street	1

Peak Hour

Time	Vehicles Per Hour	
	Major Street (Sum of both approaches)	Minor street (High volume approach)
7:00 AM	1,363	276

FIGURE 4C-3. PEAK HOUR VOLUME WARRANT



*Note: 150 vph applies as the lower threshold volume for a minor street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor street approach with one or lane.

O Peak Hour

Warrant	Met

APPENDIX F:
SIGNAL WARRANTS

Warrant 2: Four-Hour Vehicular Volumes

The Four Hour Volume Warrant is satisfied when each of any four hours of an average day the plotted points representing the vehicles per hour on the major street (total of both approaches) and the corresponding vehicles per hour on the higher volume minor street approach (one direction only) all fall above the curve in Figure 4C-1 for the existing combination of approach lanes.

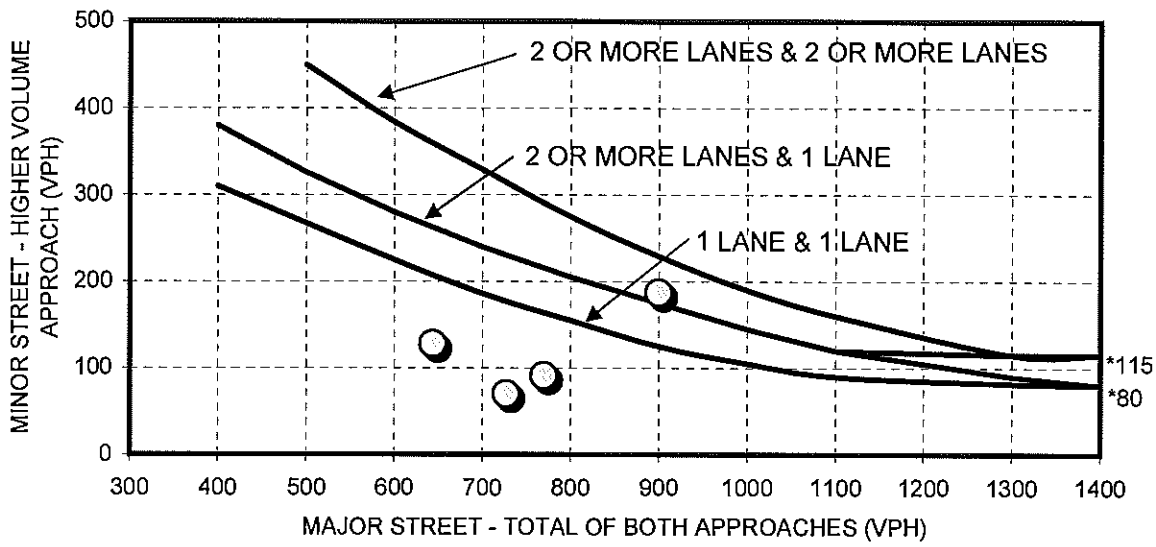
Analysis

	No of lanes
Major Street	1
Minor Street	1

Peak Four Hours

Time	Vehicles Per Hour	
	Major Street (Sum of both approaches)	Minor street (High volume approach)
7:00 AM	900	187
8:00 AM	644	128
4:00 PM	770	91
5:00 PM	727	70

FIGURE 4C-1. FOUR HOUR VOLUME WARRANT



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

O Peak Four Hours

Warrant	Not Met

APPENDIX G:
SIGNALIZED INTERSECTION MITIGATION TECHNICAL CALCULATIONS

SIMTRAFFIC LEVEL OF SERVICE REPORT

Project: Echeverria Silver Lake Property **HCM:** 2000
Scenario: Traffic Signal AM Silver Lake Road **# of Runs:** 1
TOD: Default TOD **Analysis Period:** 15 Minutes **PHF:** 1

Intersection: 2: Moya Blvd & Red Rock Road **Type:** Un-Signalized

Approach	Movement	Demand Volume	Volume Served			Delay/Veh (sec)		
			Avg	%	Std Dev	Avg	LOS	Std Dev
NB	T	123	504	413	0	4.0	A	0.0
	R	49	183	381	0	2.8	A	0.0
	Subtotal	**171**	**687**	**402**	--	**3.7**	**A**	--
SB	L	7	27	386	0	7.0	A	0.0
	Subtotal	**7**	**27**	**386**	--	**7.0**	**A**	--
WB	L	70	297	424	0	19.5	C	0.0
	R	8	33	413	0	4.2	A	0.0
	Subtotal	**78**	**330**	**423**	--	**18.0**	**C**	--
	Total	**257**	**1044**	**408**	--	**8.3**	**A**	--

Intersection: 4: Silver Lake Rd & Red Rock Road **Type:** Signalized

Approach	Movement	Demand Volume	Volume Served			Delay/Veh (sec)		
			Avg	%	Std Dev	Avg	LOS	Std Dev
NB	L	7	25	417	0	19.4	B	0.0
	T	164	680	415	0	6.3	A	0.0
	R	14	45	321	0	4.1	A	0.0
	Subtotal	**185**	**750**	**405**	--	**6.6**	**A**	--
SB	L	4	24	600	0	28.8	C	0.0
	T	161	696	432	0	15.5	B	0.0
	R	0	3	--	0	1.3	A	0.0
	Subtotal	**166**	**723**	**436**	--	**15.9**	**B**	--
EB	L	2	16	800	0	8.1	A	0.0
	T	1	4	400	0	12.1	B	0.0
	R	12	36	300	0	2.0	A	0.0
	Subtotal	**14**	**56**	**400**	--	**4.5**	**A**	--
WB	L	63	275	437	0	19.6	B	0.0
	T	2	9	450	0	23.2	C	0.0
	R	5	13	260	0	24.0	C	0.0
	Subtotal	**70**	**297**	**424**	--	**19.9**	**B**	--
	Total	**434**	**1826**	**421**	--	**12.4**	**B**	--

SIMTRAFFIC LEVEL OF SERVICE REPORT

Project: Echeverria Silver Lake Property **HCM:** 2000
Scenario: Traffic Signal AM Silver Lake Road **# of Runs:** 1
TOD: Default TOD **Analysis Period:** 15 Minutes **PHF:** 1

Intersection: 7: US 395 NB Ramps & Red Rock Road **Type:** Un-Signalized

Approach	Movement	Demand Volume	Volume Served			Delay/Veh (sec)		
			Avg	%	Std Dev	Avg	LOS	Std Dev
NB	L	3	14	467	0	4.8	A	0.0
	T	43	183	426	0	1.1	A	0.0
	Subtotal	47	197	428	--	1.4	A	--
SB	T	215	930	435	0	2.0	A	0.0
	R	21	87	414	0	0.8	A	0.0
	Subtotal	236	1017	431	--	1.9	A	--
WB	L	2	6	300	0	19.6	C	0.0
	T	0	2	--	0	11.5	B	0.0
	R	142	566	399	0	10.4	B	0.0
	Subtotal	143	574	401	--	10.5	B	--
	Total	426	1788	420	--	4.6	A	--

Intersection: 10: US 395 SB Ramps & Red Rock Road **Type:** Un-Signalized

Approach	Movement	Demand Volume	Volume Served			Delay/Veh (sec)		
			Avg	%	Std Dev	Avg	LOS	Std Dev
NB	T	7	27	386	0	0.9	A	0.0
	R	3	8	400	0	0.3	A	0.0
	Subtotal	9	35	389	--	0.8	A	--
SB	L	190	811	427	0	4.9	A	0.0
	T	26	122	469	0	4.9	A	0.0
	Subtotal	216	933	432	--	4.9	A	--
EB	L	40	168	420	0	168.9	F	0.0
	R	8	44	550	0	156.3	F	0.0
	Subtotal	48	212	442	--	166.3	F	--
	Total	273	1180	432	--	33.8	D	--

SIMTRAFFIC QUEUING REPORT

Project: Echeverria Silver Lake Property **HCM:** 2000
Scenario: Traffic Signal AM Silver Lake Road **PHF:** 1
TOD: Default TOD **Analysis Period:** 15 Minutes **# of Runs:** 1

Intersection: 2: Moya Blvd & Red Rock Road **Type:** Un-Signalized

Approach	Movement	Storage Length	Maximum Queue (ft)			Average Queue (ft)		
			Avg	> Storage	Std Dev	Avg	> Storage	Std Dev
NB	T	1404	24	--		1	--	
	R	1404	43	--		1	--	
SB	L	1457	59	--		14	--	
WB	L	2469	332	--		98	--	
	R	2469	69	--		22	--	

Intersection: 4: Silver Lake Rd & Red Rock Road **Type:** Signalized

Approach	Movement	Storage Length	Maximum Queue (ft)			Average Queue (ft)		
			Avg	> Storage	Std Dev	Avg	> Storage	Std Dev
NB	L	100	50	--		18	--	
	T	323	202	--		63	--	
	R	323	202	--		63	--	
SB	L	90	117	Yes		15	--	
	T	1404	440	--		146	--	
	R	1404	400	--		52	--	
EB	L	1173	54	--		19	--	
	T	1173	54	--		19	--	
	R	1173	54	--		19	--	
WB	L	2422	187	--		94	--	
	T	2422	187	--		94	--	
	R	2422	187	--		94	--	

SIMTRAFFIC QUEUING REPORT

Project: Echeverria Silver Lake Property **HCM:** 2000
Scenario: Traffic Signal AM Silver Lake Road **PHF:** 1
TOD: Default TOD **Analysis Period:** 15 Minutes **# of Runs:** 1

Intersection: 7: US 395 NB Ramps & Red Rock Road **Type:** Un-Signalized

Approach	Movement	Storage Length	Maximum Queue (ft)			Average Queue (ft)		
			Avg	> Storage	Std Dev	Avg	> Storage	Std Dev
NB	L	385	48	--		6	--	
	T	385	48	--		6	--	
WB	L	1644	177	--		94	--	
	T	1644	177	--		94	--	
	R	1644	177	--		94	--	

Intersection: 10: US 395 SB Ramps & Red Rock Road **Type:** Un-Signalized

Approach	Movement	Storage Length	Maximum Queue (ft)			Average Queue (ft)		
			Avg	> Storage	Std Dev	Avg	> Storage	Std Dev
SB	L	385	95	--		28	--	
	T	385	95	--		28	--	
EB	L	1618	559	--		303	--	
	R	1618	559	--		303	--	

SIMTRAFFIC QUEUING REPORT

Project: Echeverria Silver Lake Property **HCM:** 2000
Scenario: Traffic Signal PM Silver Lake Road **PHF:** 1
TOD: Default TOD **Analysis Period:** 15 Minutes **# of Runs:** 1

Intersection: 2: Moya Blvd & Red Rock Road **Type:** Un-Signalized

Approach	Movement	Storage Length	Maximum Queue (ft)			Average Queue (ft)		
			Avg	> Storage	Std Dev	Avg	> Storage	Std Dev
NB	R	1404	24	--		2	--	
SB	L	1503	33	--		11	--	
WB	L	2469	165	--		67	--	
	R	2469	70	--		26	--	

Intersection: 4: Silver Lake Rd & Red Rock Road **Type:** Signalized

Approach	Movement	Storage Length	Maximum Queue (ft)			Average Queue (ft)		
			Avg	> Storage	Std Dev	Avg	> Storage	Std Dev
NB	L	325	73	--		29	--	
	T	325	183	--		80	--	
	R	325	180	--		80	--	
SB	L	1404	82	--		18	--	
	T	1404	264	--		129	--	
	R	1404	264	--		19	--	
EB	L	1174	54	--		24	--	
	T	1174	54	--		24	--	
	R	1174	54	--		24	--	
WB	L	2422	176	--		66	--	
	T	2422	176	--		66	--	
	R	2422	176	--		66	--	

SIMTRAFFIC QUEUING REPORT

Project: Echeverria Silver Lake Property **HCM:** 2000
Scenario: Traffic Signal PM Silver Lake Road **PHF:** 1
TOD: Default TOD **Analysis Period:** 15 Minutes **# of Runs:** 1

Intersection: 7: US 395 NB Ramps & Red Rock Road **Type:** Un-Signalized

Approach	Movement	Storage Length	Maximum Queue (ft)			Average Queue (ft)		
			Avg	> Storage	Std Dev	Avg	> Storage	Std Dev
NB	L	387	114	--		48	--	
	T	387	114	--		48	--	
SB	R	325	23	--		1	--	
WB	L	1626	897	--		272	--	
	T	1626	897	--		272	--	
	R	1626	897	--		272	--	

Intersection: 10: US 395 SB Ramps & Red Rock Road **Type:** Un-Signalized

Approach	Movement	Storage Length	Maximum Queue (ft)			Average Queue (ft)		
			Avg	> Storage	Std Dev	Avg	> Storage	Std Dev
SB	L	387	257	--		58	--	
	T	387	257	--		58	--	
EB	L	1618	488	--		182	--	
	R	1618	488	--		182	--	

SIMTRAFFIC LEVEL OF SERVICE REPORT

Project: Echeverria Silver Lake Property **HCM:** 2000
Scenario: Traffic Signal PM Silver Lake Road **# of Runs:** 1
TOD: Default TOD **Analysis Period:** 15 Minutes **PHF:** 1

Intersection: 2: Moya Blvd & Red Rock Road **Type:** Un-Signalized

Approach	Movement	Demand Volume	Volume Served			Delay/Veh (sec)		
			Avg	%	Std Dev	Avg	LOS	Std Dev
NB	T	98	378	386	0	3.3	A	0.0
	R	52	202	388	0	3.3	A	0.0
	Subtotal	**151**	**580**	**387**	--	**3.3**	**A**	--
SB	L	9	30	333	0	6.0	A	0.0
	Subtotal	**9**	**30**	**333**	--	**6.0**	**A**	--
WB	L	50	184	368	0	12.2	B	0.0
	R	9	36	450	0	4.9	A	0.0
	Subtotal	**59**	**220**	**373**	--	**11.0**	**B**	--
	Total	**218**	**830**	**381**	--	**5.4**	**A**	--

Intersection: 4: Silver Lake Rd & Red Rock Road **Type:** Signalized

Approach	Movement	Demand Volume	Volume Served			Delay/Veh (sec)		
			Avg	%	Std Dev	Avg	LOS	Std Dev
NB	L	14	52	371	0	20.6	C	0.0
	T	140	526	376	0	5.8	A	0.0
	R	66	264	400	0	5.0	A	0.0
	Subtotal	**220**	**842**	**383**	--	**6.5**	**A**	--
SB	L	13	53	442	0	24.7	C	0.0
	T	177	700	395	0	10.9	B	0.0
	R	1	4	400	0	0.6	A	0.0
	Subtotal	**191**	**757**	**396**	--	**11.8**	**B**	--
EB	L	1	3	300	0	19.9	B	0.0
	T	3	7	350	0	17.6	B	0.0
	R	9	31	388	0	2.6	A	0.0
	Subtotal	**12**	**41**	**342**	--	**6.4**	**A**	--
WB	L	22	106	482	0	22.0	C	0.0
	T	2	4	200	0	15.8	B	0.0
	R	9	43	478	0	9.5	A	0.0
	Subtotal	**33**	**153**	**464**	--	**18.3**	**B**	--
	Total	**456**	**1793**	**393**	--	**9.7**	**A**	--

SIMTRAFFIC LEVEL OF SERVICE REPORT

Project: Echeverria Silver Lake Property **HCM:** 2000
Scenario: Traffic Signal PM Silver Lake Road **# of Runs:** 1
TOD: Default TOD **Analysis Period:** 15 Minutes **PHF:** 1

Intersection: 7: US 395 NB Ramps & Red Rock Road **Type:** Un-Signalized

Approach	Movement	Demand Volume	Volume Served			Delay/Veh (sec)		
			Avg	%	Std Dev	Avg	LOS	Std Dev
NB	L	21	79	376	0	8.6	A	0.0
	T	50	199	398	0	3.4	A	0.0
	Subtotal	**70**	**278**	**397**	--	**4.9**	A	--
SB	T	174	709	407	0	2.2	A	0.0
	R	33	127	385	0	1.2	A	0.0
	Subtotal	**208**	**836**	**402**	--	**2.0**	A	--
WB	L	4	16	400	0	35.0	D	0.0
	T	0	1	--	0	30.1	D	0.0
	R	171	646	380	0	28.9	D	0.0
	Subtotal	**175**	**663**	**381**	--	**29.0**	D	--
	Total	**452**	**1777**	**393**	--	**12.6**	B	--

Intersection: 10: US 395 SB Ramps & Red Rock Road **Type:** Un-Signalized

Approach	Movement	Demand Volume	Volume Served			Delay/Veh (sec)		
			Avg	%	Std Dev	Avg	LOS	Std Dev
NB	T	19	79	416	0	1.1	A	0.0
	R	1	4	400	0	0.1	A	0.0
	Subtotal	**20**	**83**	**415**	--	**1.1**	A	--
SB	L	169	692	409	0	5.4	A	0.0
	T	9	49	544	0	5.6	A	0.0
	Subtotal	**178**	**741**	**416**	--	**5.4**	A	--
EB	L	52	192	369	0	82.2	F	0.0
	R	2	6	300	0	28.6	D	0.0
	Subtotal	**53**	**198**	**374**	--	**80.6**	F	--
	Total	**251**	**1022**	**407**	--	**19.6**	C	--

SIMTRAFFIC LEVEL OF SERVICE REPORT

Project: Echeverria Silver Lake Property **HCM:** 2000
Scenario: Traffic Signal US 395 SB Ramps AM **# of Runs:** 1
TOD: Default TOD **Analysis Period:** 15 Minutes **PHF:** 1

Intersection: 2: Moya Blvd & Red Rock Road **Type:** Un-Signalized

Approach	Movement	Demand Volume	Volume Served			Delay/Veh (sec)		
			Avg	%	Std Dev	Avg	LOS	Std Dev
NB	T	123	474	389	0	3.0	A	0.0
	R	49	190	396	0	1.3	A	0.0
	Subtotal	**171**	**664**	**388**	--	**2.5**	**A**	--
SB	L	7	21	300	0	5.9	A	0.0
	Subtotal	**7**	**21**	**300**	--	**5.9**	**A**	--
WB	L	70	294	420	0	21.7	C	0.0
	R	8	27	338	0	4.1	A	0.0
	Subtotal	**78**	**321**	**412**	--	**20.2**	**C**	--
	Total	**257**	**1006**	**393**	--	**8.2**	**A**	--

Intersection: 4: Silver Lake Rd & Red Rock Road **Type:** Un-Signalized

Approach	Movement	Demand Volume	Volume Served			Delay/Veh (sec)		
			Avg	%	Std Dev	Avg	LOS	Std Dev
NB	L	7	24	400	0	6.5	A	0.0
	T	164	654	399	0	0.8	A	0.0
	R	14	49	350	0	0.7	A	0.0
	Subtotal	**185**	**727**	**393**	--	**1.0**	**A**	--
SB	L	4	18	450	0	6.0	A	0.0
	T	161	682	424	0	2.2	A	0.0
	R	0	2	--	0	0.5	A	0.0
	Subtotal	**166**	**702**	**423**	--	**2.3**	**A**	--
EB	L	2	15	750	0	30.0	D	0.0
	T	1	4	400	0	154.4	F	0.0
	R	12	36	300	0	23.6	C	0.0
	Subtotal	**14**	**55**	**393**	--	**34.9**	**D**	--
WB	L	63	89	141	0	3441.8	F	0.0
	T	2	0	0	0	0.0	--	0.0
	R	5	2	40	0	5586.8	F	0.0
	Subtotal	**70**	**91**	**130**	--	**3488.9**	**F**	--
	Total	**434**	**1575**	**363**	--	**204.3**	**F**	--

SIMTRAFFIC LEVEL OF SERVICE REPORT

Project: Echeverria Silver Lake Property **HCM:** 2000
Scenario: Traffic Signal US 395 SB Ramps AM **# of Runs:** 1
TOD: Default TOD **Analysis Period:** 15 Minutes **PHF:** 1

Intersection: 7: US 395 NB Ramps & Red Rock Road **Type:** Un-Signalized

Approach	Movement	Demand Volume	Volume Served			Delay/Veh (sec)		
			Avg	%	Std Dev	Avg	LOS	Std Dev
NB	L	3	13	433	0	8.1	A	0.0
	T	43	176	409	0	2.4	A	0.0
	Subtotal	**47**	**189**	**411**	--	**2.8**	**A**	--
SB	T	215	736	344	0	1.2	A	0.0
	R	21	76	362	0	0.6	A	0.0
	Subtotal	**236**	**812**	**344**	--	**1.1**	**A**	--
WB	L	2	6	300	0	20.4	C	0.0
	T	0	2	--	0	11.5	B	0.0
	R	142	549	387	0	11.2	B	0.0
	Subtotal	**143**	**557**	**390**	--	**11.3**	**B**	--
	Total	**426**	**1558**	**366**	--	**5.0**	**A**	--

Intersection: 10: US 395 SB Ramps & Red Rock Road **Type:** Signalized

Approach	Movement	Demand Volume	Volume Served			Delay/Veh (sec)		
			Avg	%	Std Dev	Avg	LOS	Std Dev
NB	T	7	28	400	0	2.0	A	0.0
	R	3	9	450	0	0.5	A	0.0
	Subtotal	**9**	**37**	**411**	--	**1.6**	**A**	--
SB	L	190	649	342	0	10.4	B	0.0
	T	26	94	362	0	9.2	A	0.0
	Subtotal	**216**	**743**	**344**	--	**10.2**	**B**	--
EB	L	40	163	408	0	34.8	C	0.0
	R	8	46	575	0	22.3	C	0.0
	Subtotal	**48**	**209**	**435**	--	**32.0**	**C**	--
	Total	**273**	**989**	**362**	--	**14.5**	**B**	--

SIMTRAFFIC QUEUING REPORT

Project: Echeverria Silver Lake Property **HCM:** 2000
Scenario: Traffic Signal US 395 SB Ramps AM **PHF:** 1
TOD: Default TOD **Analysis Period:** 15 Minutes **# of Runs:** 1

Intersection: 2: Moya Blvd & Red Rock Road **Type:** Un-Signalized

Approach	Movement	Storage Length	Maximum Queue (ft)			Average Queue (ft)		
			Avg	> Storage	Std Dev	Avg	> Storage	Std Dev
SB	L	1457	53	--		10	--	
WB	L	2469	240	--		119	--	
	R	2469	69	--		20	--	

Intersection: 4: Silver Lake Rd & Red Rock Road **Type:** Un-Signalized

Approach	Movement	Storage Length	Maximum Queue (ft)			Average Queue (ft)		
			Avg	> Storage	Std Dev	Avg	> Storage	Std Dev
NB	L	325	49	--		14	--	
	T	325	12	--		0	--	
	R	325	12	--		0	--	
SB	L	1404	10	--		3	--	
EB	L	1174	141	--		43	--	
	T	1174	141	--		43	--	
	R	1174	141	--		43	--	
WB	L	2422	2476	Yes		2072	--	
	T	2422	2476	Yes		2072	--	
	R	2422	2476	Yes		2072	--	

SIMTRAFFIC QUEUING REPORT

Project: Echeverria Silver Lake Property **HCM:** 2000
Scenario: Traffic Signal US 395 SB Ramps AM **PHF:** 1
TOD: Default TOD **Analysis Period:** 15 Minutes **# of Runs:** 1

Intersection: 7: US 395 NB Ramps & Red Rock Road **Type:** Un-Signalized

Approach	Movement	Storage Length	Maximum Queue (ft)			Average Queue (ft)		
			Avg	> Storage	Std Dev	Avg	> Storage	Std Dev
NB	L	387	162	--		19	--	
	T	387	162	--		19	--	
SB	T	325	31	--		1	--	
WB	L	1626	222	--		102	--	
	T	1626	222	--		102	--	
	R	1626	222	--		102	--	

Intersection: 10: US 395 SB Ramps & Red Rock Road **Type:** Signalized

Approach	Movement	Storage Length	Maximum Queue (ft)			Average Queue (ft)		
			Avg	> Storage	Std Dev	Avg	> Storage	Std Dev
NB	T	1190	28	--		3	--	
	R	1190	28	--		3	--	
SB	L	387	347	--		162	--	
	T	387	347	--		162	--	
EB	L	1618	284	--		112	--	
	R	1618	284	--		112	--	

SIMTRAFFIC LEVEL OF SERVICE REPORT

Project: Echeverria Silver Lake Property **HCM:** 2000
Scenario: Traffic Signal US 395 SB Ramps PM **# of Runs:** 1
TOD: Default TOD **Analysis Period:** 15 Minutes **PHF:** 1

Intersection: 2: Moya Blvd & Red Rock Road **Type:** Un-Signalized

Approach	Movement	Demand Volume	Volume Served			Delay/Veh (sec)		
			Avg	%	Std Dev	Avg	LOS	Std Dev
NB	T	98	365	372	0	2.0	A	0.0
	R	52	201	387	0	1.5	A	0.0
	Subtotal	**151**	**566**	**377**	--	**1.8**	**A**	--
SB	L	9	27	300	0	6.9	A	0.0
	Subtotal	**9**	**27**	**300**	--	**6.9**	**A**	--
WB	L	50	178	356	0	11.8	B	0.0
	R	9	38	475	0	4.7	A	0.0
	Subtotal	**59**	**216**	**366**	--	**10.6**	**B**	--
	Total	**218**	**809**	**371**	--	**4.3**	**A**	--

Intersection: 4: Silver Lake Rd & Red Rock Road **Type:** Un-Signalized

Approach	Movement	Demand Volume	Volume Served			Delay/Veh (sec)		
			Avg	%	Std Dev	Avg	LOS	Std Dev
NB	L	14	44	314	0	5.6	A	0.0
	T	140	532	380	0	1.4	A	0.0
	R	66	274	415	0	1.1	A	0.0
	Subtotal	**220**	**850**	**386**	--	**1.5**	**A**	--
SB	L	13	44	367	0	15.1	C	0.0
	T	177	709	401	0	1.8	A	0.0
	R	1	3	300	0	0.4	A	0.0
	Subtotal	**191**	**756**	**396**	--	**2.6**	**A**	--
EB	L	1	4	400	0	28.1	D	0.0
	T	3	9	450	0	141.3	F	0.0
	R	9	29	363	0	40.5	E	0.0
	Subtotal	**12**	**42**	**350**	--	**60.9**	**F**	--
WB	L	22	66	300	0	1093.9	F	0.0
	T	2	3	150	0	1463.5	F	0.0
	R	9	26	289	0	1174.6	F	0.0
	Subtotal	**33**	**95**	**288**	--	**1127.7**	**F**	--
	Total	**456**	**1743**	**382**	--	**64.8**	**F**	--

SIMTRAFFIC LEVEL OF SERVICE REPORT

Project: Echeverria Silver Lake Property **HCM:** 2000
Scenario: Traffic Signal US 395 SB Ramps PM **# of Runs:** 1
TOD: Default TOD **Analysis Period:** 15 Minutes **PHF:** 1

Intersection: 7: US 395 NB Ramps & Red Rock Road **Type:** Un-Signalized

Approach	Movement	Demand Volume	Volume Served			Delay/Veh (sec)		
			Avg	%	Std Dev	Avg	LOS	Std Dev
NB	L	21	84	400	0	12.5	B	0.0
	T	50	197	394	0	6.2	A	0.0
	Subtotal	70	281	401	--	8.1	A	--
SB	T	174	684	393	0	1.3	A	0.0
	R	33	120	364	0	0.6	A	0.0
	Subtotal	208	804	387	--	1.2	A	--
WB	L	4	17	425	0	36.7	E	0.0
	T	0	1	--	0	102.9	F	0.0
	R	171	656	386	0	28.1	D	0.0
	Subtotal	175	674	387	--	28.4	D	--
	Total	452	1759	389	--	12.7	B	--

Intersection: 10: US 395 SB Ramps & Red Rock Road **Type:** Signalized

Approach	Movement	Demand Volume	Volume Served			Delay/Veh (sec)		
			Avg	%	Std Dev	Avg	LOS	Std Dev
NB	T	19	77	405	0	4.8	A	0.0
	R	1	4	400	0	0.2	A	0.0
	Subtotal	20	81	405	--	4.6	A	--
SB	L	169	673	398	0	12.5	B	0.0
	T	9	40	444	0	10.1	B	0.0
	Subtotal	178	713	401	--	12.4	B	--
EB	L	52	200	385	0	26.2	C	0.0
	R	2	6	300	0	13.0	B	0.0
	Subtotal	53	206	389	--	25.8	C	--
	Total	251	1000	398	--	14.5	B	--

SIMTRAFFIC QUEUING REPORT

Project: Echeverria Silver Lake Property **HCM:** 2000
Scenario: Traffic Signal US 395 SB Ramps PM **PHF:** 1
TOD: Default TOD **Analysis Period:** 15 Minutes **# of Runs:** 1

Intersection: 2: Moya Blvd & Red Rock Road **Type:** Un-Signalized

Approach	Movement	Storage Length	Maximum Queue (ft)			Average Queue (ft)		
			Avg	> Storage	Std Dev	Avg	> Storage	Std Dev
NB	R	1404	20	--		1	--	
SB	L	1503	32	--		15	--	
WB	L	2469	162	--		62	--	
	R	2469	50	--		23	--	

Intersection: 4: Silver Lake Rd & Red Rock Road **Type:** Un-Signalized

Approach	Movement	Storage Length	Maximum Queue (ft)			Average Queue (ft)		
			Avg	> Storage	Std Dev	Avg	> Storage	Std Dev
NB	L	325	48	--		16	--	
	T	325	21	--		3	--	
	R	325	21	--		3	--	
SB	L	1404	73	--		10	--	
	T	1404	52	--		2	--	
EB	L	1174	115	--		42	--	
	T	1174	115	--		42	--	
	R	1174	115	--		42	--	
WB	L	2422	1492	--		937	--	
	T	2422	1492	--		937	--	
	R	2422	1492	--		937	--	

SIMTRAFFIC QUEUING REPORT

Project: Echeverria Silver Lake Property **HCM:** 2000
Scenario: Traffic Signal US 395 SB Ramps PM **PHF:** 1
TOD: Default TOD **Analysis Period:** 15 Minutes **# of Runs:** 1

Intersection: 7: US 395 NB Ramps & Red Rock Road **Type:** Un-Signalized

Approach	Movement	Storage Length	Maximum Queue (ft)			Average Queue (ft)		
			Avg	> Storage	Std Dev	Avg	> Storage	Std Dev
NB	L	387	158	--		62	--	
	T	387	158	--		62	--	
SB	R	325	19	--		1	--	
WB	L	1626	686	--		237	--	
	T	1626	686	--		237	--	
	R	1626	686	--		237	--	

Intersection: 10: US 395 SB Ramps & Red Rock Road **Type:** Signalized

Approach	Movement	Storage Length	Maximum Queue (ft)			Average Queue (ft)		
			Avg	> Storage	Std Dev	Avg	> Storage	Std Dev
NB	T	1190	134	--		14	--	
	R	1190	134	--		14	--	
SB	L	387	324	--		170	--	
	T	387	324	--		170	--	
EB	L	1618	157	--		96	--	
	R	1618	157	--		96	--	

APPENDIX H:
ROUNDABOUT INTERSECTION MITIGATION TECHNICAL CALCULATIONS

SIMTRAFFIC LEVEL OF SERVICE REPORT

Project: Echeverria Silver Lake Property
Scenario: Roundabout AM Silver Lake Road
TOD: Default TOD **Analysis Period:** 15 Minutes

HCM: 2000
# of Runs: 1
PHF: 1

Intersection: 2: Moya Blvd & Red Rock Road **Type:** Un-Signalized

Approach	Movement	Demand Volume	Volume Served			Delay/Veh (sec)		
			Avg	%	Std Dev	Avg	LOS	Std Dev
NB	T	123	482	395	0	3.2	A	0.0
	R	49	180	375	0	1.8	A	0.0
	Subtotal	**171**	**662**	**387**	--	**2.8**	**A**	--
SB	L	7	29	414	0	5.9	A	0.0
	Subtotal	**7**	**29**	**414**	--	**5.9**	**A**	--
WB	L	70	306	437	0	20.2	C	0.0
	R	8	32	400	0	4.3	A	0.0
	Subtotal	**78**	**338**	**433**	--	**18.7**	**C**	--
	Total	**257**	**1029**	**402**	--	**8.1**	**A**	--

Intersection: 4: Silver Lake Rd & Red Rock Road **Type:** Un-Signalized

Approach	Movement	Demand Volume	Volume Served			Delay/Veh (sec)		
			Avg	%	Std Dev	Avg	LOS	Std Dev
NB	L	7	24	400	0	2.3	A	0.0
	T	164	651	397	0	3.2	A	0.0
	R	14	50	357	0	2.4	A	0.0
	Subtotal	**185**	**725**	**392**	--	**3.1**	**A**	--
SB	L	4	26	650	0	6.6	A	0.0
	T	161	696	432	0	6.8	A	0.0
	R	0	4	--	0	2.8	A	0.0
	Subtotal	**165**	**726**	**437**	--	**6.8**	**A**	--
EB	L	2	15	750	0	35.2	E	0.0
	T	1	4	400	0	13.3	B	0.0
	R	12	38	317	0	7.0	A	0.0
	Subtotal	**14**	**57**	**407**	--	**14.9**	**B**	--
WB	L	63	278	441	0	48.0	E	0.0
	T	2	9	450	0	65.1	F	0.0
	R	5	16	320	0	35.0	D	0.0
	Subtotal	**70**	**303**	**433**	--	**47.8**	**E**	--
	Total	**434**	**1811**	**417**	--	**12.4**	**B**	--

SIMTRAFFIC LEVEL OF SERVICE REPORT

Project: Echeverria Silver Lake Property
Scenario: Roundabout AM Silver Lake Road
TOD: Default TOD **Analysis Period:** 15 Minutes

HCM: 2000
# of Runs: 1
PHF: 1

Intersection: 7: US 395 NB Ramps & Red Rock Road **Type:** Un-Signalized

Approach	Movement	Demand Volume	Volume Served			Delay/Veh (sec)		
			Avg	%	Std Dev	Avg	LOS	Std Dev
NB	L	3	12	400	0	6.9	A	0.0
	T	43	155	360	0	1.7	A	0.0
	Subtotal	47	167	363	--	2.1	A	--
SB	T	215	930	435	0	3.1	A	0.0
	R	21	85	405	0	2.4	A	0.0
	Subtotal	236	1015	430	--	3.0	A	--
WB	L	2	9	450	0	21.4	C	0.0
	T	0	2	--	0	18.6	C	0.0
	R	142	568	400	0	11.3	B	0.0
	Subtotal	143	579	405	--	11.5	B	--
	Total	426	1761	413	--	5.7	A	--

Intersection: 10: US 395 SB Ramps & Red Rock Road **Type:** Un-Signalized

Approach	Movement	Demand Volume	Volume Served			Delay/Veh (sec)		
			Avg	%	Std Dev	Avg	LOS	Std Dev
NB	T	7	29	414	0	0.8	A	0.0
	R	3	8	400	0	0.3	A	0.0
	Subtotal	9	37	411	--	0.7	A	--
SB	L	190	819	431	0	5.5	A	0.0
	T	26	118	454	0	4.2	A	0.0
	Subtotal	216	937	434	--	6.3	A	--
EB	L	40	137	343	0	462.8	F	0.0
	R	8	40	500	0	377.7	F	0.0
	Subtotal	48	177	369	--	443.6	F	--
	Total	273	1151	422	--	72.6	F	--

SIMTRAFFIC QUEUING REPORT

Project: Echeverria Silver Lake Property **HCM:** 2000
Scenario: Roundabout AM Silver Lake Road **PHF:** 1
TOD: Default TOD **Analysis Period:** 15 Minutes **# of Runs:** 1

Intersection: 2: Moya Blvd & Red Rock Road **Type:** Un-Signalized

Approach	Movement	Storage Length	Maximum Queue (ft)			Average Queue (ft)		
			Avg	> Storage	Std Dev	Avg	> Storage	Std Dev
NB	T	1278	23	--		1	--	
	R	1278	22	--		1	--	
SB	L	1457	34	--		12	--	
WB	L	2469	355	--		100	--	
	R	2469	69	--		21	--	

Intersection: 4: Silver Lake Rd & Red Rock Road **Type:** Un-Signalized

Approach	Movement	Storage Length	Maximum Queue (ft)			Average Queue (ft)		
			Avg	> Storage	Std Dev	Avg	> Storage	Std Dev
NB	L	164	70	--		14	--	
	T	164	70	--		14	--	
	R	164	45	--		5	--	
	U	164	70	--		14	--	
SB	L	1278	230	--		56	--	
	T	1278	230	--		56	--	
	R	1278	216	--		40	--	
	U	1278	230	--		56	--	
EB	L	1029	124	--		26	--	
	T	1029	124	--		26	--	
	R	1029	124	--		26	--	
	U	1029	124	--		26	--	
WB	L	2309	455	--		165	--	
	T	2309	455	--		165	--	
	R	2309	455	--		165	--	
	U	2309	455	--		165	--	

SIMTRAFFIC QUEUING REPORT

Project: Echeverria Silver Lake Property **HCM:** 2000
Scenario: Roundabout AM Silver Lake Road **PHF:** 1
TOD: Default TOD **Analysis Period:** 15 Minutes **# of Runs:** 1

Intersection: 7: US 395 NB Ramps & Red Rock Road **Type:** Un-Signalized

Approach	Movement	Storage Length	Maximum Queue (ft)			Average Queue (ft)		
			Avg	> Storage	Std Dev	Avg	> Storage	Std Dev
NB	L	387	120	--		10	--	
	T	387	120	--		10	--	
SB	R	164	21	--		1	--	
WB	L	1651	257	--		110	--	
	T	1651	257	--		110	--	
	R	1651	257	--		110	--	

Intersection: 10: US 395 SB Ramps & Red Rock Road **Type:** Un-Signalized

Approach	Movement	Storage Length	Maximum Queue (ft)			Average Queue (ft)		
			Avg	> Storage	Std Dev	Avg	> Storage	Std Dev
SB	L	387	121	--		19	--	
	T	387	121	--		19	--	
EB	L	1618	1152	--		644	--	
	R	1618	1152	--		644	--	

SIMTRAFFIC LEVEL OF SERVICE REPORT

Project: Echeverria Silver Lake Property
Scenario: Roundabout PM Silver Lake Road
TOD: Default TOD **Analysis Period:** 15 Minutes

HCM: 2000
# of Runs: 1
PHF: 1

Intersection: 2: Moya Blvd & Red Rock Road **Type:** Un-Signalized

Approach	Movement	Demand Volume	Volume Served			Delay/Veh (sec)		
			Avg	%	Std Dev	Avg	LOS	Std Dev
NB	T	98	378	386	0	2.3	A	0.0
	R	52	200	385	0	2.3	A	0.0
	Subtotal	**151**	**578**	**385**	--	**2.3**	**A**	--
SB	L	9	30	333	0	6.2	A	0.0
	Subtotal	**9**	**30**	**333**	--	**6.2**	**A**	--
WB	L	50	184	368	0	14.1	B	0.0
	R	9	36	450	0	5.1	A	0.0
	Subtotal	**59**	**220**	**373**	--	**12.6**	**B**	--
	Total	**218**	**828**	**380**	--	**5.2**	**A**	--

Intersection: 4: Silver Lake Rd & Red Rock Road **Type:** Un-Signalized

Approach	Movement	Demand Volume	Volume Served			Delay/Veh (sec)		
			Avg	%	Std Dev	Avg	LOS	Std Dev
NB	L	14	52	371	0	2.5	A	0.0
	T	140	525	375	0	3.4	A	0.0
	R	66	260	394	0	2.6	A	0.0
	Subtotal	**220**	**837**	**380**	--	**3.1**	**A**	--
SB	L	13	52	433	0	5.0	A	0.0
	T	177	703	397	0	5.7	A	0.0
	R	1	4	400	0	2.9	A	0.0
	Subtotal	**191**	**759**	**397**	--	**5.6**	**A**	--
EB	L	1	3	300	0	7.5	A	0.0
	T	3	7	350	0	7.6	A	0.0
	R	9	31	388	0	4.4	A	0.0
	Subtotal	**12**	**41**	**342**	--	**5.2**	**A**	--
WB	L	22	106	482	0	12.3	B	0.0
	T	2	5	250	0	11.7	B	0.0
	R	9	43	478	0	7.7	A	0.0
	Subtotal	**33**	**154**	**467**	--	**11.0**	**B**	--
	Total	**456**	**1791**	**393**	--	**4.9**	**A**	--

SIMTRAFFIC LEVEL OF SERVICE REPORT

Project: Echeverria Silver Lake Property **HCM:** 2000
Scenario: Roundabout PM Silver Lake Road **# of Runs:** 1
TOD: Default TOD **Analysis Period:** 15 Minutes **PHF:** 1

Intersection: 7: US 395 NB Ramps & Red Rock Road **Type:** Un-Signalized

Approach	Movement	Demand Volume	Volume Served			Delay/Veh (sec)		
			Avg	%	Std Dev	Avg	LOS	Std Dev
NB	L	21	78	371	0	8.5	A	0.0
	T	50	195	390	0	3.5	A	0.0
	Subtotal	70	273	390	--	4.9	A	--
SB	T	174	710	408	0	2.5	A	0.0
	R	33	127	385	0	2.1	A	0.0
	Subtotal	208	837	402	--	2.4	A	--
WB	L	4	16	400	0	27.0	D	0.0
	T	0	1	--	0	23.6	C	0.0
	R	171	646	380	0	24.9	C	0.0
	Subtotal	175	663	381	--	24.9	C	--
	Total	452	1773	392	--	11.2	B	--

Intersection: 10: US 395 SB Ramps & Red Rock Road **Type:** Un-Signalized

Approach	Movement	Demand Volume	Volume Served			Delay/Veh (sec)		
			Avg	%	Std Dev	Avg	LOS	Std Dev
NB	T	19	79	416	0	0.9	A	0.0
	R	1	4	400	0	0.1	A	0.0
	Subtotal	20	83	415	--	0.9	A	--
SB	L	169	688	407	0	4.3	A	0.0
	T	9	49	544	0	3.5	A	0.0
	Subtotal	178	737	414	--	4.2	A	--
EB	L	52	189	363	0	166.7	F	0.0
	R	2	6	300	0	106.0	F	0.0
	Subtotal	53	195	368	--	164.8	F	--
	Total	251	1015	404	--	34.8	D	--

SIMTRAFFIC QUEUING REPORT

Project: Echeverria Silver Lake Property **HCM:** 2000
Scenario: Roundabout PM Silver Lake Road **PHF:** 1
TOD: Default TOD **Analysis Period:** 15 Minutes **# of Runs:** 1

Intersection: 2: Moya Blvd & Red Rock Road **Type:** Un-Signalized

Approach	Movement	Storage Length	Maximum Queue (ft)			Average Queue (ft)		
			Avg	> Storage	Std Dev	Avg	> Storage	Std Dev
SB	L	1503	34	--		12	--	
WB	L	2469	253	--		71	--	
	R	2469	70	--		26	--	

Intersection: 4: Silver Lake Rd & Red Rock Road **Type:** Un-Signalized

Approach	Movement	Storage Length	Maximum Queue (ft)			Average Queue (ft)		
			Avg	> Storage	Std Dev	Avg	> Storage	Std Dev
NB	L	164	77	--		16	--	
	T	164	77	--		16	--	
	R	164	77	--		16	--	
	U	164	77	--		16	--	
SB	L	1278	89	--		48	--	
	T	1278	89	--		48	--	
	R	1278	79	--		19	--	
	U	1278	89	--		48	--	
EB	L	1029	56	--		22	--	
	T	1029	56	--		22	--	
	R	1029	56	--		22	--	
	U	1029	56	--		22	--	
WB	L	2309	138	--		48	--	
	T	2309	138	--		48	--	
	R	2309	138	--		48	--	
	U	2309	138	--		48	--	

SIMTRAFFIC QUEUING REPORT

Project: Echeverria Silver Lake Property **HCM:** 2000
Scenario: Roundabout PM Silver Lake Road **PHF:** 1
TOD: Default TOD **Analysis Period:** 15 Minutes **# of Runs:** 1

Intersection: 7: US 395 NB Ramps & Red Rock Road **Type:** Un-Signalized

Approach	Movement	Storage Length	Maximum Queue (ft)			Average Queue (ft)		
			Avg	> Storage	Std Dev	Avg	> Storage	Std Dev
NB	L	387	120	--		40	--	
	T	387	120	--		40	--	
SB	T	164	20	--		1	--	
	R	164	21	--		1	--	
WB	L	1651	855	--		230	--	
	T	1651	855	--		230	--	
	R	1651	855	--		230	--	

Intersection: 10: US 395 SB Ramps & Red Rock Road **Type:** Un-Signalized

Approach	Movement	Storage Length	Maximum Queue (ft)			Average Queue (ft)		
			Avg	> Storage	Std Dev	Avg	> Storage	Std Dev
SB	L	387	96	--		35	--	
	T	387	96	--		35	--	
EB	L	1618	651	--		305	--	
	R	1618	651	--		305	--	

SIMTRAFFIC LEVEL OF SERVICE REPORT

Project: Echeverria Silver Lake Property **HCM:** 2000
Scenario: Roundabout US 395 SB Ramps AM **# of Runs:** 1
TOD: Default TOD **Analysis Period:** 15 Minutes **PHF:** 1

Intersection: 2: Moya Blvd & Red Rock Road **Type:** Un-Signalized

Approach	Movement	Demand Volume	Volume Served			Delay/Veh (sec)		
			Avg	%	Std Dev	Avg	LOS	Std Dev
NB	T	123	474	389	0	2.5	A	0.0
	R	49	189	394	0	1.4	A	0.0
	Subtotal	**171**	**663**	**388**	--	**2.2**	A	--
SB	L	7	21	300	0	5.8	A	0.0
	Subtotal	**7**	**21**	**300**	--	**6.8**	A	--
WB	L	70	294	420	0	22.7	C	0.0
	R	8	27	338	0	3.2	A	0.0
	Subtotal	**78**	**321**	**412**	--	**21.1**	C	--
	Total	**257**	**1005**	**393**	--	**8.3**	A	--

Intersection: 4: Silver Lake Rd & Red Rock Road **Type:** Un-Signalized

Approach	Movement	Demand Volume	Volume Served			Delay/Veh (sec)		
			Avg	%	Std Dev	Avg	LOS	Std Dev
NB	L	7	24	400	0	7.0	A	0.0
	T	164	657	401	0	0.8	A	0.0
	R	14	49	350	0	0.7	A	0.0
	Subtotal	**185**	**730**	**395**	--	**1.0**	A	--
SB	L	4	18	450	0	7.8	A	0.0
	T	161	682	424	0	2.1	A	0.0
	R	0	2	--	0	0.5	A	0.0
	Subtotal	**166**	**702**	**423**	--	**2.2**	A	--
EB	L	2	15	750	0	35.4	E	0.0
	T	1	3	300	0	167.5	F	0.0
	R	12	36	300	0	17.7	C	0.0
	Subtotal	**14**	**54**	**386**	--	**30.9**	D	--
WB	L	63	76	121	0	4205.5	F	0.0
	T	2	0	0	0	0.0	--	0.0
	R	5	3	60	0	5730.4	F	0.0
	Subtotal	**70**	**79**	**113**	--	**4263.4**	F	--
	Total	**434**	**1555**	**361**	--	**217.8**	F	--

SIMTRAFFIC LEVEL OF SERVICE REPORT

Project: Echeverria Silver Lake Property
Scenario: Roundabout US 395 SB Ramps AM
TOD: Default TOD **Analysis Period:** 15 Minutes

HCM: 2000
# of Runs: 1
PHF: 1

Intersection: 7: US 395 NB Ramps & Red Rock Road **Type:** Un-Signalized

Approach	Movement	Demand Volume	Volume Served			Delay/Veh (sec)		
			Avg	%	Std Dev	Avg	LOS	Std Dev
NB	L	3	13	433	0	6.3	A	0.0
	T	43	179	416	0	1.6	A	0.0
	Subtotal	47	192	417	--	1.9	A	--
SB	T	215	728	340	0	1.4	A	0.0
	R	21	72	343	0	0.4	A	0.0
	Subtotal	236	800	339	--	1.3	A	--
WB	L	2	6	300	0	25.3	D	0.0
	T	0	2	--	0	21.2	C	0.0
	R	142	549	387	0	11.7	B	0.0
	Subtotal	143	557	390	--	11.9	B	--
	Total	426	1549	364	--	5.2	A	--

Intersection: 10: US 395 SB Ramps & Red Rock Road **Type:** Un-Signalized

Approach	Movement	Demand Volume	Volume Served			Delay/Veh (sec)		
			Avg	%	Std Dev	Avg	LOS	Std Dev
NB	T	7	28	400	0	9.2	A	0.0
	R	3	9	450	0	6.9	A	0.0
	Subtotal	9	37	411	--	8.6	A	--
SB	L	190	643	338	0	4.0	A	0.0
	T	26	94	362	0	4.3	A	0.0
	Subtotal	216	737	341	--	4.0	A	--
EB	L	40	163	408	0	16.8	C	0.0
	R	8	47	588	0	14.7	B	0.0
	Subtotal	48	210	438	--	16.3	C	--
	Total	273	984	360	--	6.8	A	--

SIMTRAFFIC QUEUING REPORT

Project: Echeverria Silver Lake Property **HCM:** 2000
Scenario: Roundabout US 395 SB Ramps AM **PHF:** 1
TOD: Default TOD **Analysis Period:** 15 Minutes **# of Runs:** 1

Intersection: 2: Moya Blvd & Red Rock Road **Type:** Un-Signalized

Approach	Movement	Storage Length	Maximum Queue (ft)			Average Queue (ft)		
			Avg	> Storage	Std Dev	Avg	> Storage	Std Dev
SB	L	1457	53	--		12	--	
WB	L	2469	308	--		116	--	
	R	2469	69	--		20	--	

Intersection: 4: Silver Lake Rd & Red Rock Road **Type:** Un-Signalized

Approach	Movement	Storage Length	Maximum Queue (ft)			Average Queue (ft)		
			Avg	> Storage	Std Dev	Avg	> Storage	Std Dev
NB	L	325	49	--		13	--	
SB	L	1404	10	--		3	--	
EB	L	1174	119	--		42	--	
	T	1174	119	--		42	--	
	R	1174	119	--		42	--	
WB	L	2422	2476	Yes		2108	--	
	T	2422	2476	Yes		2108	--	
	R	2422	2476	Yes		2108	--	

SIMTRAFFIC QUEUING REPORT

Project: Echeverria Silver Lake Property **HCM:** 2000
Scenario: Roundabout US 395 SB Ramps AM **PHF:** 1
TOD: Default TOD **Analysis Period:** 15 Minutes **# of Runs:** 1

Intersection: 7: US 395 NB Ramps & Red Rock Road **Type:** Un-Signalized

Approach	Movement	Storage Length	Maximum Queue (ft)			Average Queue (ft)		
			Avg	> Storage	Std Dev	Avg	> Storage	Std Dev
NB	L	217	49	--		5	--	
	T	217	49	--		5	--	
WB	L	1626	221	--		110	--	
	T	1626	221	--		110	--	
	R	1626	221	--		110	--	

Intersection: 10: US 395 SB Ramps & Red Rock Road **Type:** Un-Signalized

Approach	Movement	Storage Length	Maximum Queue (ft)			Average Queue (ft)		
			Avg	> Storage	Std Dev	Avg	> Storage	Std Dev
NB	T	1026	55	--		21	--	
	R	1026	55	--		21	--	
	U	1026	55	--		21	--	
SB	L	217	82	--		38	--	
	T	217	82	--		38	--	
	U	217	82	--		38	--	
EB	L	1454	263	--		76	--	
	T	1454	263	--		76	--	
	R	1454	263	--		76	--	

SIMTRAFFIC LEVEL OF SERVICE REPORT

Project: Echeverria Silver Lake Property **HCM:** 2000
Scenario: Roundabout US 395 SB Ramps PM **# of Runs:** 1
TOD: Default TOD **Analysis Period:** 15 Minutes **PHF:** 1

Intersection: 2: Moya Blvd & Red Rock Road **Type:** Un-Signalized

Approach	Movement	Demand Volume	Volume Served			Delay/Veh (sec)		
			Avg	%	Std Dev	Avg	LOS	Std Dev
NB	T	98	335	342	0	2.3	A	0.0
	R	52	185	356	0	1.9	A	0.0
	Subtotal	**151**	**520**	**347**	--	**2.2**	**A**	--
SB	L	9	25	278	0	5.8	A	0.0
	Subtotal	**9**	**25**	**278**	--	**5.8**	**A**	--
WB	L	50	166	332	0	12.4	B	0.0
	R	9	33	413	0	4.7	A	0.0
	Subtotal	**59**	**199**	**337**	--	**11.1**	**B**	--
	Total	**218**	**744**	**341**	--	**4.7**	**A**	--

Intersection: 4: Silver Lake Rd & Red Rock Road **Type:** Un-Signalized

Approach	Movement	Demand Volume	Volume Served			Delay/Veh (sec)		
			Avg	%	Std Dev	Avg	LOS	Std Dev
NB	L	14	41	293	0	4.8	A	0.0
	T	140	493	352	0	1.5	A	0.0
	R	66	250	379	0	1.2	A	0.0
	Subtotal	**220**	**784**	**355**	--	**1.6**	**A**	--
SB	L	13	38	317	0	12.0	B	0.0
	T	177	653	369	0	2.0	A	0.0
	R	1	3	300	0	0.4	A	0.0
	Subtotal	**191**	**694**	**363**	--	**2.5**	**A**	--
EB	L	1	5	500	0	101.4	F	0.0
	T	3	11	550	0	184.7	F	0.0
	R	9	27	338	0	98.2	F	0.0
	Subtotal	**12**	**43**	**358**	--	**120.7**	**F**	--
WB	L	22	56	255	0	1410.6	F	0.0
	T	2	2	100	0	1929.9	F	0.0
	R	9	22	244	0	1596.0	F	0.0
	Subtotal	**33**	**80**	**242**	--	**1474.6**	**F**	--
	Total	**456**	**1601**	**351**	--	**78.8**	**F**	--

SIMTRAFFIC LEVEL OF SERVICE REPORT

Project: Echeverria Silver Lake Property
Scenario: Roundabout US 395 SB Ramps PM
TOD: Default TOD **Analysis Period:** 15 Minutes

HCM: 2000
# of Runs: 1
PHF: 1

Intersection: 7: US 395 NB Ramps & Red Rock Road **Type:** Un-Signalized

Approach	Movement	Demand Volume	Volume Served			Delay/Veh (sec)		
			Avg	%	Std Dev	Avg	LOS	Std Dev
NB	L	21	81	386	0	8.2	A	0.0
	T	50	179	358	0	3.7	A	0.0
	Subtotal	**70**	**260**	**371**	--	**5.1**	**A**	--
SB	T	174	627	360	0	1.3	A	0.0
	R	33	109	330	0	0.7	A	0.0
	Subtotal	**208**	**736**	**354**	--	**1.2**	**A**	--
WB	L	4	18	450	0	41.6	E	0.0
	T	0	1	--	0	29.6	D	0.0
	R	171	606	356	0	31.3	D	0.0
	Subtotal	**175**	**625**	**359**	--	**31.6**	**D**	--
	Total	**452**	**1621**	**359**	--	**13.5**	**B**	--

Intersection: 10: US 395 SB Ramps & Red Rock Road **Type:** Un-Signalized

Approach	Movement	Demand Volume	Volume Served			Delay/Veh (sec)		
			Avg	%	Std Dev	Avg	LOS	Std Dev
NB	T	19	70	368	0	11.1	B	0.0
	R	1	4	400	0	8.9	A	0.0
	Subtotal	**20**	**74**	**370**	--	**11.0**	**B**	--
SB	L	169	623	369	0	4.0	A	0.0
	T	9	37	411	0	4.5	A	0.0
	Subtotal	**178**	**660**	**371**	--	**4.0**	**A**	--
EB	L	52	186	358	0	7.7	A	0.0
	R	2	3	150	0	16.6	C	0.0
	Subtotal	**53**	**189**	**357**	--	**7.8**	**A**	--
	Total	**251**	**923**	**368**	--	**5.4**	**A**	--

SIMTRAFFIC QUEUING REPORT

Project: Echeverria Silver Lake Property **HCM:** 2000
Scenario: Roundabout US 395 SB Ramps PM **PHF:** 1
TOD: Default TOD **Analysis Period:** 15 Minutes **# of Runs:** 1

Intersection: 2: Moya Blvd & Red Rock Road **Type:** Un-Signalized

Approach	Movement	Storage Length	Maximum Queue (ft)			Average Queue (ft)		
			Avg	> Storage	Std Dev	Avg	> Storage	Std Dev
NB	R	1404	22	--		1	--	
SB	L	1503	34	--		12	--	
WB	L	2469	234	--		73	--	
	R	2469	70	--		24	--	

Intersection: 4: Silver Lake Rd & Red Rock Road **Type:** Un-Signalized

Approach	Movement	Storage Length	Maximum Queue (ft)			Average Queue (ft)		
			Avg	> Storage	Std Dev	Avg	> Storage	Std Dev
NB	L	325	28	--		19	--	
	T	325	51	--		5	--	
	R	325	51	--		5	--	
SB	L	1404	56	--		10	--	
	T	1404	58	--		2	--	
EB	L	1174	188	--		68	--	
	T	1174	188	--		68	--	
	R	1174	188	--		68	--	
WB	L	2422	1805	--		1245	--	
	T	2422	1805	--		1245	--	
	R	2422	1805	--		1245	--	

APPENDIX 4

Infrastructure Feasibility Study

Echeverria Silver Lake

Property Zoning Map Amendment

INFRASTRUCTURE FEASIBILITY STUDY

Prepared for:

Echeverria Family Partnership

Prepared by:

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July 2011

jn: 2485

TABLE OF CONTENTS

I.	PROJECT DESCRIPTION	1
II.	EXISTING UTILITIES/INFRASTRUCTURE	1
III.	HYDROLOGY/DRAINAGE/CHANNEL	3
IV.	SANITARY SEWER	9
V.	WATER SYSTEM	11

FIGURES

Figure 1.	**Vicinity Map**	**2**
Figure 2.	**Grading/Volume Replacement Exhibit**	**4**
Figure 3.	**Existing FEMA Floodplain Exhibit**	**6**
Figure 4.	**Volume Mitigation - Earthwork**	**7**
Figure 5.	**Sanitary Sewer/Water Exhibit**	**10**

APPENDICES

APPENDIX I **Backup**

I. PROJECT DESCRIPTION

The Echeverria Silver Lake Property lies within APN's 090-040-02, 03 and 090-030-02. The site more generally lies northeast of the intersection of Moya Boulevard and Red Rock Road in Stead, Nevada. The development will consist of distribution/light industrial on approximately 67 acres.

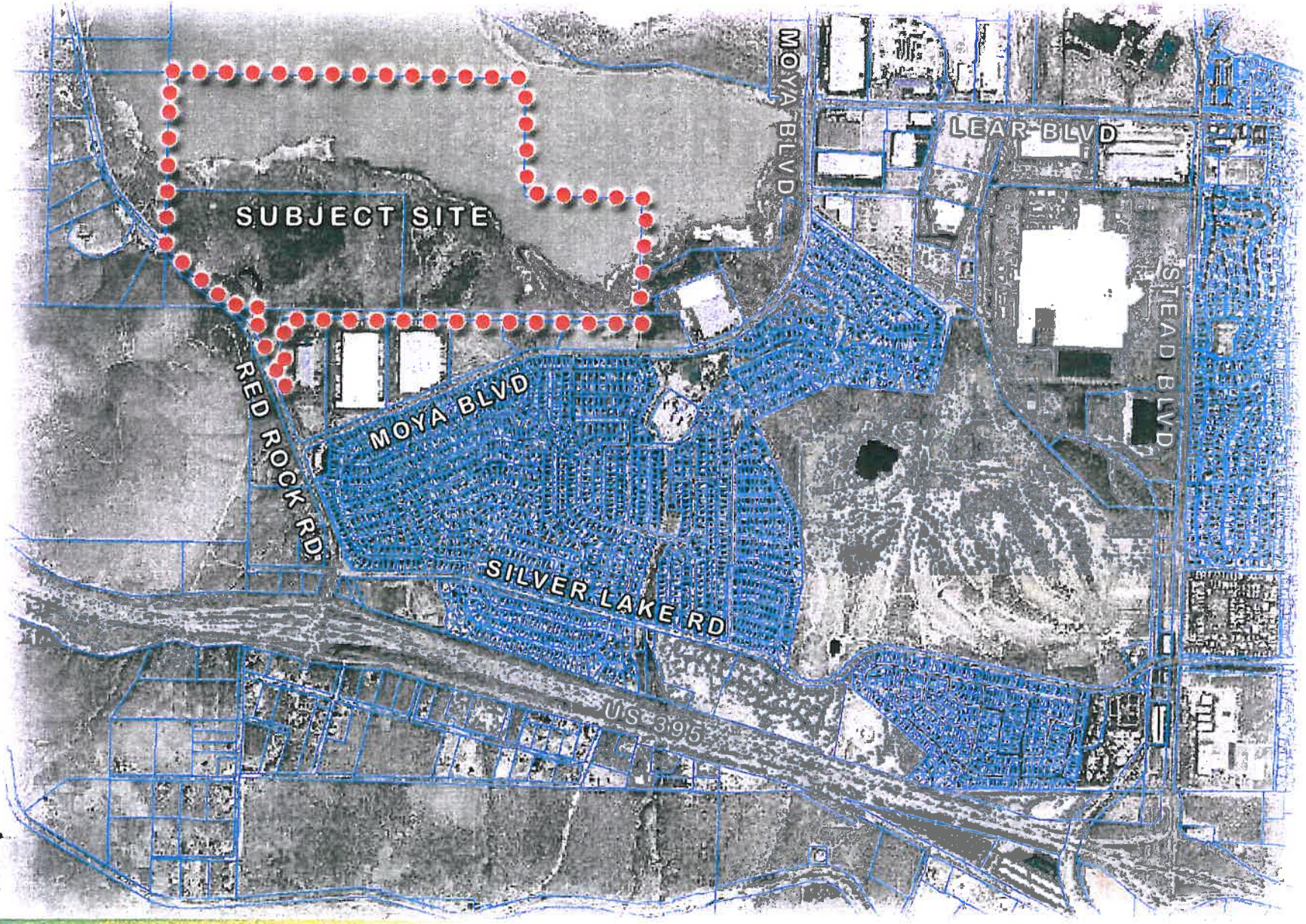
The site topography is generally gently sloping with slopes of 1% to 2%, consisting of native sagebrush and scrub brush that scatter the site. The site abuts the southern portion of Silver Lake.

Figure 1 depicts the site relative to the surrounding area.

II. EXISTING UTILITIES, INFRASTRUCTURE

At the current time, the site lies within Washoe County Department of Water Resources territory with respect to domestic water service. The City of Reno operates and maintains Sanitary Sewer facilities in the area and sewage flow ultimately flows to the Reno/Stead Water Reclamation Facility (RSWRF). Electric and gas services will be provided by NV Energy. Gas and electric services exist in the vicinity of the site (please reference to the **Appendix** which includes an e-mail and map from Glen Standridge of NV Energy). A discovery will need to be performed by NV Energy to determine the actual needs for the site; however the site can be served.

Echeverria Silver Lake Property



VICINITY MAP

WOOD RODGERS

III. HYDROLOGY/DRAINAGE/CHANNEL

Introduction

The Echeverria Silver Lake Property lies within APN's 090-040-02, 03 and 090-030-02. The site more generally lies northeast of the intersection of Moya Boulevard and Red Rock Road in Stead, Nevada. The development will consist of distribution/light industrial on approximately 67 acres. **Figure 2** depicts preliminary grading for the site, in addition to preliminary grading for the volume replacement area for the Silver Lake encroachment area and volume mitigation for urbanization as described below. As the volume replacement area will generate a substantial amount of material, it is anticipated that the site grading will be adjusted at final design to accept this material as fill. Additionally, a soils analysis will be required to assure the suitability of the material as structural fill, in addition to any cut/fill generated by onsite grading.

Silver Lake Volume Mitigation

Volume Mitigation Due to Urbanization of Site

Development of the project site will increase peak runoff volume into the Silver Lake drainage basin. Generally, in situations such as this, the City of Reno mandates that the additional volume be created to offset increased volume due to basin urbanization during a 100-year, 10 day storm. The generally accepted procedure in this area is to assume that the first day of the 10 day storm contributes increased volume to the lake, and that after the first day existing ground is saturated and no excess volume is generated by urbanization. This volume may be created using retention basins (not *detention*) above Silver Lake, or by adding volume to Silver Lake below the elevation of 4,972.0 (the 100-year water surface elevation of the lake per Federal Emergency Management Administration (FEMA) Flood Insurance Study (FIS) rates maps. **Figure 3** depicts the site relative the 100-year water surface of Silver Lake. For either option, only the volume created above the average seasonal high groundwater table may be considered.

Volume Mitigation Due to Site Encroachment into 100-Year Water Surface

In addition to peak runoff volume being increased due to urbanization of the site, portions of the development are planned to encroach into the 100-year water surface. The volume displaced by development must be created using retention basins (not *detention*) above Silver Lake, or by adding volume to Silver Lake below the elevation of 4,972.0 as described above, as per the urbanization mitigation.

Site Data

The development area, including proposed accesses, is approximately 67 acres. For purposes of this analysis, the full site acreage is assumed to be developed Distribution and Warehousing/Manufacturing.

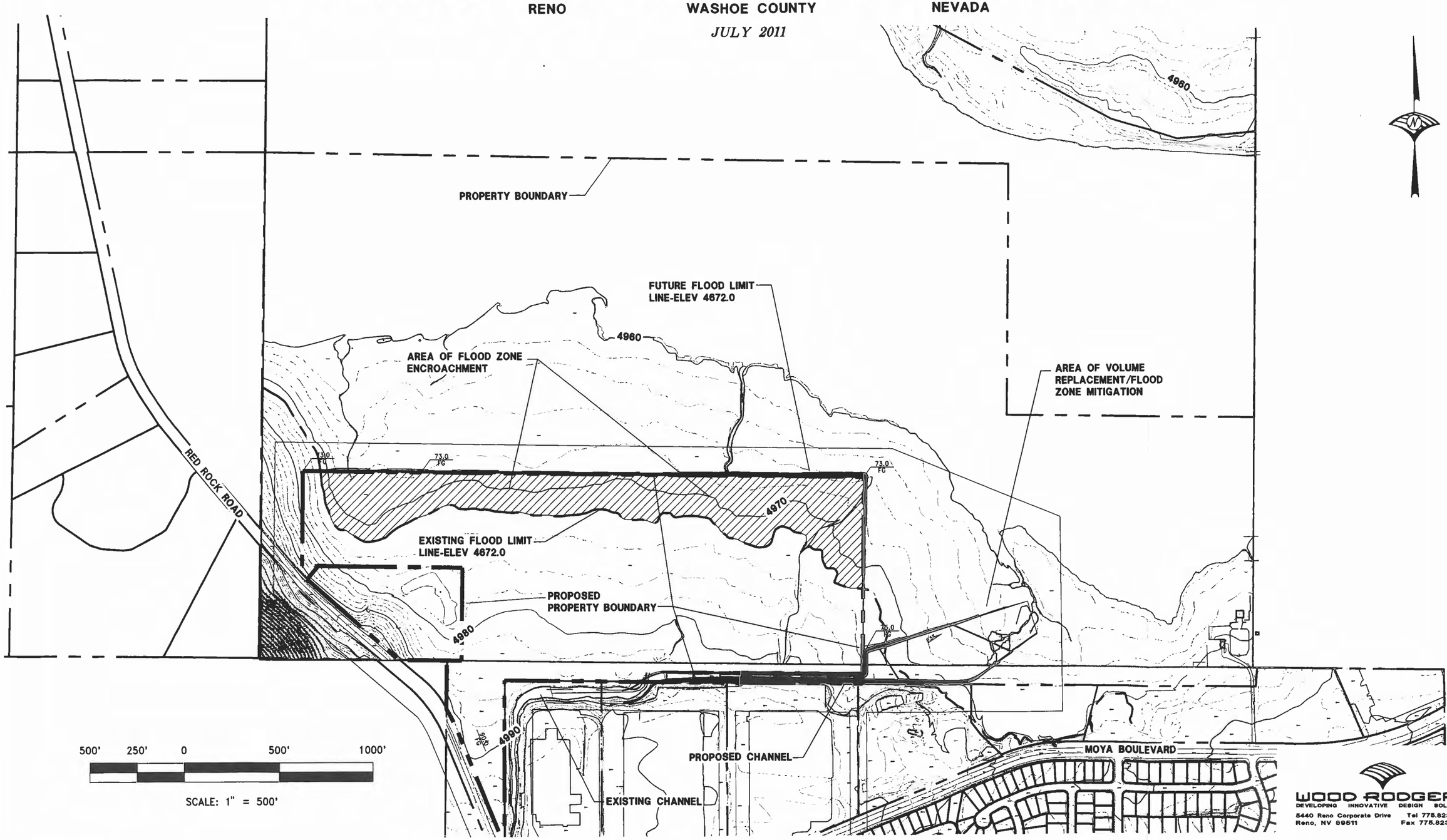
FIGURE 2

(GRADING/VOLUME REPLACEMENT EXHIBIT)

ECHEVERRIA SILVER LAKE PROPERTY

RENO WASHOE COUNTY NEVADA

JULY 2011



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Rainfall Data

Rainfall data is obtained from NOAA's National Weather Service Hydro meteorological Design Studies Center Precipitation Frequency Data Server: (http://hdsc.nws.noaa.gov/hdsc/pfds/sa/nv_pfds.html).

The centroid of the site is Latitude 39.64 / Longitude -119.91, elevation 4,967 feet. For this centroid, the 100-year, 10-day precipitation depth is 11.94 inches. Applicable material is included in the **Appendix**.

Storm Runoff Volume Data

Per the City of Reno Design Manual for storm drainage, rural runoff coefficients range from 0.25 to 0.35 and Manufacturing/Distribution and Warehousing coefficients range from 0.85 to 0.90. As an estimate for these preliminary calculations, values of 0.30 and 0.85 were chosen for the existing and developed conditions respectively. Therefore the change in runoff coefficient is 0.85 – 0.30 = 0.55. City of Reno Design Manual 'C' coefficients are included in the **Appendix**.

Volume Increase Due to Urbanization of Site

100-year, 10-day-(0.55) (67.0 ac) (11.94 inch/10) = 44.0 acre-inches or **3.7 acre-feet**

Volume Mitigation Due to Site Encroachment into 100-Year Water Surface

The area of encroachment of the site into the Silver Lake 100-year water surface is shown on **Figures 2 and 3**. Additionally, **Figure 4** is an earthwork model depicting the volume below elevation 4,972.0 which is anticipated to be filled. The total volume is as follows:

57,927 cubic yards (CY) x 27=1,564,029 cubic feet (ft^3)/43,560 = **35.9 acre-feet**

The total volume replacement required for development of the site is:

35.9 acre-feet + 3.7 acre-feet = 39.6 ac-feet = **63,900 CY**

The volume mitigation area is shown on **Figure 2**.

FIGURE 3
(EXISTING FEMA FLOODPLAIN EXHIBIT)

ECHEVERRIA SILVER LAKE PROPERTY

RENO WASHOE COUNTY NEVADA

JULY 2011

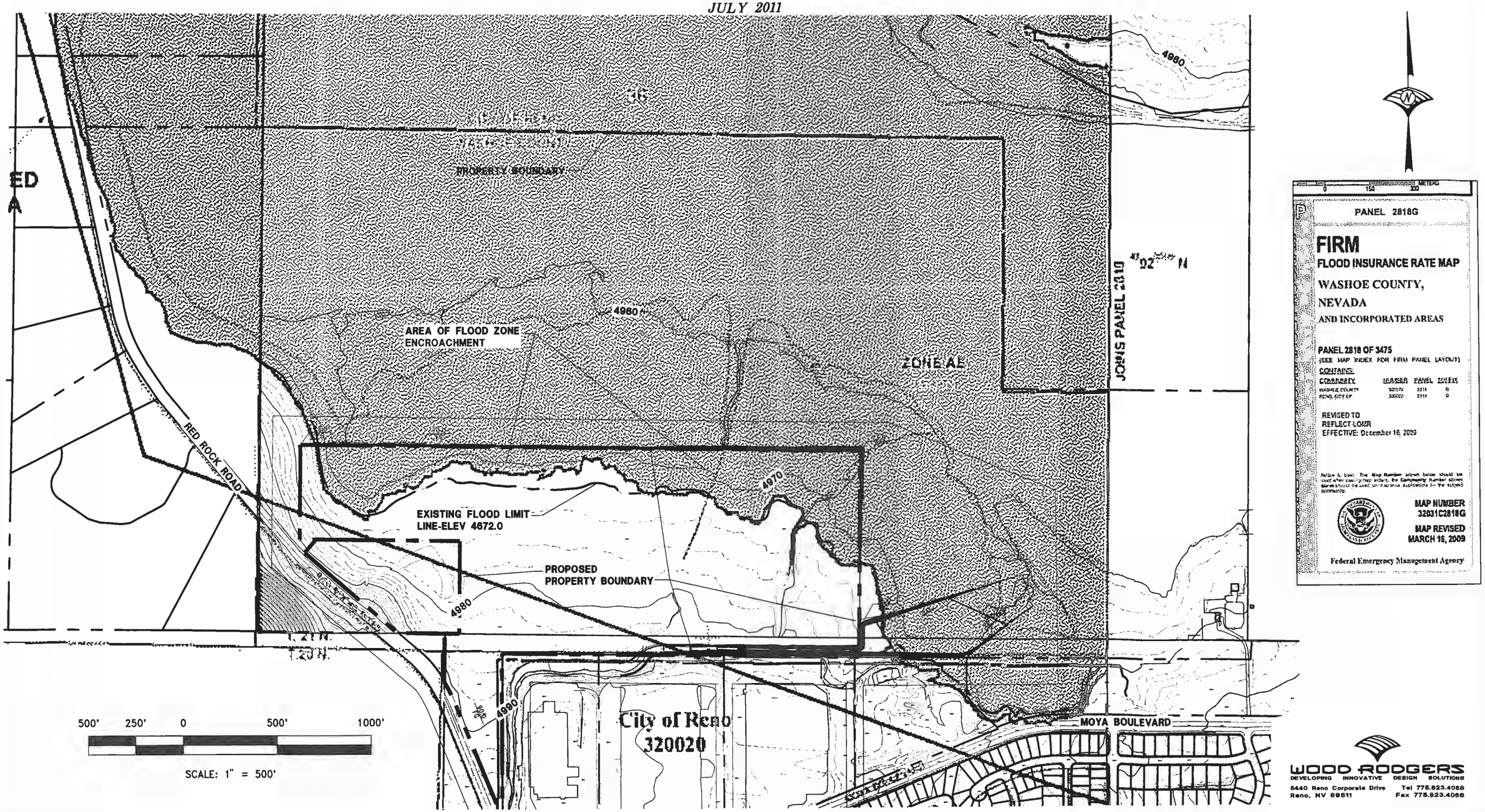

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FIGURE 4
VOLUME MITIGATION - EARTHWORK

Ech_Vol_Repl_06_11
275.ESW
Units = Ft-CY
Jun 20,2011 14:30:58 Page 1

Volume Existing	Area Total	Area Cut	Area Fill	Volume Cut	Volume Fill	Comp Ratio Cut	Comp Ratio Fill	Volume Cut	Volume Fill	Export -Import	Change Per .1 FT
Job Total	797,617	6,578	791,039	11	57,927	1.00	1.00	11	57,927	-57,916	2,954

Strip Qtys	Depth	Length	Area	Volume
NONE	Total		0	0

Sect Qtys	Depth	Length	Area	Volume
NONE	Total	0	0	

ECHEVERRIA SILVER LAKE
VOLUME ENCROACHMENT

Preliminary Hydrology

Runoff generated onsite will sheet flow or be piped directly into Silver Lake. As peak flows will be outletted directly into Silver Lake and property owned by the applicant, no mitigation of peak flow increases is necessary. Offsite flows impacting the site from the south of the site east of Red Rock Road are conveyed in an existing open channel. This channel is trapezoidal with a bottom width of approximately 60', 2:1 side slopes and a slope of approximately 0.2% and depth of approximately 4' where it enters the site. The channel is proposed to be extended with development of the subject property to the area of volume replacement for eventual outflow into Silver Lake as shown on **Figure 2**, and will be a trapezoidal section with 2:1 minimum side slopes and a varying bottom width with a minimum depth of 4'. The capacity of the existing channel with 1' of freeboard is approximately 750 cfs. The capacity of the proposed channel extension with 1' of freeboard will be need to be designed to handle the same capacity. Manning's equation backup is included in the **Appendix**. ***A detailed hydrologic and hydraulic analysis will be required at final design to assure that offsite flow can be conveyed safely to Silver Lake.***

IV. SANITARY SEWER

The site lies within the jurisdiction of the City of Reno (COR) with respect to sanitary sewer service. Sewage flow within the North Valleys, including the project site, flows to the Reno/Stead Water Reclamation Facility (RSWRF), which is located north of Lear Boulevard just west of Military Road, near Lemmon Lake (also known as Swan Lake). Please reference to the **Appendix** for location of the RSWRF relative to the subject property.

Figure 5 depicts the potential layout of sanitary sewer within the proposed parcel. A 10" trunk main in Moya Boulevard will be utilized to transport sewage flow east and north on Moya to a lift station at the intersection of Moya and Lear Boulevards. From there, sewage flow is pumped east on Lear Boulevard, then north on Stead Boulevard to Norton Avenue, where it ultimately gravity flows to the RSWRF.

The project site lies well below Moya Boulevard, and the elevation of the Sanitary Sewer main within Moya with respect to the project site does not allow for gravity flow to the existing line. Plan and profile sheets for the Moya Boulevard sanitary sewer are included in the **Appendix** for reference. Therefore, it is anticipated that a gravity line onsite to a private lift station with an outletting force main will be required. It is likely that the force main can be outletted to the south to Moya Boulevard along the east-west boundary line between parcels 090-030-25 and 090-030-26. Parcel Map 3826 depicts easements along the property lines for the parcels to the south that may allow for sanitary sewer, but research will need to be completed to assure that these can be utilized for the subject property. If not, a private easement will need to be obtained.

An alternative to a private lift station is low pressure grinder pump and lateral and feeder force main's along the same alignment described previously, or an onsite gravity system to a shared low pressure grinder pump with a force main. The most common manufacturer of such systems is Environment One Corporation, commonly known as E/One Sewer.

Estimated Sanitary Sewer flows generated by development of the site per City of Reno criteria are shown in the following table:

TABLE 1 – Echeverria Silver Lake Properties Sanitary Sewer Flows

Land Use	Acreage	Residential Unit Count	EDU's	Flow Rate	Average Daily Flow	Peaking Factor	Design Flow
				(gpd)	(gpd)		(gpd)
Industrial	67.0			1,000	67,000	3.0	201,000
	67.0				**67,000**		**201,000**

According to City of Reno staff, the downstream facilities were designed to accommodate the subject properties. ***A detailed sanitary sewer analysis will be required at final design to assure that sewage flow can be conveyed to the RSWRF.***

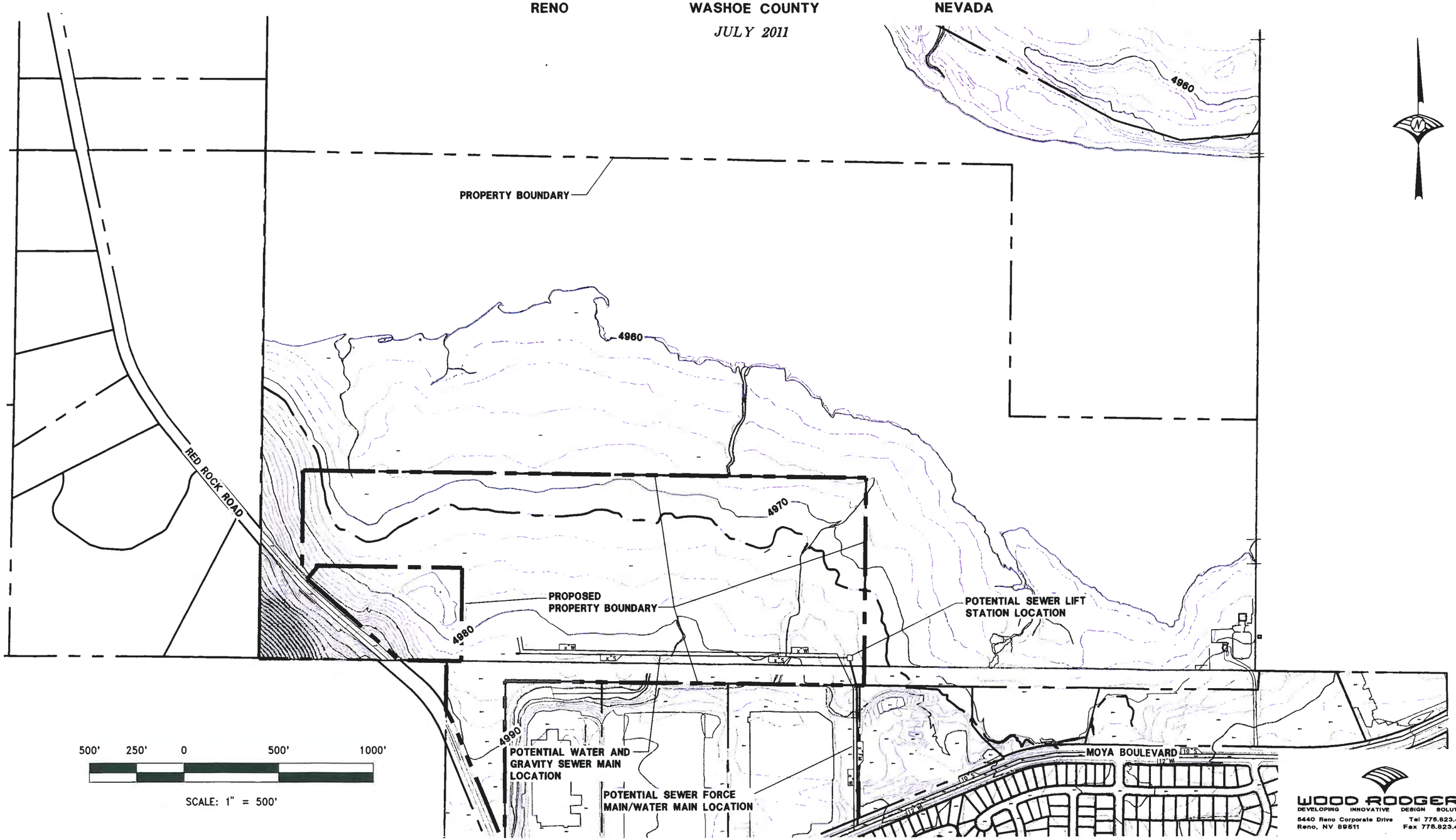
FIGURE 5

(SANITARY SEWER/WATER EXHIBIT)

ECHEVERRIA SILVER LAKE PROPERTY

RENO WASHOE COUNTY NEVADA

JULY 2011



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V. WATER SYSTEM

The site lies within the jurisdiction of the Washoe County Department of Water Resources (WCDWR) with respect to water service. At this time, there are no WCDWR water facilities within the immediate area with which to service the development from in a realistic fashion. Drilling a well is a possible solution; however water rights must be dedicated to WCDWR for the well facility.

Truckee Meadows Water Authority (TMWA) facilities exist within Moya Boulevard just south of the project site. **Figure 5** and figures contained in the **Appendix** depict proposed facilities and TMWA's service area and sphere of influence. As the map depicts, the site is not within TMWA's sphere of influence. Due to the proximity of TMWA water to the site, and the fact that WCDWR has no facilities within a reasonable distance of the project site, it is anticipated that the site will be annexed into TMWA's service territory and service by TMWA facilities. The process for this is fairly involved, in that the governing boards from both TMWA and WCDWR are both required to approve such an adjustment in boundaries. However, given the circumstances surrounding this site i.e.: close proximity of TMWA facilities, no realistic WCDWR facilities, it is not anticipated to be an issue that cannot be resolved. Essentially, at the time that development of the parcels nears, the applicant should write a letter to WCDWR requesting that the boundary of WCDWR/TMWA service territory be revised. This letter will need to also go to TMWA representatives, and ultimately to both commission's boards in order to move the boundary. This process can take up to four months but is a reasonable solution to the issue of lack of WCDWR facilities within the area.

APPENDIX I –Backup

C = runoff coefficient

i = average rainfall intensity, inches per hour

A = watershed area, acres

b. The following listed runoff coefficients, depending on future use, shall be used:

NOTE: A "build up" C valve may be required in special conditions such as very small lots with large houses or duplexes.

RUNOFF COEFFICIENTS "C"

Land Use Type	Runoff Coefficient "C"
Rural	0.25-0.35
Single Family Residential	0.45-0.60
Multi-Residential	0.60-0.70
Neighborhood Commercial	0.85
Community Commercial	0.85
Tourist Commercial	0.85
Office	0.85
Manufacturing	0.85-0.90
Distribution and Warehousing	0.85-0.90
Public Facility	0.50-0.85
Pavement and Concrete Surfaces	0.90-0.95
Park	0.25
Open Space (0-5% grade - vegetated)	0.20-0.30
Open Space (0-5% grade - no vegetation)	0.30-0.40

POINT PRECIPITATION FREQUENCY ESTIMATES FROM NOAA ATLAS 14

Nevada 39.64 N 119.91 W 4967 feet

from "Precipitation-Frequency Atlas of the United States" NOAA Atlas 14, Volume 1, Version 4
G.M. Bonnin, D. Martin, B. Lin, T. Parzybok, M.Yekta, and D. Riley
NOAA, National Weather Service, Silver Spring, Maryland, 2006

Extracted: Mon Oct 6 2008

Precipitation Frequency Estimates (inches)

ARI* (years)	5 min	10 min	15 min	30 min	60 min	120 min	3 hr	6 hr	12 hr	24 hr	48 hr	4 day	7 day	10 day	20 day	30 day	45 day	60 day
1	0.11	0.17	0.21	0.28	0.35	0.46	0.57	0.85	1.21	1.62	2.03	2.49	2.97	3.40	4.45	5.33	6.49	7.46
2	0.14	0.21	0.26	0.35	0.43	0.58	0.71	1.06	1.51	2.04	2.57	3.18	3.83	4.41	5.76	6.91	8.42	9.73
5	0.18	0.28	0.35	0.47	0.58	0.74	0.88	1.30	1.89	2.60	3.34	4.25	5.17	5.97	7.77	9.31	11.29	13.06
10	0.23	0.35	0.43	0.58	0.71	0.88	1.02	1.49	2.19	3.06	3.97	5.13	6.28	7.22	9.32	11.15	13.43	15.43
25	0.30	0.46	0.57	0.76	0.95	1.10	1.23	1.74	2.59	3.70	4.88	6.42	7.87	8.99	11.43	13.63	16.26	18.45
50	0.37	0.56	0.70	0.94	1.17	1.30	1.42	1.92	2.89	4.21	5.62	7.49	9.17	10.42	13.08	15.57	18.41	20.67
100	0.46	0.69	0.86	1.16	1.43	1.54	1.64	2.11	3.21	4.75	6.41	8.66	10.59	11.94	14.79	17.56	20.60	22.88
200	0.56	0.85	1.05	1.42	1.76	1.85	1.96	2.35	3.52	5.32	7.25	9.92	12.10	13.56	16.63	19.61	22.82	25.04
500	0.73	1.11	1.38	1.86	2.30	2.42	2.51	2.83	3.94	6.11	8.46	11.75	14.29	15.85	19.19	22.56	25.98	28.03
1000	0.89	1.36	1.68	2.27	2.81	2.96	3.03	3.31	4.29	6.74	9.44	13.28	16.09	17.70	21.22	24.89	28.44	30.26

* These precipitation frequency estimates are based on a partial duration series. ARI is the Average Recurrence Interval.
Please refer to NOAA Atlas 14 Document for more information. NOTE: Formatting forces estimates near zero to appear as zero.

* Upper bound of the 90% confidence interval Precipitation Frequency Estimates (inches)

ARI** (years)	5 min	10 min	15 min	30 min	60 min	120 min	3 hr	6 hr	12 hr	24 hr	48 hr	4 day	7 day	10 day	20 day	30 day	45 day	60 day
1	0.13	0.19	0.24	0.32	0.40	0.53	0.64	0.95	1.34	1.82	2.31	2.85	3.45	3.95	5.13	6.16	7.36	8.49
2	0.16	0.24	0.30	0.41	0.50	0.66	0.80	1.19	1.69	2.29	2.93	3.65	4.45	5.10	6.65	7.98	9.55	11.08
5	0.22	0.33	0.41	0.55	0.68	0.84	1.00	1.46	2.11	2.92	3.81	4.87	6.02	6.92	8.96	10.74	12.80	14.86
10	0.27	0.41	0.51	0.68	0.84	1.01	1.16	1.67	2.44	3.43	4.54	5.89	7.31	8.38	10.76	12.86	15.24	17.54
25	0.36	0.55	0.68	0.92	1.14	1.27	1.40	1.96	2.91	4.16	5.61	7.41	9.20	10.47	13.21	15.74	18.50	21.02
50	0.45	0.69	0.86	1.15	1.43	1.51	1.63	2.18	3.27	4.75	6.49	8.68	10.79	12.20	15.17	18.04	21.04	23.64
100	0.57	0.86	1.07	1.44	1.78	1.81	1.91	2.41	3.67	5.40	7.47	10.11	12.56	14.08	17.30	20.48	23.67	26.27
200	0.71	1.08	1.34	1.80	2.23	2.25	2.31	2.71	4.07	6.09	8.54	11.67	14.50	16.14	19.62	23.04	26.40	28.92
500	0.96	1.46	1.81	2.44	3.02	3.04	3.08	3.31	4.63	7.07	10.12	14.06	17.39	19.13	23.00	26.83	30.40	32.67
1000	1.20	1.82	2.26	3.04	3.76	3.80	3.84	3.92	5.12	7.89	11.48	16.09	19.82	21.64	25.73	29.91	33.60	35.53

* The upper bound of the confidence interval at 90% confidence level is the value which 5% of the simulated quantile values for a given frequency are greater than.
** These precipitation frequency estimates are based on a partial duration series. ARI is the Average Recurrence Interval.

Please refer to NOAA Atlas 14 Document for more information. NOTE: Formatting prevents estimates near zero to appear as zero.

* Lower bound of the 90% confidence interval Precipitation Frequency Estimates (inches)

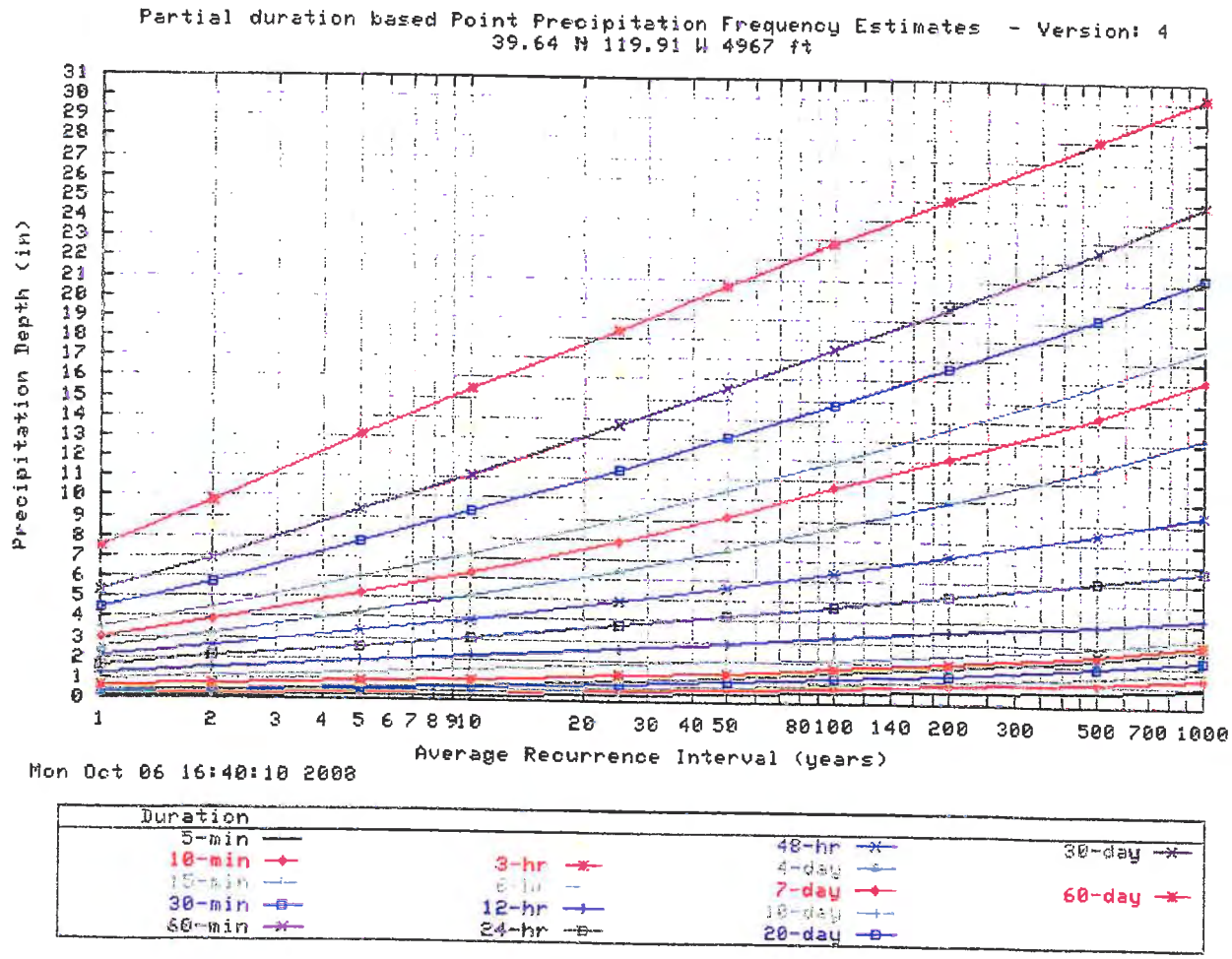
ARI** (years)	5 min	10 min	15 min	30 min	60 min	120 min	3 hr	6 hr	12 hr	24 hr	48 hr	4 day	7 day	10 day	20 day	30 day	45 day	60 day

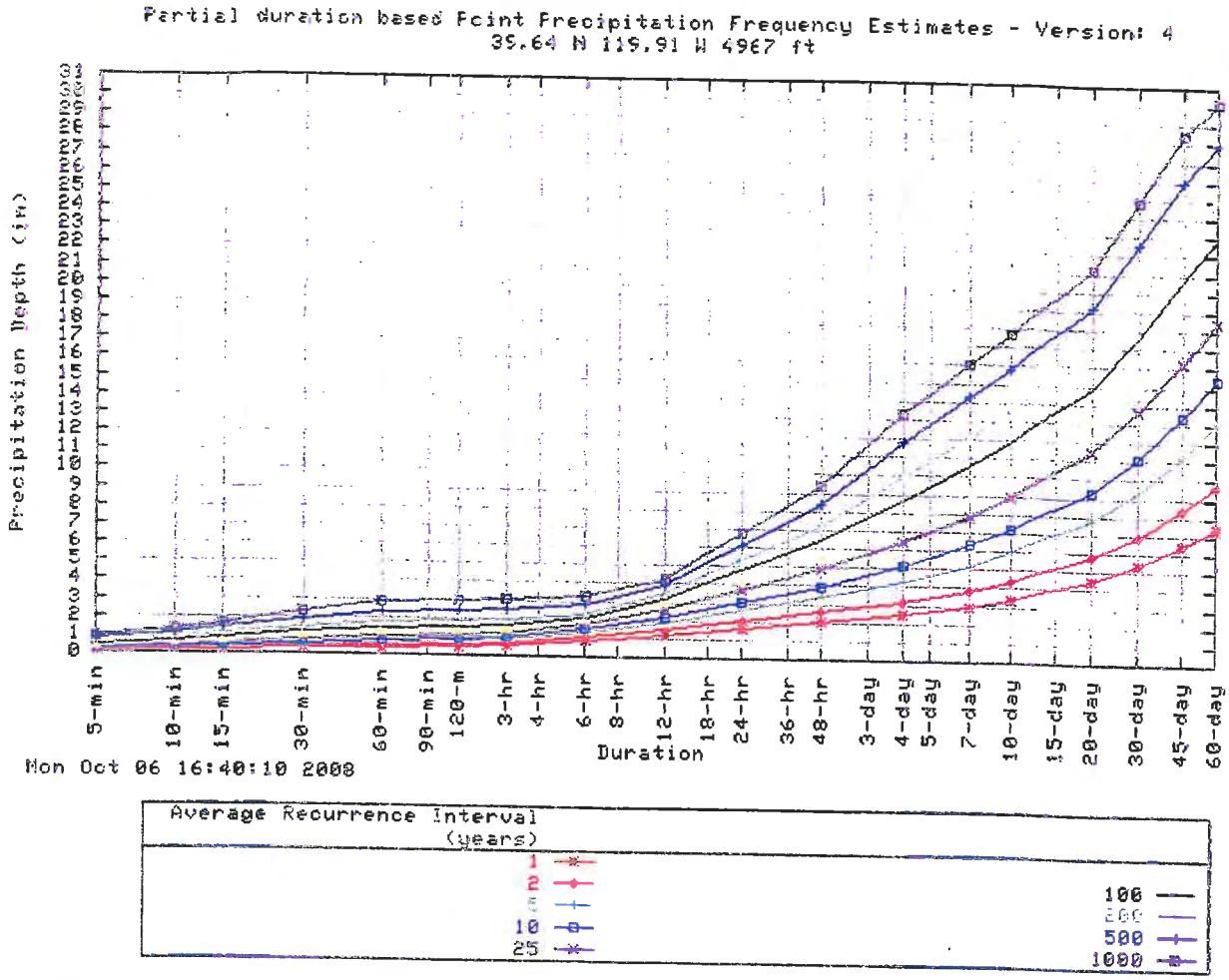
1	0.09	0.14	0.18	0.24	0.29	0.41	0.51	0.77	1.09	1.45	1.79	2.19	2.58	2.96	3.89	4.66	5.69	6.50
2	0.12	0.18	0.22	0.29	0.36	0.51	0.64	0.96	1.36	1.83	2.27	2.79	3.32	3.83	5.03	6.05	7.38	8.49
5	0.15	0.24	0.29	0.39	0.49	0.65	0.79	1.17	1.70	2.33	2.94	3.73	4.48	5.18	6.78	8.13	9.89	11.38
10	0.19	0.29	0.36	0.49	0.60	0.76	0.91	1.34	1.95	2.73	3.49	4.48	5.42	6.25	8.11	9.71	11.73	13.43
25	0.25	0.38	0.47	0.64	0.79	0.93	1.08	1.54	2.29	3.27	4.24	5.55	6.71	7.69	9.88	11.81	14.11	15.98
50	0.30	0.46	0.57	0.76	0.94	1.08	1.22	1.68	2.53	3.69	4.83	6.39	7.74	8.83	11.21	13.37	15.90	17.81
100	0.36	0.55	0.68	0.91	1.13	1.25	1.39	1.83	2.77	4.13	5.44	7.28	8.83	10.01	12.54	14.94	17.63	19.56
200	0.42	0.65	0.80	1.08	1.34	1.46	1.62	2.00	3.00	4.57	6.08	8.21	9.95	11.20	13.93	16.50	19.36	21.23
500	0.53	0.80	0.99	1.34	1.66	1.82	2.02	2.38	3.28	5.15	6.93	9.48	11.48	12.82	15.75	18.68	21.73	23.51
1000	0.62	0.94	1.16	1.57	1.94	2.16	2.38	2.74	3.51	5.59	7.59	10.51	12.70	14.10	17.18	20.34	23.51	25.15

* The **lower** bound of the confidence interval at 90% confidence level is the value which 5% of the simulated quantile values for a given frequency are **less** than.
** These precipitation frequency estimates are based on a partial duration maxima series. **ARI** is the Average Recurrence Interval.

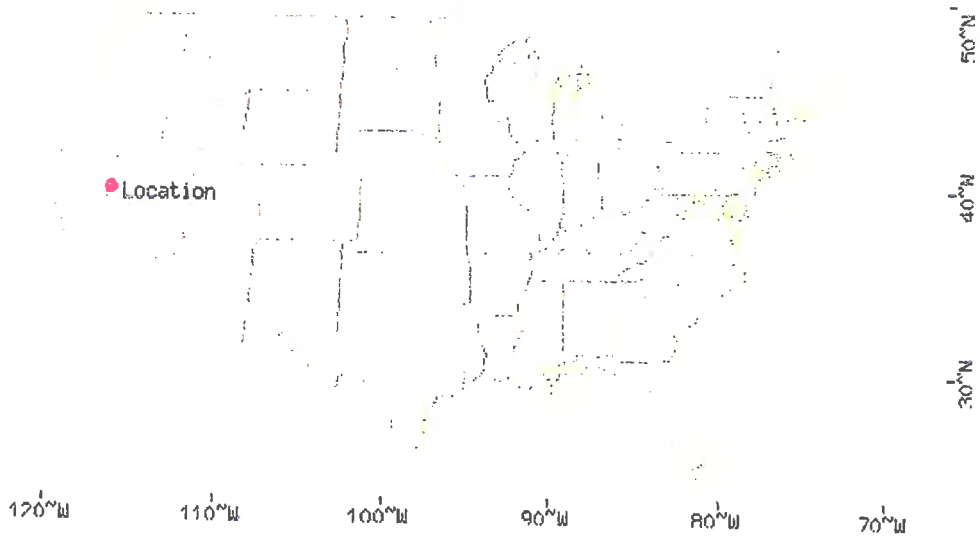
Please refer to NOAA Atlas 14 Document for more information. NOTE: Formatting prevents estimates near zero to appear as zero.

Text version of tables

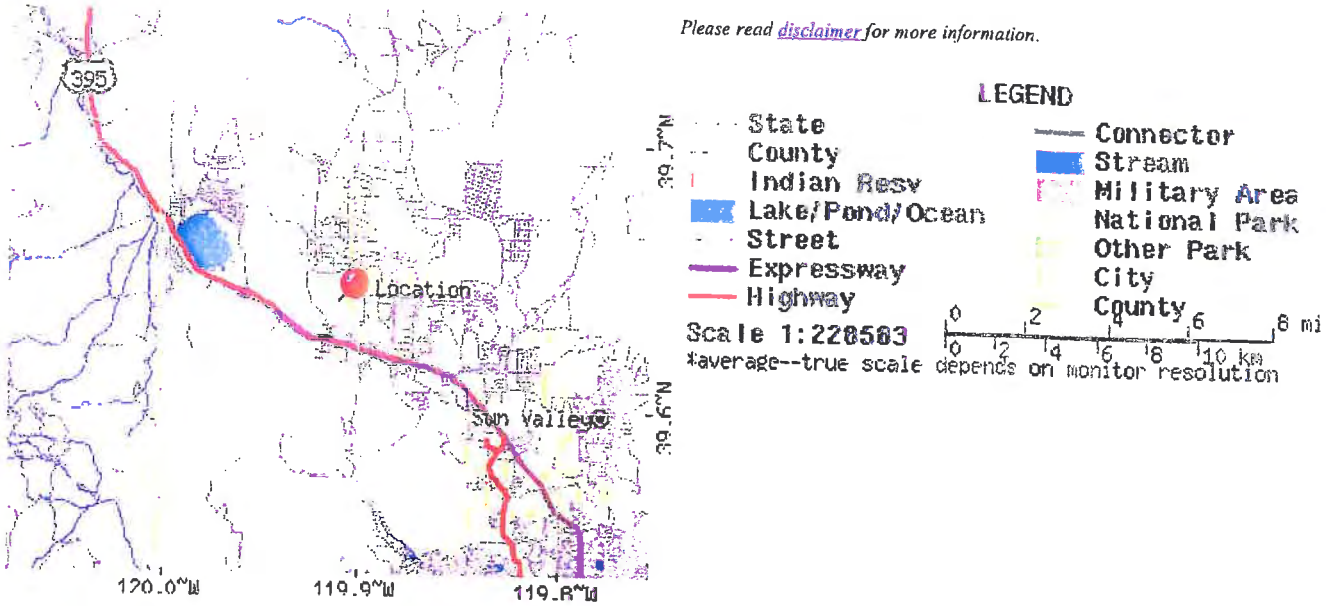




Maps -



These maps were produced using a direct map request from the U.S. Census Bureau Mapping and Cartographic Resources Tiger Map Server.



Other Maps/Photographs -

View USGS digital orthophoto quadrangle (DOQ) covering this location from TerraServer; **USGS Aerial Photograph** may also be available from this site. A DOQ is a computer-generated image of an aerial photograph in which image displacement caused by terrain relief and camera tilts has been removed. It combines the image characteristics of a photograph with the geometric qualities of a map. Visit the USGS for more information.

Watershed/Stream Flow Information -

Find the Watershed for this location using the U.S. Environmental Protection Agency's site.

Climate Data Sources -

Precipitation frequency results are based on data from a variety of sources, but largely NCDC. The following links provide general information about observing sites in the area, regardless of if their data was used in this study. For detailed information about the stations used in this study, please refer to NOAA Atlas 14 Document.

Using the **National Climatic Data Center's (NCDC)** station search engine, locate other climate stations within:

+/-30 minutes ...OR... +/-1 degree of this location (39.64/-119.91). Digital ASCII data can be obtained directly from **NCDC**.

Find Natural Resources Conservation Service (NRCS) SNOTEL (SNOwpack TELemetry) stations by visiting the **Western Regional Climate Center's state-specific SNOTEL station maps**.

Hydrometeorological Design Studies Center
DOC/NOAA/National Weather Service
1325 East-West Highway
Silver Spring, MD 20910

(301) 713-1669
Questions?: HDSC.Questions@noaa.gov

Disclaimer

Echeverria - Ex 60' Channel
Worksheet for Trapezoidal Channel

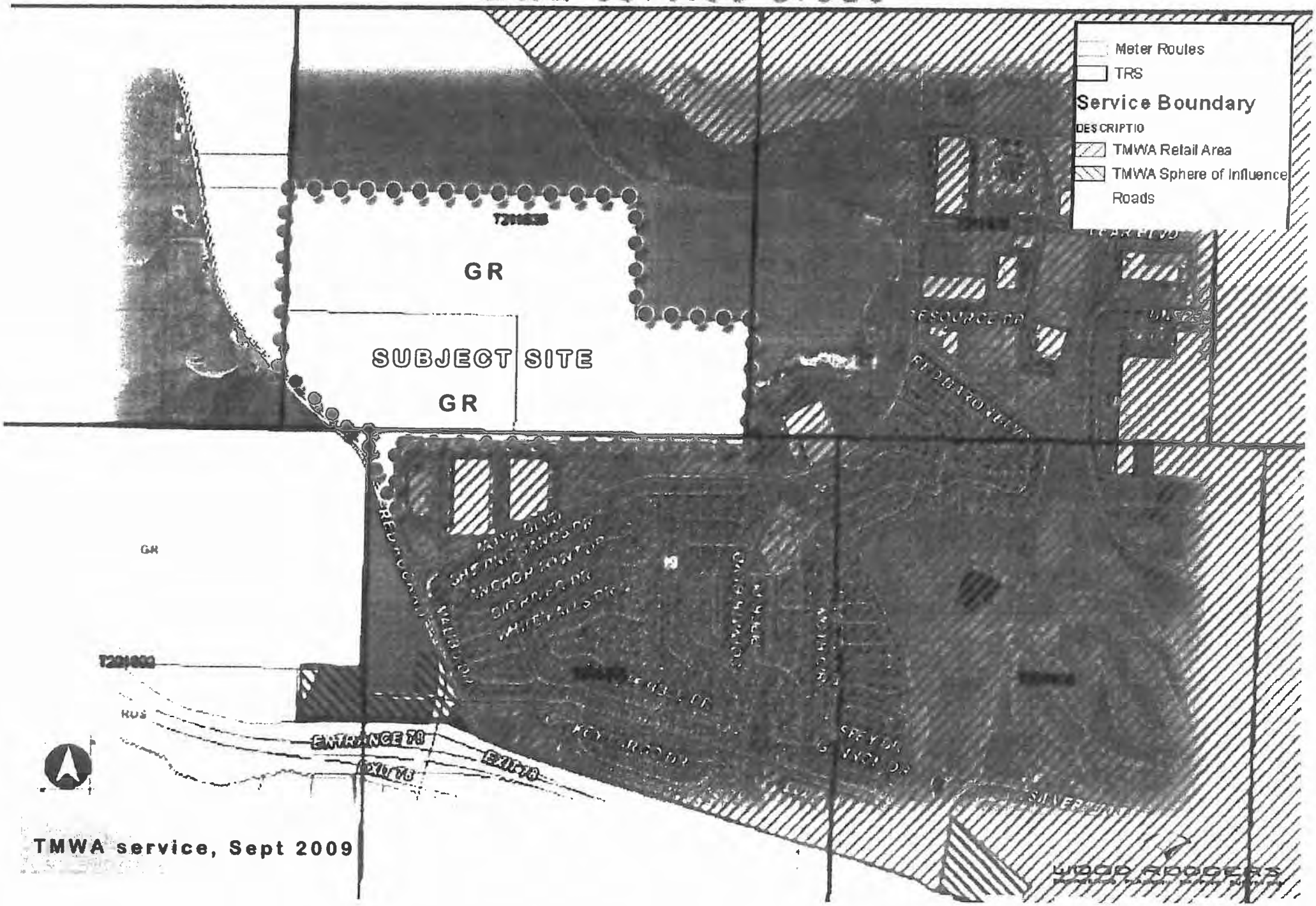
Project Description	
Worksheet	Trapezoidal Chann
Flow Element	Trapezoidal Chann
Method	Manning's Formula
Solve For	Discharge

Input Data		
Mannings Coeffic	0.035	
Channel Slope	0.40	%
Depth	3.00	ft
Left Side Slope	2.00	H : V
Right Side Slope	2.00	H : V
Bottom Width	30.00	ft

Results		
Discharge	1,030.08	cfs
Flow Area	198.0	ft²
Wetted Perim	73.42	ft
Top Width	72.00	ft
Critical Depth	2.04	ft
Critical Slope	1.46	%
Velocity	5.20	ft/s
Velocity Head	0.42	ft
Specific Energ	3.42	ft
Froude Numb	0.55	
Flow Type	Subcritical	

Echeverria Silver Lake Property

TMWA service areas



Washoe County Department of Water Resources
4930 Energy Way
Reno, NV 89502
Tel: 775-954-4600
Fax: 775-954-4610

October 27, 2008

City of Reno Community Development
Vern Kloos, Planner
PO Box 1900
Reno, NV 89505

Special Use Permit: LDC09-00037 (**Echeverria Silver Lake Property**)
APN's: 090-030-02; 090-040-02 & -03

Dear Mr. Kloos:

Washoe County Department of Water Resources (DWR) has received the Reno Development Application for the Master Plan Amendment for the Echeverria Silver Lake Property located east of Red Rock Road, approximately 1,800 feet north of the intersection of Red Rock Road and Moya Boulevard. The subject properties are also located within the Reno-Stead Corridor Joint Plan and Special Planning Area. The Applicant is proposing to change the land designation from all ±289.6 acres of General Rural (GR) to, ±73.3 acres of industrial (I) and ±216.3 acres of Open Space (OS). Washoe County Department of Water Resources is the water purveyor for that area.

Therefore, the DWR has the following conditions for approval for this special use permit:

1. Water rights in accordance with Article 422 shall be dedicated to Washoe County prior to the recordation of each final map. The water rights must be in good standing with the State Division of Water Resources and shall reflect the point of diversion, place of use, and manner of use satisfactory to the DWR and the North Valley's Area Plan.

2. All fees shall be paid in accordance with Washoe County Ordinance prior to the recordation of each final map.

3. The Developer shall construct and/or provide the financial assurance for the construction of any on-site and off-site water distribution systems or appurtenant facilities necessary to serve this project. The financial assurance must be in a form and amount acceptable to the DWR.

4. Improvement plans shall be submitted and approved by DWR prior to recordation of each final map. They shall be in compliance with Washoe County Design Standards, NAC445A, and be designed by a Professional Engineer licensed to practice in the State of Nevada.

5. DWR approved improvement plans shall be used for the construction of the water distribution systems. The DWR will inspect the construction of the water distribution systems, or appurtenant facilities.

Department of
Water Resources

6. The water distribution systems must be offered for dedication to Washoe County prior to final acceptance of the project by DWR.

7. Easements and real property for the water distribution systems and appurtenances shall be offered for dedication to Washoe County prior to the recordation of each final map.

8. The developers' engineer shall submit a plan or letter from the appropriate fire agency identifying the approved fire hydrant locations and indicating the fire flow and duration required for this project. This information must accompany the water system improvements plans when submitted for initial review.

9. No permanent structures (including rockery or retaining walls, buildings, etc.) shall be allowed within or upon any utility easement maintained by the DWR.

If you have any questions, please contact our office.

Sincerely,

Susan Hood, P,E.
Licensed Engineer

SHL/dll

ONSITE SANITARY SEWER

Worksheet

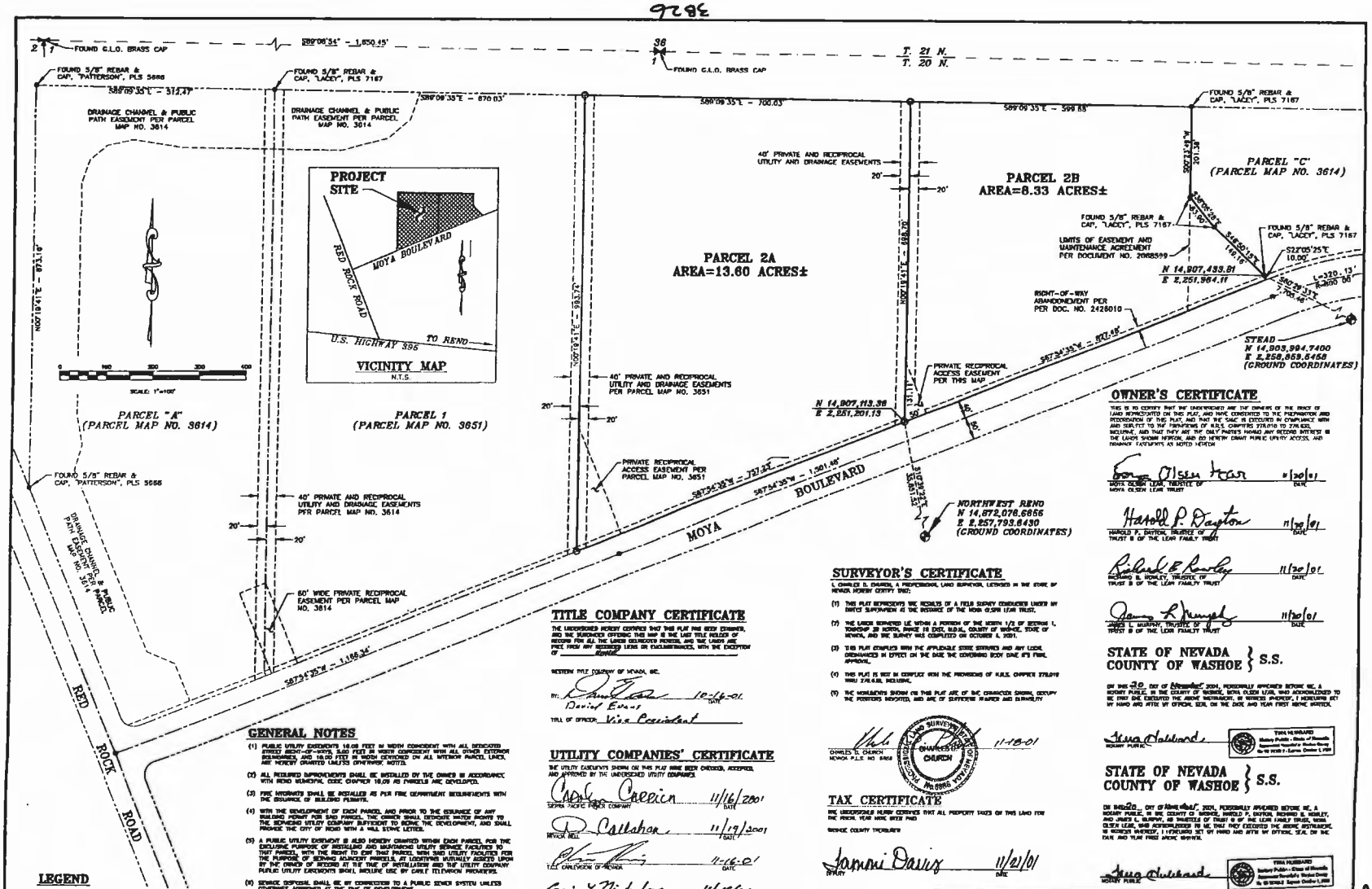
Worksheet for Circular Channel

Project Description	
Worksheet	Circular Channel
Flow Element	Circular Channel
Method	Manning's Formu
Solve For	Channel Depth

Input Data		
Mannings Coeffic	0.014	
Channel Slope	0.50	%
Diameter	6.0	in
Discharge	167700	mg(

Results		
Depth	3.7	in
Flow Area	0.1	ft²
Wetted Perime	0.91	ft
Top Width	0.00	ft
Critical Depth	0.26	ft
Percent Full	61.9	%
Critical Slope	0.91	%
Velocity	2.03	ft/s
Velocity Head	0.06	ft
Specific Energ	4.5	in
Froude Numbe	0.70	
Maximum Disc	0.256130	mgd
Discharge Full	0.238104	mgd
Slope Full	0.25	%
Flow Type	Subcritical	

3826



LEGEND

- ● FOUND MONUMENTS AS NOTED
- ● FOUND STREET CENTERLINE MONUMENT, (WHERE CAP STAMPED "PLS 12137")
- ○ SET 5/8" REBAR & CAP, PLS 4888

TOTAL AREA BREAKDOWN

PARCEL 2A: 13.60 ACRES±
PARCEL 2B: 8.33 ACRES±
TOTAL AREA = 21.93 ACRES±

2620980

GENERAL NOTES

(1) PUBLIC UTILITY EASEMENTS 10.00 FEET IN WIDTH CONGRUENT WITH ALL DEDICATED STREET RIGHT-OF-WAYS, 5.00 FEET IN WIDTH CONGRUENT WITH ALL OTHER EXTERIOR BOUNDARIES, AND 10.00 FEET IN WIDTH CENTERED ON ALL INTERIOR PARCEL LINES, ARE HEREBY GRANTED UNLESS OTHERWISE NOTED.

(2) ALL REQUIRED IMPROVEMENTS SHALL BE INSTALLED BY THE OWNER IN ACCORDANCE WITH RENO MUNICIPAL CODE, CHAPTER 18.09 AS PARCELS ARE DEVELOPED.

(3) FIRE HYDRANTS SHALL BE INSTALLED AS PER FIRE DEPARTMENT REQUIREMENTS WITH THE ISSUANCE OF BUILDING PERMITS.

(4) WITH THE DEVELOPMENT OF EACH PARCEL AND PRIOR TO THE ISSUANCE OF ANY BUILDING PERMIT FOR SAID PARCEL, THE OWNER SHALL DEDICATE WATER RIGHTS TO THE SERVICING UTILITY COMPANY SUFFICIENT TO SERVE THE DEVELOPMENT, AND SHALL PROVIDE THE CITY OF RENO WITH A WILL SERVE LETTER.

(5) A PUBLIC UTILITY EASEMENT IS ALSO HEREBY GRANTED WITHIN EACH PARCEL FOR THE EXCLUSIVE PURPOSE OF INSTALLING AND MAINTAINING UTILITY SERVICE FACILITIES TO THAT PARCEL, WITH THE RIGHT TO EXIT THAT PARCEL WITH SAID UTILITY FACILITIES FOR THE PURPOSE OF SERVING ADJACENT PARCELS, AT LOCATIONS MUTUALLY AGREED UPON BY THE OWNER OF RECORD AT THE TIME OF INSTALLATION AND THE UTILITY COMPANY. PUBLIC UTILITY EASEMENTS SHALL INCLUDE USE BY CABLE TELEVISION PROVIDERS.

(6) SEWAGE DISPOSAL SHALL BE BY CONNECTION TO A PUBLIC SEWER SYSTEM UNLESS OTHERWISE APPROVED AT THE TIME OF DEVELOPMENT.

REFERENCES

(1) RECORD OF SURVEY FOR MOYA OLSEN LEAR, RECORDED JULY 3, 1995, AS SURVEY MAP NO. 3553, FILE NO. 1955814 IN THE OFFICIAL RECORDS OF WASHOE COUNTY, NEVADA.

(2) PARCEL MAP NO. 3614, RECORDED AS FILE NO. 2424477 IN THE OFFICIAL RECORDS OF WASHOE COUNTY, NEVADA.

(3) PARCEL MAP NO. 3851, RECORDED JUNE 12, 2001, AS FILE NO. 2457748 IN THE OFFICIAL RECORDS OF WASHOE COUNTY, NEVADA.

BASIS OF BEARINGS

NEVADA STATE PLANE COORDINATE SYSTEM WEST ZONE - NAD83/94. ALL DIMENSIONS AND COORDINATES ARE GROUND VALUES. COMBINED SCALE FACTOR = 0.9999721.00. MULTIPLY VALUES BY THE SCALE FACTOR TO OBTAIN GRID VALUES.

TITLE COMPANY CERTIFICATE

THE UNDERSIGNED HEREBY CERTIFIES THAT THIS PLAT HAS BEEN EXAMINED, AND THE SUBDIVIDER OFFERING THIS MAP IS THE LAST TITLE HOLDER OF RECORD FOR ALL THE LANDS DELINEATED HEREON, AND THE LANDS ARE FREE FROM ANY RECORDED LIENS OR ENCUMBRANCES, WITH THE EXCEPTION OF None

WESTERN TITLE COMPANY OF NEVADA, INC.

BY: [signature] 10-16-01
David Evans — DATE

TITLE OF OFFICER: Vice President

UTILITY COMPANIES' CERTIFICATE

THE UTILITY EASEMENTS SHOWN ON THIS PLAT HAVE BEEN CHECKED, ACCEPTED, AND APPROVED BY THE UNDERSIGNED UTILITY COMPANIES.

[signature] 11/16/2001
SIERRA PACIFIC POWER COMPANY — DATE

[signature] 11/19/2001
NEVADA BELL — DATE

[signature] 11-16-01
T.C.I. CABLEVISION OF NEVADA — DATE

[signature] 11/16/01
TRUCKEE-MEADOWS WATER AUTHORITY — DATE

PARCEL MAP COMMITTEE CERTIFICATE

APPROVED AND ACCEPTED BY THE PARCEL MAP COMMITTEE OF THE CITY OF RENO, WASHOE COUNTY, NEVADA, THIS 26th DAY OF OCTOBER, 2001, CONDITIONAL APPROVAL OF THIS MAP WAS GRANTED ON THE 11th DAY OF SEPTEMBER, 2001, FOR THE CITY TO REVIEW DATA IN ACCORDANCE WITH THE PROVISIONS OF N.R.S. CHAPTER 278

[signature] 11-26-01
CHAIRMAN PARCEL MAP COMMITTEE — DATE

SURVEYOR'S CERTIFICATE

I, CHARLES S. CHURCH, A PROFESSIONAL LAND SURVEYOR, LICENSED IN THE STATE OF NEVADA HEREBY CERTIFY THAT:

(1) THIS PLAT REPRESENTS THE RESULTS OF A FIELD SURVEY CONDUCTED UNDER MY DIRECT SUPERVISION AT THE INSTANCE OF THE MOYA OLSEN LEAR TRUST.

(2) THE LANDS REPRESENTED LIE WITHIN A PORTION OF THE NORTH 1/2 OF SECTION 1, TOWNSHIP 20 NORTH, RANGE 19 EAST, M.D.M., COUNTY OF WASHOE, STATE OF NEVADA, AND THE SURVEY WAS COMPLETED ON OCTOBER 1, 2001.

(3) THIS PLAT COMPLIES WITH THE APPLICABLE STATE STATUTES AND ANY LOCAL ORDINANCES IN EFFECT ON THE DATE THE GOVERNING BODY GIVES ITS FINAL APPROVAL.

(4) THIS PLAT IS NOT IN CONFLICT WITH THE PROVISIONS OF N.R.S. CHAPTER 278.010 THRU 278.630, INCLUSIVE.

(5) THE MONUMENTS SHOWN ON THIS PLAT ARE OF THE CHARACTER SHOWN, OCCUPY THE POSITIONS INDICATED, AND ARE OF SUFFICIENT NATURE AND DURABILITY

CHARLES S. CHURCH
NEVADA P.L.S. NO. 5888
11-16-01 — DATE

TAX CERTIFICATE

THE UNDERSIGNED HEREBY CERTIFIES THAT ALL PROPERTY TAXES ON THIS LAND FOR THE FISCAL YEAR HAVE BEEN PAID

WASHOE COUNTY TREASURER

Jammi Davis — 11/21/01
DEPUTY — DATE

OWNER'S CERTIFICATE

THIS IS TO CERTIFY THAT THE UNDERSIGNED ARE THE OWNERS OF THE TRACT OF LAND REPRESENTED ON THIS PLAT, AND HAVE CONSENTED TO THE PREPARATION AND RECORDATION OF THIS PLAT, AND THAT THE SAME IS EXECUTED IN COMPLIANCE WITH AND SUBJECT TO THE PROVISIONS OF N.R.S. CHAPTER 278.010 TO 278.630, INCLUSIVE, AND THAT THEY ARE THE ONLY PARTIES HAVING ANY RECORD INTEREST IN THE LANDS SHOWN HEREON, AND DO HEREBY GRANT PUBLIC UTILITY ACCESS, AND DRAINAGE EASEMENTS AS NOTED HEREON

[signature] 11/20/01
MOYA OLSEN LEAR, TRUSTEE OF MOYA OLSEN LEAR TRUST — DATE

Harold P. Dayton 11/20/01
HAROLD P. DAYTON, TRUSTEE OF TRUST B OF THE LEAR FAMILY TRUST — DATE

Richard B. Rowley 11/20/01
RICHARD B. ROWLEY, TRUSTEE OF TRUST B OF THE LEAR FAMILY TRUST — DATE

[signature] 11/20/01
JAMES L. MURPHY, TRUSTEE OF TRUST B OF THE LEAR FAMILY TRUST — DATE

STATE OF NEVADA
COUNTY OF WASHOE } S.S.

ON THIS 20 DAY OF November 2001, PERSONALLY APPEARED BEFORE ME, A NOTARY PUBLIC, IN THE COUNTY OF WASHOE, MOYA OLSEN LEAR, WHO ACKNOWLEDGED TO ME THAT SHE EXECUTED THE ABOVE INSTRUMENT, IN WITNESS WHEREOF, I HEREUNTO SET MY HAND AND AFFIX MY OFFICIAL SEAL ON THE DATE AND YEAR FIRST ABOVE WRITTEN.

[signature]
NOTARY PUBLIC

TERA HUBBARD
Notary Public - State of Nevada
Appointment Recorded in Washoe County
No: 93-2002-1 - Expires October 1, 2004

STATE OF NEVADA
COUNTY OF WASHOE } S.S.

ON NOVEMBER 20, 2001, PERSONALLY APPEARED BEFORE ME, A NOTARY PUBLIC, IN THE COUNTY OF WASHOE, MOYA OLSEN LEAR, HAROLD P. DAYTON, RICHARD B. ROWLEY, AND JAMES L. MURPHY, AS TRUSTEE OF TRUST B OF THE LEAR FAMILY TRUST, MOYA OLSEN LEAR, WHO ACKNOWLEDGED TO ME THAT THEY EXECUTED THE ABOVE INSTRUMENT, IN WITNESS WHEREOF, I HEREUNTO SET MY HAND AND AFFIX MY OFFICIAL SEAL ON THE DATE AND YEAR FIRST ABOVE WRITTEN.

[signature]
NOTARY PUBLIC

TERA HUBBARD
Notary Public - State of Nevada
Appointment Recorded in Washoe County
No: 93-2002-1 - Expires October 1, 2004

FILE NO. 2620980
FILED FOR RECORD AT THE REQUEST OF SIERRA SURVEYING, INC. ON THIS 27 DAY OF Nov. 2001, AT 9 MIN. PAST 3 O'CLOCK, P.M. OFFICIAL RECORDS OF WASHOE COUNTY, NEVADA
Kathryn L. Burke
COUNTY RECORDER
BY C. Barthey
DEPUTY
FEE: 22.00

PARCEL MAP
FOR
TRUST B OF THE LEAR FAMILY TRUST & THE MOYA OLSEN LEAR TRUST

A DIVISION OF PARCEL 2 OF PARCEL MAP NO. 3851
A PORTION OF THE NORTH ONE-HALF OF SECTION 1, TOWNSHIP 20 NORTH, RANGE 19 EAST, M.D.B.&M.
RENO, WASHOE COUNTY, NEVADA

SIERRA SURVEYING, INC.
6301 LOXLEY LANE, A-5
RENO, NEVADA 89511
TELEPHONE: (775) 829-8004 FAX: (775) 829-0328

JOB NO.:	2002019
DRAWN BY:	TMB
CHECKED BY:	TMB
DATE:	9/20
CHECKED BY:	CSC
DATE:	NOVEMBER 15, 2001
SHEET	1 OF 1

Parcel Map 3826

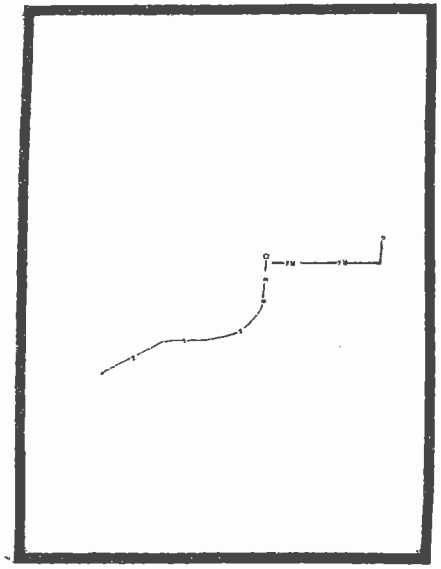
3826

Q23-023

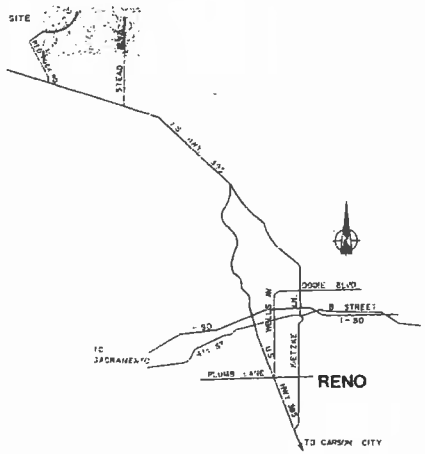
MOYA BLVD. TRUNK SEWER SEWAGE PUMP STATION AND SEWAGE FORCE MAIN IMPROVEMENTS

RENO, NEVADA

MAY 1979



VICINITY MAP
N.T.S.



AREA MAP
N.T.S.

INDEX TO DRAWINGS

DRAWING No	DRAWING TITLE	STATION
1.	COVER SHEET	
2.	MOYA BLVD TRUNK SEWER	0 - 40 to 11+00
3.	" " " "	thru - 22+00
4.	" " " "	thru 33+00
5.	" " " "	thru 44+00
6.	" " " "	thru 55+00
7.	" " " "	thru 66+00
8.	" " " "	thru 77+00
9.	FORCE MAIN - LEAR BLVD.	thru 80+50.30(MOYA)
10.	" " " "	1+00 to 11+00
11.	" " " "	thru 22+00
12.	" " " "	thru 33+00
13.	" " " "	thru 42+20.20
14.	FORCE MAIN - STEAD BLVD.	0+00 to 8+72.50
15.	LEAR SEWAGE PUMP STATION & DETAILS	
15A.	SEWER - ARAGON BLVD.	

ABBREVIATIONS

A.C.P.	Asbestos Cement Pipe	N.T.S.	Not To Scale
B.M.	Bench-Mark	N.I.C.	Not In Contract
B.C.	Begin Horizontal Curve	R.C.P.	Reinforced Concrete Pipe
C.B.	Catch Basin	R/W	Right of Way
℄	Centerline	SHT	Sheet
CONC	Concrete	ST	Street
ELEV	Elevation	STA	Station
℄	Flow Line	TYP	Typical
E.P.	Edge of Paving	TC	Top of Curb
E.C.	End Horizontal Curve	W/	With
INV	Invert Elevation	W/O	Without
RT	RIGHT OF CENTER LINE	LT	LEFT OF CENTER LINE

SYMBOLS

Proposed Sanitary Sewer & F.M.		Property Line	
Sanitary Sewer (existing)	—SS—	Fractured Street R/W	
Storm Drain (existing)	—SD—	Sewer Slope (STA FT)	S=0.0016
Water Line (existing)	—W—	Drainage Swale	
Gas Line (existing)	—G—	Test Pit	
Underground Telephone (existing)	—T—	Proposed Manhole	
		Air Release Valve	
		Existing Manhole	-O-

GENERAL NOTES

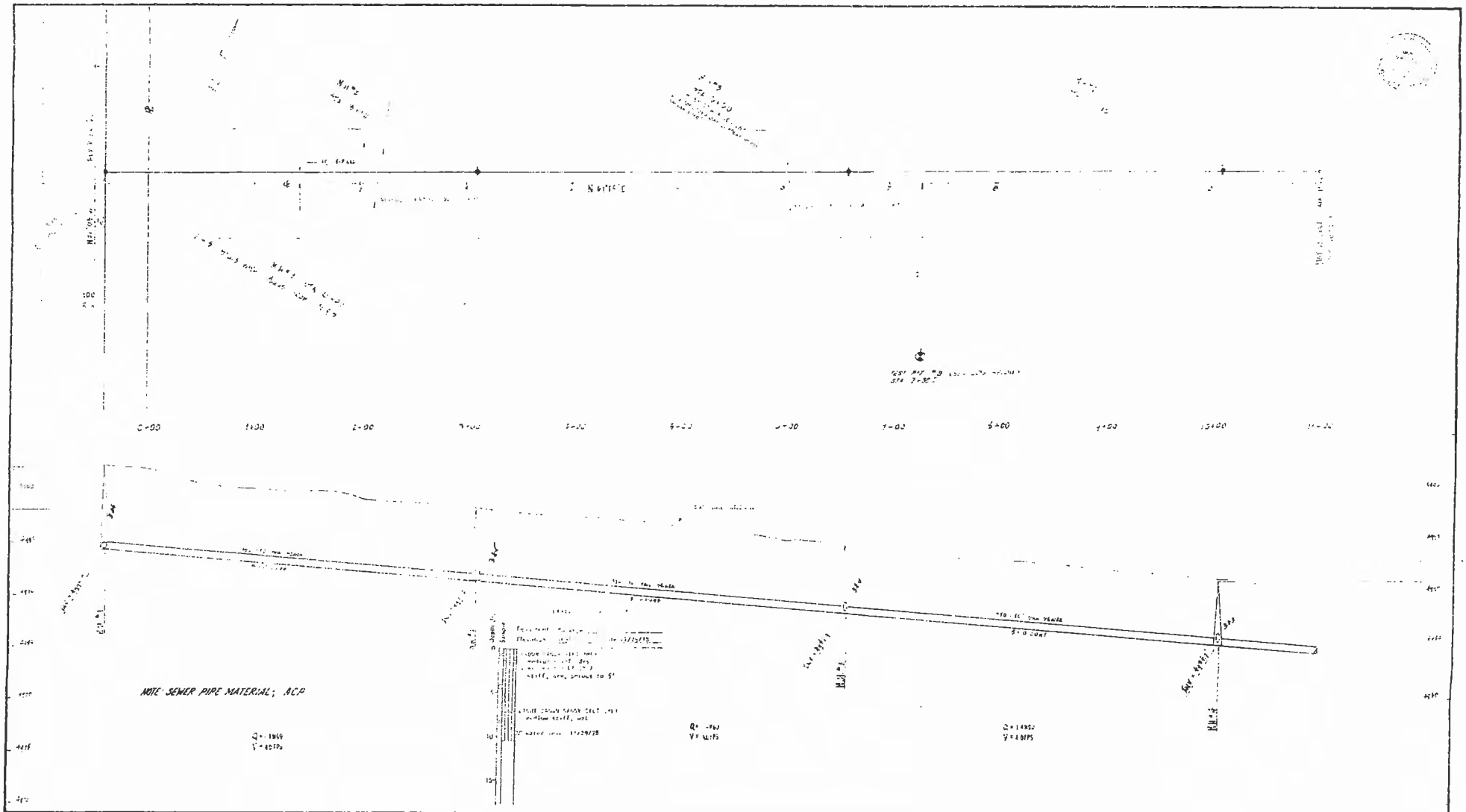
1. Basis of Bearing: The south R/W line of "Future Lear Blvd." shown as N85°04'08"W on that Record of Survey for Wm. P. Lear, recorded February 15, 1978, File #514533, Washoe County Records.
2. Basis of Elevation: LBM #5, top of iron post 100' left of station 50+00 "L" line (Silver Lake Blvd.). Elevation 5122.164 (State Highway Datum).
3. Location of underground utilities shown are approximate only. The Contractor shall verify exact location of all utilities to be encountered with the utility owner prior to start of excavation.
4. Gravity trunk sewer pipe shall be Class 2400 ACP.
5. Sewage force main pipe shall be Class 100 ACP.
6. All construction shall be in accordance with the City of Reno standards and specifications.

DATE			APPROVED		SHEET 1
SCALE			BY		OF SHEETS
DESIGNED			DATE 6/26/79 RCE 4368		JOB NO.
DRAWN			APPROVED		R-1102
CHECKED			BY		
PROJ ENGR			DATE		
	BY	DATE	REVISIONS		

PYRAMID Engineers & Land Surveyors

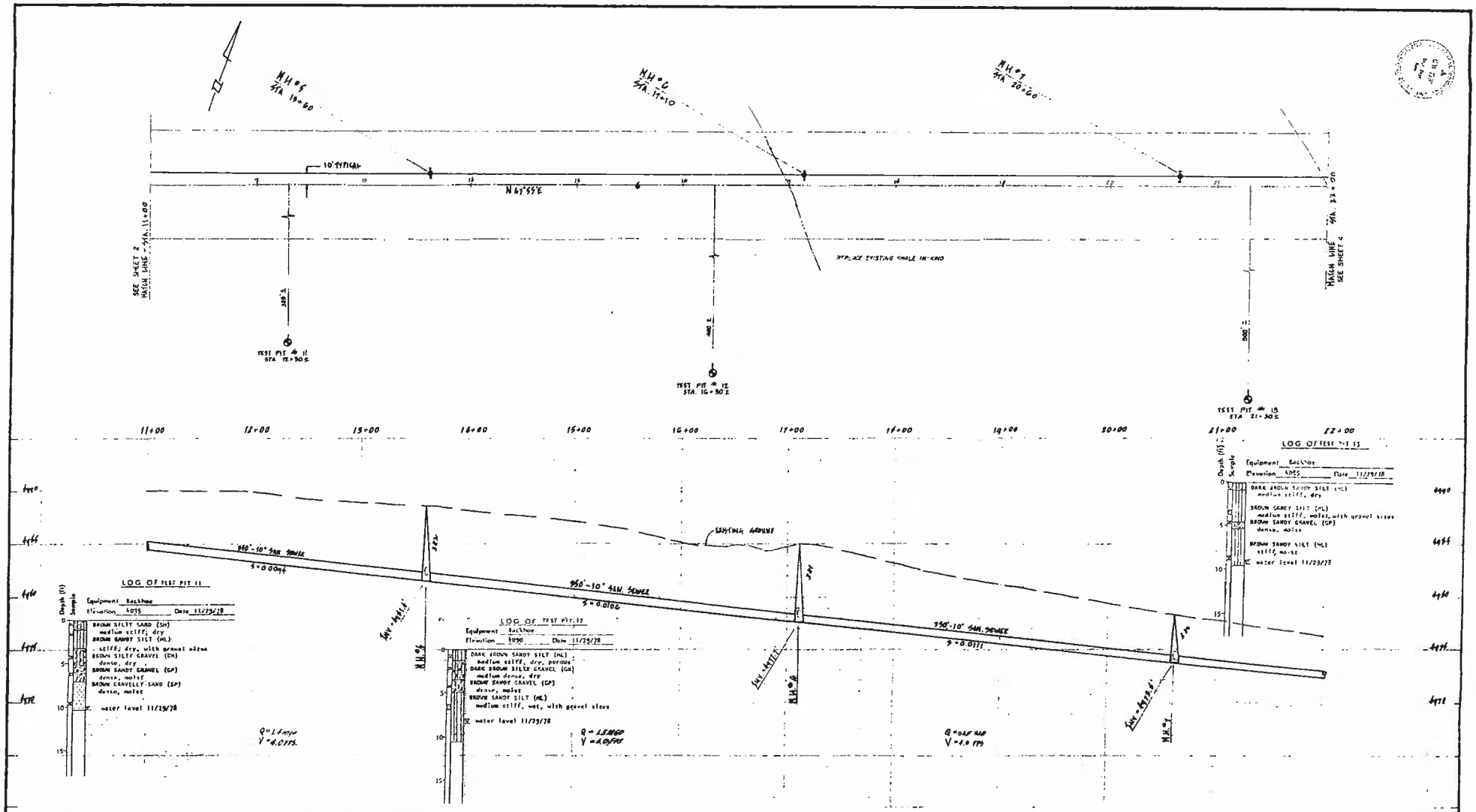
Q23-023

J-132-1



DATE SCALE DESIGNED DRAWN CHECKED PROJ. ENGR.	BY DATE REVISIONS	APPROVED BY DATE 6/23 APPROVED BY DATE RCE	TYRANO ENGINEERING & LAND SURVEYING	MOYA BLVD. TRUNK SEWER RENO NEVADA	SHEET 2 OF SHEETS JOB NO. R-1102

2-112-2



DATE 5/78
SCALE
DESIGNED
DRAWN
CHECKED
PROJ. ENGR.

BY	DATE	REVISIONS

APPROVED
BY
DATE 6/26/79 R.C.E. 4368
APPROVED
BY
DATE R.C.E.

PYRAMID Engineers & Land Surveyors
1200 Kietzke Lane Ste 30 Reno NV 89502 - (702) 329-2540

MOYA BLVD. TRUNK SEWER

RENO NEVADA

SHEET 3 OF SHEETS

JOB NO R-1102

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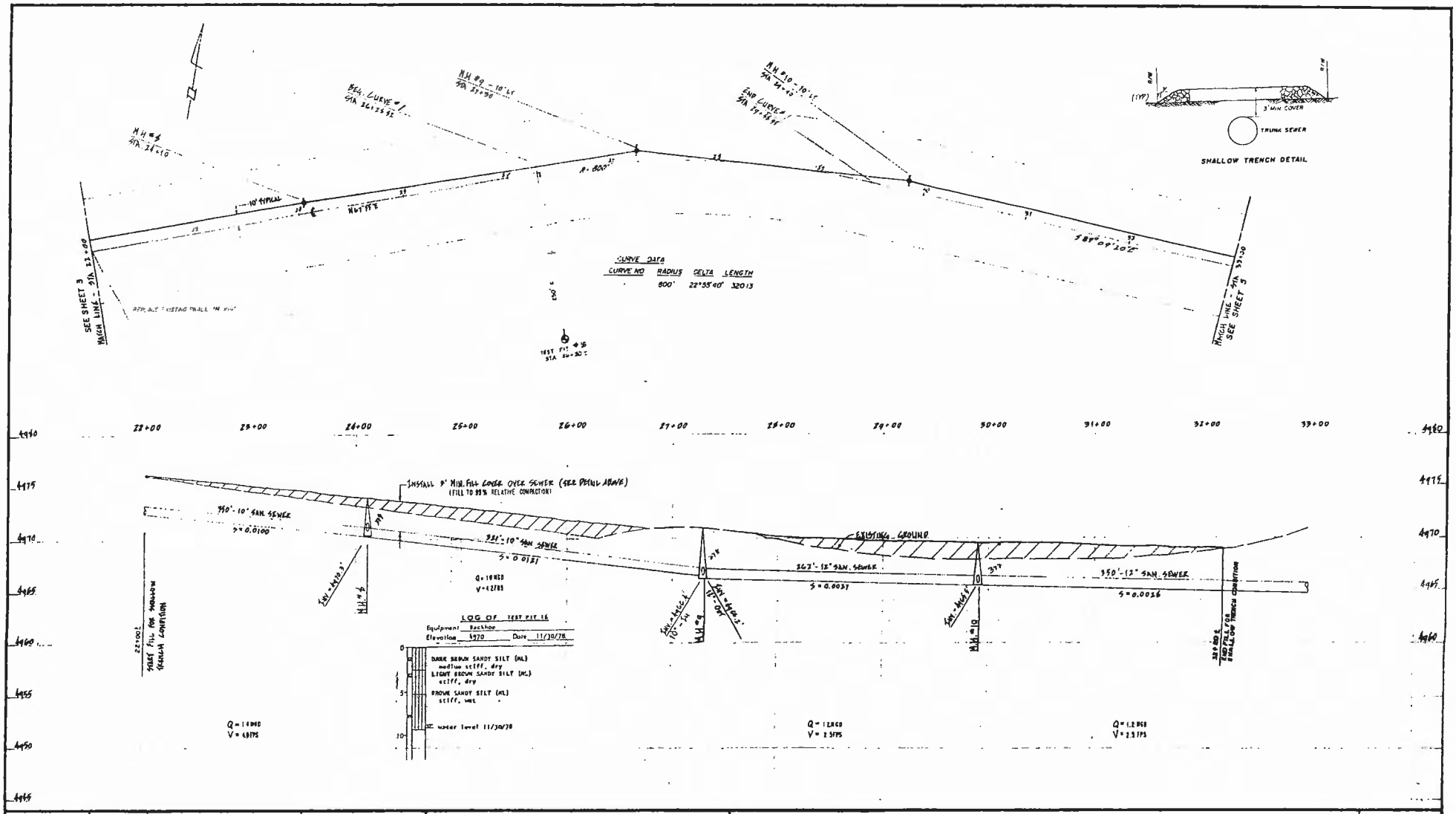
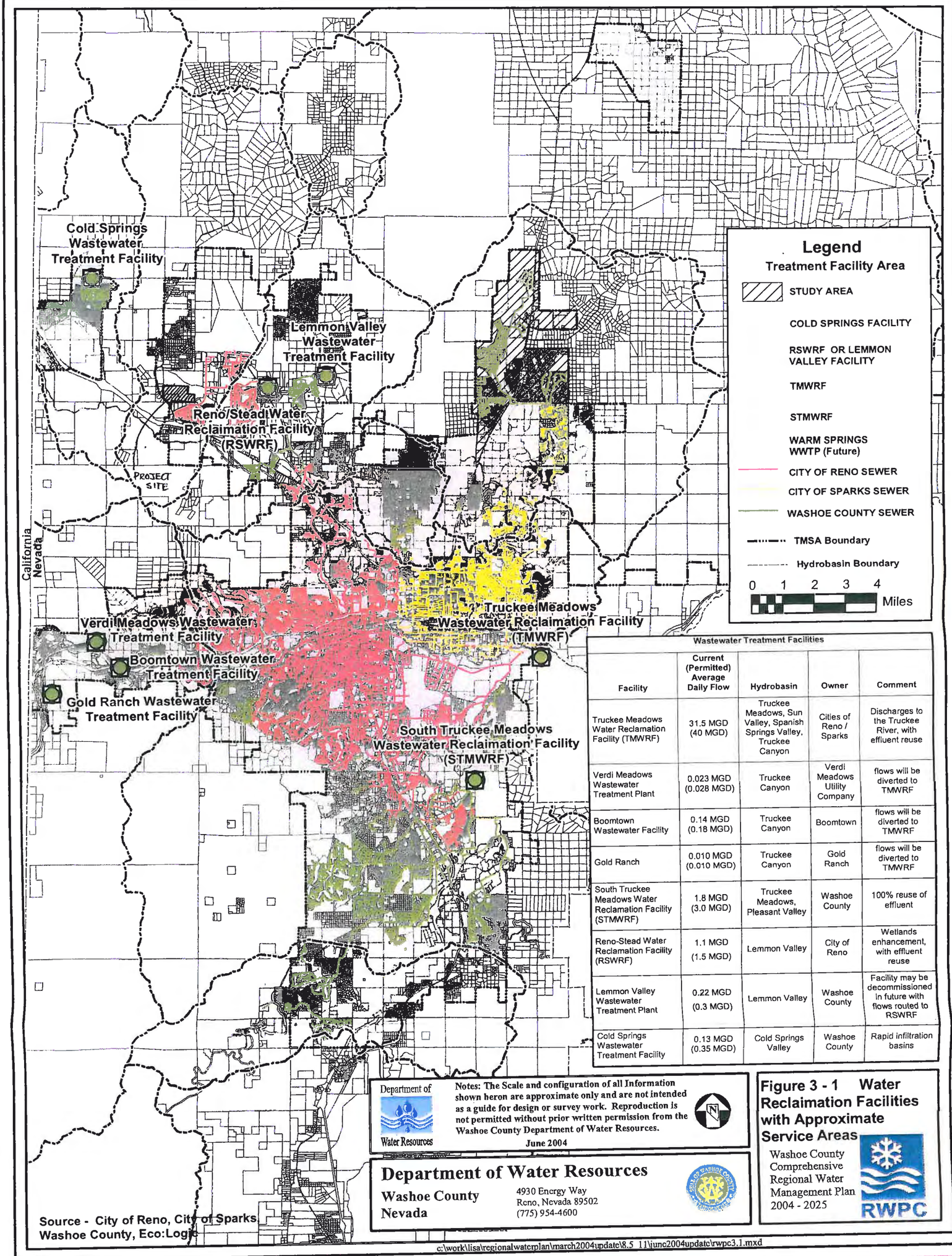


DATE 5/79 SCALE 1"=20' H 1"=5' V DESIGNED DRAWN CHECKED PROJ. ENGR	BY DATE REVISIONS	APPROVED BY DATE 6/27/79 R.C.E. 4565 APPROVED BY DATE R.C.E.	PYRAMID Engineers & Land Surveyors	MOYA BLVD. TRUNK SEWER RENO NEVADA	SHEET 4 OF SHEETS JOB NO. R-1102

Z-132-4



Wastewater Treatment Facilities

Facility	Current (Permitted) Average Daily Flow	Hydrobasin	Owner	Comment
Truckee Meadows Water Reclamation Facility (TMWRF)	31.5 MGD (40 MGD)	Truckee Meadows, Sun Valley, Spanish Springs Valley, Truckee Canyon	Cities of Reno / Sparks	Discharges to the Truckee River, with effluent reuse
Verdi Meadows Wastewater Treatment Plant	0.023 MGD (0.028 MGD)	Truckee Canyon	Verdi Meadows Utility Company	flows will be diverted to TMWRF
Boomtown Wastewater Facility	0.14 MGD (0.18 MGD)	Truckee Canyon	Boomtown	flows will be diverted to TMWRF
Gold Ranch	0.010 MGD (0.010 MGD)	Truckee Canyon	Gold Ranch	flows will be diverted to TMWRF
South Truckee Meadows Water Reclamation Facility (STMWRF)	1.8 MGD (3.0 MGD)	Truckee Meadows, Pleasant Valley	Washoe County	100% reuse of effluent
Reno-Stead Water Reclamation Facility (RSWRF)	1.1 MGD (1.5 MGD)	Lemmon Valley	City of Reno	Wetlands enhancement, with effluent reuse
Lemmon Valley Wastewater Treatment Plant	0.22 MGD (0.3 MGD)	Lemmon Valley	Washoe County	Facility may be decommissioned in future with flows routed to RSWRF
Cold Springs Wastewater Treatment Facility	0.13 MGD (0.35 MGD)	Cold Springs Valley	Washoe County	Rapid infiltration basins

Figure 3 - 1 Water Reclaimation Facilities with Approximate Service Areas

Washoe County Comprehensive Regional Water Management Plan 2004 - 2025

c:\work\lisa\regionalwaterplan\march2004update\8.5 11\june2004update\rwpc3.1.mxd

Todd Gammill

From: Standridge, Glen [GStandridge@nvenergy.com]
Sent: Wednesday, September 30, 2009 11:20 AM
To: Todd Gammill
Subject: Red Rock and Moya

Todd,
I have attached a screen shot showing where the existing electric and gas facilities are located.

Overhead electric runs along Red Rock on the West and along the East side of the parcels in question.
Gas is an 8" main and runs along Moya to the South of the parcels in question.

Legend:
Electric – Green
Gas - Purple
Street Center Lines – Red

If you need any additional information, please feel free to give me a call.

Thank You,

Glen Standridge
Utility Design Administrator
NV Energy
(775) 834-7284 office
(775) 544-6378 cell
(775) 834-7305 fax
gstandridge@nvenergy.com

ZENAMASTE
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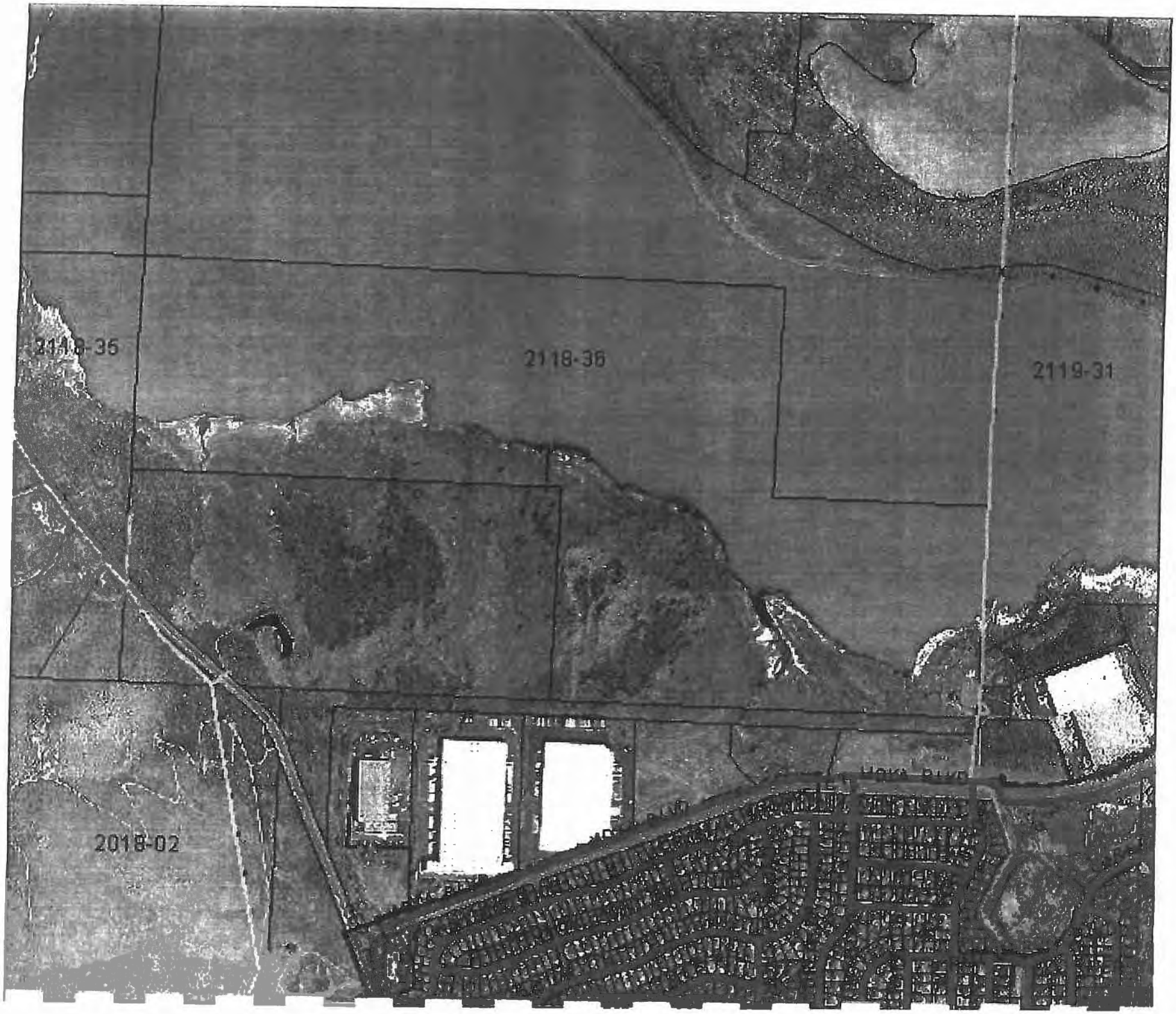
Diversity Champions


2118-35
2118-36
2119-31
2018-02

WASHOE COUNTY
RECORDER

OFFICE OF THE RECORDER
KATHRYN L. BURKE, RECORDER

1001 E. NINTH STREET
POST OFFICE BOX 11130
RENO, NEVADA 89520-0027
PHONE (775) 328-3661
FAX (775) 325-8010

LEGIBILITY NOTICE

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By my signing below, I acknowledge that I have been advised that once the document has been microfilmed it may not reproduce a legible copy.

Signature

3/30/2012
Date

ANDREW D. BURLINK
Printed Name