Los Alamos County

Community Development Department

PLANNING & ZONING COMMISSION STAFF REPORT

Public Hearing Date:	March 28, 2018 – Postponed to **April 11, 2018**
Subject:	Case No. SUB-2018-005, A-19/Mirador Final Subdivision Plat
Applicant/Owner:	Scott Eddings, P.E., Agent for Adam Thornton, Owner
Case Manager:	Tamara Baer, Planning Manager

The Los Alamos County Planning and Zoning Commission (P&Z), at their meeting of March 28, 2018, postponed Case No. SUB-2018-005, A-19/Mirador Final Subdivision Plat, to the next P&Z meeting of April 11, 2018. The request to postpone was made by the Applicant in order to pursue further discussion with County staff in regard to the proposed Conditions of Approval.

County staff and the Applicant have reached agreement on all conditions. Revised recommended Conditions of Approval are provided below and represent clarifications of the original conditions.

A copy of the January 10, 2018 Amended Traffic Study, prepared by the Albuquerque engineering firm Bohannan Huston, is included in its entirety with this cover report. Pages 20 and 21 highlight the Conclusions and Recommendations of the study.

The suggested Motions, along with the revised recommended Conditions of Approval, are provided below. Please refer to the original staff report dated March 28, 2018 for the complete report and analysis.

Case No. SUB-2018-005: A-19/Mirador Final Subdivision Plat

Scott Eddings, P.E., agent for Adam Thornton, owner, requests Final Subdivision Plat approval to create 161 new residential lots and one commercial lot on Tracts A-19-A-1, A-19-A-2A and A-19-A-2B, being a part of the Ramon Vigil Grant. The land from which the new subdivision will be platted consists of three existing parcels. The parcel designated A-19-A-1, is zoned R-1-5 (Single-family residential) and consists of 34.35± acres. The second parcel is A-19-A-2A, is zoned DT-NCO (Downtown - Neighborhood Center Overlay), and consists of 12.94± acres. A third parcel, A-19-A-2B is also zoned DT-NCO, consists of 12.97±, and is owned by Los Alamos County. The subdivision will be located on the first two, privately owned tracts of land.

Motion on the Final Subdivision Plat

Motion Option 1:

I move to **approve** Case No. SUB-2018-005, a request for approval of Final Subdivision Plat, creating 161 new residential lots and one commercial lot pertaining to the Property as described, and known as A-19, or Mirador. I so move for the reasons stated in the staff report and per testimony at the public hearing, and subject to the conditions of approval.

Conditions of Approval:

1. The developer shall be responsible for future installation of a traffic signal and related equipment at the NM 4/Mirador/Sherwood Boulevard intersection if engineering warrants are met. This shall not preclude the developer from seeking financial participation from other sources.

2. The developer shall provide an updated Traffic Impact Analysis (TIA) at the time of any of the following:

    - Site Plan submittal for Commercial Tract D, or any portion thereof; or

    - As may be required by the County Engineer based on traffic operational performance, safety and/or capacity issues upon completion of Phases I, II or III of residential build-out; or

    - As may be required by the New Mexico Department of Transportation.

3. Applicant's engineer shall address all County Engineer's Conditions of Approval of Preliminary Plat (Exhibit A), and additional comments in the County Engineer's memorandum dated February 28, 2018 (Exhibit B) with submittal of construction drawings for Building Permit. Based on input from the U.S. Army Corps of Engineers, if drainage outfalls are below the ordinary high water mark, then a USACE nationwide permit will be required.

4. A financial guarantee, approved by the county attorney, shall be provided in an amount sufficient to cover the costs of construction of all public improvements and public utilities. The utilities manager and county engineer shall certify that the amount is adequate.

5. Prior to recording the plat, the developer shall provide a written statement describing the date for commencement and completion of construction, by phase, and a chart indicating the approximate construction period for each of the utilities, and public and private roadway improvements. Reasonable amendments or changes to such phasing shall be accepted by the County.

6. …

Motion Option 2:

I move to **deny** Case Nos. SUB-2018-005, a Final Subdivision Plat for 161 new residential lots, and one commercial lot, pertaining to the Property as described, and known as A-19, or Mirador, finding that the proposal has failed to meet the Los Alamos County Code of Ordinances, Chapter 16 – Development Code review criteria in Sec. 16-153 – Subdivision, for the following reason(s):

1. …

Finally, it is noted that this hearing was not required to be nor was it re-noticed. The Los Alamos County Code of Ordinances, Chapter 16 – Development Code, Article V. – Public Notice, Sec. 16-192. - *Planning and zoning commission public hearing requirements. (c)* [reads in part]: "*A public hearing for which notice has been given as set forth in this section, may be rescheduled to a later date, on a day not more than 21 days from the original scheduled hearing, without repetition of notice aforesaid, but notice of the new date, time and place for the rescheduled hearing shall be prominently displayed or otherwise communicated at*

the originally scheduled hearing." The new hearing date of April 11, 2018 was announced at the previous meeting.

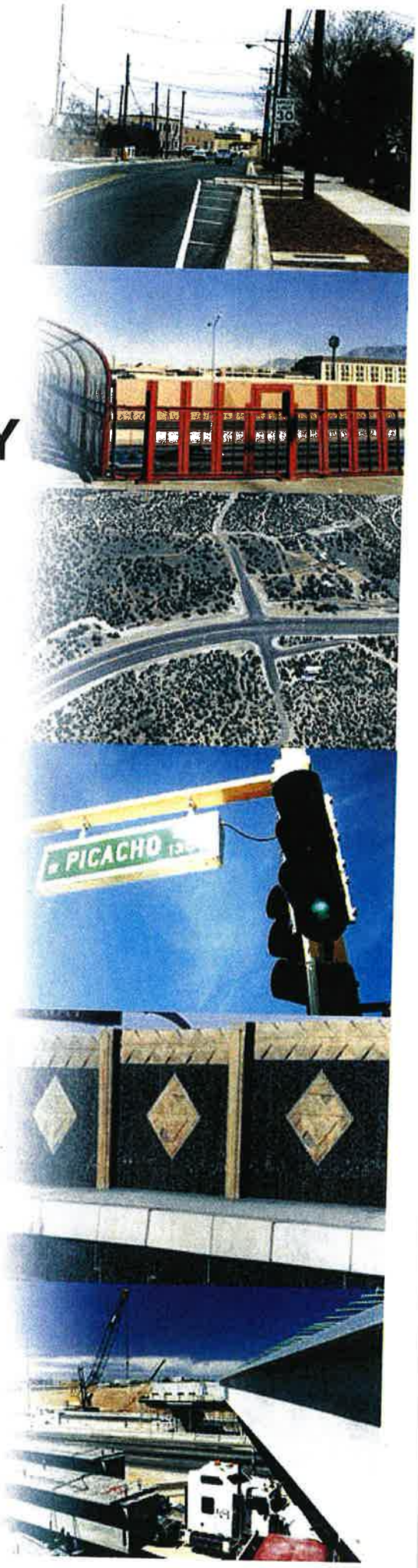
Exhibits

- Exhibit 1: Amended White Rock Tract A-19-a Traffic Impact Study, dated January 10, 2018
- Exhibit 2: March 28, 2018 Staff Report to P&Z for Case No. SUB-2018-005, A-19/Mirador Final Subdivision Plat

AMENDED WHITE ROCK TRACT A-19-a WHITE ROCK, NM TRAFFIC IMPACT STUDY

INITIAL REVIEW SUBMITTAL

JANUARY 10, 2018



Prepared For:

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Prepared By:

Bohannan Huston

Engineering

Spatial Data

Advanced Technologies

Exhibit 1

AMENDED
WHITE ROCK TRACT A-19-a
WHITE ROCK, NM
TRAFFIC IMPACT STUDY

INITIAL REVIEW SUBMITTAL

JANUARY 10, 2018

PREPARED BY:

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Eric J Wrage 1/10/18

ERIC J. WRAGE, P.E., P.T.O.E **DATE**

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Bohannan Huston

Exhibit 1

WHITE ROCK MASTER PLAN TRACT A-19-a
WHITE ROCK, NM
AMEMDED TRAFFIC IMPACT STUDY
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APPENDICES

I. INTRODUCTION

This study is an amendment to the traffic study submitted July 14, 2011. This study evaluates the currently proposed land use concept for what is known as Tract A-19-a, a 60-acre tract of land in White Rock conveyed from the Federal government to the County of Los Alamos. This conveyance included the land which SR 4 is located on across the site. A vicinity map is shown in Figure 1. Detailed site determination has not been completed at this time, however a revised land use plan has been developed. The revised land use plan is shown in Figure 2.

A. STUDY PURPOSE

The purpose of the traffic study is to determine the impacts of the proposed development on the existing street network and to recommend any mitigation measures that may be necessary to support the additional traffic generated by the proposed development.

B. STUDY PROCEDURE

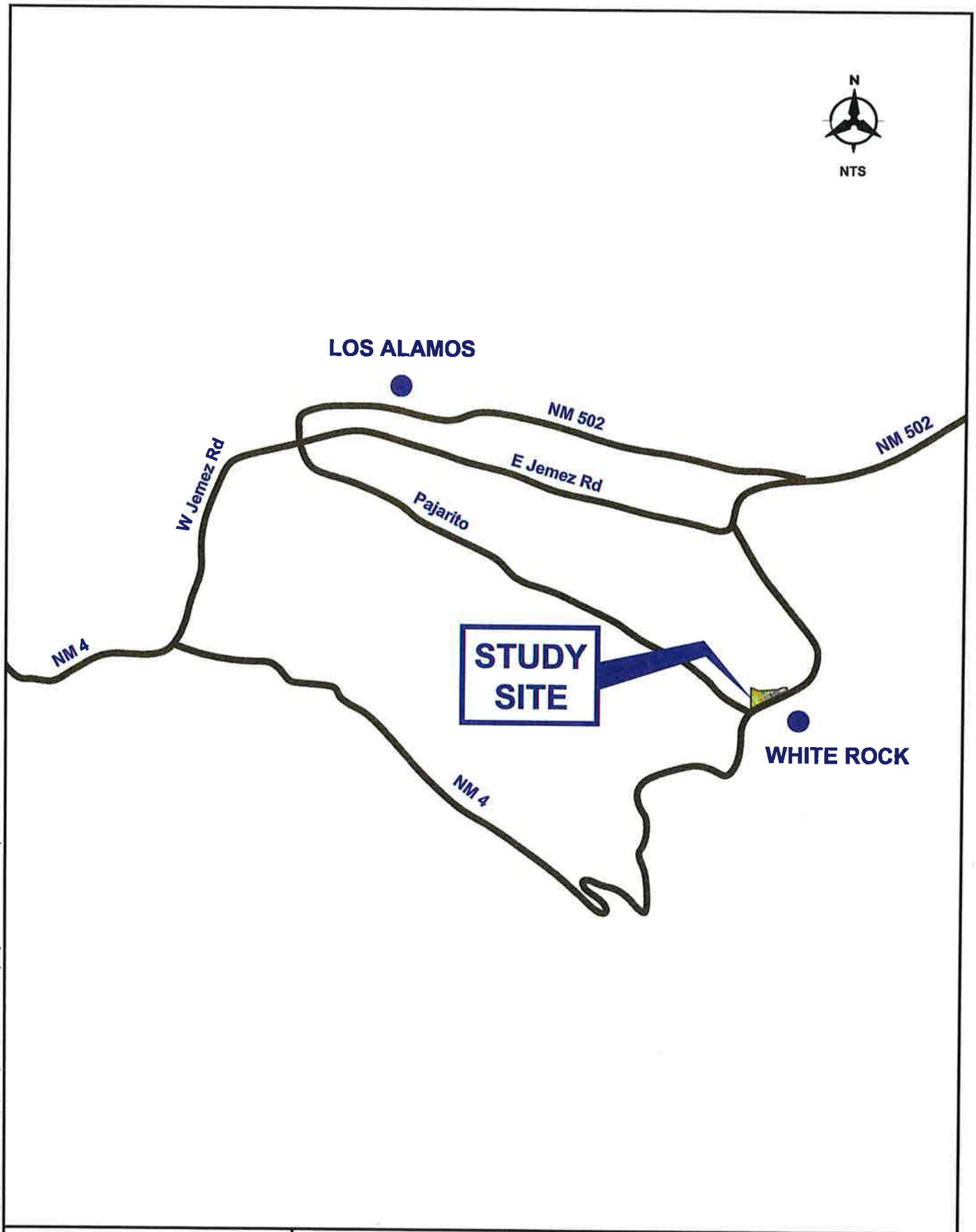
The study was conducted using established traffic engineering procedures. The study will include analysis of the following intersections:

- NM State Route (SR) 4 and Rover Boulevard (full access signalized)
- State Route 4 and Sherwood Boulevard/Future Entrance 1 (full access unsignalized)
- State Route 4 and La Vista Drive/Future Entrance 2 (full access unsignalized)
- State Route 4 and Pajarito Road/Grand Canyon Drive (signalized)

The intersection evaluations include analysis for the AM and PM peak hours for the following traffic conditions:

- Existing traffic
- Future Completion Year without proposed development or future access points (No Build)
- Future Completion Year with full buildout of the site

Previous traffic studies performed on SR 4, including the August 24, 2010 *Final Report Phase I-A/I-B Evaluation of Alternatives Report, NM 4 and Canada del Buey Multi-Use Path Alignment Study White Rock, New Mexico* have found that traffic growth has been flat on NM 4 for the past 10 years, and recent data finds this has continued to be true.



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Courtyard I 7500 Jefferson St. NE Albuquerque, NM 87109-4335
ENGINEERING ▲ SPATIAL DATA ▲ ADVANCED TECHNOLOGIES

WHITE ROCK MASTER PLAN
TRACT A-19-a
TRAFFIC IMPACT ANALYSIS

FIGURE 1
VICINITY MAP

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WHITE ROCK MASTER PLAN
TRACT A-19-a
TRAFFIC IMPACT ANALYSIS

FIGURE 2
INITIAL LAND USE PLAN

II. EXISTING AREA CHARACTERISTICS

A. GENERAL AREA CHARACTERISTICS

The site is located in the northeast corner of the intersection of SR 4 and Sherwood Boulevard, and continues west to approximately Pajarito Road.

SR 4 has recently been reconstructed as a 2-lane road (1 in each direction) with medians to provide left turn lanes at key intersections. A climbing lane begins at Sherwood Boulevard that provides two westbound through lanes with the climbing lane dropping as a free right turn lane onto Pajarito Road. Pertinent pages from the SR 4 reconstruction projects striping and signing plan are included in Appendix A. The speed limit on SR 4 is 35 MPH. The 2015 NMDOT Transportation Information Management System (TIMS) shows that SR 4 carries approximately 8,800 vehicles per day (vpd) near the site (2008 data showed 9,400 vpd).

Pajarito Road and Grand Canyon Drive is a signalized intersection on the east end of the study area. Pajarito Road is a primary access point to Los Alamos National Laboratory to the north and Grand Canyon Drive is a local street that provides access to White Rock neighborhoods to the south.

La Vista Street is a stop controlled T-intersection that provides access to White Rock neighborhoods to the south. The intersection with La Vista is also a future entrance to the proposed development.

Sherwood Boulevard is currently a T-intersection controlled by a Stop sign that provides access to White Rock neighborhoods to the south and is also a primary entrance to the local Smith's Food and Drug Center and post office. Sherwood Boulevard is also the entrance to the new Visitor's Center. Sherwood is also expected to be an entrance to the proposed development.

Rover Boulevard is a traffic signal controlled intersection that serves White Rock residential development to the south and a Phillips 66 gas station on the north.

B. EXISTING TRAFFIC VOLUMES

Traffic counts for the intersections analyzed in the study area were taken from the August 24, 2010 *Phase I-A/I-B Evaluation of Alternatives Report, NM 4 and Canada del Buey Multi-Use Path Alignment Study White Rock, New Mexico Final Report*. This is considered appropriate due to the flat traffic growth on SR 4 over the past 10 years. Figure 3 is a summary of the existing peak hour traffic volumes, existing laneage, turning

movements, and intersection levels of service. The existing conditions analysis assumes construction of the improvements to SR 4.

C. EXISTING LEVELS OF SERVICE

The Sixth Edition of the Highway Capacity Manual (HCM) defines Level of Service (LOS) for signalized and un-signalized intersections as follows:

Table 1 – LOS Definitions

Level of Service	Signalized (sec/veh)	Definition	Un-Signalized (sec/veh)
A	<10	Most vehicles do not stop.	<10
B	>10 and <20	Some vehicles stop.	>10 and <15
C	>20 and <35	Significant numbers of vehicles stop.	>15 and <25
D	>35 and <55	Many vehicles stop.	>25 and <35
E	>55 and <80	Limit of acceptable delay.	>35 and <50
F	>80	Unacceptable delay.	>50

LOS D is generally considered acceptable in urban areas and is the County's design standard for major intersections.

Existing intersection traffic volumes were analyzed using intersection methodology from the Sixth Edition and the *2000 Highway Capacity Manual* (HCM). Synchro version 10 was used to perform the level of service calculations. Individual intersection output is included in

Appendix B. The signalized intersection results are summarized in Table 2.

The results indicate that both signalized intersections operate at an acceptable level of service.

Table 2 – Existing Signalized Intersection Capacity Analysis Results

Signalized Intersections	AM Peak			PM Peak		
	Delay (sec.)	V/C	LOS	Delay (sec.)	V/C	LOS
SR 4 and Rover	12.9	0.79	B	14.2	0.79	B
SR 4 and Pajarito	4.0	0.64	A	13.1	0.83	B

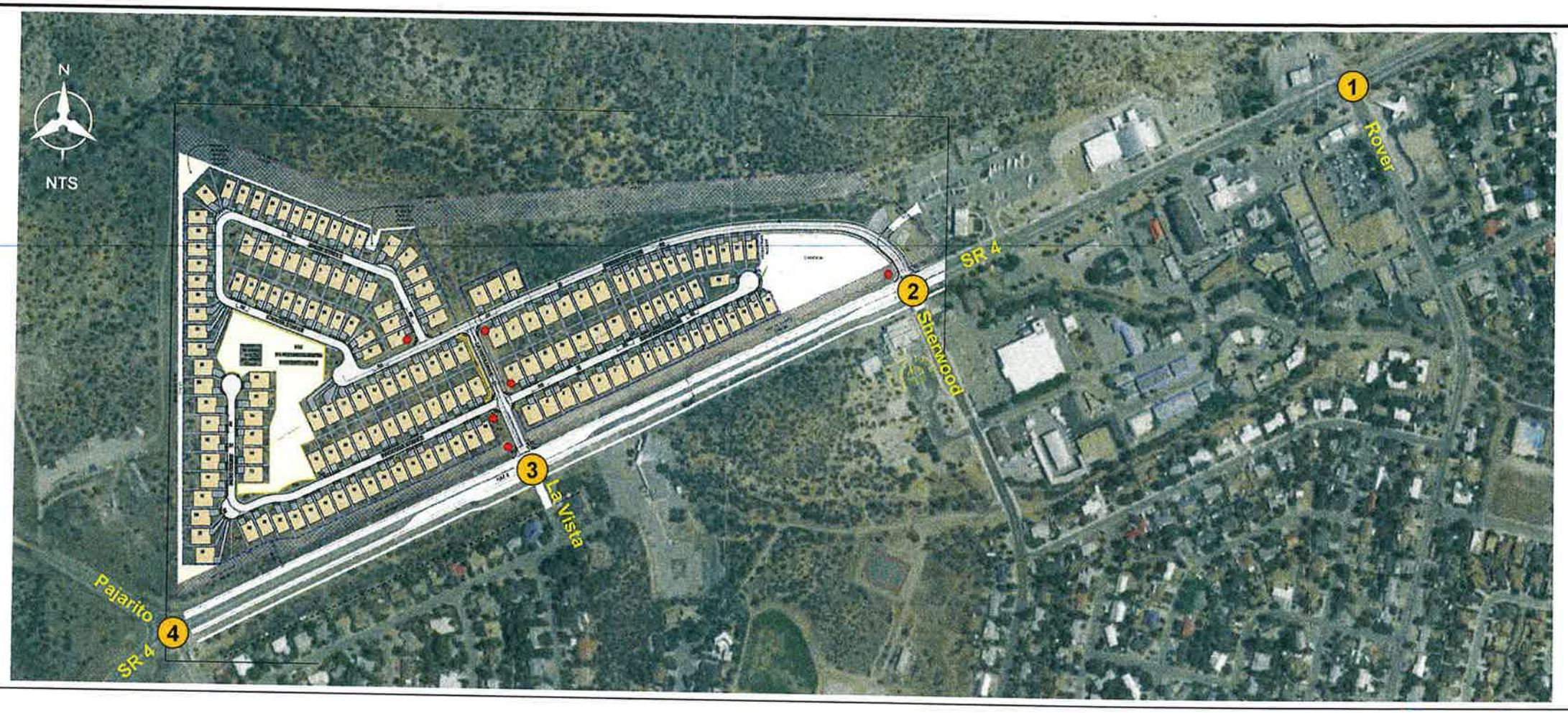
* - some movements LOS E
** - some movements LOS F

The unsignalized intersection results are summarized in Table 3. Both unsignalized intersections operate at acceptable levels of service, although the high eastbound volume in the PM peak hour does result in LOS D for the northbound left turn at Sherwood Boulevard.

Table 3 – Existing Unsignalized Intersection Capacity Analysis Results

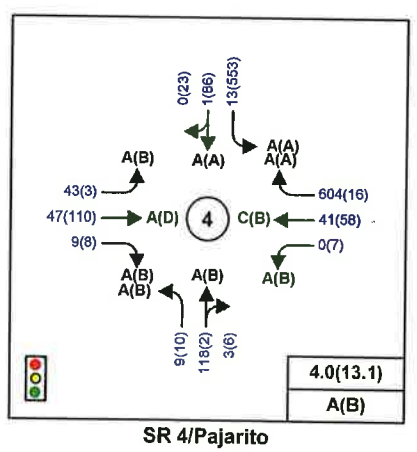
Intersection/Movement	AM Peak				PM Peak			
	Delay	v/c	Queue* (ft)	LOS	Delay	v/c	Queue* (ft)	LOS
SR 4 & Sherwood								
WB Left	7.5	0.03	25	A	9.9	0.16	25	A
NB Left	19.5	0.13	25	C	25.5	0.10	25	D
NB Through/Right	8.9	0.06	25	A	15.0	0.28	50	C
SR 4 & La Vista								
WB Left	0.0	0.00	0	A	9.3	0.04	25	A
NB Approach	9.5	0.03	25	A	15.6	0.03	25	C

* - HCM 95th percentile queue rounded to next 25-foot increment

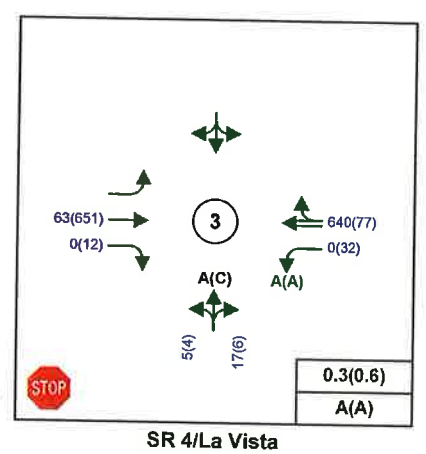


LEGEND

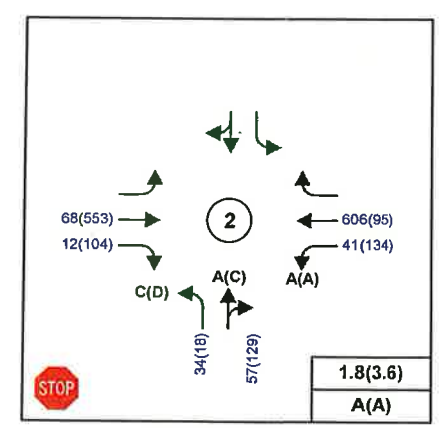
- Thru Lanes (# as indicated)
- Turning Lanes (# as indicated)
- 1234(1234) AM(PM) Traffic Counts
- X(X) AM(PM) Level of Service (LOS)



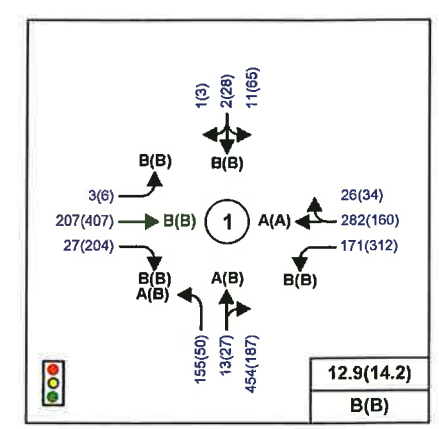
SR 4/Pajarito



SR 4/La Vista



SR 4/Sherwood



SR 4/Rover

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TRACT A-19a
TRAFFIC IMPACT ANALYSIS

FIGURE 3
EXISTING AM (PM) PEAK HOUR
TRAFFIC VOLUMES

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Exhibit 1

III. BACKGROUND TRAFFIC PROJECTIONS

A. NO-BUILD TRAFFIC PROJECTIONS

As mentioned previously, traffic volume growth in Los Alamos County has been flat for a number of years; however, two developments are planned for the corridor that will increase traffic levels. The first is the Chemistry and Metallurgy Research Replacement project (CMRR) at LANL that will have access via Pajarito Road. A traffic impact analysis was performed for the CMRR in 2008. The traffic volumes expected to be generated by the CMRR and added to SR 4 are shown in Appendix C. Additionally, a new visitor center complex is located north of SR 4 near the Sherwood Boulevard intersection and will share the access with the proposed Tract A-19-a development. The visitor complex is not expected to generate a high amount of traffic during the peak hours; however, a small number of trips for employees was assumed and is also added into the background traffic as shown in Appendix C. Figure 4 on page 10 shows the No Build traffic volumes, number of lanes, and level of service.

The No Build analysis also assumes that the proposed development and future access points are not constructed.

B. NO-BUILD INTERSECTION CAPACITY ANALYSIS

The intersections were again analyzed using Synchro version 10. Synchro output is included in Appendix D. The signalized intersection results are summarized in Table 4.

The intersections again operate at acceptable levels of service.

As will be shown in the next section, the intersection of SR 4 and Sherwood Boulevard operates with high delay as an unsignalized intersection and therefore was evaluated as a signalized intersection. The Sherwood intersection will operate at acceptable level of service with a traffic signal.

Table 4 – No Build Signalized Intersection Capacity Analysis Results

Signalized Intersections	AM Peak			PM Peak		
	Delay (sec.)	V/C	LOS	Delay (sec.)	V/C	LOS
SR 4 and Rover	13.2	0.71	B	14.4	0.80	B
SR 4 and Pajarito	4.9	0.74	A	10.0	0.60	B

* - some movements LOS E
** - some movements LOS F

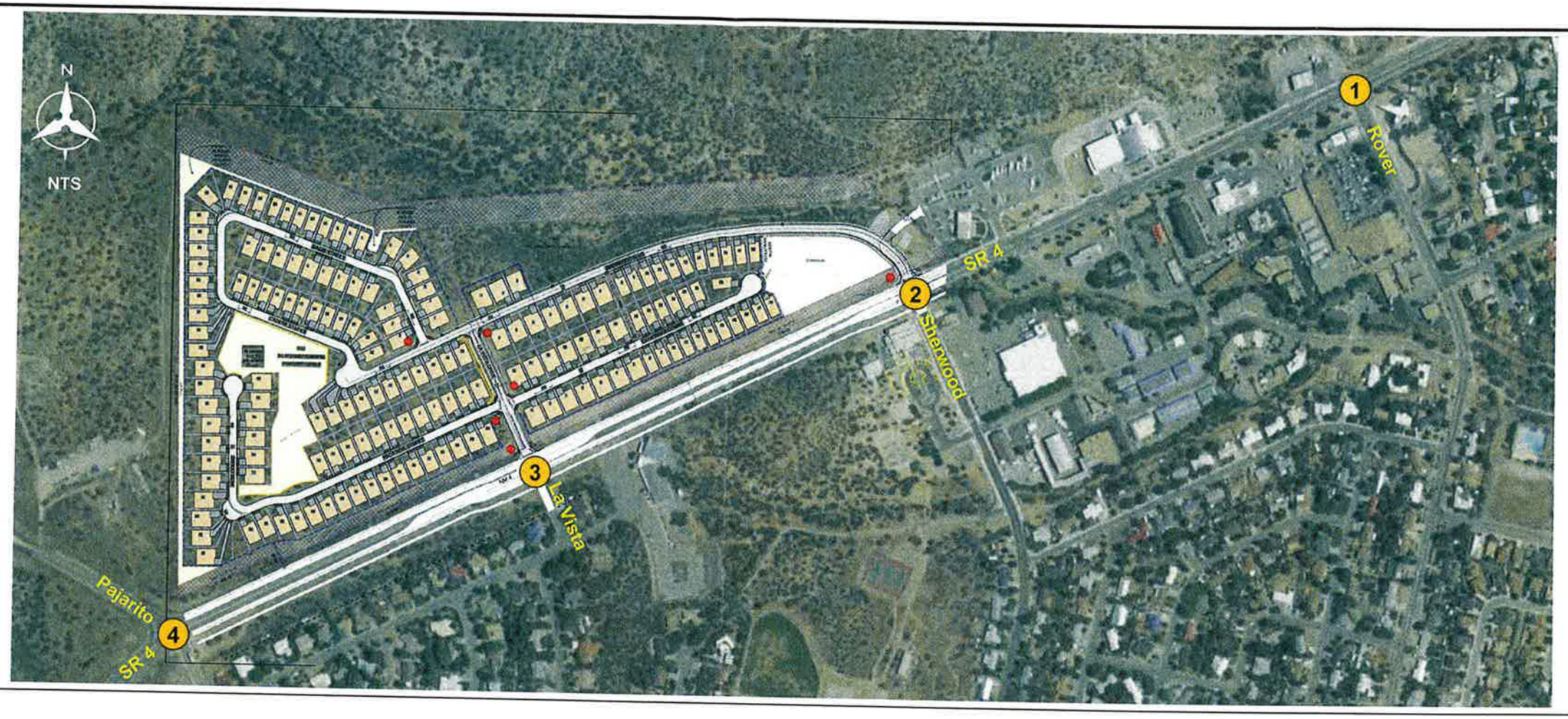
Table 5 is a summary of the unsignalized intersection No-Build results. Due to the high volume of traffic on SR 4 the Sherwood Boulevard minor street left turns operate at high

delay, with the southbound left operating at LOS E with 44 seconds of delay in the PM peak hour. A Peak Hour Volume traffic signal warrant analysis was performed for the no build traffic volumes and is included in Appendix D. A traffic signal is not warranted due to volume or delay.

Table 5 – No Build Unsignalized Intersection Capacity Analysis Results

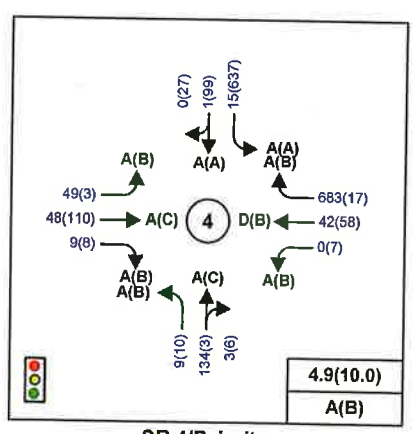
Intersection/Movement	No Build AM Peak				No Build PM Peak			
	Delay	v/c	Queue* (ft)	LOS	Delay	v/c	Queue* (ft)	LOS
SR 4 & Sherwood								
EB Left	9.2	0.00	0	A	0.0	0.00	0	A
WB Left	7.5	0.03	25	A	10.3	0.18	25	B
NB Left	22.3	0.16	25	C	28.9	0.12	25	D
NB Through/Right	9.1	0.07	25	A	16.5	0.31	50	C
SB Left	21.3	0.01	0	C	44.2	0.03	25	E
SB Through/Right	0.0	0.00	0	A	18.9	0.01	0	C
SR 4 & La Vista								
WB Left	0.0	0.00	0	A	9.6	0.04	25	A
NB Approach	9.7	0.03	25	A	17.2	0.04	25	C

* - HCM 95th percentile queue rounded to next 25-foot increment

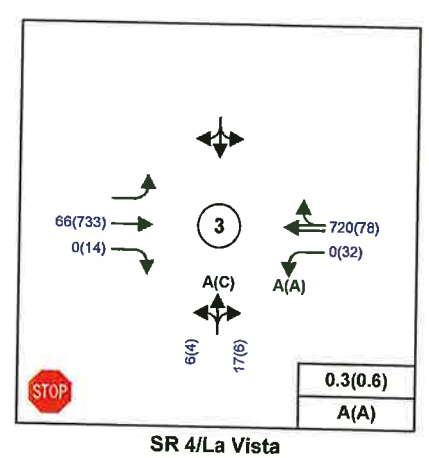


LEGEND

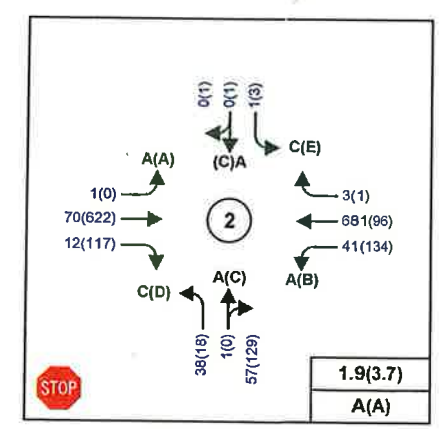
- Thru Lanes (# as indicated)
- Turning Lanes (# as indicated)
- 1234(1234) AM(PM) Traffic Counts
- X(X) AM(PM) Level of Service (LOS)



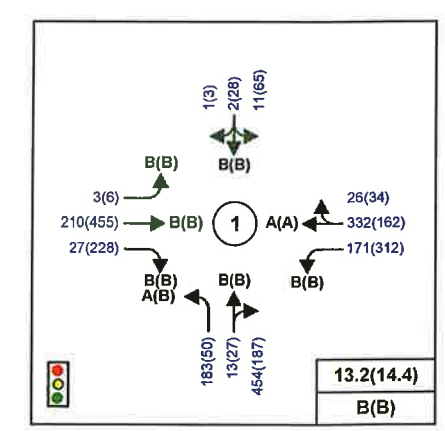
SR 4/Pajarito



SR 4/La Vista



SR 4/Sherwood



SR 4/Rover

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FIGURE 4
NO-BUILD AM (PM) PEAK HOUR TRAFFIC VOLUMES

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Exhibit 1

IV. PROPOSED SITE CHARACTERISTICS

A. PROPOSED DEVELOPMENT

The initial land use plan was developed with community input and market analysis. The land use plan anticipates 160 single family detached housing with 3.7 acres of future commercial development. As this commercial development is unknown at this time, it was assumed to be specialty retail with a 0.25 floor-to-area ratio, or 40,293 square feet.

B. TRIP GENERATION

Generated trips are broken down into three types; 1) primary, 2) pass-by trips, and 3) diverted link. The *Trip Generation* report defines these trips as follows:

- **Primary Trips** - These trips are made for the specific purpose of visiting the generator. The stop at that generator is the primary reason for the trip. For example, a home to shopping to home combination of trips is a primary trip set.
- **Pass-by Trips** - These trips are made as intermediate stops on the way from an origin to a primary trip generation. Pass-by trips are attracted from the traffic passing the site on an adjacent street that contains direct access to the generator site. These trips do not require a diversion from another roadway. For example, stopping at the store on the way home from work is an example of a pass-by trip. No pass-by trips were assigned to this development.
- **Diverted Linked Trips** - These trips are attracted from the traffic volume on the roadway within the vicinity of the generator, but which require a diversion from that roadway to another roadway to gain access to the site. The roadways could include streets or freeways adjacent to the generator, but without access to the generator. For this study, the diverted link trips have been included in with the primary trips.

All trips to the site were considered primary trips.

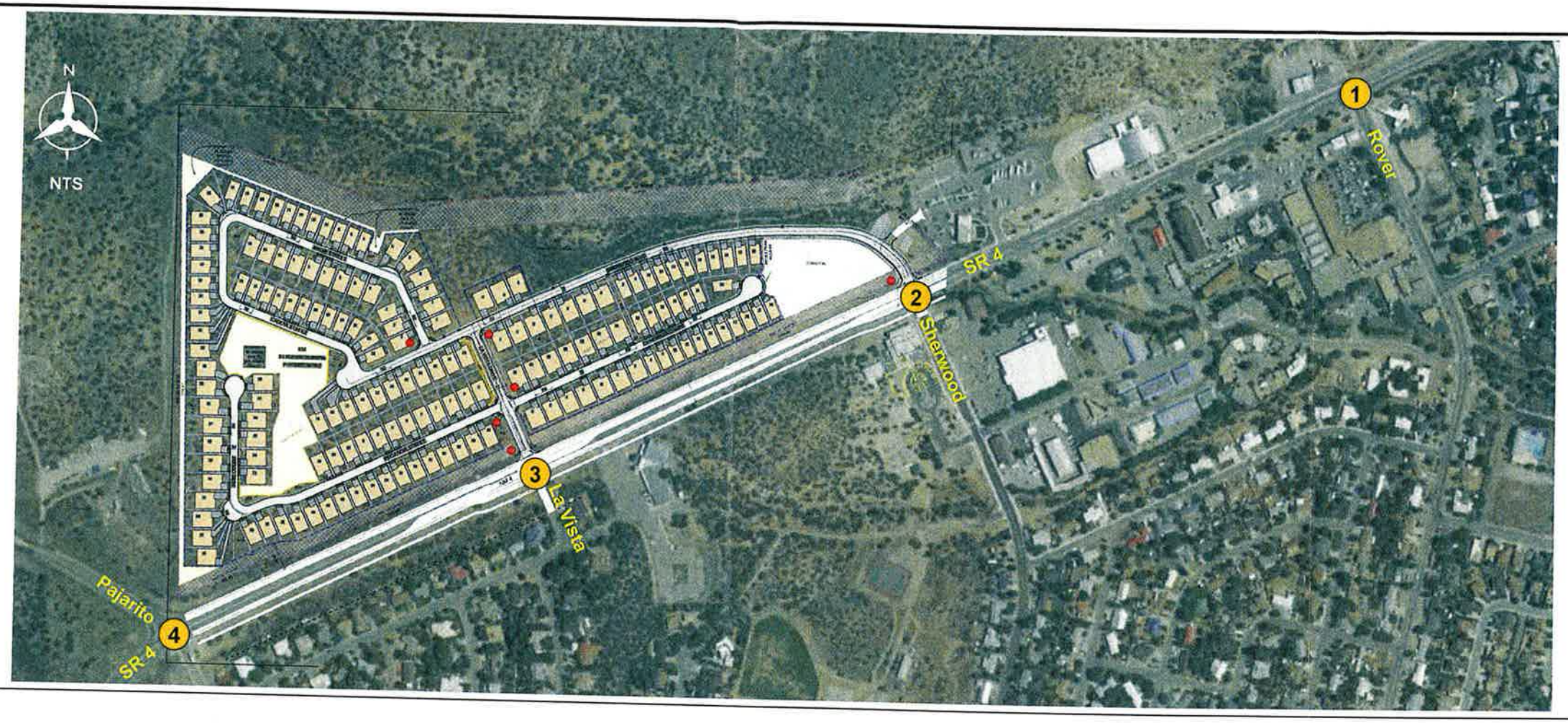
Trips generated by the proposed development are summarized as follows:

Table 6 – Trip Generation							
Land Use	ITE Land Use Code	Size	24 Hour Two-Way Volume**	AM Peak Hour***		PM Peak Hour***	
				Enter	Exit	Enter	Exit
Single Family Detached Housing	210	160 DU	1,603	30	89	101	59
Specialty Retail	814	40.3 TGLA	1,762	0	0	53	66
TGSF – thousand gross leasable area							

C. TRIP DISTRIBUTION AND ASSIGNMENT

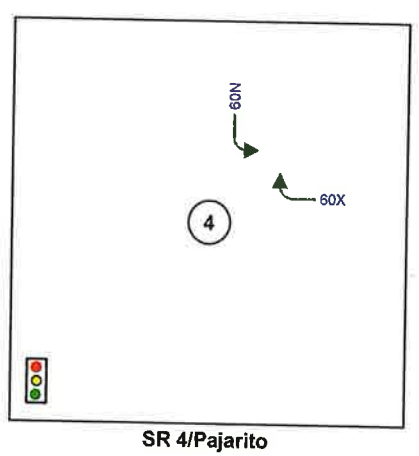
Residential trip distribution and assignment was based on the proximity of the surrounding communities where employment opportunities are located, as the peak hour traffic from residences is expected to be job related commute trips. The standard "gravity" model was used where the trip distribution is assumed to be proportional to the population of the community and inversely proportionally to the distance to the community. The residential trip distribution percentages are shown in Figure 5 on page 13. The residential trip assignment of the total project trips to the individual intersections is shown on Figure 6 on page 14.

The retail trip distribution was anticipated to be local White Rock traffic only. The percentage trip distribution for the retail trips are shown in Figure 7 on page 15, with the peak hour trips assigned to the individual intersection is shown in Figure 8 on page 16.

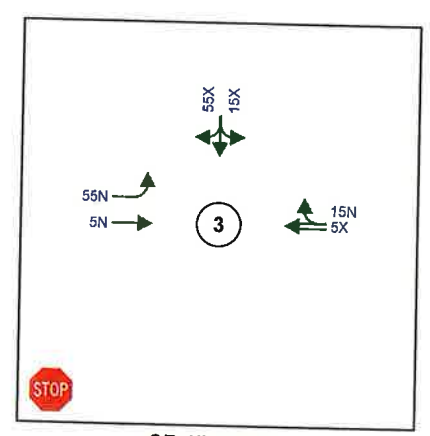


LEGEND

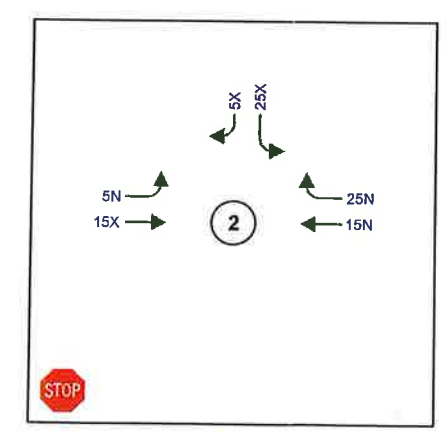
↑↑↑	Thru Lanes (# as indicated)
↰↑↱	Turning Lanes (# as indicated)
1234(1234)	AM(PM) Traffic Counts
N	Entering
X	Exiting



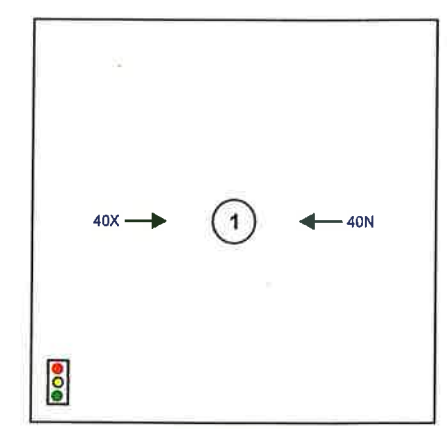
SR 4/Pajarito



SR 4/La Vista



SR 4/Sherwood



SR 4/Rover

Bohannan Huston
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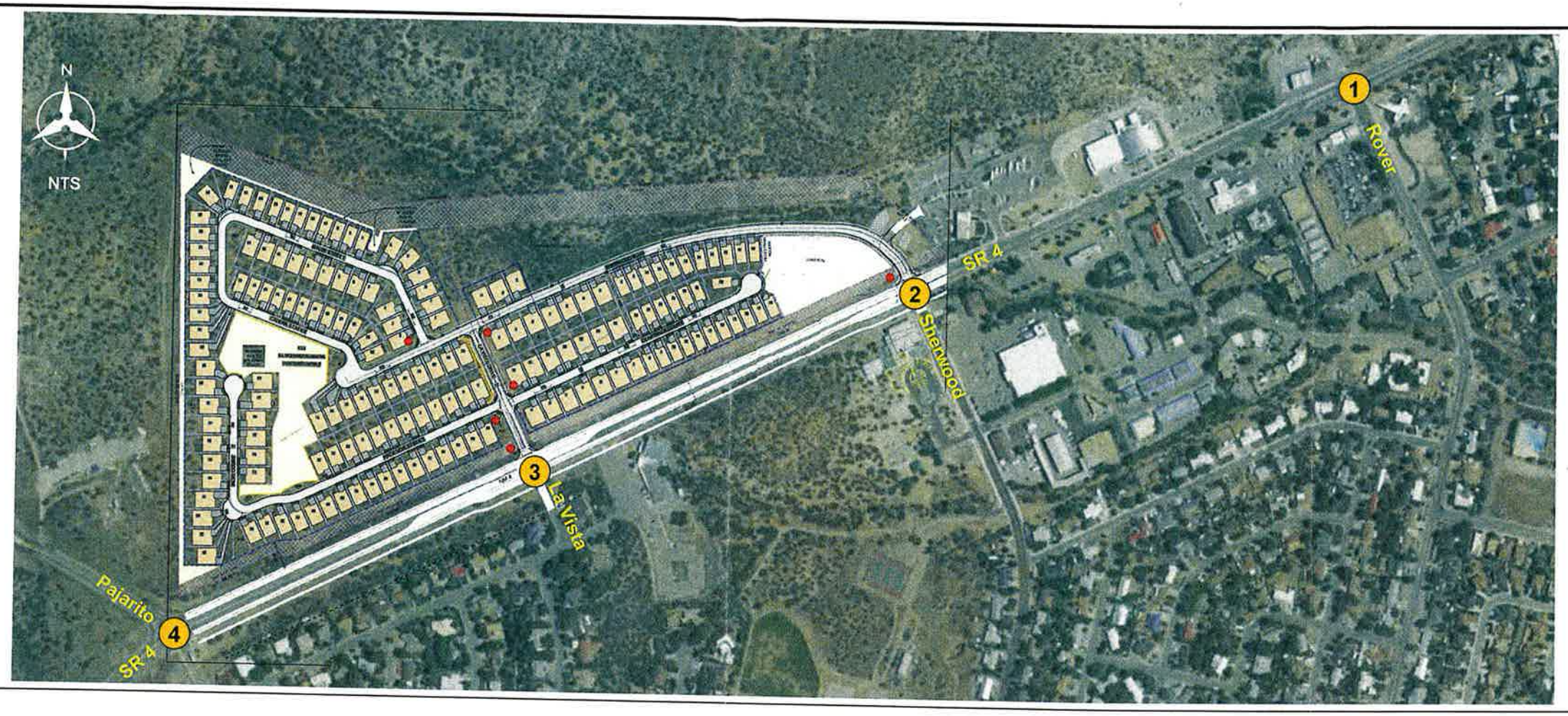
WHITE ROCK MASTER PLAN
TRACT A-19a
TRAFFIC IMPACT ANALYSIS

FIGURE 5
RESIDENTIAL TRIP DISTRIBUTION PERCENTAGES

N:\Trans\Proposals\2018 FY Proposals\TIA's\Tract A-19-a Huitt Zollars\2018 Study\Report-Production\Report Figures\20110243-TripDistPerRes.dwg Jan 09, 2018 - 9:00am

Exhibit 1

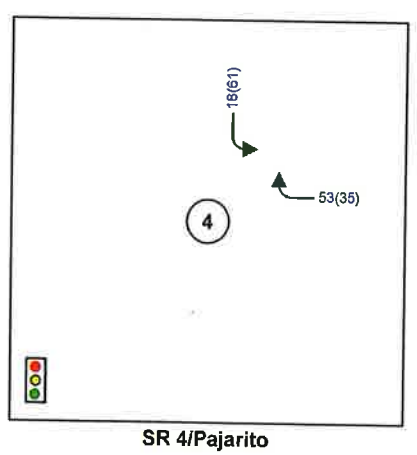


LEGEND

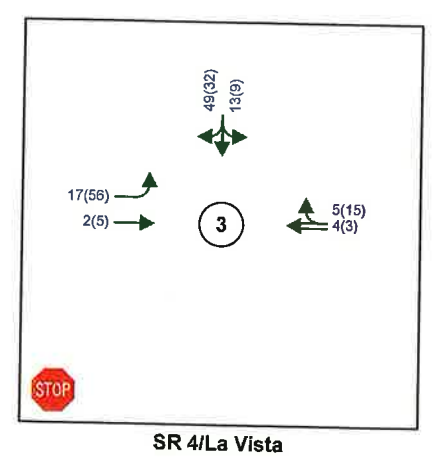
Thru Lanes (# as indicated)

Turning Lanes (# as indicated)

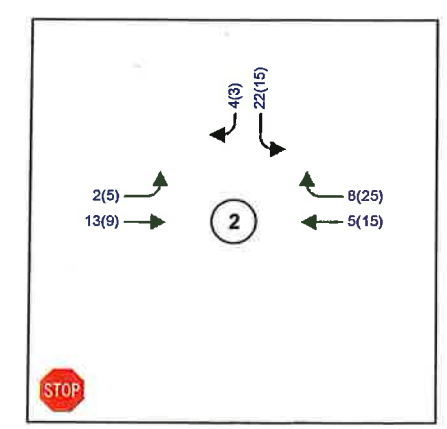
1234(1234) AM(PM) Traffic Counts



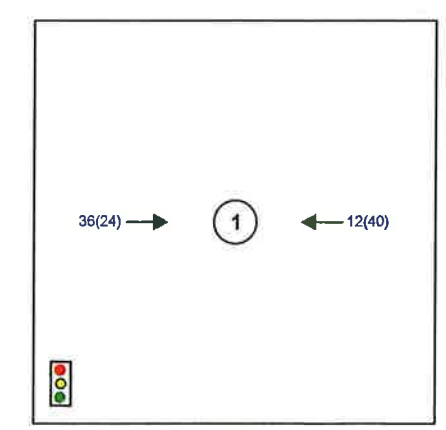
SR 4/Pajarito



SR 4/La Vista



SR 4/Sherwood



SR 4/Rover

Bohannan Huston
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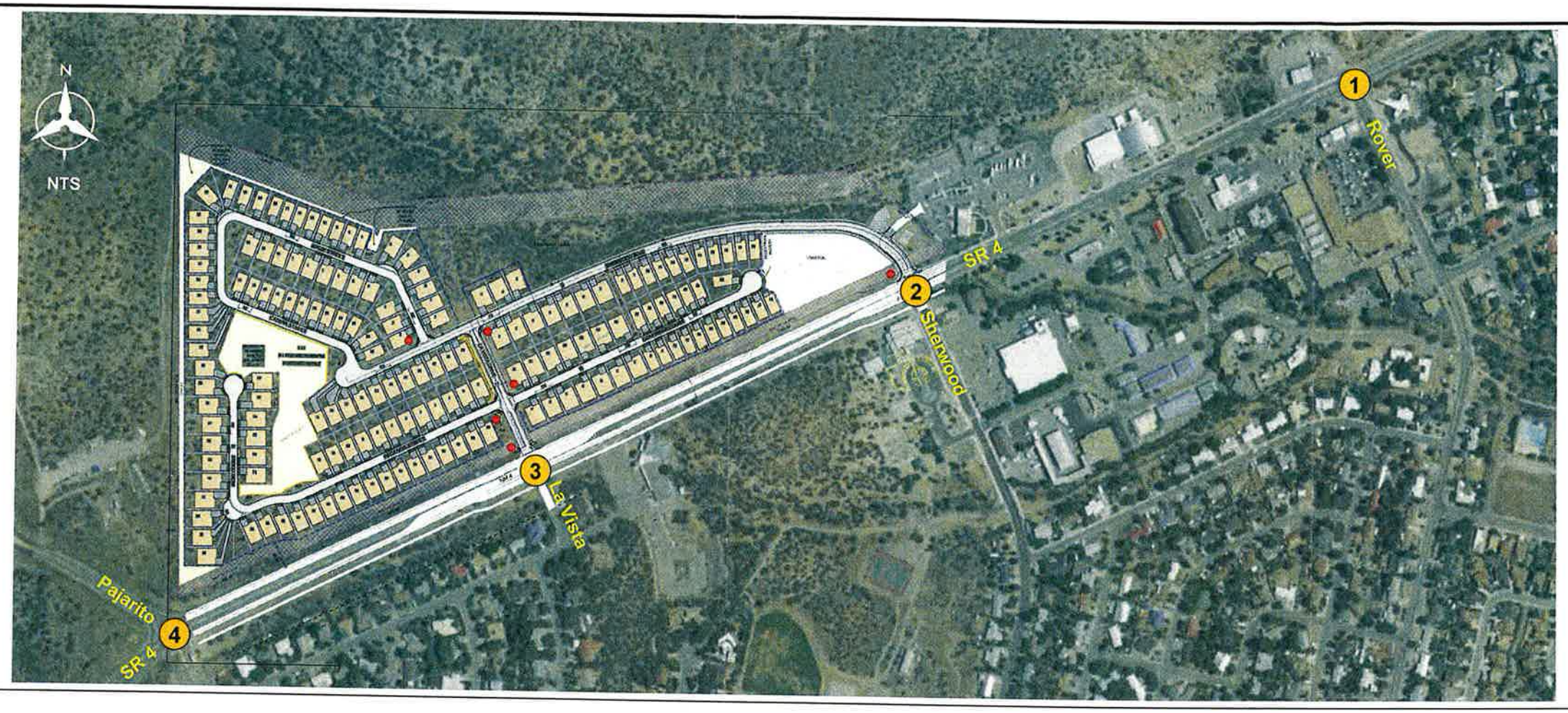
WHITE ROCK MASTER PLAN
TRACT A-19a
TRAFFIC IMPACT ANALYSIS

FIGURE 6
RESIDENTIAL TRIP DISTRIBUTION VOLUMES - AM (PM)

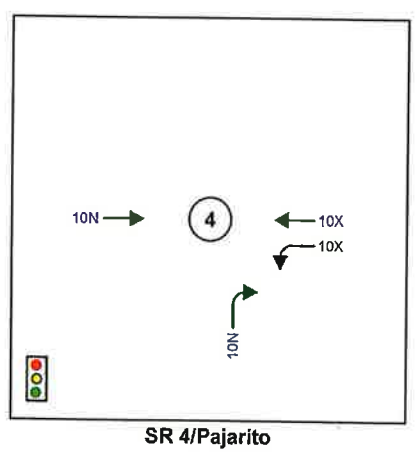
N:\Trans\Proposals\2018 FY Proposals\TIA's\Tract A-19-a Hutt Zollare\2018 Study\Report-Production\Report Figures\20110243-TripDistVolRes.dwg Jun 08, 2018 - 3:26pm

Exhibit 1

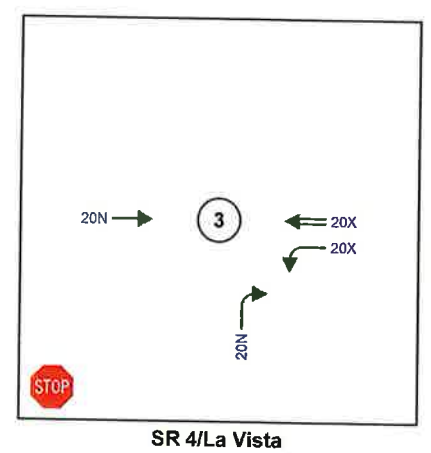


LEGEND

- Thru Lanes (# as indicated)
- Turning Lanes (# as indicated)
- 1234(1234) AM(PM) Traffic Counts
- N Entering
- X Exiting



SR 4/Pajarito



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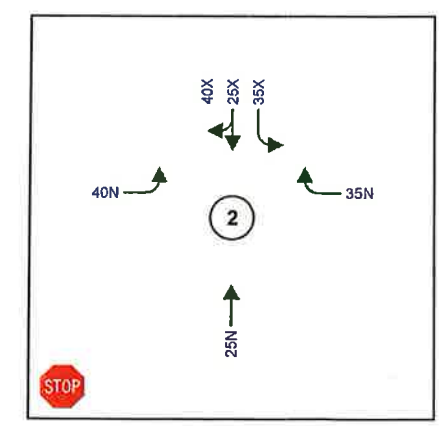
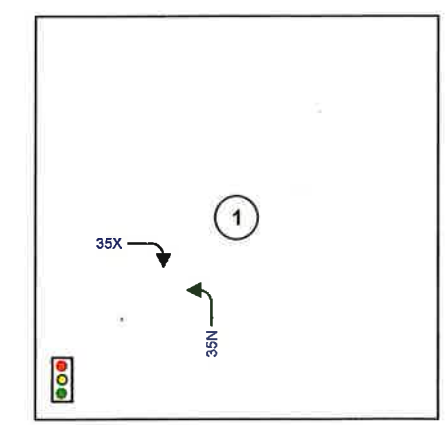


SR 4/Sherwood



SR 4/Rover

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WHITE ROCK MASTER PLAN
TRACT A-19a
TRAFFIC IMPACT ANALYSIS

FIGURE 7
RETAIL TRIP DISTRIBUTION PERCENTAGES

N:\Trans\Proposals\2018 FY Proposals\TIA's\Tract A-19-a Huitt Zollars\2018 Study\Report-Production\Report Figures\20110243-TripDistPerRet.dwg Jan 08, 2018 - 3:30pm

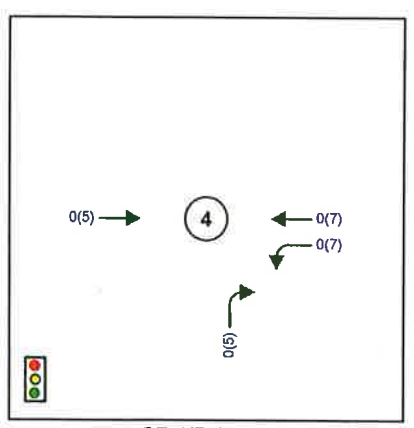
Exhibit 1

LEGEND

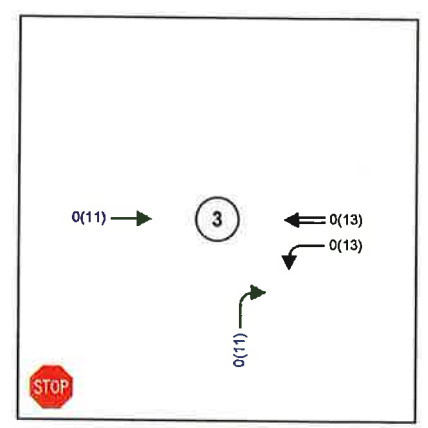
Thru Lanes (# as Indicated)

Turning Lanes (# as indicated)

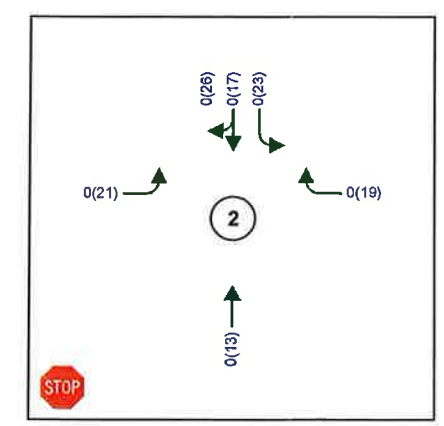
1234(1234) AM(PM) Traffic Counts



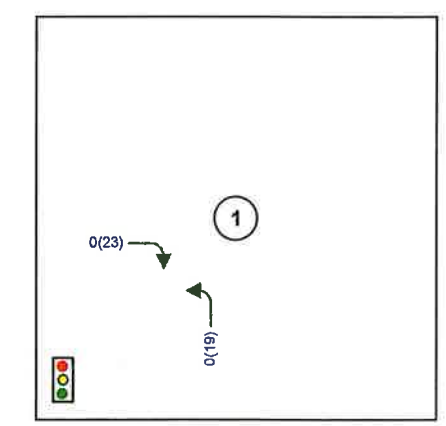
SR 4/Pajarito



SR 4/La Vista



SR 4/Sherwood



SR 4/Rover

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WHITE ROCK MASTER PLAN
TRACT A-19a
TRAFFIC IMPACT ANALYSIS

FIGURE 8
RETAIL TRIP DISTRIBUTION
VOLUMES - AM (PM)

N:\Trans\Proposals\2018 FY Proposals\TIA's\Tract A-19-a Hutt Zallare\2018 Study\Report-Production\Report Figures\20110243-TripDistVolRet.dwg Jun 08, 2018 - 3:47pm

Exhibit 1

V. BUILD TRAFFIC ANALYSIS

The following section will discuss the results of the build traffic analysis.

A. BUILD TRAFFIC VOLUMES

Based on the trip distribution and assignments discussed above, the estimated traffic generated by the proposed site development was then added to the No-Build traffic projections. Details of the Build traffic volume computations are included in Appendix C.

Figure 9, page 19, is a summary of the Build Peak hour traffic projections, lane geometry, and movement and intersection level of service for the build year analysis

B. RESULTS AND DISCUSSION

The intersections were again analyzed using Synchro version 10. Table 7 and Table 8 show the results for the signalized and unsignalized intersections, respectively. The Synchro output is included in Appendix E.

It can be seen from the table that the forecast build volumes will operate at an acceptable level of service. As in the No Build, the intersection of SR 4 and Sherwood/Entrance operates at a poor level of service in the PM Peak Hour, so it was also evaluated as a signalized intersection.

Table 7 – Build Signalized Intersection Capacity Analysis Results

Signalized Intersections	Build AM Peak			Build PM Peak		
	Delay (sec.)	V/C	LOS	Delay (sec.)	V/C	LOS
SR 4 and Rover	13.8	0.70	B	14.6	0.80	B
SR 4 and Pajarito	3.4	0.51	A	11.0	0.75	B
SR 4 & Sherwood	23.4	0.90	C	21.9	0.89	C

* - some movements LOS E
** - some movements LOS F

The SR 4 and Sherwood/Entrance intersection will operate at acceptable level of service as a signalized intersection. The Peak Hour Volume traffic signal warrant analysis is included in Appendix E. The warrant analysis indicates that the intersection does not warrant a traffic signal due to volume or anticipated delay, however a traffic signal would be beneficial for pedestrians.

Table 8 – Build Unsignalized Intersection Results

Intersection/Movement	Build AM Peak				Build PM Peak			
	Delay	v/c	Queue* (ft)	LOS	Delay	v/c	Queue* (ft)	LOS
SR 4 & Sherwood								
EB Left	9.2	0.01	0	A	7.6	0.02	25	A
WB Left	7.5	0.03	25	A	10.4	0.18	25	B
NB Left	23.6	0.18	25	C	41.8	0.17	25	E
NB Through/Right	9.2	0.07	25	A	21.0	0.41	50	C
SB Left	24.0	0.12	25	C	107.2	0.59	75	F
SB Through/Right	13.7	0.01	0	B	20.4	0.18	25	C
SR 4 & La Vista								
EB Left	9.5	0.02	25	A	7.6	0.04	25	A
WB Left	0.0	0.00	0	A	9.8	0.06	25	A
NB Approach	10.1	0.03	25	B	17.9	0.08	25	B
SB Approach	14.3	0.15	25	B	14.4	0.10	25	C

* - HCM 95th percentile queue rounded to next 25-foot increment

All of the unsignalized intersections, except SR 4 and Sherwood/Entrance intersection, are shown to operate at acceptable levels of service in the Build scenario.

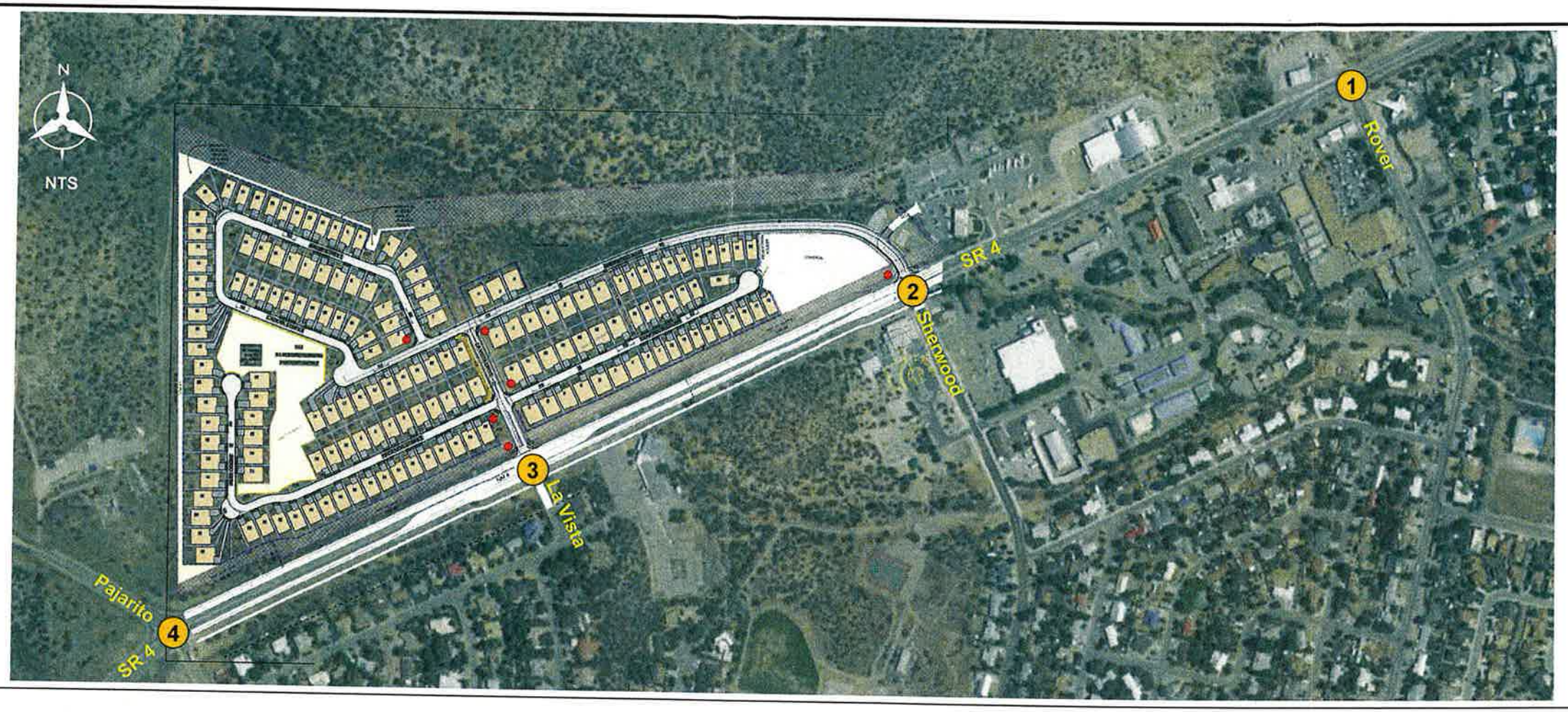
C. VEHICLE CIRCULATION

The site provides excellent vehicular circulation. Most areas have multiple access locations and can easily reach a driveway onto SR 4.

On-street bicycle lanes are recommended on the spine infrastructure/main road entrance to the development, as well as the connector roads to SR 4.

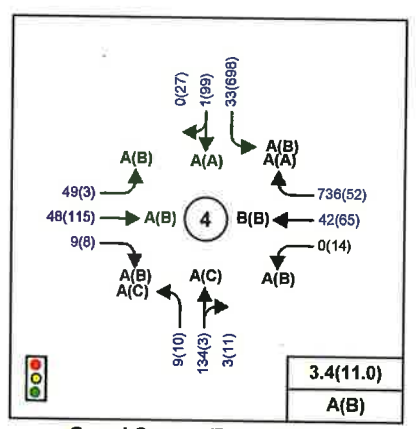
D. PEDESTRIAN CIRCULATION

Pedestrian paths are located on the perimeter of the site and throughout the site. Sidewalks will be provided along all streets, along with pedestrian crossings throughout the site. The pedestrian crossings in the mixed-use area surrounding the plaza are to be Portland grey textured concrete crosswalks, but will not be raised. The texture alone is considered sufficient to reduce vehicular travel speeds. Other crosswalks in the development will be traditional painted crosswalks.

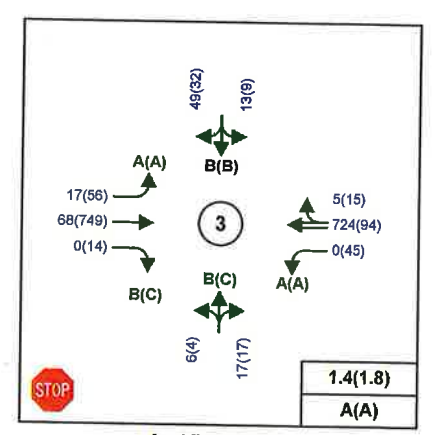


LEGEND

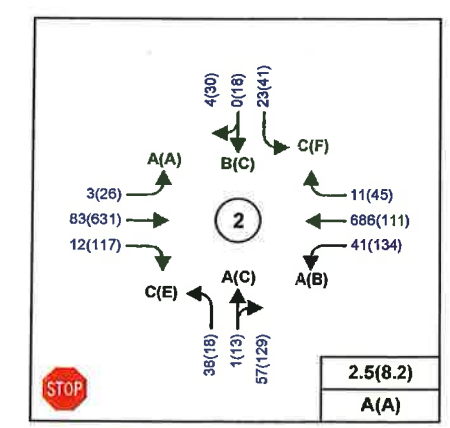
- Thru Lanes (# as indicated)
- Turning Lanes (# as indicated)
- 1234(1234) AM(PM) Traffic Counts
- X(X) AM(PM) Level of Service (LOS)



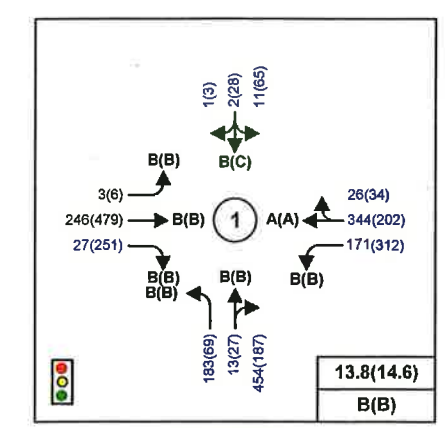
Grand Canyon/Pajarito/SR 4



La Vista/SR 4



Sherwood/Entrance/SR 4



Rover/SR 4

Bohannan Huston
www.bhinc.com 800.877.5332

WHITE ROCK MASTER PLAN
TRACT A-19a
TRAFFIC IMPACT ANALYSIS

FIGURE 9
BUILD PEAK HOUR TRAFFIC VOLUMES - AM (PM)

Exhibit 1

VI. CONCLUSIONS AND RECOMMENDATIONS

A. CONCLUSIONS

The existing signalized intersections at SR 4 and Rover and SR 4 and Pajarito will perform at acceptable levels of service in the existing, no-build and build scenarios.

The existing unsignalized intersection studied at SR 4 and La Vista will operate at acceptable levels of service in the existing, no-build and build scenarios.

The northbound-to-westbound left turn movement at the intersection of SR 4 and Sherwood operates at level of service D with an average delay of 25.5 seconds in the existing condition. This same movement will operate at LOS D with an average delay of 28.9 seconds in the no-build scenario PM peak hour and at LOS E with approximately 42 seconds of average delay in the build PM peak hour. In the build condition, the southbound-to-eastbound left at the SR 4 and Sherwood intersection will operate at LOS F with an average delay of 107 seconds.

The delays for these movements are expected to decrease slightly with the expected use of "two-stage gap" maneuvers. This is when the driver performs the left turn in two-stages, once to cross the near side traffic lane and pause in the median until a gap is available in the far side traffic lane. Not all drivers are comfortable with this maneuver and it is expected that there will be substantial delays for some motorists. The two-stage gap maneuver is not expected be of much benefit for the Sherwood southbound left in the PM peak hour due to high amount of eastbound traffic. However, the volume at this intersection does not satisfy the Manual of Uniform Traffic Control Devices Peak Hour Volume Traffic Signal Warrant criteria. If a traffic signal were to be installed at this location the level of service would LOS B.

The high volume of traffic will impact the ability of pedestrians to cross SR 4 and a traffic signal will promote the viability of pedestrians to walk to the commercial center, a key objective of the Master Plan.

The number of westbound right turns at the entrances does not require right turn deceleration lanes per the NMDOT *State Access Management Manual* Criteria except for Sherwood which had a right turn lane constructed as part of the NMDOT SR 4 reconstruction project. The La Vista entrance can be considered a multi-lane highway due to the climbing/auxiliary lane that drops at Pajarito Road and the right turn volume does not meet the requirements for right turn deceleration lanes.

B. RECOMMENDATIONS

At the time of the original study, the NMDOT SR 4 reconstruction project was to construct the underground conduit to allow for signalization of the Sherwood and La Vista intersections in the event that these traffic signals are warranted due to volume or delay reasons.

It is recommended that the delays at these intersections be monitored to determine if the delay is excessive or other operational problems arise. It is not recommended to install the traffic signals initially as they are not warranted by volume or by delay, based on the forecast volumes and predicted delay.

The number of westbound right turns at the entrances does not require right turn deceleration lanes per the NMDOT *State Access Management Manual* Criteria except for Sherwood which has a right turn lane that was constructed as part of the NMDOT SR 4 reconstruction project. The other entrance can be considered multi-lane highways due to the climbing/auxiliary lane that drops at Pajarito Road and do not meet the NMDOT requirements for right turn deceleration lanes.

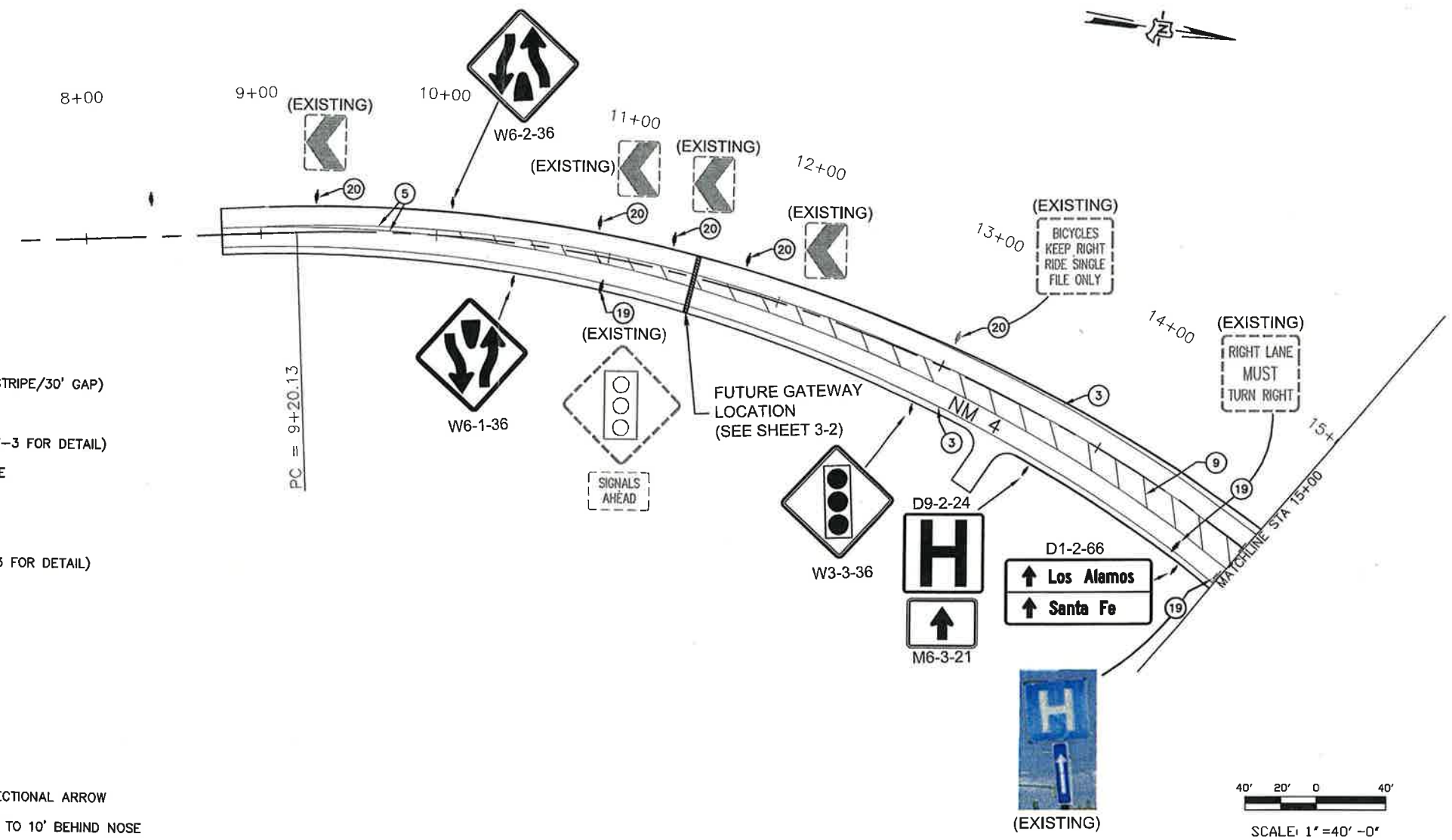
On-street bicycle lanes are recommended on the spine infrastructure/main road entrance to the development, as well as the connector roads to SR 4.

Pedestrian paths are recommended as shown in the site plan and are located on the perimeter of the site and throughout the site. Sidewalks are recommended along all streets, along with pedestrian crossings throughout the site. The pedestrian crossings in the mixed-use area surrounding the plaza are recommended to be Portland grey textured concrete crosswalks, but not recommended to be raised crosswalks due to snow removal. The texture alone is considered sufficient to reduce vehicular travel speeds. Other crosswalks in the development are recommended to be traditional painted crosswalks.

Appendix A

SR4 Signing and Striping Plan

WILSON & COMPANY



KEYED NOTES

1. 6" SOLID WHITE RETROREFLECTORIZED PAINTED STRIPE
2. 4" BROKEN WHITE RETROREFLECTORIZED PAINTED STRIPE (10' STRIPE/30' GAP)
3. 4" SOLID WHITE RETROREFLECTORIZED PAINTED STRIPE
4. COLD PLASTIC INTERSECTION CROSSWALK STRIPING (SEE SHT. 7-3 FOR DETAIL)
5. 4" SOLID DOUBLE YELLOW RETROREFLECTORIZED PAINTED STRIPE
6. 4" DOTTED WHITE COLD PLASTIC STRIPE (2' STRIPE/6' GAP)
7. 6" DOTTED WHITE COLD PLASTIC STRIPE (2' STRIPE/6' GAP)
8. COLD PLASTIC MID-BLOCK CROSSWALK STRIPING (SEE SHT. 7-3 FOR DETAIL)
9. MEDIAN STRIPING (SEE SHT. 7-3 FOR DETAIL)
10. 12" SOLID WHITE COLD PLASTIC STRIPE
11. COLD PLASTIC PAVEMENT SYMBOL – WORD "ONLY"
12. (NOT USED)
13. COLD PLASTIC PAVEMENT SYMBOL – LEFT-TURN ARROW
14. COLD PLASTIC PAVEMENT SYMBOL – RIGHT-TURN ARROW
15. (NOT USED)
16. COLD PLASTIC PAVEMENT SYMBOL – BICYCLE SYMBOL AND DIRECTIONAL ARROW
17. RETROREFLECTORIZED PAINTED MARKING – YELLOW CURB PAINT TO 10' BEHIND NOSE WITH TYPE 2 OBJECT MARKER
18. EXISTING SIGN TO REMAIN IN PLACE
19. EXISTING SIGN TO BE REMOVED AND DISPOSED
20. RELOCATE SIGN AT SAME STATION, OUTSIDE OF NEW DRIVING LANES
21. COLD PLASTIC PAVEMENT SYMBOL – YIELD LINE
22. COLD PLASTIC PAVEMENT SYMBOL – COMBINATION THRU/RIGHT ARROW
23. OBLITERATE EXISTING PAVEMENT MARKING (INCIDENTAL TO CONSTRUCTION)
24. 4" SOLID YELLOW RETROREFLECTORIZED PAINTED STRIPE
25. SPEED LIMIT SIGN TO BE MOUNTED ON 18-FOOT TAPERED ALUMINUM POLE. RADAR AND DRIVER FEEDBACK HARDWARE TO BE PROVIDED AND INSTALLED BY LAC.

NO.	REVISION DESCRIPTION	DATE	BY
6			
4			
3			
2			

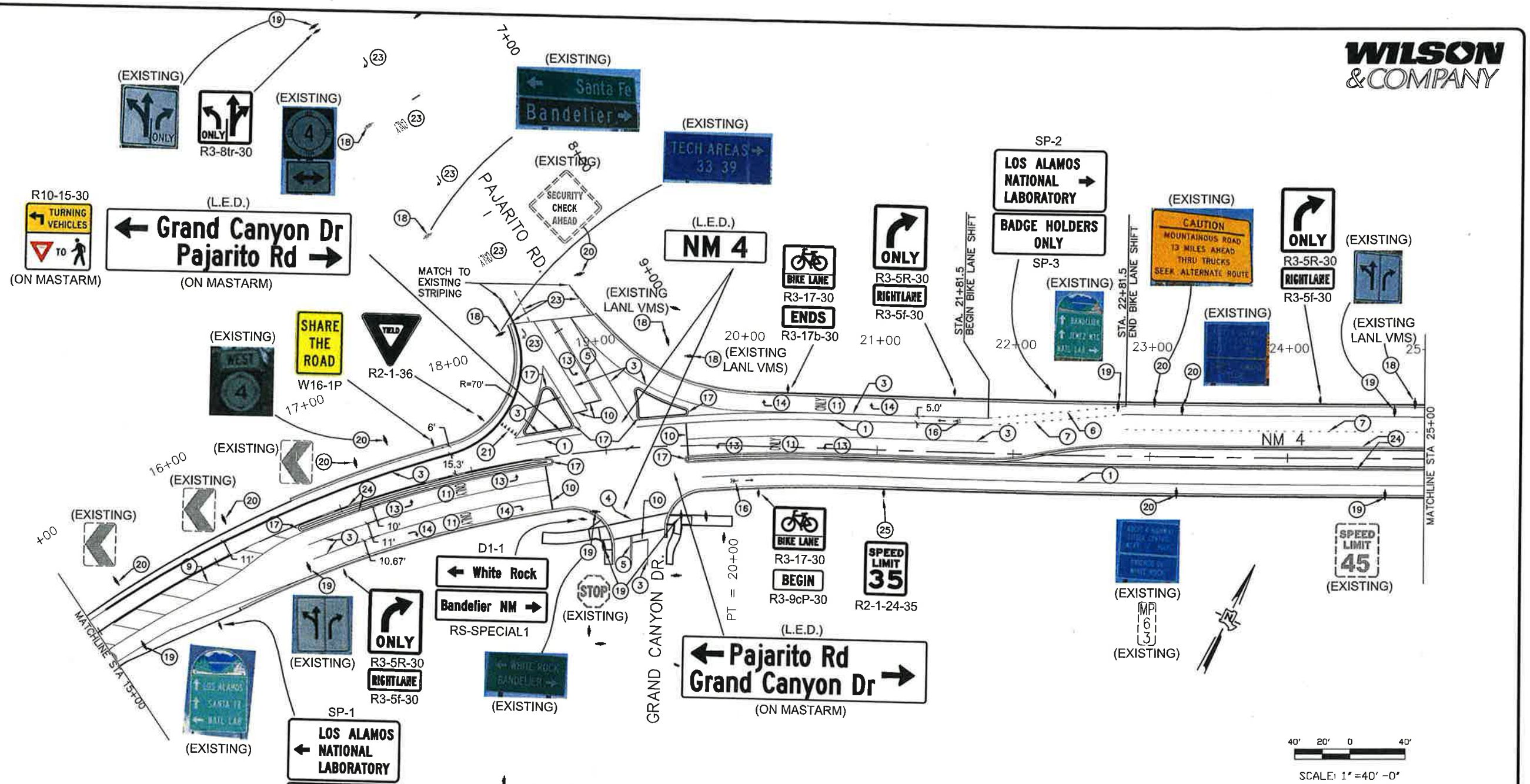
DESIGNED BY: KRA
DRAWN BY: MLA
CHECKED BY: KRA
APPROVED BY: DDM
DATE: APR/2011
SCALE: AS SHOWN

NM-4
PROJECT BID No : 2011-26
PERMANENT SIGNING & STRIPING PLAN

COUNTY OF LOS ALAMOS
PUBLIC WORKS DEPARTMENT
1925 TRINITY DRIVE/PO BOX 30
LOS ALAMOS, NEW MEXICO 87544

SHEET
7-4

Exhibit 1



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NO.	REVISION DESCRIPTION	DATE	BY
5			
4			
3			
2			

DESIGNED BY: NEA
DRAWN BY: NEA
CHECKED BY: NEA
APPROVED BY: DDM
DATE: APR/2011
SCALE: AS SHOWN

NM-4
PROJECT BID No : 2011-26

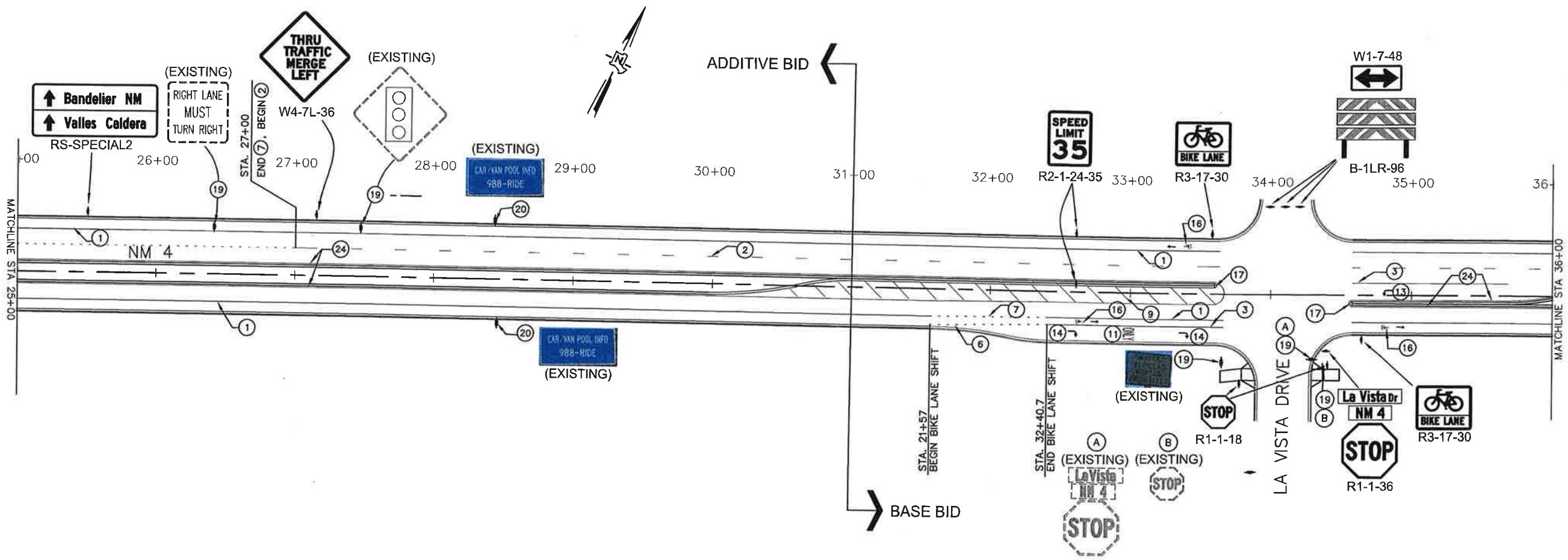
PERMANENT SIGNING & STRIPING PLAN

COUNTY OF LOS ALAMOS
PUBLIC WORKS DEPARTMENT
1925 TRINITY DRIVE/PO BOX 30
LOS ALAMOS, NEW MEXICO 87544

SHEET
7-5

Exhibit 1

WILSON & COMPANY



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40' 20' 0 40'

SCALE: 1" = 40' -0"

NO.	REVISION DESCRIPTION	DATE	BY
5			
4			
3			
2			

DESIGNED BY: NEA
DRAWN BY: NLA
CHECKED BY: NEA
APPROVED BY: DDM
DATE: APR/2011
SCALE: AS SHOWN

NM-4
PROJECT BID No : 2011-26

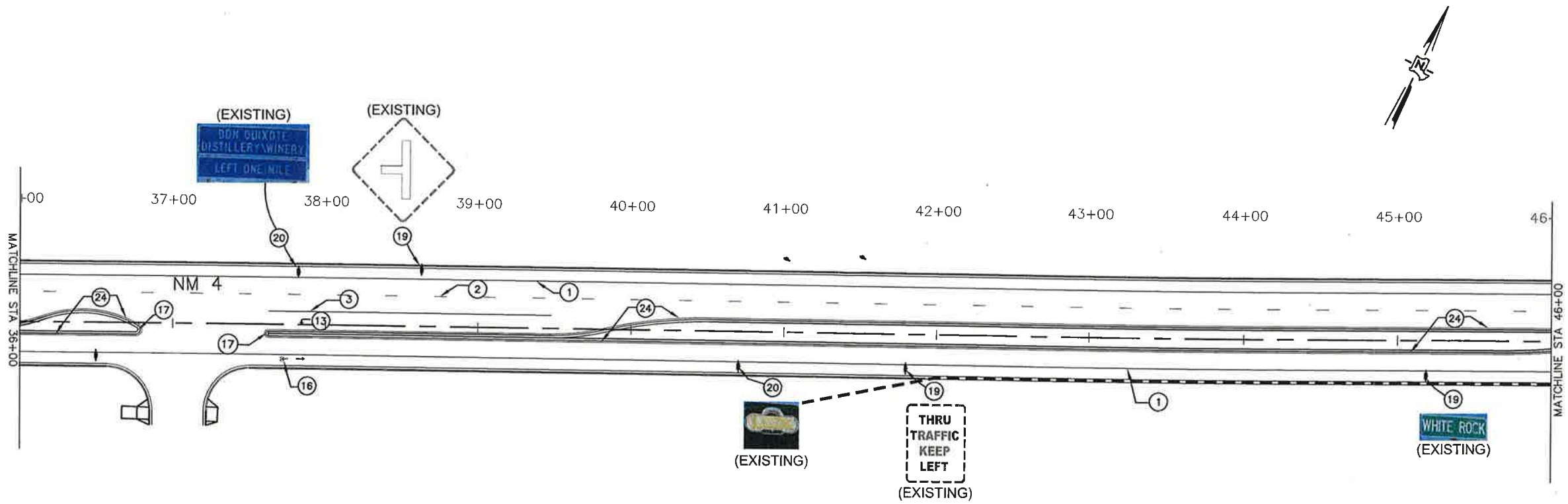
PERMANENT SIGNING & STRIPING PLAN

COUNTY OF LOS ALAMOS
PUBLIC WORKS DEPARTMENT
1925 TRINITY DRIVE/PO BOX 30
LOS ALAMOS, NEW MEXICO 87544

SHEET
7-6

Exhibit 1

WILSON & COMPANY



KEYED NOTES

1. 6" SOLID WHITE RETROREFLECTORIZED PAINTED STRIPE
2. 4" BROKEN WHITE RETROREFLECTORIZED PAINTED STRIPE (10' STRIPE/30' GAP)
3. 4" SOLID WHITE RETROREFLECTORIZED PAINTED STRIPE
4. COLD PLASTIC INTERSECTION CROSSWALK STRIPING (SEE SHT. 7-3 FOR DETAIL)
5. 4" SOLID DOUBLE YELLOW RETROREFLECTORIZED PAINTED STRIPE
6. 4" DOTTED WHITE COLD PLASTIC STRIPE (2' STRIPE/6' GAP)
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8. COLD PLASTIC MID-BLOCK CROSSWALK STRIPING (SEE SHT. 7-3 FOR DETAIL)
9. MEDIAN STRIPING (SEE SHT. 7-3 FOR DETAIL)
10. 12" SOLID WHITE COLD PLASTIC STRIPE
11. COLD PLASTIC PAVEMENT SYMBOL – WORD "ONLY"
12. (NOT USED)
13. COLD PLASTIC PAVEMENT SYMBOL – LEFT-TURN ARROW
14. COLD PLASTIC PAVEMENT SYMBOL – RIGHT-TURN ARROW

KEYED NOTES (CONT'D)

15. (NOT USED)
16. COLD PLASTIC PAVEMENT SYMBOL – BICYCLE SYMBOL AND DIRECTIONAL ARROW
17. RETROREFLECTORIZED PAINTED MARKING – YELLOW CURB PAINT TO 10' BEHIND NOSE WITH TYPE 2 OBJECT MARKER
18. EXISTING SIGN TO REMAIN IN PLACE
19. EXISTING SIGN TO BE REMOVED AND DISPOSED
20. RELOCATE SIGN AT SAME STATION, OUTSIDE OF NEW DRIVING LANES
21. COLD PLASTIC PAVEMENT SYMBOL – YIELD LINE
22. COLD PLASTIC PAVEMENT SYMBOL – COMBINATION THRU/RIGHT ARROW
23. OBLITERATE EXISTING PAVEMENT MARKING
24. 4" SOLID YELLOW RETROREFLECTORIZED PAINTED STRIPE
25. SPEED LIMIT SIGN TO BE MOUNTED ON 18-FOOT TAPERED ALUMINUM POLE. RADAR AND DRIVER FEEDBACK HARDWARE TO BE PROVIDED AND INSTALLED BY LAC.

40' 20' 0 40'

SCALE: 1" = 40' -0"

NO.	REVISION DESCRIPTION	DATE	BY
5			
4			
3			
2			

DESIGNED BY: TEA
DRAWN BY: TLA
CHECKED BY: TEA
APPROVED BY: DGM
DATE: APR/2011
SCALE: AS SHOWN

NM-4
PROJECT BID No : 2011-26

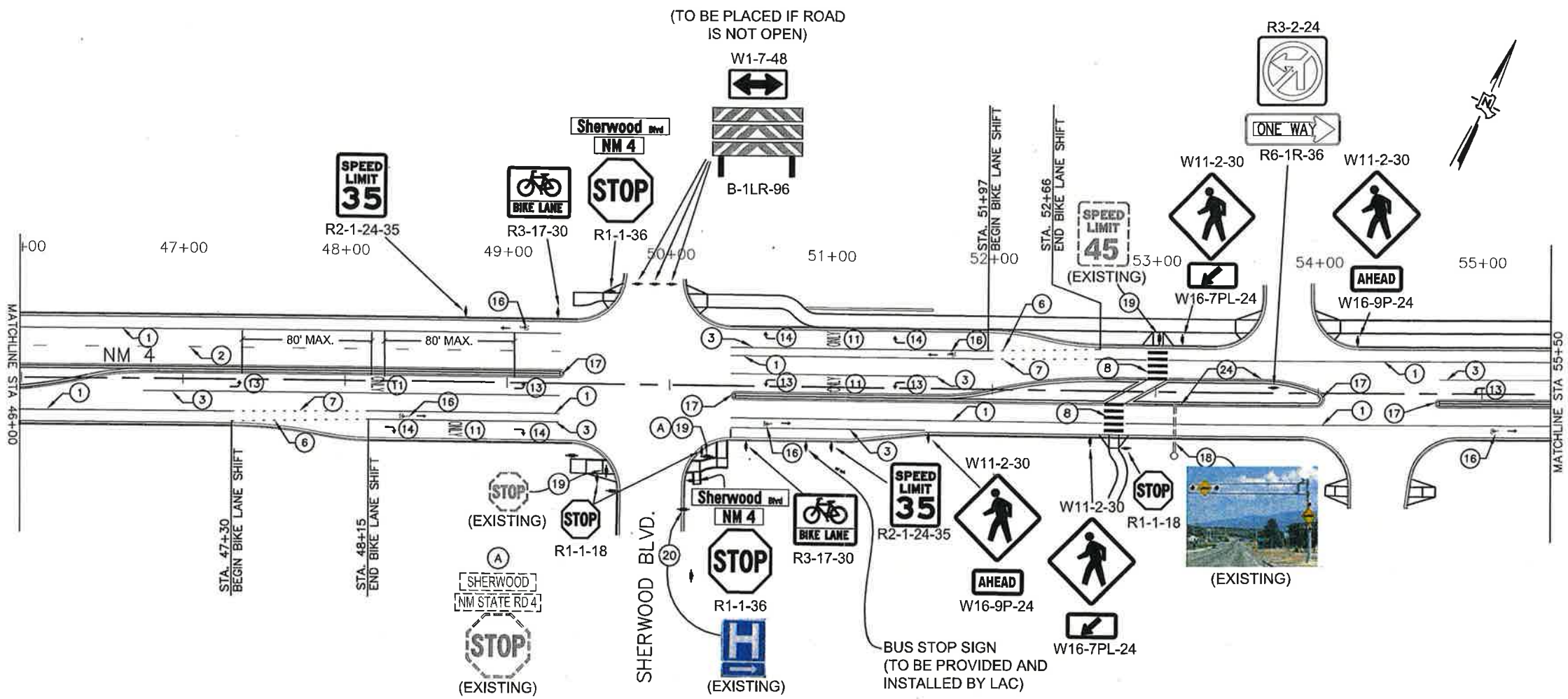
PERMANENT SIGNING & STRIPING PLAN

COUNTY OF LOS ALAMOS
PUBLIC WORKS DEPARTMENT
1925 TRINITY DRIVE/PO BOX 30
LOS ALAMOS, NEW MEXICO 87544

SHEET
7-7

Exhibit 1

WILSON & COMPANY



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40' 20' 0 40'
SCALE: 1"=40'-0"

NO.	REVISION DESCRIPTION	DATE	BY
5			
4			
3			
2			

DESIGNED BY: RMA
DRAWN BY: WLA
CHECKED BY: RMA
APPROVED BY: DDM
DATE: APR/2011
SCALE: AS SHOWN

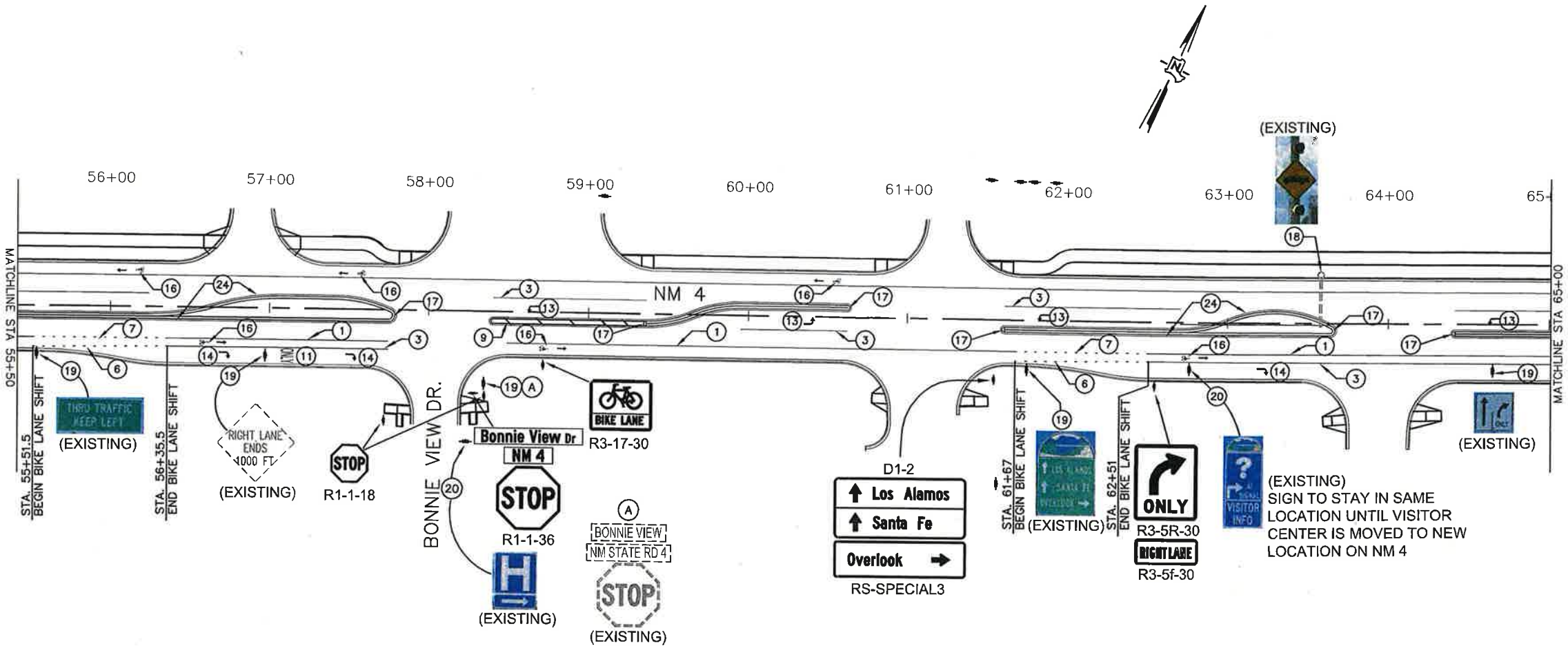
NM-4
PROJECT BID No : 2011-26
PERMANENT SIGNING & STRIPING PLAN

COUNTY OF LOS ALAMOS
PUBLIC WORKS DEPARTMENT
1925 TRINITY DRIVE/PO BOX 30
LOS ALAMOS, NEW MEXICO 87544

SHEET
7-8

Exhibit 1

WILSON & COMPANY



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SCALE: 1"=40'-0"

NO.	REVISION DESCRIPTION	DATE	BY
5			
4			
3			
2			

DESIGNED BY: KEA
DRAWN BY: KLA
CHECKED BY: KEA
APPROVED BY: DDM
DATE: APR/2011
SCALE: AS SHOWN

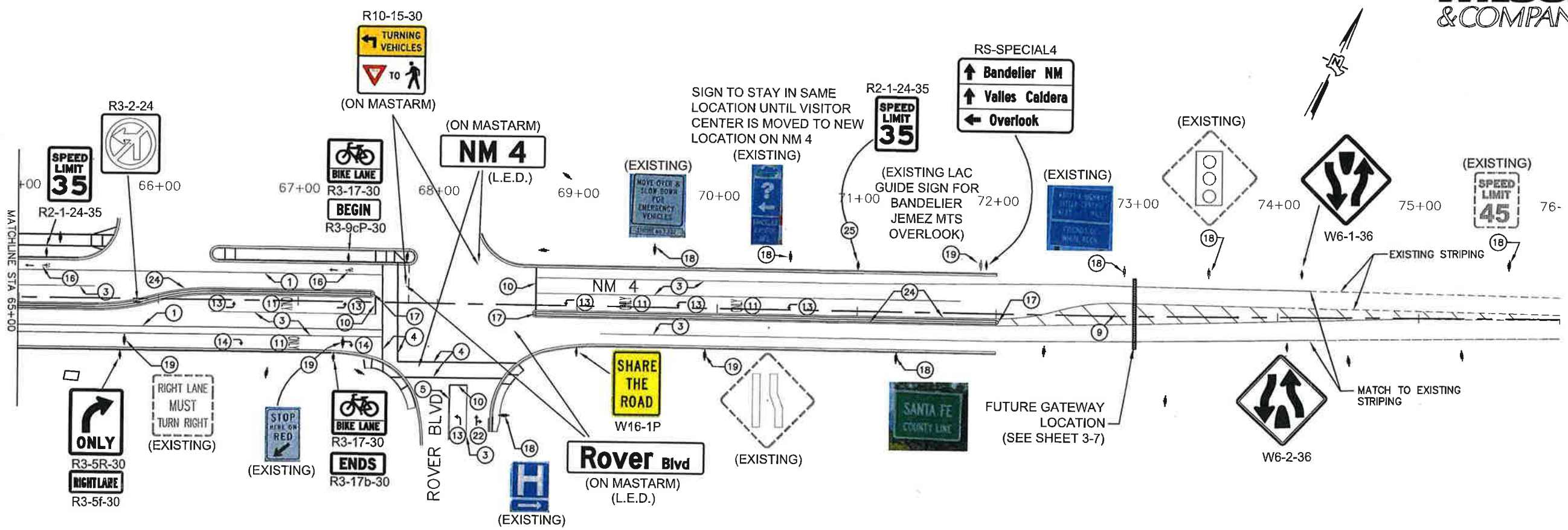
NM-4
PROJECT BID No : 2011-26

PERMANENT SIGNING & STRIPING PLAN

COUNTY OF LOS ALAMOS
PUBLIC WORKS DEPARTMENT
1925 TRINITY DRIVE/PO BOX 30
LOS ALAMOS, NEW MEXICO 87544

SHEET
7-9

Exhibit 1



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NO.	REVISION DESCRIPTION	DATE	BY
5			
4			
3			
2			

DESIGNED BY: RKA
DRAWN BY: NLA
CHECKED BY: RKA
APPROVED BY: DOM
DATE: APR/2011
SCALE: AS SHOWN

NM-4
PROJECT BID No : 2011-26
PERMANENT SIGNING & STRIPING PLAN

COUNTY OF LOS ALAMOS
PUBLIC WORKS DEPARTMENT
1925 TRINITY DRIVE/PO BOX 30
LOS ALAMOS, NEW MEXICO 87544

SHEET
7-10

Exhibit 1

Appendix B

Existing Intersection Capacity Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	207	27	171	282	26	155	13	454	11	2	1
Future Volume (veh/h)	3	207	27	171	282	26	155	13	454	11	2	1
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	3	225	29	186	307	28	168	14	493	12	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	325	342	290	459	491	45	751	18	628	263	38	10
Arrive On Green	0.00	0.18	0.18	0.11	0.29	0.29	0.10	0.41	0.41	0.21	0.21	0.21
Sat Flow, veh/h	1781	1870	1585	1781	1689	154	1781	44	1548	491	186	48
Grp Volume(v), veh/h	3	225	29	186	0	335	168	0	507	15	0	0
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	0	1843	1781	0	1592	725	0	0
Q Serve(g_s), s	0.1	4.5	0.6	3.1	0.0	6.3	2.7	0.0	11.1	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.1	4.5	0.6	3.1	0.0	6.3	2.7	0.0	11.1	3.2	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.08	1.00		0.97	0.80		0.07
Lane Grp Cap(c), veh/h	325	342	290	459	0	536	751	0	645	312	0	0
V/C Ratio(X)	0.01	0.66	0.10	0.41	0.00	0.62	0.22	0.00	0.79	0.05	0.00	0.00
Avail Cap(c_a), veh/h	498	749	635	528	0	830	797	0	1036	529	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	13.3	15.2	13.6	10.2	0.0	12.3	9.2	0.0	10.4	12.8	0.0	0.0
Incr Delay (d2), s/veh	0.0	2.2	0.1	0.6	0.0	1.2	0.1	0.0	2.2	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	1.7	0.2	0.9	0.0	2.1	0.9	0.0	3.3	0.1	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	13.3	17.3	13.7	10.8	0.0	13.5	9.3	0.0	12.5	12.9	0.0	0.0
LnGrp LOS	B	B	B	B	A	B	A	A	B	B	A	A
Approach Vol, veh/h		257			521			675			15	
Approach Delay, s/veh		16.9			12.5			11.7			12.9	
Approach LOS		B			B			B			B	

Timer - Assigned Phs		2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s		20.2	8.5	11.3	8.0	12.2	4.1	15.6
Change Period (Y+Rc), s		4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s		26.0	6.0	16.0	5.0	17.0	4.0	18.0
Max Q Clear Time (g_c+I1), s		13.1	5.1	6.5	4.7	5.2	2.1	8.3
Green Ext Time (p_c), s		3.1	0.0	0.8	0.0	0.0	0.0	1.3

Intersection Summary	
HCM 6th Ctrl Delay	12.9
HCM 6th LOS	B

Exhibit 1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	43	47	9	0	41	604	9	118	3	13	1	0
Future Volume (vph)	43	47	9	0	41	604	9	118	3	13	1	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85		1.00	0.85	1.00	1.00		1.00	1.00	
Flt Protected	0.95	1.00	1.00		1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583		1863	1583	1770	1856		1719	1810	
Flt Permitted	0.83	1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Satd. Flow (perm)	1552	1863	1583		1863	1583	1863	1856		1810	1810	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	47	51	10	0	45	657	10	128	3	14	1	0
RTOR Reduction (vph)	0	0	8	0	0	0	0	2	0	0	0	0
Lane Group Flow (vph)	47	51	2	0	45	657	10	129	0	14	1	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%	5%	5%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Free	pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		Free	2			6		
Actuated Green, G (s)	5.2	5.2	5.2		0.8	21.0	3.8	3.4		3.8	3.4	
Effective Green, g (s)	5.2	5.2	5.2		0.8	21.0	3.8	3.4		3.8	3.4	
Actuated g/C Ratio	0.25	0.25	0.25		0.04	1.00	0.18	0.16		0.18	0.16	
Clearance Time (s)	4.0	4.0	4.0		4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0		3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	388	461	391		70	1583	335	300		325	293	
v/s Ratio Prot	0.00	0.03			0.02		0.00	0.07		0.00	0.00	
v/s Ratio Perm	0.03		0.00			c0.41	0.00			0.01		
v/c Ratio	0.12	0.11	0.01		0.64	0.42	0.03	0.43		0.04	0.00	
Uniform Delay, d1	6.2	6.1	6.0		10.0	0.0	7.1	7.9		7.1	7.4	
Progression Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.1	0.0		18.4	0.8	0.0	1.0		0.1	0.0	
Delay (s)	6.3	6.2	6.0		28.4	0.8	7.1	8.9		7.2	7.4	
Level of Service	A	A	A		C	A	A	A		A	A	
Approach Delay (s)		6.2			2.6			8.8			7.2	
Approach LOS		A			A			A			A	

Intersection Summary			
HCM 2000 Control Delay	4.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	1.74		
Actuated Cycle Length (s)	21.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	26.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Exhibit 1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	6	407	204	312	160	34	50	27	187	65	28	3
Future Volume (veh/h)	6	407	204	312	160	34	50	27	187	65	28	3
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	7	442	222	339	174	37	54	29	203	71	30	3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	531	559	473	516	675	143	508	53	370	242	62	5
Arrive On Green	0.01	0.30	0.30	0.16	0.45	0.45	0.04	0.26	0.26	0.12	0.12	0.12
Sat Flow, veh/h	1781	1870	1585	1781	1495	318	1781	202	1414	813	500	39
Grp Volume(v), veh/h	7	442	222	339	0	211	54	0	232	104	0	0
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	0	1813	1781	0	1616	1352	0	0
Q Serve(g_s), s	0.1	9.3	4.9	5.0	0.0	3.1	1.1	0.0	5.3	2.6	0.0	0.0
Cycle Q Clear(g_c), s	0.1	9.3	4.9	5.0	0.0	3.1	1.1	0.0	5.3	3.0	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.18	1.00		0.88	0.68		0.03
Lane Grp Cap(c), veh/h	531	559	473	516	0	818	508	0	423	309	0	0
V/C Ratio(X)	0.01	0.79	0.47	0.66	0.00	0.26	0.11	0.00	0.55	0.34	0.00	0.00
Avail Cap(c_a), veh/h	683	697	591	521	0	818	595	0	941	663	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	10.4	13.8	12.3	8.7	0.0	7.3	13.6	0.0	13.7	17.7	0.0	0.0
Incr Delay (d2), s/veh	0.0	4.9	0.7	3.0	0.0	0.2	0.1	0.0	1.1	0.6	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	3.8	1.4	1.6	0.0	0.9	0.4	0.0	1.8	0.9	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	10.4	18.8	13.0	11.7	0.0	7.5	13.7	0.0	14.8	18.4	0.0	0.0
LnGrp LOS	B	B	B	B	A	A	B	A	B	B	A	A
Approach Vol, veh/h		671			550			286			104	
Approach Delay, s/veh		16.8			10.1			14.6			18.4	
Approach LOS		B			B			B			B	

Timer - Assigned Phs		2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s		15.2	10.9	16.8	5.9	9.3	4.3	23.4
Change Period (Y+Rc), s		4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s		25.0	7.0	16.0	4.0	17.0	4.0	19.0
Max Q Clear Time (g_c+I1), s		7.3	7.0	11.3	3.1	5.0	2.1	5.1
Green Ext Time (p_c), s		1.4	0.0	1.5	0.0	0.4	0.0	0.9

Intersection Summary	
HCM 6th Ctrl Delay	14.2
HCM 6th LOS	B

Exhibit 1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	110	8	7	58	16	10	2	6	553	86	23
Future Volume (vph)	3	110	8	7	58	16	10	2	6	553	86	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.88		1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	1645		1770	1804	
Flt Permitted	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		0.87	1.00	
Satd. Flow (perm)	1863	1863	1583	1863	1863	1583	1863	1645		1620	1804	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	3	120	9	8	63	17	11	2	7	601	93	25
RTOR Reduction (vph)	0	0	8	0	0	0	0	7	0	0	15	0
Lane Group Flow (vph)	3	120	1	8	63	17	11	2	0	601	103	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Free	pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		Free	2			6		
Actuated Green, G (s)	2.7	2.3	2.3	2.7	2.3	29.6	1.0	0.6		14.9	10.5	
Effective Green, g (s)	2.7	2.3	2.3	2.7	2.3	29.6	1.0	0.6		14.9	10.5	
Actuated g/C Ratio	0.09	0.08	0.08	0.09	0.08	1.00	0.03	0.02		0.50	0.35	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	168	144	123	168	144	1583	61	33		867	639	
v/s Ratio Prot	0.00	c0.06		0.00	0.03		0.00	0.00		c0.24	0.06	
v/s Ratio Perm	0.00		0.00	0.00		c0.01	0.00			c0.11		
v/c Ratio	0.02	0.83	0.01	0.05	0.44	0.01	0.18	0.06		0.69	0.16	
Uniform Delay, d1	12.3	13.5	12.6	12.3	13.0	0.0	14.1	14.2		5.5	6.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.0	31.9	0.0	0.1	2.1	0.0	1.4	0.8		2.4	0.1	
Delay (s)	12.3	45.4	12.6	12.4	15.2	0.0	15.5	15.1		8.0	6.7	
Level of Service	B	D	B	B	B	A	B	B		A	A	
Approach Delay (s)		42.4			12.0			15.3			7.7	
Approach LOS		D			B			B			A	

Intersection Summary			
HCM 2000 Control Delay	13.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	29.6	Sum of lost time (s)	16.0
Intersection Capacity Utilization	49.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Exhibit 1

Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	68	12	41	606	0	34	0	57	0	0	0
Future Vol, veh/h	0	68	12	41	606	0	34	0	57	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	250	-	150	250	-	150	150	-	-	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	0	0	0
Mvmt Flow	0	74	13	45	659	0	37	0	62	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	659	0	0	87	0	0	823	823	74	861	836	659
Stage 1	-	-	-	-	-	-	74	74	-	749	749	-
Stage 2	-	-	-	-	-	-	749	749	-	112	87	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.1	5.5	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.5	4	3.3
Pot Cap-1 Maneuver	929	-	-	1509	-	-	292	309	988	278	305	467
Stage 1	-	-	-	-	-	-	935	833	-	407	422	-
Stage 2	-	-	-	-	-	-	404	419	-	898	827	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	929	-	-	1509	-	-	285	300	988	255	296	467
Mov Cap-2 Maneuver	-	-	-	-	-	-	285	300	-	255	296	-
Stage 1	-	-	-	-	-	-	935	833	-	407	409	-
Stage 2	-	-	-	-	-	-	392	406	-	842	827	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.5	12.9	0
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	285	988	929	-	-	1509	-	-	-	-
HCM Lane V/C Ratio	0.13	0.063	-	-	-	0.03	-	-	-	-
HCM Control Delay (s)	19.5	8.9	0	-	-	7.5	-	-	0	0
HCM Lane LOS	C	A	A	-	-	A	-	-	A	A
HCM 95th %tile Q(veh)	0.4	0.2	0	-	-	0.1	-	-	-	-

Exhibit 1

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	63	0	0	640	0	5	0	17	0	0	0
Future Vol, veh/h	0	63	0	0	640	0	5	0	17	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	250	-	150	250	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	68	0	0	696	0	5	0	18	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	696	0	0	68	0	0	416	764	68	773	764	348
Stage 1	-	-	-	-	-	-	68	68	-	696	696	-
Stage 2	-	-	-	-	-	-	348	696	-	77	68	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.33	6.53	6.23	7.33	6.53	6.93
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.53	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.53	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.219	-	-	2.219	-	-	3.519	4.019	3.319	3.519	4.019	3.319
Pot Cap-1 Maneuver	898	-	-	1532	-	-	534	333	995	302	333	649
Stage 1	-	-	-	-	-	-	942	838	-	399	442	-
Stage 2	-	-	-	-	-	-	642	442	-	931	838	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	898	-	-	1532	-	-	534	333	995	296	333	649
Mov Cap-2 Maneuver	-	-	-	-	-	-	534	333	-	296	333	-
Stage 1	-	-	-	-	-	-	942	838	-	399	442	-
Stage 2	-	-	-	-	-	-	642	442	-	914	838	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	9.5	0
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	832	898	-	-	1532	-	-	-
HCM Lane V/C Ratio	0.029	-	-	-	-	-	-	-
HCM Control Delay (s)	9.5	0	-	-	0	-	-	0
HCM Lane LOS	A	A	-	-	A	-	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	-

Exhibit 1

Intersection	
Int Delay, s/veh	3.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	553	104	134	95	0	18	0	129	0	0	0
Future Vol, veh/h	0	553	104	134	95	0	18	0	129	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	250	-	150	250	-	150	150	-	-	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	601	113	146	103	0	20	0	140	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	103	0	0	714	0	0	996	996	601	1123	1109	103
Stage 1	-	-	-	-	-	-	601	601	-	395	395	-
Stage 2	-	-	-	-	-	-	395	395	-	728	714	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1489	-	-	886	-	-	223	244	500	183	210	952
Stage 1	-	-	-	-	-	-	487	489	-	630	605	-
Stage 2	-	-	-	-	-	-	630	605	-	415	435	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1489	-	-	886	-	-	195	204	500	115	175	952
Mov Cap-2 Maneuver	-	-	-	-	-	-	195	204	-	115	175	-
Stage 1	-	-	-	-	-	-	487	489	-	630	505	-
Stage 2	-	-	-	-	-	-	526	505	-	299	435	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	5.8	16.3	0
HCM LOS			C	A

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	195	500	1489	-	-	886	-	-	-	-
HCM Lane V/C Ratio	0.1	0.28	-	-	-	0.164	-	-	-	-
HCM Control Delay (s)	25.5	15	0	-	-	9.9	-	-	0	0
HCM Lane LOS	D	C	A	-	-	A	-	-	A	A
HCM 95th %tile Q(veh)	0.3	1.1	0	-	-	0.6	-	-	-	-

Exhibit 1

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	651	12	32	77	0	4	0	6	0	0	0
Future Vol, veh/h	0	651	12	32	77	0	4	0	6	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	250	-	150	250	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	708	13	35	84	0	4	0	7	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	84	0	0	721	0	0	820	862	708	872	875	42
Stage 1	-	-	-	-	-	-	708	708	-	154	154	-
Stage 2	-	-	-	-	-	-	112	154	-	718	721	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.33	6.53	6.23	7.33	6.53	6.93
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.53	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.53	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.219	-	-	2.219	-	-	3.519	4.019	3.319	3.519	4.019	3.319
Pot Cap-1 Maneuver	1512	-	-	879	-	-	280	292	434	258	287	1020
Stage 1	-	-	-	-	-	-	425	437	-	833	770	-
Stage 2	-	-	-	-	-	-	881	770	-	419	431	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1512	-	-	879	-	-	272	280	434	246	276	1020
Mov Cap-2 Maneuver	-	-	-	-	-	-	272	280	-	246	276	-
Stage 1	-	-	-	-	-	-	425	437	-	833	739	-
Stage 2	-	-	-	-	-	-	846	739	-	413	431	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	2.7	15.6	0
HCM LOS			C	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	350	1512	-	-	879	-	-	-
HCM Lane V/C Ratio	0.031	-	-	-	0.04	-	-	-
HCM Control Delay (s)	15.6	0	-	-	9.3	-	-	0
HCM Lane LOS	C	A	-	-	A	-	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0.1	-	-	-

Exhibit 1

Appendix C

Forecast Turning Movements

Exhibit 1

WHITE ROCK A-19 AMENDED TRAFFIC STUDY
EXISTING & PROJECTED TURNING MOVEMENTS

INTERSECTION: SR 4 & Rover

AM Peak Hour

	Southbound Gas Station			Westbound SR 4			Northbound Rover			Eastbound SR 4		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Existing Volumes	**11**	**2**	**1**	**171**	**282**	**26**	**155**	**13**	**454**	**3**	**207**	**27**
Approved Development												
CMRR					48		27				2	0
Visitor Center					2		1				1	
No Build	**11**	**2**	**1**	**171**	**332**	**26**	**183**	**13**	**454**	**3**	**210**	**27**
Residential Enter					12							
Residential Exit											36	
Retail Enter							0					
Retail Exit												0
Build	**11**	**2**	**1**	**171**	**344**	**26**	**183**	**13**	**454**	**3**	**246**	**27**
PHF	*0.920*			*0.920*			*0.920*			*0.920*		
HV %		*2*			*2*			*2*			*2*	

PM Peak Hour

	Southbound Gas Station			Westbound SR 4			Northbound Rover			Eastbound SR 4		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Existing Volumes	**65**	**28**	**3**	**312**	**160**	**34**	**50**	**27**	**187**	**6**	**407**	**204**
Approved Development												
CMRR					1		0				46	23
Visitor Center					1		0				2	1
No Build	**65**	**28**	**3**	**312**	**162**	**34**	**50**	**27**	**187**	**6**	**455**	**228**
Residential Enter					40							
Residential Exit											24	
Retail Enter							19					
Retail Exit												23
Build	**65**	**28**	**3**	**312**	**202**	**34**	**69**	**27**	**187**	**6**	**479**	**251**
PHF	*0.920*			*0.920*			*0.920*			*0.920*		
HV %		*2*			*2*			*2*			*2*	

growth rates	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Trip Distribution % Enter					40.0%								Residential
Trip Distribution % Exit	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	40.0%	0.0%	
Trip Distribution % Enter							35.0%						Retail
Trip Distribution % Exit	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	35.0%	

WHITE ROCK A-19 AMENDED TRAFFIC STUDY
EXISTING & PROJECTED TURNING MOVEMENTS

INTERSECTION: SR 4 & Sherwood

AM Peak Hour

	Southbound SR 4			Westbound Sherwood			Northbound SR 4			Eastbound Sherwood		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Existing Volumes	**0**	**0**	**0**	**41**	**606**	**0**	**34**	**0**	**57**	**0**	**68**	**12**
Approved Development												
CMRR					75		4				2	0
Visitor Center	1	0	0			3		1		1		
No Build	**1**	**0**	**0**	**41**	**681**	**3**	**38**	**1**	**57**	**1**	**70**	**12**
Residential Enter					5	8				2		
Residential Exit	22		4								13	
Retail Enter						0		0		0		
Retail Exit	0	0	0									
Build	**23**	**0**	**4**	**41**	**686**	**11**	**38**	**1**	**57**	**3**	**83**	**12**
PHF	*0.920*			*0.920*			*0.920*			*0.920*		
HV %		*0*			*2*			*2*			*2*	

PM Peak Hour

	Southbound SR 4			Westbound Sherwood			Northbound SR 4			Eastbound Sherwood		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Existing Volumes	**0**	**0**	**0**	**134**	**95**	**0**	**18**	**0**	**129**	**0**	**553**	**104**
Approved Development												
CMRR					1		0				69	13
Visitor Center	3	1	1			1		0		0		
No Build	**3**	**1**	**1**	**134**	**96**	**1**	**18**	**0**	**129**	**0**	**622**	**117**
Residential Enter					15	25				5		
Residential Exit	15		3								9	
Retail Enter						19		13		21		
Retail Exit	23	17	26									
	41	**18**	**30**	**134**	**111**	**45**	**18**	**13**	**129**	**26**	**631**	**117**
PHF	*0.920*			*0.920*			*0.920*			*0.920*		
HV %		*2*			*2*			*2*			*2*	

growth rates	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Trip Distribution % Enter					15.0%	25.0%				5.0%			Residential
Trip Distribution % Exit	25.0%	0.0%	5.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	15.0%	0.0%	
Trip Distribution % Enter						35.0%		25.0%		40.0%			Retail
Trip Distribution % Exit	35.0%	25.0%	40.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	

Exhibit 1

WHITE ROCK A-19 AMENDED TRAFFIC STUDY
EXISTING & PROJECTED TURNING MOVEMENTS

INTERSECTION: SR 4 & La Vista

AM Peak Hour

	Southbound A-19			Westbound SR 4			Northbound La Vista			Eastbound SR 4		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Existing Volumes	**0**	**0**	**0**	**0**	**640**	**0**	**5**	**0**	**17**	**0**	**63**	**0**
Approved Development												
CMRR					79		1				2	0
Visitor Center					1						1	
No Build	**0**	**0**	**0**	**0**	**720**	**0**	**6**	**0**	**17**	**0**	**66**	**0**
Residential Enter						5				17	2	
Residential Exit	13		49		4							
Retail Enter									0		0	
Retail Exit				0	0							
Build	**13**	**0**	**49**	**0**	**724**	**5**	**6**	**0**	**17**	**17**	**68**	**0**
PHF	*0.920*			*0.920*			*0.920*			*0.920*		
HV %		*2*			*2*			*2*			*2*	

PM Peak Hour

	Southbound A-19			Westbound SR 4			Northbound La Vista			Eastbound SR 4		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Existing Volumes	**0**	**0**	**0**	**32**	**77**	**0**	**4**	**0**	**6**	**0**	**651**	**12**
Approved Development												
CMRR					1		0				82	2
Visitor Center					0						0	
No Build	**0**	**0**	**0**	**32**	**78**	**0**	**4**	**0**	**6**	**0**	**733**	**14**
Residential Enter						15				56	5	
Residential Exit	9		32		3							
Retail Enter									11		11	
Retail Exit				13	13							
	9	**0**	**32**	**45**	**94**	**15**	**4**	**0**	**17**	**56**	**749**	**14**
PHF	*0.920*			*0.920*			*0.920*			*0.920*		
HV %		*2*			*2*			*2*			*2*	

growth rates	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Trip Distribution % Enter						15.0%				55.0%	5.0%		Residential
Trip Distribution % Exit	15.0%	0.0%	55.0%	0.0%	5.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Trip Distribution % Enter									20.0%		20.0%		Retail
Trip Distribution % Exit	0.0%	0.0%	0.0%	20.0%	20.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	

Exhibit 1

WHITE ROCK A-19 AMENDED TRAFFIC STUDY
EXISTING & PROJECTED TURNING MOVEMENTS

INTERSECTION: SR 4 & Pajarito

AM Peak Hour

	Southbound Pajarito			Westbound SR 4			Northbound Grand Canyon			Eastbound SR 4		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Existing Volumes	**13**	**1**	**0**	**0**	**41**	**604**	**9**	**118**	**3**	**43**	**47**	**9**
	0	0	0	0	0	0	0	0	0	0	0	0
Approved Development												
CMRR	2	0	0			79		16		6		
Visitor Center					1						1	
No Build	**15**	**1**	**0**	**0**	**42**	**683**	**9**	**134**	**3**	**49**	**48**	**9**
Residential Enter	18											
Residential Exit						53						
Retail Enter									0		0	
Retail Exit				0	0							
Build	**33**	**1**	**0**	**0**	**42**	**736**	**9**	**134**	**3**	**49**	**48**	**9**
PHF	*0.920*			*0.920*			*0.920*			*0.920*		
HV %		*4*			*2*			*2*			*2*	

PM Peak Hour

	Southbound Pajarito			Westbound SR 4			Northbound			Eastbound SR 4		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Existing Volumes	**553**	**86**	**23**	**7**	**58**	**16**	**10**	**2**	**6**	**3**	**110**	**8**
	0	0	0	0	0	0	0	0	0	0	0	0
Approved Development												
CMRR	84	13	4			1		1		0		
Visitor Center					0						0	
No Build	**637**	**99**	**27**	**7**	**58**	**17**	**10**	**3**	**6**	**3**	**110**	**8**
Residential Enter	61											
Residential Exit						35						
Retail Enter									5		5	
Retail Exit				7	7							
	698	**99**	**27**	**14**	**65**	**52**	**10**	**3**	**11**	**3**	**115**	**8**
PHF	*0.920*			*0.920*			*0.920*			*0.920*		
HV %		*2*			*2*			*2*			*2*	

growth rates	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Trip Distribution % Enter	60.0%												Residential
Trip Distribution % Exit	0.0%	0.0%	0.0%	0.0%	0.0%	60.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Trip Distribution % Enter									10.0%		10.0%		Retail
Trip Distribution % Exit	0.0%	0.0%	0.0%	10.0%	10.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	

Exhibit 1

Appendix D

No Build Intersection Capacity Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	210	27	171	332	26	183	13	454	11	2	1
Future Volume (veh/h)	3	210	27	171	332	26	183	13	454	11	2	1
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	3	228	29	186	361	28	199	14	493	12	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	293	352	457	461	505	39	745	18	620	258	38	10
Arrive On Green	0.00	0.19	0.19	0.11	0.29	0.29	0.10	0.40	0.40	0.20	0.20	0.20
Sat Flow, veh/h	1781	1870	1585	1781	1714	133	1781	44	1548	478	188	48
Grp Volume(v), veh/h	3	228	29	186	0	389	199	0	507	15	0	0
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	0	1846	1781	0	1592	713	0	0
Q Serve(g_s), s	0.1	4.5	0.5	3.0	0.0	7.5	3.3	0.0	11.2	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.1	4.5	0.5	3.0	0.0	7.5	3.3	0.0	11.2	3.2	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.07	1.00		0.97	0.80		0.07
Lane Grp Cap(c), veh/h	293	352	457	461	0	545	745	0	638	305	0	0
V/C Ratio(X)	0.01	0.65	0.06	0.40	0.00	0.71	0.27	0.00	0.79	0.05	0.00	0.00
Avail Cap(c_a), veh/h	466	892	915	489	0	927	745	0	959	505	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	13.2	15.0	10.3	10.1	0.0	12.5	9.5	0.0	10.5	12.9	0.0	0.0
Incr Delay (d2), s/veh	0.0	2.0	0.1	0.6	0.0	1.8	0.2	0.0	2.8	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	1.7	0.1	0.9	0.0	2.6	1.0	0.0	3.4	0.1	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	13.2	17.0	10.3	10.6	0.0	14.3	9.7	0.0	13.3	13.0	0.0	0.0
LnGrp LOS	B	B	B	B	A	B	A	A	B	B	A	A
Approach Vol, veh/h		260			575			706			15	
Approach Delay, s/veh		16.2			13.1			12.3			13.0	
Approach LOS		B			B			B			B	

Timer - Assigned Phs		2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s		20.0	8.4	11.5	8.0	12.0	4.1	15.8
Change Period (Y+Rc), s		4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s		24.0	5.0	19.0	4.0	16.0	4.0	20.0
Max Q Clear Time (g_c+I1), s		13.2	5.0	6.5	5.3	5.2	2.1	9.5
Green Ext Time (p_c), s		2.8	0.0	1.0	0.0	0.0	0.0	1.7

Intersection Summary	
HCM 6th Ctrl Delay	13.2
HCM 6th LOS	B

Exhibit 1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	49	48	9	0	42	683	9	134	3	15	1	0
Future Volume (vph)	49	48	9	0	42	683	9	134	3	15	1	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85		1.00	0.85	1.00	1.00		1.00	1.00	
Flt Protected	0.95	1.00	1.00		1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583		1863	1583	1770	1857		1719	1810	
Flt Permitted	0.83	1.00	1.00		1.00	1.00	0.78	1.00		0.78	1.00	
Satd. Flow (perm)	1552	1863	1583		1863	1583	1461	1857		1419	1810	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	53	52	10	0	46	742	10	146	3	16	1	0
RTOR Reduction (vph)	0	0	7	0	0	0	0	2	0	0	0	0
Lane Group Flow (vph)	53	52	3	0	46	742	10	147	0	16	1	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%	5%	5%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Free	pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		Free	2			6		
Actuated Green, G (s)	6.5	6.5	6.5		0.8	24.0	5.5	5.1		5.5	5.1	
Effective Green, g (s)	6.5	6.5	6.5		0.8	24.0	5.5	5.1		5.5	5.1	
Actuated g/C Ratio	0.27	0.27	0.27		0.03	1.00	0.23	0.21		0.23	0.21	
Clearance Time (s)	4.0	4.0	4.0		4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0		3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	435	504	428		62	1583	339	394		330	384	
v/s Ratio Prot	0.01	0.03			0.02		0.00	0.08		0.00	0.00	
v/s Ratio Perm	0.02		0.00			c0.47	0.01			0.01		
v/c Ratio	0.12	0.10	0.01		0.74	0.47	0.03	0.37		0.05	0.00	
Uniform Delay, d1	6.6	6.6	6.4		11.5	0.0	7.2	8.1		7.2	7.4	
Progression Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.1	0.0		37.6	1.0	0.0	0.6		0.1	0.0	
Delay (s)	6.7	6.7	6.4		49.1	1.0	7.2	8.7		7.3	7.4	
Level of Service	A	A	A		D	A	A	A		A	A	
Approach Delay (s)		6.7			3.8			8.6			7.3	
Approach LOS		A			A			A			A	

Intersection Summary			
HCM 2000 Control Delay	4.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	1.41		
Actuated Cycle Length (s)	24.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	28.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Exhibit 1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	6	455	228	312	162	34	50	27	187	65	28	3
Future Volume (veh/h)	6	455	228	312	162	34	50	27	187	65	28	3
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	7	495	248	339	176	37	54	29	203	71	30	3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	555	616	591	499	718	151	484	51	357	231	61	5
Arrive On Green	0.01	0.33	0.33	0.16	0.48	0.48	0.04	0.25	0.25	0.12	0.12	0.12
Sat Flow, veh/h	1781	1870	1585	1781	1499	315	1781	202	1414	812	501	39
Grp Volume(v), veh/h	7	495	248	339	0	213	54	0	232	104	0	0
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	0	1814	1781	0	1616	1353	0	0
Q Serve(g_s), s	0.1	11.1	5.3	5.1	0.0	3.2	1.1	0.0	5.8	2.8	0.0	0.0
Cycle Q Clear(g_c), s	0.1	11.1	5.3	5.1	0.0	3.2	1.1	0.0	5.8	3.3	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.17	1.00		0.88	0.68		0.03
Lane Grp Cap(c), veh/h	555	616	591	499	0	868	484	0	407	297	0	0
V/C Ratio(X)	0.01	0.80	0.42	0.68	0.00	0.25	0.11	0.00	0.57	0.35	0.00	0.00
Avail Cap(c_a), veh/h	697	775	725	570	0	949	562	0	881	621	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	10.1	14.0	10.7	9.1	0.0	7.1	14.8	0.0	15.0	19.1	0.0	0.0
Incr Delay (d2), s/veh	0.0	4.9	0.5	2.7	0.0	0.1	0.1	0.0	1.3	0.7	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	4.5	1.5	1.6	0.0	0.9	0.4	0.0	2.0	1.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	10.1	18.9	11.2	11.8	0.0	7.2	14.9	0.0	16.2	19.8	0.0	0.0
LnGrp LOS	B	B	B	B	A	A	B	A	B	B	A	A
Approach Vol, veh/h		750			552			286			104	
Approach Delay, s/veh		16.3			10.0			16.0			19.8	
Approach LOS		B			B			B			B	

Timer - Assigned Phs		2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s		15.6	11.2	19.1	6.0	9.6	4.3	26.0
Change Period (Y+Rc), s		4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s		25.0	9.0	19.0	4.0	17.0	4.0	24.0
Max Q Clear Time (g_c+I1), s		7.8	7.1	13.1	3.1	5.3	2.1	5.2
Green Ext Time (p_c), s		1.4	0.2	2.0	0.0	0.4	0.0	1.1

Intersection Summary	
HCM 6th Ctrl Delay	14.4
HCM 6th LOS	B

Exhibit 1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	110	8	7	58	17	10	3	6	637	99	27
Future Volume (vph)	3	110	8	7	58	17	10	3	6	637	99	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.90		1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	1667		1770	1804	
Flt Permitted	0.93	1.00	1.00	0.93	1.00	1.00	1.00	1.00		0.83	1.00	
Satd. Flow (perm)	1733	1863	1583	1733	1863	1583	1863	1667		1552	1804	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	3	120	9	8	63	18	11	3	7	692	108	29
RTOR Reduction (vph)	0	0	8	0	0	0	0	7	0	0	13	0
Lane Group Flow (vph)	3	120	1	8	63	18	11	3	0	692	124	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Free	pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		Free	2			6		
Actuated Green, G (s)	4.8	4.3	4.3	4.8	4.3	40.0	1.3	0.8		23.2	18.7	
Effective Green, g (s)	4.8	4.3	4.3	4.8	4.3	40.0	1.3	0.8		23.2	18.7	
Actuated g/C Ratio	0.12	0.11	0.11	0.12	0.11	1.00	0.03	0.02		0.58	0.47	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	208	200	170	208	200	1583	59	33		1000	843	
v/s Ratio Prot	0.00	c0.06		0.00	0.03		0.00	0.00		c0.32	0.07	
v/s Ratio Perm	0.00		0.00	0.00		c0.01	0.00			c0.08		
v/c Ratio	0.01	0.60	0.01	0.04	0.32	0.01	0.19	0.10		0.69	0.15	
Uniform Delay, d1	15.5	17.0	15.9	15.6	16.5	0.0	16.2	19.2		5.8	6.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.0	4.8	0.0	0.1	0.9	0.0	1.5	1.3		2.1	0.1	
Delay (s)	15.5	21.8	16.0	15.6	17.4	0.0	17.8	20.5		7.9	6.2	
Level of Service	B	C	B	B	B	A	B	C		A	A	
Approach Delay (s)		21.3			13.7			19.1			7.6	
Approach LOS		C			B			B			A	

Intersection Summary			
HCM 2000 Control Delay	10.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	40.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	54.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Exhibit 1

Intersection	
Int Delay, s/veh	1.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	70	12	41	681	3	38	1	57	1	0	0
Future Vol, veh/h	1	70	12	41	681	3	38	1	57	1	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	250	-	150	250	-	150	150	-	-	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	0	0	0
Mvmt Flow	1	76	13	45	740	3	41	1	62	1	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	743	0	0	89	0	0	910	911	76	946	921	740
Stage 1	-	-	-	-	-	-	78	78	-	830	830	-
Stage 2	-	-	-	-	-	-	832	833	-	116	91	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.1	5.5	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.5	4	3.3
Pot Cap-1 Maneuver	864	-	-	1506	-	-	255	274	985	243	273	420
Stage 1	-	-	-	-	-	-	931	830	-	367	388	-
Stage 2	-	-	-	-	-	-	363	384	-	894	823	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	864	-	-	1506	-	-	249	266	985	222	265	420
Mov Cap-2 Maneuver	-	-	-	-	-	-	249	266	-	222	265	-
Stage 1	-	-	-	-	-	-	930	829	-	367	376	-
Stage 2	-	-	-	-	-	-	352	372	-	836	822	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.4	14.3	21.3
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	249	941	864	-	-	1506	-	-	222	-
HCM Lane V/C Ratio	0.166	0.067	0.001	-	-	0.03	-	-	0.005	-
HCM Control Delay (s)	22.3	9.1	9.2	-	-	7.5	-	-	21.3	0
HCM Lane LOS	C	A	A	-	-	A	-	-	C	A
HCM 95th %tile Q(veh)	0.6	0.2	0	-	-	0.1	-	-	0	-

Exhibit 1

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	66	0	0	720	0	6	0	17	0	0	0
Future Vol, veh/h	0	66	0	0	720	0	6	0	17	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	250	-	150	250	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	72	0	0	783	0	7	0	18	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	783	0	0	72	0	0	464	855	72	864	855	392
Stage 1	-	-	-	-	-	-	72	72	-	783	783	-
Stage 2	-	-	-	-	-	-	392	783	-	81	72	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.33	6.53	6.23	7.33	6.53	6.93
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.53	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.53	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.219	-	-	2.219	-	-	3.519	4.019	3.319	3.519	4.019	3.319
Pot Cap-1 Maneuver	833	-	-	1527	-	-	495	295	990	261	295	608
Stage 1	-	-	-	-	-	-	937	835	-	354	404	-
Stage 2	-	-	-	-	-	-	605	404	-	927	835	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	833	-	-	1527	-	-	495	295	990	256	295	608
Mov Cap-2 Maneuver	-	-	-	-	-	-	495	295	-	256	295	-
Stage 1	-	-	-	-	-	-	937	835	-	354	404	-
Stage 2	-	-	-	-	-	-	605	404	-	910	835	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	9.7	0
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	785	833	-	-	1527	-	-	-
HCM Lane V/C Ratio	0.032	-	-	-	-	-	-	-
HCM Control Delay (s)	9.7	0	-	-	0	-	-	0
HCM Lane LOS	A	A	-	-	A	-	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	-

Exhibit 1

Intersection	
Int Delay, s/veh	3.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	622	117	134	96	1	18	0	129	3	1	1
Future Vol, veh/h	0	622	117	134	96	1	18	0	129	3	1	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	250	-	150	250	-	150	150	-	-	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	676	127	146	104	1	20	0	140	3	1	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	105	0	0	803	0	0	1074	1073	676	1206	1199	104
Stage 1	-	-	-	-	-	-	676	676	-	396	396	-
Stage 2	-	-	-	-	-	-	398	397	-	810	803	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1486	-	-	821	-	-	198	220	453	160	185	951
Stage 1	-	-	-	-	-	-	443	453	-	629	604	-
Stage 2	-	-	-	-	-	-	628	603	-	374	396	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1486	-	-	821	-	-	170	181	453	95	152	951
Mov Cap-2 Maneuver	-	-	-	-	-	-	170	181	-	95	152	-
Stage 1	-	-	-	-	-	-	443	453	-	629	496	-
Stage 2	-	-	-	-	-	-	515	496	-	258	396	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	6	18	34.1
HCM LOS			C	D

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	170	453	1486	-	-	821	-	-	95	262
HCM Lane V/C Ratio	0.115	0.31	-	-	-	0.177	-	-	0.034	0.008
HCM Control Delay (s)	28.9	16.5	0	-	-	10.3	-	-	44.2	18.9
HCM Lane LOS	D	C	A	-	-	B	-	-	E	C
HCM 95th %tile Q(veh)	0.4	1.3	0	-	-	0.6	-	-	0.1	0

Exhibit 1

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	733	14	32	78	0	4	0	6	0	0	0
Future Vol, veh/h	0	733	14	32	78	0	4	0	6	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	250	-	150	250	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	797	15	35	85	0	4	0	7	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	85	0	0	812	0	0	910	952	797	963	967	43
Stage 1	-	-	-	-	-	-	797	797	-	155	155	-
Stage 2	-	-	-	-	-	-	113	155	-	808	812	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.33	6.53	6.23	7.33	6.53	6.93
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.53	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.53	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.219	-	-	2.219	-	-	3.519	4.019	3.319	3.519	4.019	3.319
Pot Cap-1 Maneuver	1511	-	-	812	-	-	242	259	386	222	253	1018
Stage 1	-	-	-	-	-	-	379	398	-	832	769	-
Stage 2	-	-	-	-	-	-	880	769	-	374	391	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1511	-	-	812	-	-	234	248	386	211	242	1018
Mov Cap-2 Maneuver	-	-	-	-	-	-	234	248	-	211	242	-
Stage 1	-	-	-	-	-	-	379	398	-	832	736	-
Stage 2	-	-	-	-	-	-	842	736	-	368	391	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	2.8	17.2	0
HCM LOS			C	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	306	1511	-	-	812	-	-	-
HCM Lane V/C Ratio	0.036	-	-	-	0.043	-	-	-
HCM Control Delay (s)	17.2	0	-	-	9.6	-	-	0
HCM Lane LOS	C	A	-	-	A	-	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0.1	-	-	-

Exhibit 1

Appendix E

Build Intersection Capacity Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	246	27	171	344	26	183	13	454	11	2	1
Future Volume (veh/h)	3	246	27	171	344	26	183	13	454	11	2	1
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	3	267	29	186	374	28	199	14	493	12	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	298	389	482	448	537	40	728	17	612	245	36	9
Arrive On Green	0.00	0.21	0.21	0.11	0.31	0.31	0.10	0.40	0.40	0.20	0.20	0.20
Sat Flow, veh/h	1781	1870	1585	1781	1719	129	1781	44	1548	441	175	44
Grp Volume(v), veh/h	3	267	29	186	0	402	199	0	507	15	0	0
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	0	1847	1781	0	1592	660	0	0
Q Serve(g_s), s	0.1	5.5	0.5	3.1	0.0	8.0	3.4	0.0	11.8	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.1	5.5	0.5	3.1	0.0	8.0	3.4	0.0	11.8	3.8	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.07	1.00		0.97	0.80		0.07
Lane Grp Cap(c), veh/h	298	389	482	448	0	577	728	0	630	290	0	0
V/C Ratio(X)	0.01	0.69	0.06	0.42	0.00	0.70	0.27	0.00	0.80	0.05	0.00	0.00
Avail Cap(c_a), veh/h	464	854	876	469	0	888	728	0	918	470	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	13.1	15.2	10.3	10.2	0.0	12.6	10.0	0.0	11.1	13.4	0.0	0.0
Incr Delay (d2), s/veh	0.0	2.2	0.1	0.6	0.0	1.5	0.2	0.0	3.4	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	2.1	0.2	0.9	0.0	2.7	1.1	0.0	3.8	0.1	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	13.1	17.4	10.3	10.8	0.0	14.1	10.2	0.0	14.5	13.5	0.0	0.0
LnGrp LOS	B	B	B	B	A	B	B	A	B	B	A	A
Approach Vol, veh/h		299			588			706			15	
Approach Delay, s/veh		16.7			13.1			13.3			13.5	
Approach LOS		B			B			B			B	

Timer - Assigned Phs		2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s		20.5	8.5	12.6	8.0	12.5	4.1	17.0
Change Period (Y+Rc), s		4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s		24.0	5.0	19.0	4.0	16.0	4.0	20.0
Max Q Clear Time (g_c+I1), s		13.8	5.1	7.5	5.4	5.8	2.1	10.0
Green Ext Time (p_c), s		2.7	0.0	1.2	0.0	0.0	0.0	1.7

Intersection Summary	
HCM 6th Ctrl Delay	13.8
HCM 6th LOS	B

Exhibit 1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	49	48	9	0	42	736	9	134	3	33	1	0
Future Volume (vph)	49	48	9	0	42	736	9	134	3	33	1	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85		1.00	0.85	1.00	1.00		1.00	1.00	
Flt Protected	0.95	1.00	1.00		1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583		1863	1583	1770	1857		1736	1827	
Flt Permitted	0.67	1.00	1.00		1.00	1.00	0.78	1.00		0.78	1.00	
Satd. Flow (perm)	1242	1863	1583		1863	1583	1461	1857		1433	1827	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	53	52	10	0	46	800	10	146	3	36	1	0
RTOR Reduction (vph)	0	0	7	0	0	0	0	2	0	0	0	0
Lane Group Flow (vph)	53	52	3	0	46	800	10	147	0	36	1	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	4%	4%	4%
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA	Free	pm+pt	NA		pm+pt	NA	
Protected Phases	7	4	5	3	8		5	2		1	6	
Permitted Phases	4		4	8		Free	2			6		
Actuated Green, G (s)	7.1	7.1	7.6		2.0	24.7	5.6	5.1		5.6	5.1	
Effective Green, g (s)	7.1	7.1	7.6		2.0	24.7	5.6	5.1		5.6	5.1	
Actuated g/C Ratio	0.29	0.29	0.31		0.08	1.00	0.23	0.21		0.23	0.21	
Clearance Time (s)	4.0	4.0	4.0		4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0		3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	380	535	743		150	1583	337	383		331	377	
v/s Ratio Prot	0.01	0.03	0.00		0.02		0.00	0.08		0.00	0.00	
v/s Ratio Perm	0.03		0.00			c0.51	0.01			0.02		
v/c Ratio	0.14	0.10	0.00		0.31	0.51	0.03	0.38		0.11	0.00	
Uniform Delay, d1	6.5	6.5	5.9		10.7	0.0	7.4	8.4		7.5	7.8	
Progression Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	0.1	0.0		1.2	1.2	0.0	0.6		0.1	0.0	
Delay (s)	6.7	6.5	5.9		11.9	1.2	7.5	9.1		7.7	7.8	
Level of Service	A	A	A		B	A	A	A		A	A	
Approach Delay (s)		6.6			1.7			9.0			7.7	
Approach LOS		A			A			A			A	

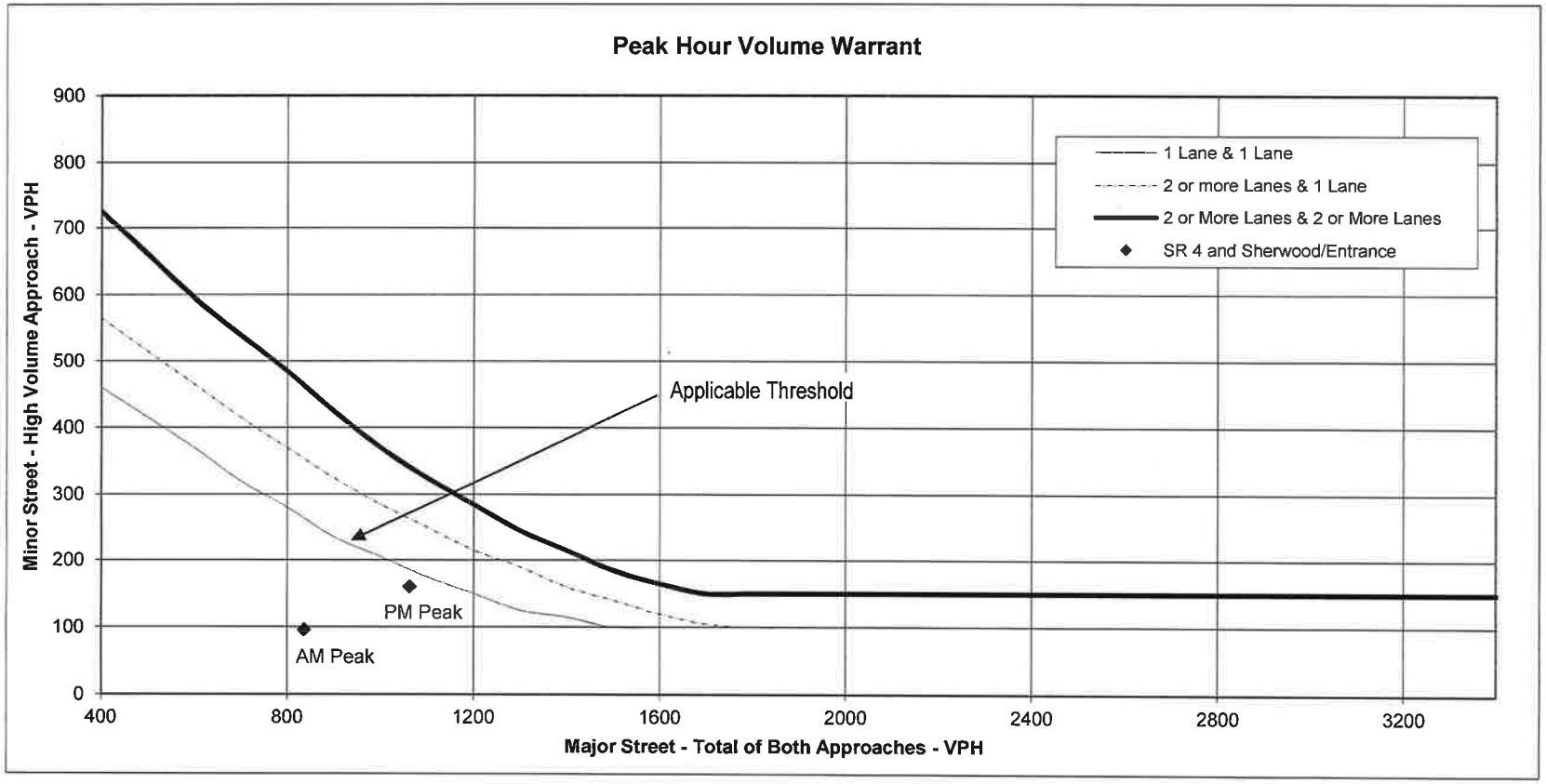
Intersection Summary			
HCM 2000 Control Delay	3.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	1.43		
Actuated Cycle Length (s)	24.7	Sum of lost time (s)	16.0
Intersection Capacity Utilization	29.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Exhibit 1

PEAK HOUR VOLUME SIGNAL WARRANT ANALYSIS

Scenario: Build **Peak Hour Delay** 0.4 Hours in AM Criteria - 4 Hours
Intersection: SR 4 and Sherwood/Entrance 1.5 Hours in PM
Type: 1 Lane/1 Lane
Major Street (Orientation): SR 4 (E/W)
Minor Street (Orientation): Sherwood/Entrance (N/S)

	Minor Street Approach Volume			Major Street Approach Volume			Satisfies
Time	NB	SB	High Vol Approach	EB	WB	EB + WB	Warrant 11?
AM Peak	96	27	96	98	738	836	NO
PM Peak	160	89	160	774	290	1,064	NO



Note: 150 VPH applies as the lower threshold for minor street approach with 2 or more lanes & 100 VPH as the threshold for a minor street approach with one lane

warrant analysis.xls <40mph Sherwood Bld

Exhibit 1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	83	12	41	686	11	38	1	57	23	0	4
Future Volume (veh/h)	3	83	12	41	686	11	38	1	57	23	0	4
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1900	1900	1900
Adj Flow Rate, veh/h	3	90	13	45	746	12	41	1	62	25	0	4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	0	0	0
Cap, veh/h	173	766	701	670	825	735	543	7	425	487	0	421
Arrive On Green	0.00	0.41	0.41	0.03	0.44	0.44	0.03	0.27	0.27	0.02	0.00	0.26
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	1781	25	1564	1810	0	1610
Grp Volume(v), veh/h	3	90	13	45	746	12	41	0	63	25	0	4
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1781	0	1589	1810	0	1610
Q Serve(g_s), s	0.1	1.8	0.3	0.9	22.7	0.3	1.0	0.0	1.8	0.6	0.0	0.1
Cycle Q Clear(g_c), s	0.1	1.8	0.3	0.9	22.7	0.3	1.0	0.0	1.8	0.6	0.0	0.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.98	1.00		1.00
Lane Grp Cap(c), veh/h	173	766	701	670	825	735	543	0	431	487	0	421
V/C Ratio(X)	0.02	0.12	0.02	0.07	0.90	0.02	0.08	0.00	0.15	0.05	0.00	0.01
Avail Cap(c_a), veh/h	284	917	829	724	917	813	601	0	431	564	0	421
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	14.1	11.2	9.6	9.7	15.9	8.9	15.6	0.0	16.9	15.9	0.0	16.7
Incr Delay (d2), s/veh	0.0	0.1	0.0	0.0	11.5	0.0	0.1	0.0	0.7	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.7	0.1	0.3	10.6	0.1	0.4	0.0	0.7	0.2	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	14.1	11.3	9.6	9.8	27.4	8.9	15.7	0.0	17.6	16.0	0.0	16.8
LnGrp LOS	B	B	A	A	C	A	B	A	B	B	A	B
Approach Vol, veh/h		106			803			104			29	
Approach Delay, s/veh		11.2			26.1			16.9			16.1	
Approach LOS		B			C			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.4	20.6	6.1	29.1	6.0	20.0	4.2	31.0
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	4.0	16.0	4.0	30.0	4.0	16.0	4.0	30.0
Max Q Clear Time (g_c+I1), s	2.6	3.8	2.9	3.8	3.0	2.1	2.1	24.7
Green Ext Time (p_c), s	0.0	0.2	0.0	0.4	0.0	0.0	0.0	2.3

Intersection Summary	
HCM 6th Ctrl Delay	23.4
HCM 6th LOS	C

Exhibit 1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	6	479	251	312	202	34	69	27	187	65	28	3
Future Volume (veh/h)	6	479	251	312	202	34	69	27	187	65	28	3
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	7	521	273	339	220	37	75	29	203	71	30	3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	550	648	632	488	771	130	479	51	358	221	60	5
Arrive On Green	0.01	0.35	0.35	0.15	0.49	0.49	0.05	0.25	0.25	0.12	0.12	0.12
Sat Flow, veh/h	1781	1870	1585	1781	1561	262	1781	202	1414	812	502	39
Grp Volume(v), veh/h	7	521	273	339	0	257	75	0	232	104	0	0
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	0	1823	1781	0	1616	1353	0	0
Q Serve(g_s), s	0.1	12.3	6.1	5.3	0.0	4.1	1.7	0.0	6.1	3.0	0.0	0.0
Cycle Q Clear(g_c), s	0.1	12.3	6.1	5.3	0.0	4.1	1.7	0.0	6.1	3.5	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.14	1.00		0.88	0.68		0.03
Lane Grp Cap(c), veh/h	550	648	632	488	0	901	479	0	409	285	0	0
V/C Ratio(X)	0.01	0.80	0.43	0.70	0.00	0.29	0.16	0.00	0.57	0.37	0.00	0.00
Avail Cap(c_a), veh/h	682	842	796	612	0	1081	532	0	826	583	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	10.2	14.5	10.7	9.6	0.0	7.3	15.8	0.0	15.9	20.4	0.0	0.0
Incr Delay (d2), s/veh	0.0	4.4	0.5	2.5	0.0	0.2	0.2	0.0	1.2	0.8	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	5.0	1.7	1.6	0.0	1.2	0.6	0.0	2.2	1.1	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	10.3	18.8	11.1	12.0	0.0	7.5	16.0	0.0	17.2	21.2	0.0	0.0
LnGrp LOS	B	B	B	B	A	A	B	A	B	C	A	A
Approach Vol, veh/h		801			596			307			104	
Approach Delay, s/veh		16.1			10.1			16.9			21.2	
Approach LOS		B			B			B			C	

Timer - Assigned Phs		2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s		16.4	11.6	20.9	6.6	9.8	4.4	28.2
Change Period (Y+Rc), s		4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s		25.0	11.0	22.0	4.0	17.0	4.0	29.0
Max Q Clear Time (g_c+I1), s		8.1	7.3	14.3	3.7	5.5	2.1	6.1
Green Ext Time (p_c), s		1.3	0.4	2.6	0.0	0.4	0.0	1.4

Intersection Summary	
HCM 6th Ctrl Delay	14.6
HCM 6th LOS	B

Exhibit 1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	115	8	14	65	52	10	3	11	698	99	27
Future Volume (vph)	3	115	8	14	65	52	10	3	11	698	99	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.88		1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	1639		1770	1804	
Flt Permitted	0.71	1.00	1.00	0.68	1.00	1.00	1.00	1.00		0.82	1.00	
Satd. Flow (perm)	1324	1863	1583	1261	1863	1583	1863	1639		1521	1804	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	3	125	9	15	71	57	11	3	12	759	108	29
RTOR Reduction (vph)	0	0	8	0	0	0	0	12	0	0	12	0
Lane Group Flow (vph)	3	125	1	15	71	57	11	3	0	759	125	0
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA	Free	pm+pt	NA		pm+pt	NA	
Protected Phases	7	4	5	3	8		5	2		1	6	
Permitted Phases	4		4	8		Free	2			6		
Actuated Green, G (s)	6.8	6.3	6.8	6.8	6.3	45.3	1.4	0.9		26.5	22.0	
Effective Green, g (s)	6.8	6.3	6.8	6.8	6.3	45.3	1.4	0.9		26.5	22.0	
Actuated g/C Ratio	0.15	0.14	0.15	0.15	0.14	1.00	0.03	0.02		0.58	0.49	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	203	259	377	194	259	1583	56	32		1008	876	
v/s Ratio Prot	0.00	c0.07	0.00	0.00	0.04		0.00	0.00		c0.36	0.07	
v/s Ratio Perm	0.00		0.00	0.01		c0.04	0.00			c0.08		
v/c Ratio	0.01	0.48	0.00	0.08	0.27	0.04	0.20	0.10		0.75	0.14	
Uniform Delay, d1	16.4	18.0	16.4	16.5	17.5	0.0	18.9	21.8		6.8	6.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.0	1.4	0.0	0.2	0.6	0.0	1.7	1.4		3.2	0.1	
Delay (s)	16.4	19.4	16.4	16.7	18.0	0.0	20.6	23.2		10.1	6.5	
Level of Service	B	B	B	B	B	A	C	C		B	A	
Approach Delay (s)		19.1			10.7			22.1			9.5	
Approach LOS		B			B			C			A	

Intersection Summary			
HCM 2000 Control Delay	11.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	45.3	Sum of lost time (s)	16.0
Intersection Capacity Utilization	59.4%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Exhibit 1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	26	631	117	134	111	45	18	13	129	41	18	30
Future Volume (veh/h)	26	631	117	134	111	45	18	13	129	41	18	30
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	28	686	127	146	121	49	20	14	140	45	20	33
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	652	768	680	267	837	764	466	36	361	378	167	275
Arrive On Green	0.02	0.41	0.41	0.06	0.45	0.45	0.02	0.25	0.25	0.03	0.26	0.26
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	1781	146	1461	1781	635	1047
Grp Volume(v), veh/h	28	686	127	146	121	49	20	0	154	45	0	53
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1781	0	1607	1781	0	1682
Q Serve(g_s), s	0.6	22.1	3.2	3.0	2.5	1.1	0.5	0.0	5.2	1.2	0.0	1.6
Cycle Q Clear(g_c), s	0.6	22.1	3.2	3.0	2.5	1.1	0.5	0.0	5.2	1.2	0.0	1.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.91	1.00		0.62
Lane Grp Cap(c), veh/h	652	768	680	267	837	764	466	0	397	378	0	441
V/C Ratio(X)	0.04	0.89	0.19	0.55	0.14	0.06	0.04	0.00	0.39	0.12	0.00	0.12
Avail Cap(c_a), veh/h	719	865	763	267	865	788	543	0	397	427	0	441
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	10.5	17.8	11.5	14.5	10.6	9.0	17.7	0.0	20.3	17.4	0.0	18.2
Incr Delay (d2), s/veh	0.0	10.8	0.1	2.3	0.1	0.0	0.0	0.0	2.9	0.1	0.0	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	10.4	1.0	1.2	0.9	0.3	0.2	0.0	2.2	0.5	0.0	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	10.5	28.6	11.6	16.8	10.6	9.0	17.7	0.0	23.2	17.5	0.0	18.8
LnGrp LOS	B	C	B	B	B	A	B	A	C	B	A	B
Approach Vol, veh/h		841			316			174			98	
Approach Delay, s/veh		25.5			13.3			22.6			18.2	
Approach LOS		C			B			C			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.2	20.0	8.0	30.6	5.2	21.0	5.6	33.0
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	4.0	16.0	4.0	30.0	4.0	16.0	4.0	30.0
Max Q Clear Time (g_c+I1), s	3.2	7.2	5.0	24.1	2.5	3.6	2.6	4.5
Green Ext Time (p_c), s	0.0	0.5	0.0	2.5	0.0	0.1	0.0	0.7

Intersection Summary	
HCM 6th Ctrl Delay	21.9
HCM 6th LOS	C

Exhibit 1

Intersection	
Int Delay, s/veh	2.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	83	12	41	686	11	38	1	57	23	0	4
Future Vol, veh/h	3	83	12	41	686	11	38	1	57	23	0	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	250	-	150	250	-	150	150	-	-	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	0	0	0
Mvmt Flow	3	90	13	45	746	12	41	1	62	25	0	4

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	758	0	0	103	0	0	940	944	90	970	945	746
Stage 1	-	-	-	-	-	-	96	96	-	836	836	-
Stage 2	-	-	-	-	-	-	844	848	-	134	109	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.1	5.5	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.5	4	3.3
Pot Cap-1 Maneuver	853	-	-	1489	-	-	244	262	968	235	264	417
Stage 1	-	-	-	-	-	-	911	815	-	364	385	-
Stage 2	-	-	-	-	-	-	358	378	-	874	809	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	853	-	-	1489	-	-	235	253	968	214	255	417
Mov Cap-2 Maneuver	-	-	-	-	-	-	235	253	-	214	255	-
Stage 1	-	-	-	-	-	-	907	812	-	363	373	-
Stage 2	-	-	-	-	-	-	344	367	-	814	806	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0.4	14.9	22.5
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	235	923	853	-	-	1489	-	-	214	417
HCM Lane V/C Ratio	0.176	0.068	0.004	-	-	0.03	-	-	0.117	0.01
HCM Control Delay (s)	23.6	9.2	9.2	-	-	7.5	-	-	24	13.7
HCM Lane LOS	C	A	A	-	-	A	-	-	C	B
HCM 95th %tile Q(veh)	0.6	0.2	0	-	-	0.1	-	-	0.4	0

Exhibit 1

Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	17	68	0	0	724	5	6	0	17	13	0	49
Future Vol, veh/h	17	68	0	0	724	5	6	0	17	13	0	49
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	250	-	150	250	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	18	74	0	0	787	5	7	0	18	14	0	53

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	792	0	0	74	0	0	504	902	74	909	900	396
Stage 1	-	-	-	-	-	-	110	110	-	790	790	-
Stage 2	-	-	-	-	-	-	394	792	-	119	110	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.33	6.53	6.23	7.33	6.53	6.93
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.53	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.53	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.219	-	-	2.219	-	-	3.519	4.019	3.319	3.519	4.019	3.319
Pot Cap-1 Maneuver	827	-	-	1525	-	-	464	277	987	243	277	604
Stage 1	-	-	-	-	-	-	895	804	-	350	401	-
Stage 2	-	-	-	-	-	-	603	400	-	885	804	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	827	-	-	1525	-	-	416	271	987	234	271	604
Mov Cap-2 Maneuver	-	-	-	-	-	-	416	271	-	234	271	-
Stage 1	-	-	-	-	-	-	875	786	-	342	401	-
Stage 2	-	-	-	-	-	-	550	400	-	850	786	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.9	0	10.1	14.3
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	727	827	-	-	1525	-	-	454
HCM Lane V/C Ratio	0.034	0.022	-	-	-	-	-	0.148
HCM Control Delay (s)	10.1	9.5	-	-	0	-	-	14.3
HCM Lane LOS	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.1	0.1	-	-	0	-	-	0.5

Exhibit 1

Intersection	
Int Delay, s/veh	8.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	26	631	117	134	111	45	18	13	129	41	18	30
Future Vol, veh/h	26	631	117	134	111	45	18	13	129	41	18	30
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	250	-	150	250	-	150	150	-	-	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	28	686	127	146	121	49	20	14	140	45	20	33

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	170	0	0	813	0	0	1206	1204	686	1296	1282	121
Stage 1	-	-	-	-	-	-	742	742	-	413	413	-
Stage 2	-	-	-	-	-	-	464	462	-	883	869	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1407	-	-	814	-	-	160	184	447	139	165	930
Stage 1	-	-	-	-	-	-	408	422	-	616	594	-
Stage 2	-	-	-	-	-	-	578	565	-	340	369	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1407	-	-	814	-	-	117	148	447	75	133	930
Mov Cap-2 Maneuver	-	-	-	-	-	-	117	148	-	75	133	-
Stage 1	-	-	-	-	-	-	400	414	-	604	488	-
Stage 2	-	-	-	-	-	-	439	464	-	221	362	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	4.8	23.3	60.4
HCM LOS			C	F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	117	377	1407	-	-	814	-	-	75	286
HCM Lane V/C Ratio	0.167	0.409	0.02	-	-	0.179	-	-	0.594	0.182
HCM Control Delay (s)	41.8	21	7.6	-	-	10.4	-	-	107.2	20.4
HCM Lane LOS	E	C	A	-	-	B	-	-	F	C
HCM 95th %tile Q(veh)	0.6	1.9	0.1	-	-	0.6	-	-	2.6	0.7

Exhibit 1

Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	56	749	14	45	94	15	4	0	17	9	0	32
Future Vol, veh/h	56	749	14	45	94	15	4	0	17	9	0	32
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	250	-	150	250	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	61	814	15	49	102	16	4	0	18	10	0	35

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	118	0	0	829	0	0	1085	1152	814	1161	1159	59
Stage 1	-	-	-	-	-	-	936	936	-	208	208	-
Stage 2	-	-	-	-	-	-	149	216	-	953	951	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.33	6.53	6.23	7.33	6.53	6.93
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.53	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.53	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.219	-	-	2.219	-	-	3.519	4.019	3.319	3.519	4.019	3.319
Pot Cap-1 Maneuver	1469	-	-	800	-	-	182	197	377	161	195	995
Stage 1	-	-	-	-	-	-	317	343	-	775	729	-
Stage 2	-	-	-	-	-	-	839	723	-	310	337	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1469	-	-	800	-	-	162	177	377	141	176	995
Mov Cap-2 Maneuver	-	-	-	-	-	-	162	177	-	141	176	-
Stage 1	-	-	-	-	-	-	304	329	-	742	685	-
Stage 2	-	-	-	-	-	-	760	679	-	283	323	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.5	2.9	17.9	14.4
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	301	1469	-	-	800	-	-	427
HCM Lane V/C Ratio	0.076	0.041	-	-	0.061	-	-	0.104
HCM Control Delay (s)	17.9	7.6	-	-	9.8	-	-	14.4
HCM Lane LOS	C	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.2	0.1	-	-	0.2	-	-	0.3

Exhibit 1

Los Alamos County

Community Development Department

PLANNING & ZONING COMMISSION STAFF REPORT

Public Hearing Date:	March 28, 2018
Subject:	Case No. SUB-2018-005, A-19/Mirador Final Subdivision Plat
Applicant/Owner:	Scott Eddings, P.E., Agent for Adam Thornton, Owner
Case Manager:	Tamara Baer, Planning Manager

Case No. SUB-2018-005: A-19/Mirador Final Subdivision Plat

Scott Eddings, P.E., agent for Adam Thornton, owner, requests Final Subdivision Plat approval to create 161 new residential lots and one commercial lot on Tracts A-19-A-1, A-19-A-2A and A-19-A-2B, being a part of the Ramon Vigil Grant. The land from which the new subdivision will be platted consists of three existing parcels. The parcel designated A-19-A-1, is zoned R-1-5 (Single-family residential) and consists of 34.35± acres. The second parcel is A-19-A-2A, is zoned DT-NCO (Downtown - Neighborhood Center Overlay), and consists of 12.94± acres. A third parcel, A-19-A-2B is also zoned DT-NCO, consists of 12.97±, and is owned by Los Alamos County. The subdivision will be located on the first two, privately owned tracts of land.

Motion on the Final Subdivision Plat

Motion Option 1:

I move to **approve** Case No. SUB-2018-005, a request for approval of Final Subdivision Plat, creating 161 new residential lots and one commercial lot pertaining to the Property as described, and known as A-19, or Mirador. I so move for the reasons stated in the staff report and per testimony at the public hearing, and subject to the conditions of approval.

Conditions of Approval:

1. The developer shall be responsible for future installation of a traffic signal and related equipment at the NM 4/Mirador/Sherwood Boulevard intersection if engineering warrants are met.
2. The developer shall provide an updated Traffic Impact Analysis (TIA) at the time of any of the following:

    - Site Plan submittal for Commercial Tract D, or any portion thereof; or
    - As required by the County Engineer based on traffic operational performance, safety and/or capacity issues during or upon completion of residential build-out; or
    - As may be required by the New Mexico Department of Transportation. (See County Engineer's memorandum Exhibit B.)

EXHIBIT 2

3. Applicant's engineer shall address all County Engineer's Conditions of Approval of Preliminary Plat (Exhibit A), and additional comments in the County Engineer's memorandum dated February 28, 2018 (Exhibit B) with submittal of construction drawings for Building Permit.

4. Per LAC Code of Ordinances, Sec. 16-236 (b) (1): An escrow letter of credit agreement approved by the county attorney shall be provided in an amount sufficient to pay 100 percent of the costs of construction of all public improvements and public utilities. The utilities manager and county engineer shall certify that the amount is adequate.

5. Per LAC Code of Ordinances, Sec. 16-236 , prior to recording the plat, provide a written statement describing the date for commencement and completion of construction, by phase, and a chart indicating the approximate construction period for each of the utilities, and public and private roadway improvements.

6. …

Motion Option 2:

I move to **deny** Case Nos. SUB-2018-005, a Final Subdivision Plat for 161 new residential lots, and one commercial lot, pertaining to the Property as described, and known as A-19, or Mirador, finding that the proposal has failed to meet the Los Alamos County Code of Ordinances, Chapter 16 – Development Code review criteria in Sec. 16-153 – Subdivision, for the following reason(s):

1. …

BACKGROUND AND HISTORY

On December 13, 2017 the Planning and Zoning Commission approved three related cases for this property:

- **Case No. WVR-2017-0051**, a request for approval of a **Waiver** to the 50-foot frontage requirement for nine lots within the proposed subdivision of Lot A-19-A-1; and
- **Case No. SIT-2017-0024**, a request for **Site Plan** approval to develop 160 residential lots; and
- **Case No. SUB-2017-0004**, a request for approval of a **Preliminary Subdivision Plat**, creating 160 new residential lots and one commercial lot pertaining to the Property as described, and known as A-19.

The Waiver and Site Plan approvals were final actions. The Preliminary Plat application included 20 conditions of approval, which are attached to this report as Exhibit A. Most of these conditions have been satisfied. Others either pertain to an action that is required at some later date or are technical comments and corrections that need to be addressed prior to or upon application and submittal of construction plans for building permit. All reviewers, including Utilities, Engineering, Fire and Planning support approval of the Final Subdivision Plat. (See also IDRC section below.)

The recommended conditions of approval in this report, as they pertain to future requirements, are included here for reference and continuity. These include requirements related to traffic impacts at or during build-out, code requirements for financial guarantees, and timing requirements carried over from the Development Agreement.

The current application is for Final Subdivision Plat approval. The Los Alamos County Code of Ordinances, Development Code, Sec. 16- 459. - **Relationship between sketch, preliminary and final plat**, states, in part, "No final plat shall be considered by the planning and zoning commission unless it substantially conforms to the approved or conditionally approved preliminary plat." An extensive review of the Final Plat submittal by County staff finds that the Final Plat does substantially conform to the conditionally approved preliminary plat.

There are two differences of note between the Preliminary and Final Plats. First, one lot has been added, bringing the total number of proposed residential lots from the 160 lots approved with the Preliminary Plat review to 161. County staff, from all reviewing departments, found that the addition of this single lot did not substantially change the nature of the proposal or affect demand on infrastructure. The second change with the current submittal reflects the requirement by the Engineering Division to replace the "knuckle" design at the end of the road that was previously named Sherwood, and is now called Mirador, to a traditional cul-de-sac design.

The following history of the property was provided with the previous applications, and is repeated here for the record.

The original 76.33 acre parcel was transferred by the Federal Government to Los Alamos County in 2002. In June of 2008, the Los Alamos County Council adopted the White Rock Center Master Plan/Economic Development Strategy for the purpose of generating economic development in the White Rock area. The Master Plan adopted a vision for the redevelopment of the central core of White Rock and created a preferred development scenario, which featured both residential and mixed-use development on this site. A brief history of actions pertaining to this property includes the following:

- *Property was granted to the County of Los Alamos by the Department of Energy on 24 September, 2002 and zoned F-L.*
- *2005, Los Alamos County divided the lot into three lots, A-19-A, A19-B, and A-19-C, with the anticipation of the development of A-19-B and A-19-C for the Los Alamos Visitors Center and Los Alamos Fire Department Station 3. A-19-B and C were rezoned to P-L. The remaining portion, A-19-A, consisted of 60.37± acres.*
- *In 2012 Design and Development Standards were developed by the County, as property owner, in association with a consultant team, for A-19-A, in anticipation of the development of that tract for housing and mixed-use commercial.*
- *2013 Summary Lot Split in anticipation that the western portion of the property, Lot A-19-A-1, consisting of 34.46± acres, would be developed as single-family residential and that the eastern portion, Lot A-19-A-2, consisting of 25.82± acres, would become a mixed-use center.*
- *2013 Rezoning. Lot A-19-A-1 was rezoned to R-1-5 (Single-Family Residential) and Lot A-19-A-2 was rezoned to DT-NCO (Downtown - Neighborhood Center Overlay).*
- *2015 Development Agreement executed for A-19-A-1.*
- *2017 Development Agreement executed for A-19-A-2, and A-19-A-2 was further divided so that one portion (A-19-A-2A) could be sold for development, and the other (A-19-A-2B) could be retained by the County.*

A-19-A-2B is included for clarity and discussion purposes. However, no development on this County-owned parcel is part of these applications and none is anticipated in the near future.

The Final Subdivision Plat will create 161 new residential lots and one (1) commercial lot on three existing lots on the property known as A-19 in White Rock. In addition to the residential lots, there are a number of Homeowner Association (HOA) tracts that will be developed by the owner and maintained by the HOA. These include small parks, grouped mailbox locations and pedestrian passageways.

The four page Final Subdivision Plat is attached to this report as Exhibit E. Following plat recordation, the developers will work with the County to notify White Rock residents who live near the project of plans and scheduling for blasting, which is necessary due to the preponderance of rock on the site, and in order to install utilities. The project will be developed in phases, based upon infrastructure completion.

The graphic below depicts the basic subdivision layout, showing 161 residential lots, Commercial Tract D, and the revised street names per the County's recommendations.

Mirador Subdivision: 161 single-family lots and one commercial tract, Tract D

The Subdivision review criteria are the same for Preliminary and Final Plat. The majority of the responses are also the same as they were for the Preliminary Plat application and staff report with updates provided as applicable.

Sec. 16-153 - SUBDIVISION REVIEW CRITERIA

The Los Alamos County Code of Ordinances, Chapter 16, Development Code, Sec. 16-153 establishes eight (8) criteria for the Planning and Zoning Commission to use when reviewing an application for subdivision approval. They are:

(1) The development of the property shall substantially conform to the comprehensive plan and shall not be materially detrimental to the health, safety and general welfare of the county.

Applicant Response: The proposed development conforms to the comprehensive plan.

Staff Response: The proposed development is substantially in conformance with the comprehensive plan.

The Future Land Use Map designates Tract A-19-A-1 as Medium to High Density Residential, or 7 to 15 dwelling units per acre. This tract consists of 34.35 ± acres and will contain 109 lots. While this calculates to a density of only 3.11 dwelling units per acre, this number is misleading in that a significant portion of the tract is undevelopable due to steep terrain and underlying rock. The typical lot size within this tract ranges from 5,000 square feet to 11,000 square feet. The smaller lots, at 5,000 square feet, correspond to a density of 8.7 dwelling units per acre. The proposed subdivision will have the "feel" of a neighborhood zoned R-1-5, which is the zoning of Tract A-19-A-1.

The other tract that will be developed for housing and commercial uses, Tract A-19-A-2A, is designated Mixed-Use on the Future Land Use Map. A Site Plan for the eastern portion of this tract will be reviewed at a future time. The majority of the tract will contain 50 residential lots, typically between 5,000 and 9,000 square feet. Both residential and commercial uses are allowed in the Mixed-Use land use designation.

The proposed subdivision supports all of the following Comprehensive Plan Goals and Policies, as previously noted at the time of Preliminary Plat review, and repeated here for the record pertaining to Final Plat approval:

3.1 Housing, Neighborhoods & Growth

3.1.1 HOUSING GOALS

- *HG2. Provide a variety of housing types, sizes and densities*
- *HG3 Promote development of housing stock that would accommodate downsizing households*

HOUSING - LAND USE POLICIES

- *HLU.4. Promote design standards for high quality and good design of new housing*
- *HLU.5. Develop and adopt new and mixed-use zoning districts*
- *HLU.6. Encourage new housing developments in proximity to workplaces*

NEIGHBORHOODS – INFRASTRUCTURE POLICIES

- *NI.1. Maximize the use of County-owned land*
- *NI.2. Make strategic extensions of utilities to support development*

3.1.2 NEIGHBORHOODS GOALS

- *NG2. Promote the creation of a variety of housing options for all segments of the Los Alamos community*

3.1.3 GROWTH GOALS

- *GG.1. Plan for modest growth of an additional 2,000 residents in the next 5 to 10 years*
- *GG.11. Strive to make housing available to those who work in the County and want to live in the County*
- *GG.12. Enhance community pride*

GROWTH - LAND USE POLICIES

- *GLU.1. Maximize the utilization of County-owned land*

GROWTH – INFRASTRUCTURE POLICIES

- *GI.1. Promote public/private partnerships of utility extensions*

3.2 – DEVELOPMENT, REDEVELOPMENT & DOWNTOWN

- *DG.5. Focus increased residential densities on new development in and near downtown*

DEVELOPMENT - LAND USE POLICIES

- *DLU.1. Maximize the use of County-owned land*
- *DLU.6. Ensure greater certainty in the development review process especially if the application conforms to the Comprehensive Plan and the Future Land Use Map*

3.2 – DEVELOPMENT, REDEVELOPMENT & DOWNTOWN

3.2.2 - REDEVELOPMENT GOALS

- *RG1. Redevelop vacant blighted areas and underutilized properties*
- *RG2. Encourage infill development on underused or blighted sites*

3.3 OPEN SPACE, TRAILS & MOBILITY

3.3.2 TRAILS AND GOALS

TRAILS – INFRASTRUCTURE POLICIES

- *TI.1. Create designated, safe, convenient, and well maintained bike and pedestrian pathways and sidewalks*

3.3.3 – MOBILITY GOALS

- *MG.1. Support streets designed for the safety and comfort of all users*
- *MG.2. Maintain and improve transportation and mobility*
- *MG.4. Improve bicycle and pedestrian safety and convenience*

(2) Except for the R-E and R-A zoning districts and developed areas where it is determined by the utilities manager that it is economically unfeasible to extend sewer lines, all subdivisions must be served or be capable of being served by all public utilities.

Applicant Response: Utilities are available and shall be extended into the subdivision. Pre-application meetings have occurred and conceptual utility plans review[ed] and discussed with County Utilities. Wet utilities will extend into the subdivision from [the] intersection of Sherwood Boulevard and State Road 4. Sanitary sewer gravity drains from west to east and no lift station/forcemain is required. Water mains will be looped internal through the subdivision.

Dry utilities have defined points of connection also at the intersection of Sherwood Boulevard and State Road 4 and provide proposed backbone layout to accommodate proposed development.

Staff Response: The subdivision will be served by public utilities. These are water, sewer, gas and electric. All utilities will be located within right-of-way or defined easements, which will be labeled for the type of easement and will include pipe sizes. All residential lots and HOA tracts are encumbered with a ten (10) foot wide public utility easement adjacent to road rights-of-way, except on corner lots, where the easement width adjacent to the side street is five (5) feet wide. There is also a five (5) foot wide public utility easement within all residential lots and HOA tracts on all other side and rear property lines. Pipe sizing and materials have been adjusted per the direction provided by the Utilities Manager.

(3) Provisions shall be made for the safe ingress, egress and circulation of vehicles, bicyclists and pedestrians.

Applicant Response: Subdivision includes extension of Sherwood Boulevard and La Vista Boulevard into the site. La Vista Boulevard is a 72-foot right-of-way which includes concrete sidewalks on each side, curb and gutter, and 28-feet of asphalt concrete roadway accommodating two-way traffic and bicycle lanes. Sherwood Boulevard is a 50-foot right-of-way which includes concrete sidewalks on each side, curb and gutter, and 28-feet of asphalt concrete roadway accommodating two-way traffic and bicycle lanes.

Project also includes development of neighborhood streets. Neighborhood Streets have a 50-foot right-of-way which includes concrete sidewalks on each side, curb and gutter, and 28-feet of asphalt concrete roadway accommodating two-way traffic and on-street parking.

Staff Response: The applicant has worked with the Engineering Division of the Public Works Department to establish the required rights-of-way and street sections. The latter include bicycle lanes on La Vista and on the section of Sherwood/Mirador adjacent to the future commercial development. It was determined that all other roadways/neighborhood streets within the subdivision will be sufficiently low volume traffic as not to warrant dedicated bicycle lanes. Allowing bicycle travel in the automobile lanes frees up the interior streets for parking on both sides. All streets have six (6) foot wide sidewalks on both sides. In addition, pedestrian access will be provided from the end of Confianza Street in A-19-A-2A to Sherwood/Mirador Boulevard.

(4) Adequate provisions shall be made for accepting expected drainage from other properties, for controlling drainage on the site and for directing it to the storm sewer or drainage system, including considerations for impact on downstream properties. The county engineer shall approve, disapprove or recommend modifications to the storm drainage plans.

Applicant Response: A master drainage plan (DMP) for Tract A-19 dated July 6, 2012 was prepared to support previous planning efforts. The DMP analyzed tract A-19 and the Canada del Buey arroyo. The

conclusion of the DMP is that the peak runoff from this site occurs before the peak flow of the main watershed occurs and that no increase in peak flow rate will be experienced downstream of subdivision and as such additional stormwater ponds are not required.

Additional analysis and design for on-site stormwater conveyance is provided and enclosed.

Staff Response: The County Engineer has pointed out the need for additional drainage inlets, especially at the bottom of internal streets that slope toward residential lots. The project engineer concurs with this conclusion and will provide such inlets with final engineering drawings. The County Engineer has also requested that the applicant provide an updated drainage report comparing the assumptions of the Master Drainage Study to the development as currently proposed, including drainage area and design storm for storm sewer and structures.

Specific requirements are outlined in the County Engineer's memorandum, Exhibit B. Most of these requirements do not pertain to the plat; rather they will be addressed with submittal of construction drawings. Those requirements that do pertain to the plat have been addressed.

(5) The necessary easements shall be provided for both existing and proposed utilities in an acceptable manner to the county engineer and utilities manager. Development of the property shall be in accordance with adopted utilities department plans and specifications.

Applicant Response: Proposed development of the property is in accordance with adopted utility department plans and specifications.

Staff Response: It was a condition of the Preliminary Plat that the Final Subdivision Plat identify and label all existing and proposed utility easements to the satisfaction of the County Engineer and the Utilities Manager. This has been done. Locations and sizes of easements have been provided for all public utility infrastructure. Private easements are identified in those locations where one property owner is burdened for the benefit of the adjacent owner.

(6) Outdoor activity areas, parking lots, outside storage areas, outdoor lighting, or other features or uses of the site or structures shall be adequately screened or otherwise controlled to effectively mitigate conflict with existing or potential adjacent land uses.

Applicant Response: The project does not propose to develop outdoor activity areas, parking lots, or outside storage areas. Outdoor lighting such as street lights shall be in accordance with approved County of Los Alamos standards.

Staff Response: HOA tracts are illustrated on the Site Plan and will be developed in conjunction with build-out of the various phases.

The County Engineer has recommended that street lighting match or be similar to that of the nearby neighborhood south of NM 4. He has suggested adjustments to specific locations of street lights. Final street lighting layout and details on foundations, poles, and luminaires will be provided with construction drawings.

As required by Code Section 16-276. – Outdoor Lighting, roadway lighting design categories must be approved by Council upon recommendation of the County Engineer. This action has been scheduled for the Council meeting of May 1, 2018.

(7) The capacity of those public services and facilities required to serve the proposed development (including but not limited to water, sanitary sewer, electricity, gas, storm sewer, streets, etc.) shall be adequate, or made to be adequate if improvements are required.

Applicant Response: Developer has collaborated with public service departments in preparation of the proposed site plan.

Staff Response: As this is a completely new development, all utilities will be brought to the site. The developer and project engineer have collaborated with the Utilities Department on the location, size and configuration of all utilities. The Utilities Department is satisfied with the submittals to date and has provided the applicants with redline comments and corrections to their drawings. The Utilities Manager and Senior Engineer have stated that these are all relatively minor and can be easily accomplished with the final set of construction drawings. It is noted that all utilities shall be installed in compliance with DPU construction standards, which have been provided to the design engineer.

(8) The subdivision is planned to retain as much as possible, all natural features such as watercourses, natural vegetation, terrain, existing structures, historic sites, archaeological sites, and other community assets, which if preserved, will contribute to the overall appearance and quality of life in the county of Los Alamos. If the property is designated on the county zoning map as a hillside area, the subdivision shall comply with the hillside development standards (section 16-576).

Applicant Response: A prominent outcropping exists on the western portion of the property and will be preserved. The site shall be contoured to accommodate the proposed residential and commercial uses. Residential lots shall be graded in a manner to convey storm water to the public right-of-way and no cross-lot drainage shall be permitted.

There are no known existing structures, historic sites, or archaeological sites within the subdivision.

Staff Response: Staff concurs with the applicant's response. The Canada del Buey, a natural drainage channel, traverses the property from west to east. Stormwater exits the site via an existing drainage structure at the far eastern end of the site. Drainage from the new development will be channeled to this arroyo, both by means of piped structures and surface flow. An existing 100± foot electric utility easement lies immediately within the entire northern boundary of the property and has been cleared of most vegetation. The remainder of the two eastern tracts will stay in their current natural state. However, at some time in the future, it is expected that the County will develop active recreational facilities within the open space at the northern end of La Vista. The County has requested and the applicant has provided language on the plat indicating this future use so as to alert future residents to expect development within this area.

INTERDEPARTMENTAL REVIEW COMMITTEE (IDRC)

The IDRC meeting on the Final Subdivision Plat took place on February 16, 2018. The committee reviewed each of the 20 conditions of approval adopted by the Planning and Zoning Commission on December 13, 2017 with the Preliminary Plat. The project manager relayed IDRC comments to the project engineer and owner. In addition, the County Engineer provided a detailed memorandum dated February 28, 2018 (Exhibit B) summarizing all remaining engineering issues. As discussed earlier in this report, all items pertaining to Final Plat have been addressed or are recommended conditions of approval related to future development. Remaining items are those that will be addressed with final construction and engineering plans to be submitted for permitting.

Also, it is noted that the Utilities Department was not able to attend the IDRC meeting but sent an email prior to the meeting indicating their support of moving forward the Final Plat to P&Z. See Exhibit D-2.

Subsequent to the IDRC meeting there was further communication between the project engineer and County staff, including Utilities, Engineering, and Planning, and several revisions were made per direction of staff to the Final Plat provided with this report.

NOTICE

The public hearing for Case No. SUB-2018-005 was noticed in the Los Alamos Daily Post on March 8, 2018, and posted on March 9, 2018. Property owner notices were mailed to all owners of real property located within 500 feet of the subject property, in accordance with, and in excess of the requirements of Article V, Section 16-192 of the Los Alamos County Development Code. See Exhibit C, a map of the properties to which notice of these cases was sent and a list of those property owners. No comments or concerns had been received as of Thursday, March 22, 2018.

FINDINGS OF FACT – Final Subdivision Plat

1. Notice of this public hearing, setting forth the nature of the request, the specific parcel of property affected, and the date, time and place of the public hearing, was announced and published in The Los Alamos Daily Post on March 8, 2018, and property owners of real property located within 500 feet of the subject property were notified of this public hearing, all in accordance with the requirements of §16-192 of the Los Alamos Development Code.

2. The request is for approval of a Final Subdivision Plat for 161 single-family residential lots and one commercial lot.

3. The subdivision proposed is permitted within the R-1-5 and DT-NCO zoning districts, subject to review and approval by the Planning & Zoning Commission.

4. The subject property is currently addressed as 95 State Road 4.

5. The subject property is currently undeveloped.

6. The subject property is zoned R-1-5 (Single-family Residential) and DT-NCO (Downtown – Neighborhood Center Overlay) as described in §16-533 and §16-540 of the Los Alamos County Development Code.

7. Single-family residential land uses are permitted uses in the R-1-5 and DT-NCO, per the Use Index Table contained in §16-287.

8. Issues brought forward at the IDRC meeting conducted on February 16, 2018, and subsequently, are identified and addressed in this report, in the memorandum from Engineering, and in the recommended conditions of approval.

9. Upon review by the IDRC, the application was unanimously (6-0) recommended for approval, subject to the recommended conditions of approval as outlined in this report.

EXHIBITS

Exhibit A: P&Z Preliminary Plat Conditions of Approval

Exhibit B: Eric Martinez, County Engineer, Memorandum February 28, 2018

Exhibit C: Map and List of Notified Property Owners (500 Feet)

Exhibit D: IDRC Report (D-1) and Email from J. Alarid, Utilities Manager (D-2)

Exhibit E: Applicant Materials:

- Application
- Final Plat – 4 pages (11” x 17”)

PLANNING & ZONING COMMISSION Meeting of : December 13, 2017

<u>Case No. SUB-2017-0004</u>: A-19 Preliminary Subdivision Plat

Approved list of conditions:

1. A cul-de-sac or other turnaround approved by Public Works shall be provided at the far western end of Sherwood Boulevard.

2. The applicant shall submit a Final Subdivision Plat for Planning and Zoning Commission approval, which is in substantial conformance with the Preliminary Plat.

3. All design issues must be resolved to the satisfaction of the County Engineer and the Utilities Manager prior to approval of Final Plat.

4. Drawings submitted for Final Plat must be at 95% or greater completion.

5. Add keyed notes and provide corrections to utility pipe sizes and materials per redline comments from the Utilities Manager transmitted on December 8, 2017.

6. All easements must be shown and labeled on the plat. Anything other than ROW needs a defined use easement, including any shared utility, drainage and/or pedestrian easements.

7. Provide evidence of performance bond prior to grading.

8. Place the following note, or similar language, on the plat, overlapping the westernmost portion of Lot 2B (Tract C) and the easternmost portion of A-1 (Tract A), "Future recreational facilities by County."

9. Per the terms of the Development Agreement for A-19-A-2, the developer shall submit plans for the development of the commercial tract, Tract D, no later than 60 months from the date of closing on A-19-A-2, or September 22, 2022.

10. Street lighting shall be provided per the standards in the Los Alamos County Code of Ordinances, Chapter 16, Sec. 16-276 – Outdoor Lighting, and subject to approval by the County Engineer. La Vista and Sherwood (NM 4 to the commercial lot line) qualify as an RLDC-5 (continuous lighting), while the local streets qualify under RLDC-4 (roadway with lighted intersections and partial lighting). Partial lighting shall be provided at curvatures in the roadway and at cul-de-sacs.

11. An updated Traffic Impact Analysis (TIA) shall be provided prior to Final Plat. Include updates to trip distribution and capacity analysis, and a traffic signal warrant study at both intersections, noting at what stage of development signals will be warranted.

12. Provide an updated drainage report comparing the assumptions of the Master Drainage Study to the development as currently proposed, including drainage area and design storm for storm sewer and structures.

13. Provide grading details along with details for proposed drainage structures, stormwater, erosion, stabilization and sediment controls, including any proposed Low Impact Development (LID)/green infrastructure stormwater management techniques.

14. Project Engineer shall perform an analysis of the Fire Code (NFPA 101) to determine if the residence on Lot 27, Block 1 must be sprinklered. If it is required, this shall be noted on the plat.

15. Provide additional stormwater inlets subject to the approval of the County Engineer to prevent on-lot flooding.

16. Street names are subject to approval by the County Surveyor and P&Z on the Site Plan and Final Plat. Propose a different name for "Valle" as the County already has streets named "Valle del Sol" and "Valle Vista". A street name should not change in the middle of its course. It is recommended that "Valle" and "Cadena" Streets be renamed "Cadena Loop".

17. Show lot addresses as assigned by the County Surveyor on the Final Plat.

18. Water lines must be fully looped throughout the site per the direction of the Utilities Manager.

19. Submit Plan & Profile information subject to approval of the County Engineer and Utilities Manager prior to Final Plat.

20. Label plat to show Public Access Easements through the subdivision ~~and specifically through Parcel 1 from State Road 4 to the open space on Tract B~~.

MEMORANDUM

LOS ALAMOS

Public Works
1000 Central Avenue, Suite 160
Los Alamos, NM 87544
P 505.662.8150 F 505.662.8109
losalamosnm.us

DATE: February 28, 2018

TO: Tamara Baer, RLA, ASLA – Planning Manager

THROUGH: Philo Shelton, P.E. – Public Works Director PS

FROM: Eric Martinez, P.E., CFM – County Engineer EM

CC: Paul Andrus, Community Development Director

RE: Mirador Subdivision – Tract A-19 Final Subdivision Plat; Case SUB-2018-0005

In accordance with the February 16, 2018 IDRC meeting and the conditions of approval (particularly #1, 3, 4, 6, 10, 11, 12, 13, 15, 17 and 19) imposed by the Planning & Zoning Commission and accepted verbally by the applicant at the December 13, 2017 Planning & Zoning Meeting, the following conditions of approval are provided:

The Applicant shall address the following conditions related to the plat prior to final plat approval:

- Sherwood Blvd. (north of NM 4) to be renamed Mirador—provide street label/type, i.e. Street, Avenue, Road, etc.
- Indicate address for each lot as assigned by the County Surveyor.
- Adjust right of way boundaries to modify the knuckle geometric design to a traditional cul-de-sac at the western Cadena/Sherwood (now Mirador) Intersection.
- Ensure right of way boundary accommodates a minimum curb return radii of 30 ft. for collector streets (i.e. La Vista, Mirador) and 25 ft. for local streets and make adjustments if necessary.

Further, the following shall be included as a condition of final plat approval:

- The Applicant shall be responsible for future installation of a traffic signal and related equipment at the NM 4/Mirador/Sherwood Blvd. intersection if engineering warrants are met.
- An updated Traffic Impact Study shall be provided upon any of the following:
    - Site plan submittal for development of Commercial Tract D.
    - As required by the County Engineer based upon traffic operational performance, safety and/or capacity issues during or upon completion of residential build-out.
    - As required by the New Mexico Department of Transportation.

The Applicant, through their engineer, shall address all technical comments and corrections listed below to the satisfaction of the County Engineer prior to or upon application and submittal of construction plans for building permit:

DESIGN PLANS

- General Notes:
  - Add Minimum Material Testing Requirements (Subject to County Engineer Approval)
  - Add NDPES Requirements (SWPPP, NOI, NOT)
  - Add access to Visitors Center shall be maintained at all times
  - Add LAC Excavation & Traffic Permit Requirements
  - Add LAC Noise Ordinance Provisions
- Roadway:
  - Replace knuckle geometric design with a traditional cul-de-sac at the western Cadena/Mirador Intersection.
  - Add street name signs—use County detail for guide sign mounting on square tubing (attached) and follow MUTCD for letter heights below. Note: NM 4 is a higher speed facility requiring larger letter heights.

2009 Edition - Revision 2 Page 163

Table 2D-2. Recommended Minimum Letter Heights on Street Name Signs

Type of Mounting	Type of Street or Highway	Speed Limit	Recommended Minimum Letter Height	
			Initial Upper-Case	Lower-Case
Overhead	All types	All speed limits	12 inches	9 inches
Post-mounted	Multi-lane	More than 40 mph	8 inches	6 inches
Post-mounted	Multi-lane	40 mph or less	6 inches	4.5 inches
Post-mounted	2-lane	All speed limits	6 inches*	4.5 inches*

* On local two-lane streets with speed limits of 25 mph or less, 4-inch initial upper-case letters with 3-inch lower-case letters may be used.

  - Add curve warning signs w/speed plaque for curves w/15 mph design speed.
  - Revise stop sign size from 24" to 30"; provide stop signs at all intersections and stop bars at intersections with collector streets; determine if a 3-way stop at La Vista/Mirador is necessary.
  - Delete 6" Bike Lane Stripe on local roads
    - Delete bike lane and striping from local road Typical Section
  - La Vista: Provide bike lane pavement markings.
  - Mirador:
    - NM 4 to western boundary of Tract D: Remove the diagonal stripe on the shoulder area; provide center stripe, bike lanes w/bike lane symbols and bike lane ends/begins signs; transition the east to southbound bike lane between the two vehicular lanes at NM 4.
    - Western boundary of Tract D to La Vista: Remove shoulder/bike lane stripe and provide sharrows.
  - Provide Street Light placement adjustments as recommended by the County Engineer; provide material details i.e. foundation, pole, & luminares.

- Provide missing information on Roadway Plan & Profile sheets (i.e. stationing, profile grades, etc.)
- Clarify driveway locations & size, or address how this is to be determined.

- Grading & Drainage:
  - Cadena (north side) and Confianza West: Provide superelevated cross section around curves at bottom of steep grades to maintain flow within the street section.
    - Ensure bulb-out areas and finished floor elevations are elevated above highest adjacent flow line and projected water surface levels for the 100 year storm (or better).
    - Recommend Low Impact Development (LID)/water harvesting measures within the HOA lots to reduce street flow (quantity & velocity) while providing irrigation to planned landscaped areas.
  - Cadena/Sherwood (west intersection): Provide a valley gutter (east to west) with revised cul-de-sac geometry.
    - Recommend extension of the storm drain system on Sherwood with additional inlet to capture drainage from Cadena's steep grade; otherwise, provide hydrological calculations/models demonstrating 100 yr. water surface levels are contained within the street curb and gutter section.
  - Provide additional storm drop inlets for increased storm water capacity on Confianza East as recommended by Applicant's engineer.
  - Protect drainage outfalls from child entry.
  - Metal (Ultraflow or similar)/HDPE/Polyethylene pipe may be used in lieu of RCP; result would reduce costs and wall thickness while increasing available space.
    - Recommend a 24" minimum storm drain pipe size for ease of maintenance.
  - Confirm if the proposed 24" storm drain pipe near Manhole #5 is of adequate size given the collection area.
  - Label manholes on sheet SD1 for ease of locating them on plan and profiles sheets.
  - Confirm if proposed 24" storm drain pipe is of sufficient size for future commercial area.
  - On storm drain profile sheets, provide shaded areas to illustrate utilities that may conflict particularly with lateral crossings.
  - All retaining walls proposed shall be designed and stamped by a NM licensed engineer.
  - The Applicant anticipates steep slopes within the development will consist largely of rock material. Provide a contingency for terrain management/erosion control of loose material on steep slopes to mitigate wash out and sediment transport on sidewalks, streets and the storm drain system.

DRAINAGE REPORT

- Provide a 100 yr. Base Flood Elevation (BFE) within Flood Zone A at Canada del Buey and a water surface elevation after build out and include a "No-Rise" Certification (sample below). County provided topo map south of NM 4 (500'x300') attached as requested by Applicant's engineer for this purpose.

  No-Rise Certification Sample:
  Approximately 0.XX acres (or square feet) of the proposed project is located in Zone A of the 100-year Floodplain, per FEMA Flood Insurance Rate Maps 35028C0130C dated 07/18/2011 within the Canada del Buey. The additional storm drainage from the proposed project would not significantly affect the functions and values of floodplains in the project area, nor increase or impact the 100-year flood elevations of the Canada del Buey, due to the...(support your findings, i.e. modeling mentioned above shows no change in BFE/WSEL, etc.).
- Page 2, Tables – Check math as there appears to be an addition error.
- Indicate if roof top and driveway drainage considered in drainage volume calculations and sizing of infrastructure.
- Discuss the parameters and assumptions in quantifying runoff for the commercial area.
- Discuss inlet and roadway storm capacity (i.e. 10, 25, 50, or 100 year).
- Discuss 401/404 Permit requirements for outfall construction within Canada del Buey (water of the US) and developers follow up actions for compliance. Note, County Code excerpt below regarding duties and responsibilities of the floodplain administrator (i.e. County Engineer):

  Chapter 24, Article II, Division 4, Section 24-72, Paragraph 4:
  Review permits for proposed development to assure that all necessary permits have been obtained from those federal, state or local governmental agencies (including Section 404 of the Federal Water Pollution Control Act Amendments of 1972, 33 U.S.C. 1334) from which prior approval is required.

TRAFFIC IMPACT STUDY

- Study may also require review by NMDOT District Five Traffic Engineer. Applicant is responsible to coordinate with NMDOT.
- NM 4/La Vista: Re-analyze with northbound & southbound shared Left/Thru lanes.

GEOTECHNICAL REPORT

- Provide all findings of geotechnical investigations and sampling.

A-19
300' Required Notice
500' Actual Notice

0 250 500 1,000 Feet

EXHIBIT 2

Exhibit C

ADDRESS	OWNERNAME	OWNERADDRESS
80 STATE ROAD 4	WHITE ROCK BAPTIST CHURCH	80 LA PALOMA DR
99 LA VISTA DR	COFFELT KERRY P & LORI J	99 LA VISTA DR
74 LA PALOMA DR	BLISS JOHN & NANCY	74 LA PALOMA DR
72 LA PALOMA DR	LANG PHILLIP M	72 LA PALOMA DR
70 LA PALOMA DR	ILG WENDY E	70 LA PALOMA DR
77 LA PALOMA DR	REINOVSKY FAMILY TRUST	77 LA PALOMA DR
68 LA PALOMA DR	HILL BRANDON & ANGELE	68 LA PALOMA DR
64 LA PALOMA DR	SALINAS HILARIO L	64 LA PALOMA DR
101 LA VISTA DR	READ GARY W & LAURA L REV TRUST	101 LA VISTA DR
62 LA PALOMA DR	LILES LAURA A	62 LA PALOMA DR
60 LA PALOMA DR	SHORT KERMIT M	60 LA PALOMA DR
67 LA PALOMA DR	STORMS STEVEN A	67 LA PALOMA DR
58 LA PALOMA DR	NARANJO RICHARD M & KELLY R	58 LA PALOMA DR
56 LA PALOMA DR	COURT DONALD B	56 LA PALOMA DR
63 LA PALOMA DR	O'DONNELL JAMES P & KATE L	63 LA PALOMA
59 LA PALOMA DR	BRENT ROY W JR & DIANE L	59 LA PALOMA DR
97 MESA VERDE DR	TUGGLE DOUGLAS L Y KRISTOPHER S	97 MESA VERDE ST
9999 GRAND CANYON DR	LOS ALAMOS COUNTY	P O BOX 30
53 LA PALOMA DR	BROTHERS BRAD D & JULIE ANN	53 LA PALOMA
51 LA PALOMA DR	PETER WILLIAM K REVOC TRUST	5710 KINGSWOOD ROAD BETHESDA,MD
15 GRAND CANYON DR	CHURCH OF THE NAZARENE	15 GRAND CANYON DR
49 LA PALOMA DR	MORIN MARIO	49 LA PALOMA DR
47 LA PALOMA DR	MANSELL LESLIE	47 LA PALOMA DR
45 LA PALOMA DR	THACKER DOUGLAS J & EMILY NIKAY-	45 LA PALOMA
43 LA PALOMA DR	CARROLL DAVID W & JANICE	43 LA PALOMA DR
16 GRAND CANYON DR	CRAWFORD PAULA & VIVES THOMAS	16 GRAND CANYON
20 STATE ROAD 4	ACOMB FAMILY REVOCABLE TRUST	20 STATE ROAD 4
95 STATE ROAD 4	INCORPORATED COUNTY OF LOS ALAMOS	P.O. BOX 30
95 STATE ROAD 4	INCORPORATED COUNTY OF LOS ALAMOS	P.O. BOX 30
108 STATE ROAD 4	INCORPORATED COUNTY OF LOS ALAMOS	P.O. BOX 30
115 STATE ROAD 4	INCORPORATED COUNTY OF LOS ALAMOS	P.O. BOX 30
118 STATE ROAD 4	INCORPORATED COUNTY OF LOS ALAMOS	PO BOX 30
116 STATE ROAD 4	INCORPORATED COUNTY OF LOS ALAMOS	PO BOX 30
9999 SHERWOOD BLVD	LOS ALAMOS COUNTY	P O BOX 30
11 SHERWOOD BLVD	CANTRUP PETER H REVOC TRUST	PO BOX 4610
106 LONGVIEW DR	GARTZ DAVID R & STACY & GARTZ REVOC LIVING TRUST	305 VALLE DEL SOL
31 SHERWOOD BLVD	GIBSON PRODUCTS CO	1014 VINE ST 7TH FLOOR

EXHIBIT 2

Exhibit C

10 SHERWOOD BLVD	LOS ALAMOS COUNTY	P O BOX 30
118 STATE ROAD 4	TIME OUT PIZZERIA LLC	118 STATE ROAD 4
116 STATE ROAD 4	TIME OUT PIZZERIA LLC	118 STATE ROAD 4
9999 LOUISE AVE	LOS ALAMOS COUNTY	P O BOX 30
9999 LOUISE AVE	LOS ALAMOS COUNTY	P O BOX 30
STATE ROAD 4	INCORPORATED COUNTY OF LOS ALAMOS	PO BOX 30
54 LA PALOMA DR	HILL THOMAS R	54 LA PALOMA DR
52 LA PALOMA DR	SPRINKLE JAMES K JR & JONES JENIFER REVOC LIVING TRUST	52 LA PALOMA DR
50 LA PALOMA DR	TEMPLE BRIAN A & KIMBERLY	50 LA PALOMA DR
46 LA PALOMA DR	FERENBAUGH ROGER W	46 LA PALOMA DR
48 LA PALOMA DR	JULIANI RICHARD P & AUDREY M	48 LA PALOMA
44 LA PALOMA DR	ANDERSON SCOTT & JAYNE	44 LA PALOMA DR
50 STATE ROAD 4	INCORPORATED COUNTY OF LOS ALAMOS	P.O. BOX 30
42 LA PALOMA DR	MEDRICK CHARLES G & GAIL P	42 LA PALOMA DR
40 LA PALOMA DR	JAMES HARGIS G & ENRIQUEZ BIANCA M	40 LA PALOMA DR
129 STATE ROAD 4	INCORPORATED COUNTY OF LOS ALAMOS	P.O. BOX 30
133 STATE ROAD 4	DEPT. OF THE INTERIOR/BUREAU OF INDIAN AFFAIRS/PUEBLO OF SAN ILDEFONSO	PO BOX 26567, ALBUQUERQUE, NM
95 STATE ROAD 4	INCORPORATED COUNTY OF LOS ALAMOS	P.O. BOX 30

IDRC REPORT

Case: SUB-2018-0005 - A-19 Final Plat

Date of Meeting: February 16, 2018

Member/ Alternate	Dept.	Attended	Recommended Conditions/Comments	Approved	Approved w/ Conditions	Denied
~~M. Arellano / J. Dudziak~~	Building					
T. Baer	Planning	X	See attached.		X	
D. Erickson	Traffic	X		X		
~~J. Alarid / P.Guerrerortiz~~ **	Utilities			X		
~~A. Gurule / L. Martinez~~	Env. Serv.					
E. Martinez	PW	X	See attached.		X	
A. Millmann / J. Naranjo	Planning	X		X		
J. Wetteland / S. Rinaldi	Fire	X	See attached.		X	
OTHERS ATTENDING:						
Chris Wilson	Parks	X				
Jason Romero	PW	X				
Lucas Fresquez	Assessors	X				

*** Blue strikethrough indicates not present at meeting.**
** No representation from Utilities. However, voted to approve via email.

MOTION: Anders Millmann made a motion to **approve with conditions** (items pending from Preliminary Plat Conditions of approval- see staff report). Eric Martinez seconded.

Motion passed 6-0.

EXHIBIT 2

Exhibit D-1

From: Alarid, James

Sent: Thursday, February 15, 2018 4:49 PM

To: Baer, Tamara

Cc: Guerrerortiz, Patricio; Marez, Stephen

Subject:IDRC Tomorrow

Tamara,

We have completed a cursory review of the A-19 construction drawing submittal. The utility plan set is complete and we can coordinate our detailed comments with the consultant over the next few weeks. We will not have a representative in tomorrow's IDRC. Out department's recommendation is to approve the project going forward to the P&Z for final plat approval.

Let us know if you have any question.

Sincerely,

James

LOS ALAMOS
Community Development

SUBDIVISION APPLICATION

Los Alamos County Community Development Department
1000 Central Ave, Suite 150, Los Alamos NM 87544
(505) 662-8120

SUB-2018-0005

This application is for: SKETCH PLAN ☐ **PRELIMINARY PLAT** ☐ **FINAL PLAT** ☒

Property to be Subdivided: 95 State Rd. 4
Address

Legal description: Tract A-19-A-1, Tract A-19-A-2A, Tract A-19-A-2B Part of Ramon Vigil Grant

Zoning District: High Denisty/ Overlay **Area** (Acres): 60.974 **# Lots Proposed:** 161

Vacant Land
Current Use

Related Applications (if any):

APPLICANT (Unless otherwise specified, all communication regarding this application shall be to Applicant):

Name: Huitt-Zollars, Inc c/o Scott Eddings Phone: 505-892-5141 Cell #: 505-235-7211
Please Print

Address: 333 Rio Rancho Blvd, Rio Rancho, NM 87124 Email: Seddings@huitt-zollars.com

SIGNATURE **DATE** 2/8/18

PROPERTY OWNER(s) (If different from Applicant) ☐ **Check here if same as above**

Name: Adam Thornton Phone: 505-338-1418 Cell #: 505-338-1418
Please Print

Address: P.O. Box 1443, Corrales, NM 87048 Email: athornton@rayleehomes.com

My/Our signature(s) below indicates that I/We authorize the Applicant to make this subdivision application on my/our behalf

SIGNATURE **DATE** 2-8-18

SIGNATURE **DATE**

Revised: 02/08/18

SUBDIVISION REVIEW CRITERIA:

The Los Alamos County Code of Ordinances, Chapter 16, Development Code, Sec. 16-153 establishes eight (8) criteria for the Planning and Zoning Commission to use when reviewing an application for subdivision approval. Please review each of the criteria listed and describe how your application meets the criteria. You will also be asked to discuss the criteria at your public hearings. Attach additional sheets as needed.

(1) The development of the property shall substantially conform to the comprehensive plan and shall not be materially detrimental to the health, safety and general welfare of the county.

The proposed development conforms to the comprehensive plan.

(2) Except for the R-E and R-A zoning districts and developed areas where it is determined by the utilities manager that it is economically unfeasible to extend sewer lines, all subdivisions must be served or be capable of being served by all public utilities.

Utilities are available and shall be extended into the subdivision. Pre-application meetings have occurred and conceptual utility plans review and discussed with County Utilities. Wet utilities will extend into the subdivision from intersection of Sherwood Boulevard and State Road 4. Sanitary sewer gravity drains from west to east and no lift station/forcemain is required. Water mains will be looped internal through the subdivision.

Dry utilities have defined points of connection also at the intersection of Sherwood Boulevard and State Road 4 and provide proposed backbone layout to accommodate proposed development

(3) Provisions shall be made for the safe ingress, egress and circulation of vehicles, bicyclists and pedestrians.

Subdivision includes extension of Sherwood Boulevard and La Vista Boulevard into the site.
La Vista Boulevard is a 72-foot right-of-way which includes concrete sidewalks on each side, curb and gutter, and 28-feet of asphalt concrete roadway accommodating two-way traffic and bicycle lanes.
Sherwood Boulevard is a 50-foot right-of-way which includes concrete sidewalks on each side, curb and gutter, and 28-feet of asphalt concrete roadway accommodating two-way traffic and bicycle lanes.

Project also includes development of neighborhood streets. Neighborhood Streets have a 50-foot right-of-way which includes concrete sidewalks on each side, curb and gutter, and 28-feet of asphalt concrete roadway accommodating two-way traffic and on-street parking.

(4) Adequate provisions shall be made for accepting expected drainage from other properties, for controlling drainage on the site and for directing it to the storm sewer or drainage system, including considerations for impact on downstream properties. The county engineer shall approve, disapprove or recommend modifications to the storm drainage plans.

A master drainage plan (DMP) for Tract A-19 dated July 6, 2012 was prepared to support previous planning efforts. The DMP analyzed tract A-19 and the Canada De Buey arroyo. The conclusion of the DMP is that the peak runoff from this site occurs before the peak flow of the main watershed occurs and that no increase in peak flow rate will be experienced downstream of subdivision and as such additional stormwater ponds are not required.

Additional analysis and design for on-site stormwater conveyance is provided and enclosed.

(5) The necessary easements shall be provided for both existing and proposed utilities in an acceptable manner to the county engineer and utilities manager. Development of the property shall be in accordance with adopted utilities department plans and specifications.

Proposed development of the property is in accordance with adopted utility department plans and specifications.

(6) Outdoor activity areas, parking lots, outside storage areas, outdoor lighting, or other features or uses of the site or structures shall be adequately screened or otherwise controlled to effectively mitigate conflict with existing or potential adjacent land uses.

The project does not propose to develop outdoor activity areas, parking lots, or outside storage areas. Outdoor lighting such as street lights shall be in accordance with approved County of Los Alamos standards.

(7) The capacity of those public services and facilities required to serve the proposed development (including but not limited to water, sanitary sewer, electricity, gas, storm sewer, streets, etc.) shall be adequate, or made to be adequate if improvements are required.

Developer has collaborated with public service departments in preparation of the proposed site plan.

(8) The subdivision is planned to retain as much as possible, all natural features such as watercourses, natural vegetation, terrain, existing structures, historic sites, archaeological sites, and other community assets, which if preserved, will contribute to the overall appearance and quality of life in the county of Los Alamos.

A prominent outcropping exists on the western portion of the property and will be preserved. The site shall be contoured to accommodate the proposed residential and commercial uses. Residential lots shall be graded in a manner to convey storm water to the public right-of-way and no cross-lot drainage shall be permitted.

There are no known existing structures, historic sites, or archaeological sites within the subdivision.

REQUIRED SUBMITTALS:

Check each of the boxes to indicate that you have attached two (2) full size (24" x 36") paper copies of each of the following, and one complete electronic copy of all materials:

- [X] **Proof of property ownership.**
- [X] **A Vicinity map, showing the boundaries of the property to be subdivided, and all adjacent lots within 300 feet.**
- [X] **A scaled Plat or survey at 1 inch to 100 feet, including all the following information:** (Note: For smaller properties, a legal description with metes and bounds, may be acceptable. Check with CDD staff.)
- [X] Locate and label all existing utility lines on the site. (Existing gas and electric service lines must be located by the Los Alamos County Utilities Department prior to submittal of this application.)
- [X] Show and label the footprint of all existing buildings and structures on the site.
- [X] Show the footprint of all buildings and public rights-of-way within 20 feet of all boundaries of the site.
- [X] Show, dimension and label all existing and proposed easements.

THIS SECTION TO BE COMPLETED BY THE COMMUNITY DEVELOPMENT DEPARTMENT

For County Use:

Date of Submittal: 2/9/18 ***Staff Initial:*** [illegible]

CDD Application Number: SUB-2018-0005 ***Fees Paid:*** NA

Additional information for Subdivision Applicants:

Sec. 16-459. - Relationship between sketch, preliminary and final plat.

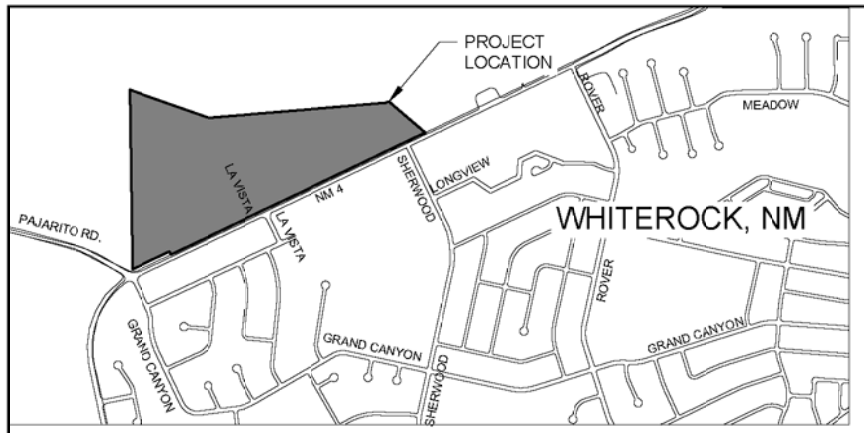
No preliminary plat shall be considered by the planning and zoning commission unless it substantially conforms to the approved or conditionally approved sketch plan. No final plat shall be considered by the planning and zoning commission unless it substantially conforms to the approved or conditionally approved preliminary plat. Plats that do not substantially conform shall be resubmitted at the sketch plat stage. Plats containing five lots or less after utility or public or private roadway improvements under article VI of this chapter may submit sketch, preliminary and final plats as a single plat for approval.

Sec. 16-458. - Subdivision time periods.

(a) There shall be no more than six months between final action on a sketch plan and application for preliminary plat. There shall be no more than 12 months between final action on a preliminary plat and application for final plat. Approved or conditionally approved final plats shall be filed by the applicant or agent with the county clerk within 12 months of the date of final action on a final plat.

(b) Whenever the time period for filing of the application or filing with the county clerk expires, any and all applications for subdividing the same parcel of property shall be treated as a new application.

FINAL PLAT
MIRADOR
TRACT A-19-A-1, A-19-A-2A AND A-19-A-2B
BEING A PART OF THE RAMON VIGIL GRANT
LOS ALAMOS COUNTY, NEW MEXICO
MARCH 2018



VICINITY MAP

NTS

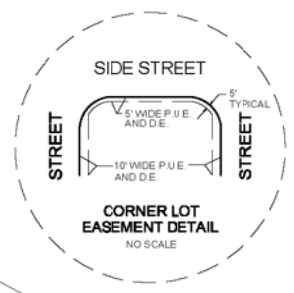
FOR STREET ADDRESSING REFER TO SHEET 3

DOCUMENTS

1. Plat of "Tract A-19-A-2A & A-19-A-2B", A Subdivision of Tract A-19-A-2, Part of the Ramon Vigil Grant, County of Los Alamos, State of New Mexico, Recorded September 15, 2017, in Book 177, Page 795, as Document No. 231910, Los Alamos County, New Mexico.
2. Plat entitled, "Los Alamos County, Tracts A-19-A-1 & A-19-A-2, a Subdivision of Tract A-19-A, Part of the Ramon Vigil Grant", Recorded August 8, 2013, in Book 164, Page 175, as Document No. 218290, Los Alamos County, New Mexico.

EASEMENTS

1. Existing Power Line / Utility Easement (width varies) (Plat Book 129, Page 632, Document No. 183747).
2. Existing Power Line / Utility Easement (width varies) (Plat Book 129, Page 632, Document No. 183747).
3. Existing 40' Water Easement #22 (Plat Book 8, Page 100, Document No. 161648).
4. Existing Stream Gauge Easement (Plat Book 107, Page 780, Document No. 161584). (as shown on plat filed in Plat Book 129, Page 632, Document No. 183747).
5. Existing 50' Ingress / Egress and Utility Easement (vacated by this plat).
6. 44.2' Public Access and Utility Easement (granted by this plat).
7. 20' Public Utility Easement (granted by this plat).
8. 40' Public Utility and Pedestrian Access Easement (granted by this plat).
9. Public Utility Easement - Width Varies (granted by this plat).
10. Electric Utility Easements - Size Varies (granted by this plat).



DEDICATION

The real estate shown and described in this plat is surveyed and subdivided with the free consent of and in accordance with the wishes and desires of the undersigned Owner(s) thereof, and the Owner(s) of such real estate do hereby dedicate all public rights-of-way and parks which are shown hereon to the County of Los Alamos, New Mexico subject to the easements shown or noted hereon, and do hereby grant any and all easements shown or noted on the plat including the right of ingress and egress.

OWNERS (TRACT A-19-A-2A AND A-19-A-2B): LOS ALAMOS COUNTY

HARRY BURGESS, LOS ALAMOS COUNTY MANAGER DATE

STATE OF _____)
SS
COUNTY OF _____)

On this day of , 20 , before me the undersigned Notary Public in and for said County and State personally appeared Harry Burgess, who being by me duly sworn, did say that he is the County Manager of Los Alamos County, New Mexico, that he signed this instrument on behalf of said County as the free act and deed of said County.

Notary Public

My Commission Expires _____

OWNERS (TRACT A-19-A-1): SITE A-19-A-1 ACQUISITION GROUP LLC

C. ADAM THORNTON, MANAGING MEMBER DATE

STATE OF _____)
SS
COUNTY OF _____)

On this day of , 20 , before me the undersigned Notary Public in and for said County and State, personally appeared C. Adam Thornton, who being by me duly sworn, did say that he is the Managing Member of Site A-19-A-1 Acquisition Group LLC, a New Mexico corporation organized under the laws of the State of New Mexico and that he signed this instrument on behalf of said corporation as the free act and deed of said corporation.

Notary Public

My Commission Expires _____

NOTES

1. Bearings are New Mexico State Plane Grid Bearings (NAD 83 Central Zone)
2. Distances shown are ground distances.
3. The combined ground to grid factor is: 0.999670469 (1.000333064).
4. Elevations are NAVD88.
5. No buildings existing on the surveyed property.

BOUNDARY EVIDENCE: UNLESS OTHERWISE INDICATED:

1. Found ¾" rebar with 3 ¼" aluminum cap stamped "LS 8732".
2. Found NMDOT T-rail.
3. Found ⅝" rebar with 1 ¼" orange plastic cap stamped "LS 15700".

Found moruments are tagged with a washer stamped "LS 7482".

NOTES: UNLESS OTHERWISE INDICATED:

Parcels 1 thru 9 will remain in private ownership to be maintained by a Homeowners Association (HOA). Tracts A, B and C are being dedicated to the County of Los Alamos by this plat. Also to vacate an existing 50' Ingress/Egress and Utility Easement, to eliminate previous Tract lines, and to create a 50' Public Access & Utility Easement, a 20' Public Utility Easement, 3 variable width Public Utility Easements, 20' wide Electrical Utility Easements, 20' x 20' Electrical Utility Easements and a 40' Public Utility & Pedestrian Easement.

There is a ten (10) foot wide public utility easement within all lots and tracts adjacent to road rights-of-way being granted hereon except for corner lots where the easement width adjacent to the side street is only five (5) feet wide per the detail shown hereon. There is also a five (5) foot wide public public utility easement within all lots and tracts on all other side and rear property lines.

All property corners are found or set with a 5/8" x 24" rebar with red or yellow plastic cap stamped LS 7482.

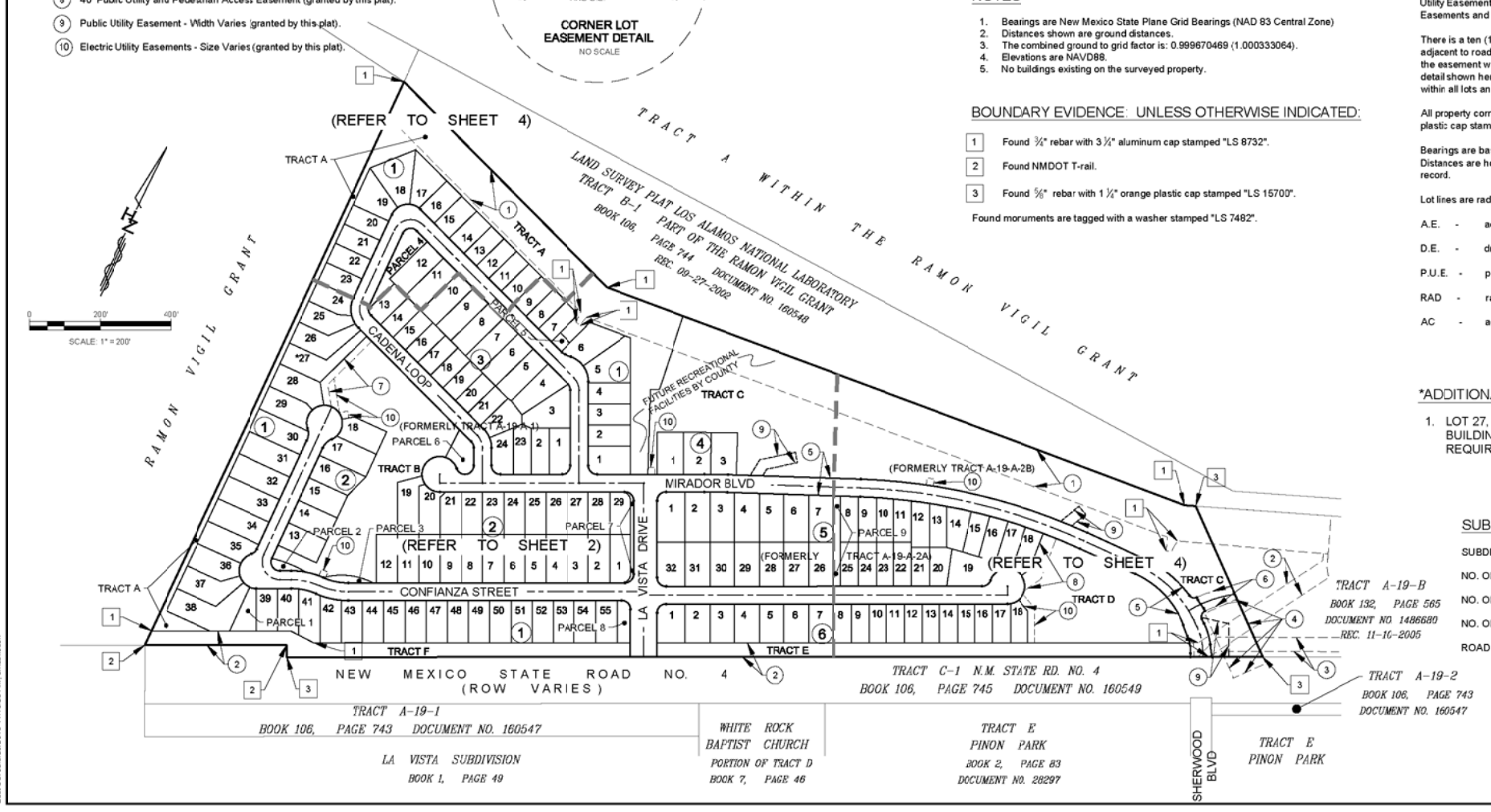
Bearings are based on those for Tract A-19-A, Los Alamos County Tracts. Distances are horizontal ground distances in feet. All bearings and distances are record.

Lot lines are radial or perpendicular to street lines (unless otherwise indicated).

A.E. - access easement
D.E. - drainage easement
P.U.E. - public utility easement
RAD - radial bearing
AC - acres

*ADDITIONAL NOTES

1. LOT 27, BLOCK 1 IS SUBJECT TO FIRE MARSHALL REVIEW OF BUILDING PERMIT TO CONFIRM FIRE SPRINKLER REQUIREMENTS.



SUBDIVISION DATA

SUBDIVISION	MIRADOR	PLAT ACRES	60.293
NO. OF LOTS	161	LOT ACRES	28.914
NO. OF PARCELS	9	PARCEL ACRES	0.896
NO. OF TRACTS	6	TRACT ACRES	21.434
ROAD MILES	1.401	ROAD ACRES	9.049

DESCRIPTION

A CERTAIN TRACT OF LAND SITUATE WITHIN THE RAMON VIGIL GRANT, LOS ALAMOS COUNTY, NEW MEXICO, SAID TRACT BEING ALL OF TRACTS A-19-A-2A, A-19-A-2B, AND A-19-A-1, AS SHOWN AND DESIGNATED ON THE PLAT THEREOF, RECORDED IN THE OFFICE OF THE LOS ALAMOS COUNTY CLERK, ON SEPTEMBER 15, 2017 IN PLAT BOOK 177, PAGE 795, AS DOCUMENT NUMBER 231910.

SAID PARCEL CONTAINING A TOTAL OF 60.2929 ACRES (2,626,360 SQUARE FEET) MORE OR LESS.

COUNTY APPROVALS

THIS PLAT IS HEREBY APPROVED

COUNTY SURVEYOR DATE

COUNTY ENGINEER DATE

UTILITIES MANAGER DATE

THIS PLAT IS HEREBY APPROVED THIS _____ DAY OF _____ 2018, BY THE LOS ALAMOS COUNTY PLANNING AND ZONING COMMISSION, INCORPORATED COUNTY OF LOS ALAMOS.

CHAIR LOS ALAMOS COUNTY PLANNING AND ZONING COMMISSION DATE

DIRECTOR LOS ALAMOS COUNTY COMMUNITY DEVELOPMENT DEPARTMENT DATE

ATTEST:
INCORPORATED COUNTY OF LOS ALAMOS COUNTY CLERK

BY: _____ DATE

COUNTY FILING CERTIFICATION

STATE OF NEW MEXICO)
SS.
COUNTY OF LOS ALAMOS)
I HEREBY CERTIFY THAT THIS INSTRUMENT WAS FILED FOR RECORD AS DOCUMENT NO. _____

ON THE _____ DAY OF _____ 2018, AT _____ O'CLOCK __M. AND DULY

RECORDED IN PLAT BOOK _____, PAGES _____, OF THE RECORDS OF SAID COUNTY.

COUNTY CLERK DATE

SURVEYOR'S CERTIFICATE

I, Kim C. Stelzer, New Mexico Registered Land Surveyor No. 7482, do hereby certify that the plat shown hereon was prepared under my supervision, and that the same is true and correct to the best of my knowledge and belief. This survey conforms to the Land Surveying Standards as adopted by the New Mexico State Board of Registration for Professional Engineers and Land Surveyors and the County of Los Alamos Subdivision Ordinance.

Kim C. Stelzer NMPLS No. 7482

KIM C. STELZER NEW MEXICO 7482 REGISTERED PROFESSIONAL LAND SURVEYOR

JURISDICTIONAL AFFIDAVIT

I, Kim C. Stelzer, New Mexico Professional Surveyor Number 7482, do hereby affirm that the property described does lie within the platting and extra-territorial subdivision jurisdiction of the County of Los Alamos.

Kim C. Stelzer NMPLS No. 7482

KIM C. STELZER NEW MEXICO 7482 REGISTERED PROFESSIONAL LAND SURVEYOR

HUITT-ZOLLARS
HUITT-ZOLLARS, INC. RIO RANCHO
333 Rio Rancho Drive NE, Suite 101
Rio Rancho, New Mexico 87124
Phone (505) 892-5141 Fax (505) 892-3259

Plotted: 3/23/2018 11:28:31 AM, By:Mathiesen, Corbin
H:\proj\R034731.01 Tract A19\07 Consultants\07.13 Survey\PLAT 01.dwg
Last Saved 3/23/2018 11:13:25 AM, cmathiesen

FINAL PLAT - MIRADOR

A SUBDIVISION OF TRACT A-19-A-1, A-19-A-2A AND A-19-A-2B
BEING A PART OF THE RAMON VIGIL GRANT
LOS ALAMOS COUNTY, NEW MEXICO
MARCH 2018

FOR LINE / CURVE TABLES SEE SHEET 3

FOR STREET ADDRESSING REFER TO SHEET 3

NOTES: UNLESS OTHERWISE INDICATED:

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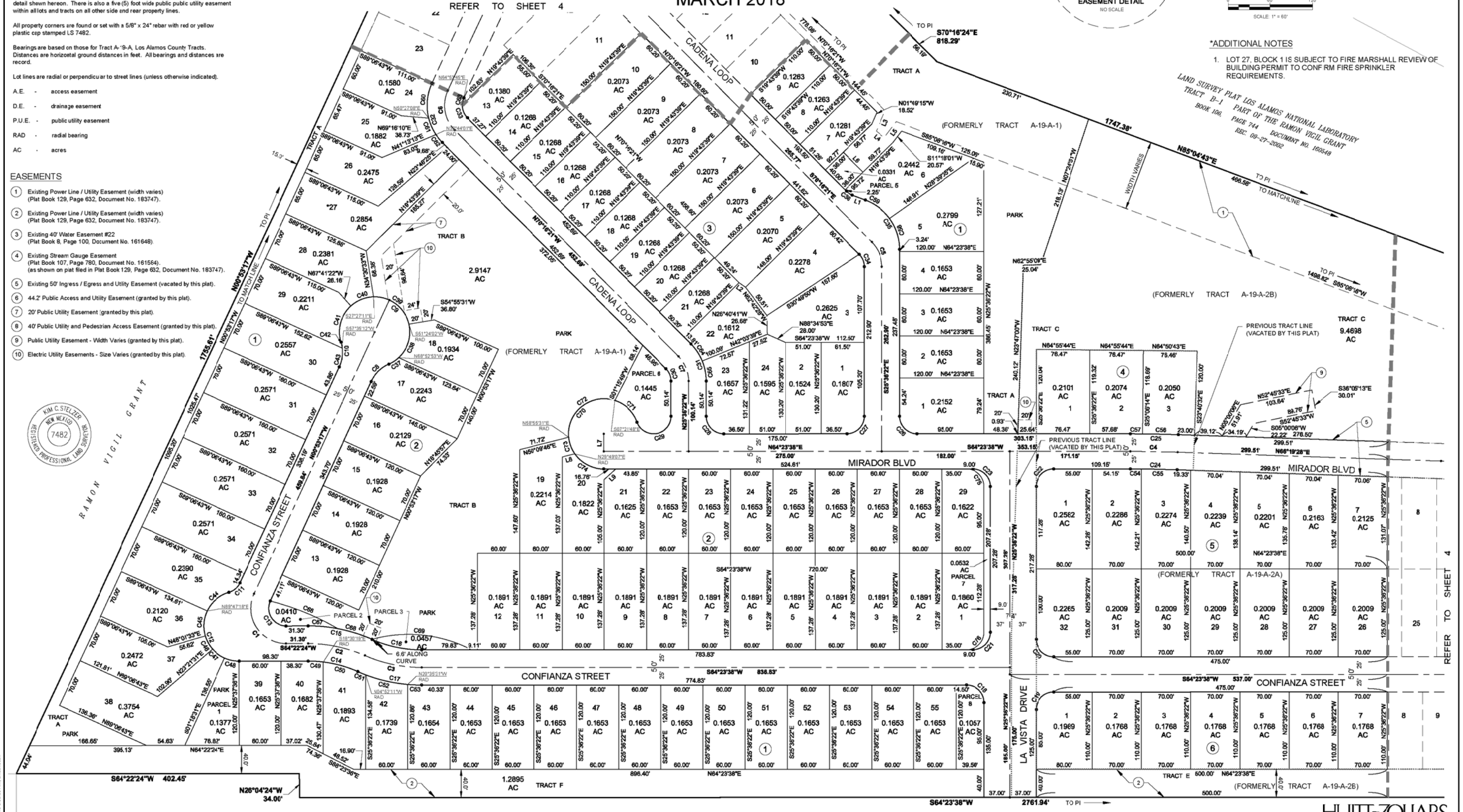

HUITT-ZOLLARS
HUITT-ZOLLARS, INC. RIO RANCHO
333 Rio Rancho Drive NE, Suite 101
Rio Rancho, New Mexico 87124
Phone (505) 892-5141 Fax (505) 892-3259

Plotted: 3/23/2018 11:26:35 AM, By: Matthesen, Corbin
H:\proj\6394731.01 Tract A 19-07 Consultants\07.13 Survey\PLAT 02.03.dwg
Last Saved: 3/23/2018 9:55:53 AM, cmatthesen

EXHIBIT 2

Exhibit E - Final Plat – 4 pages

FINAL PLAT - MIRADOR

A SUBDIVISION OF TRACT A-19-A-1, A-19-A-2A AND A-19-A-2B

BEING A PART OF THE RAMON VIGIL GRANT

LOS ALAMOS COUNTY, NEW MEXICO

MARCH 2018

ADDRESSES	
BLOCK / LOT NUMBER	STREET ADDRESS
BLOCK 1 / LOT 1	20 CADENA LOOP
BLOCK 1 / LOT 2	22 CADENA LOOP
BLOCK 1 / LOT 3	24 CADENA LOOP
BLOCK 1 / LOT 4	26 CADENA LOOP
BLOCK 1 / LOT 5	28 CADENA LOOP
BLOCK 1 / LOT 6	30 CADENA LOOP
BLOCK 1 / LOT 7	32 CADENA LOOP
BLOCK 1 / LOT 8	34 CADENA LOOP
BLOCK 1 / LOT 9	36 CADENA LOOP
BLOCK 1 / LOT 10	38 CADENA LOOP
BLOCK 1 / LOT 11	40 CADENA LOOP
BLOCK 1 / LOT 12	42 CADENA LOOP
BLOCK 1 / LOT 13	44 CADENA LOOP
BLOCK 1 / LOT 14	46 CADENA LOOP
BLOCK 1 / LOT 15	48 CADENA LOOP
BLOCK 1 / LOT 16	50 CADENA LOOP
BLOCK 1 / LOT 17	52 CADENA LOOP
BLOCK 1 / LOT 18	54 CADENA LOOP
BLOCK 1 / LOT 19	56 CADENA LOOP
BLOCK 1 / LOT 20	58 CADENA LOOP
BLOCK 1 / LOT 21	60 CADENA LOOP
BLOCK 1 / LOT 22	62 CADENA LOOP
BLOCK 1 / LOT 23	64 CADENA LOOP
BLOCK 1 / LOT 24	66 CADENA LOOP
BLOCK 1 / LOT 25	68 CADENA LOOP
BLOCK 1 / LOT 26	70 CADENA LOOP
BLOCK 1 / LOT 27	72 CADENA LOOP
BLOCK 1 / LOT 28	15 CONRANZA STREET
BLOCK 1 / LOT 29	17 CONRANZA STREET
BLOCK 1 / LOT 30	19 CONRANZA STREET
BLOCK 1 / LOT 31	21 CONRANZA STREET
BLOCK 1 / LOT 32	23 CONRANZA STREET
BLOCK 1 / LOT 33	25 CONRANZA STREET
BLOCK 1 / LOT 34	27 CONRANZA STREET
BLOCK 1 / LOT 35	29 CONRANZA STREET
BLOCK 1 / LOT 36	31 CONRANZA STREET
BLOCK 1 / LOT 37	33 CONRANZA STREET
BLOCK 1 / LOT 38	35 CONRANZA STREET
BLOCK 1 / LOT 39	37 CONRANZA STREET
BLOCK 1 / LOT 40	39 CONRANZA STREET
BLOCK 1 / LOT 41	41 CONRANZA STREET
BLOCK 1 / LOT 42	43 CONRANZA STREET
BLOCK 1 / LOT 43	45 CONRANZA STREET
BLOCK 1 / LOT 44	47 CONRANZA STREET
BLOCK 1 / LOT 45	49 CONRANZA STREET
BLOCK 1 / LOT 46	51 CONRANZA STREET
BLOCK 1 / LOT 47	53 CONRANZA STREET
BLOCK 1 / LOT 48	55 CONRANZA STREET
BLOCK 1 / LOT 49	57 CONRANZA STREET
BLOCK 1 / LOT 50	59 CONRANZA STREET
BLOCK 1 / LOT 51	61 CONRANZA STREET
BLOCK 1 / LOT 52	63 CONRANZA STREET
BLOCK 1 / LOT 53	65 CONRANZA STREET
BLOCK 1 / LOT 54	67 CONRANZA STREET
BLOCK 1 / LOT 55	69 CONRANZA STREET
BLOCK 2 / LOT 1	70 CONRANZA STREET
BLOCK 2 / LOT 2	68 CONRANZA STREET
BLOCK 2 / LOT 3	66 CONRANZA STREET
BLOCK 2 / LOT 4	64 CONRANZA STREET
BLOCK 2 / LOT 5	62 CONRANZA STREET
BLOCK 2 / LOT 6	60 CONRANZA STREET
BLOCK 2 / LOT 7	58 CONRANZA STREET
BLOCK 2 / LOT 8	56 CONRANZA STREET
BLOCK 2 / LOT 9	54 CONRANZA STREET
BLOCK 2 / LOT 10	52 CONRANZA STREET
BLOCK 2 / LOT 11	50 CONRANZA STREET
BLOCK 2 / LOT 12	48 CONRANZA STREET
BLOCK 2 / LOT 13	26 CONRANZA STREET
BLOCK 2 / LOT 14	24 CONRANZA STREET
BLOCK 2 / LOT 15	22 CONRANZA STREET
BLOCK 2 / LOT 16	20 CONRANZA STREET
BLOCK 2 / LOT 17	18 CONRANZA STREET
BLOCK 2 / LOT 18	16 CONRANZA STREET
BLOCK 2 / LOT 19	152 MIRADOR STREET
BLOCK 2 / LOT 20	150 MIRADOR STREET
BLOCK 2 / LOT 21	148 MIRADOR STREET
BLOCK 2 / LOT 22	146 MIRADOR STREET
BLOCK 2 / LOT 23	144 MIRADOR STREET
BLOCK 2 / LOT 24	142 MIRADOR STREET
BLOCK 2 / LOT 25	140 MIRADOR STREET
BLOCK 2 / LOT 26	138 MIRADOR STREET
BLOCK 2 / LOT 27	136 MIRADOR STREET
BLOCK 2 / LOT 28	134 MIRADOR STREET
BLOCK 2 / LOT 29	132 MIRADOR STREET

ADDRESSES	
BLOCK / LOT NUMBER	STREET ADDRESS
BLOCK 3 / LOT 1	21 CADENA LOOP
BLOCK 3 / LOT 2	139 MIRADOR STREET
BLOCK 3 / LOT 3	23 CADENA LOOP
BLOCK 3 / LOT 4	25 CADENA LOOP
BLOCK 3 / LOT 5	27 CADENA LOOP
BLOCK 3 / LOT 6	29 CADENA LOOP
BLOCK 3 / LOT 7	31 CADENA LOOP
BLOCK 3 / LOT 8	33 CADENA LOOP
BLOCK 3 / LOT 9	35 CADENA LOOP
BLOCK 3 / LOT 10	37 CADENA LOOP
BLOCK 3 / LOT 11	39 CADENA LOOP
BLOCK 3 / LOT 12	41 CADENA LOOP
BLOCK 3 / LOT 13	71 CADENA LOOP
BLOCK 3 / LOT 14	73 CADENA LOOP
BLOCK 3 / LOT 15	75 CADENA LOOP
BLOCK 3 / LOT 16	77 CADENA LOOP
BLOCK 3 / LOT 17	79 CADENA LOOP
BLOCK 3 / LOT 18	81 CADENA LOOP
BLOCK 3 / LOT 19	83 CADENA LOOP
BLOCK 3 / LOT 20	85 CADENA LOOP
BLOCK 3 / LOT 21	87 CADENA LOOP
BLOCK 3 / LOT 22	89 CADENA LOOP
BLOCK 3 / LOT 23	91 CADENA LOOP
BLOCK 3 / LOT 24	141 MIRADOR STREET
BLOCK 4 / LOT 1	129 MIRADOR STREET
BLOCK 4 / LOT 2	127 MIRADOR STREET
BLOCK 4 / LOT 3	125 MIRADOR STREET
BLOCK 5 / LOT 1	130 MIRADOR STREET
BLOCK 5 / LOT 2	128 MIRADOR STREET
BLOCK 5 / LOT 3	126 MIRADOR STREET
BLOCK 5 / LOT 4	124 MIRADOR STREET
BLOCK 5 / LOT 5	122 MIRADOR STREET
BLOCK 5 / LOT 6	120 MIRADOR STREET
BLOCK 5 / LOT 7	118 MIRADOR STREET
BLOCK 5 / LOT 8	116 MIRADOR STREET
BLOCK 5 / LOT 9	114 MIRADOR STREET
BLOCK 5 / LOT 10	112 MIRADOR STREET
BLOCK 5 / LOT 11	110 MIRADOR STREET
BLOCK 5 / LOT 12	108 MIRADOR STREET
BLOCK 5 / LOT 13	106 MIRADOR STREET
BLOCK 5 / LOT 14	104 MIRADOR STREET
BLOCK 5 / LOT 15	102 MIRADOR STREET
BLOCK 5 / LOT 16	100 MIRADOR STREET
BLOCK 5 / LOT 17	108 CONFIANZA STREET
BLOCK 5 / LOT 18	110 CONFIANZA STREET
BLOCK 5 / LOT 19	106 CONFIANZA STREET
BLOCK 5 / LOT 20	104 CONFIANZA STREET
BLOCK 5 / LOT 21	102 CONFIANZA STREET
BLOCK 5 / LOT 22	100 CONFIANZA STREET
BLOCK 5 / LOT 23	98 CONFIANZA STREET
BLOCK 5 / LOT 24	96 CONFIANZA STREET
BLOCK 5 / LOT 25	94 CONFIANZA STREET
BLOCK 5 / LOT 26	92 CONFIANZA STREET
BLOCK 5 / LOT 27	90 CONFIANZA STREET
BLOCK 5 / LOT 28	88 CONFIANZA STREET
BLOCK 5 / LOT 29	86 CONFIANZA STREET
BLOCK 5 / LOT 30	84 CONFIANZA STREET
BLOCK 5 / LOT 31	82 CONFIANZA STREET
BLOCK 5 / LOT 32	80 CONFIANZA STREET
BLOCK 6 / LOT 1	81 CONFIANZA STREET
BLOCK 6 / LOT 2	83 CONFIANZA STREET
BLOCK 6 / LOT 3	85 CONFIANZA STREET
BLOCK 6 / LOT 4	87 CONFIANZA STREET
BLOCK 6 / LOT 5	89 CONFIANZA STREET
BLOCK 6 / LOT 6	91 CONFIANZA STREET
BLOCK 6 / LOT 7	93 CONFIANZA STREET
BLOCK 6 / LOT 8	95 CONFIANZA STREET
BLOCK 6 / LOT 9	97 CONFIANZA STREET
BLOCK 6 / LOT 10	99 CONFIANZA STREET
BLOCK 6 / LOT 11	101 CONFIANZA STREET
BLOCK 6 / LOT 12	103 CONFIANZA STREET
BLOCK 6 / LOT 13	105 CONFIANZA STREET
BLOCK 6 / LOT 14	107 CONFIANZA STREET
BLOCK 6 / LOT 15	109 CONFIANZA STREET
BLOCK 6 / LOT 16	111 CONFIANZA STREET
BLOCK 6 / LOT 17	113 CONFIANZA STREET
BLOCK 6 / LOT 18	115 CONFIANZA STREET

CURVE TABLE					
CURVE NO.	DELTA	RADIUS	CHORD BEARING	CHORD LENGTH	ARC LENGTH
C1	114°44'19"	50.00'	N58°15'27"W	84.22'	100.13'
C2	23°48'58"	200.00'	S76°16'52"W	82.54'	83.13'
C3	23°47'44"	200.00'	S76°17'29"W	82.47'	83.06'
C4	1°55'50"	2000.00'	N65°21'33"E	67.39'	67.39'
C5	44°39'58"	50.00'	S47°56'21"E	38.00'	38.98'
C6	69°23'03"	50.00'	N35°34'49"W	56.92'	60.55'
C7	44°39'58"	50.00'	N47°56'21"W	38.00'	38.98'
C8	41°24'35"	50.00'	S19°49'00"W	35.36'	36.14'
C9	262°49'09"	50.00'	N89°06'43"E	75.00'	229.35'
C10	41°24'35"	50.00'	N21°35'35"W	35.36'	36.14'
C11	48°35'35"	25.00'	N23°24'30"E	20.57'	21.20'
C12	163°19'54"	50.00'	N33°57'39"W	98.94'	142.53'
C13	114°44'19"	25.00'	S58°15'27"E	42.11'	50.06'
C14	23°48'58"	175.00'	S76°16'52"W	72.22'	72.74'
C15	23°48'58"	225.00'	N76°16'52"E	92.85'	93.53'
C16	23°47'44"	175.00'	N76°17'29"E	72.16'	72.68'
C17	23°47'44"	225.00'	S76°17'29"W	92.77'	93.44'
C18	90°00'00"	25.00'	N70°36'22"W	35.36'	39.27'
C19	90°00'00"	25.00'	N19°23'38"E	35.36'	39.27'
C20	90°00'00"	25.00'	N70°36'22"W	35.36'	39.27'
C21	90°00'00"	25.00'	N19°23'38"E	35.36'	39.27'
C22	90°00'00"	25.00'	N19°23'38"E	35.36'	39.27'
C23	90°00'00"	25.00'	N70°36'22"W	35.36'	39.27'
C24	1°55'50"	1975.00'	N65°21'33"E	66.54'	66.55'
C25	1°55'50"	2025.00'	N65°21'33"E	68.23'	68.23'
C26	90°00'00"	25.00'	S70°36'22"E	35.36'	39.27'
C27	90°00'00"	25.00'	S19°23'38"W	35.36'	39.27'
C28	90°00'00"	25.00'	N70°36'22"W	35.36'	39.27'
C29	160°31'44"	25.00'	N54°39'29"E	49.28'	70.04'
C30	44°39'58"	25.00'	N47°56'21"W	19.00'	19.49'
C31	44°39'58"	75.00'	N47°56'21"W	57.00'	58.47'
C32	69°23'03"	75.00'	S35°34'49"E	85.37'	90.82'
C33	45°10'06"	25.00'	N47°41'18"W	19.20'	19.71'
C34	44°39'58"	25.00'	S47°56'21"E	19.00'	19.49'
C35	69°15'21"	75.00'	S60°14'03"E	85.24'	90.66'
C36	24°35'23"	25.00'	S82°34'02"E	10.65'	10.73'
C37	19°24'10"	50.00'	N30°49'12"E	16.85'	16.93'
C38	59°43'06"	50.00'	N8°44'25"W	49.79'	52.11'
C39	78°51'13"	50.00'	N78°01'35"W	63.51'	68.81'
C40	40°14'11"	50.00'	S42°25'43"W	34.40'	35.11'
C41	64°36'30"	50.00'	S9°59'37"E	53.44'	56.38'
C42	9°53'03"	50.00'	N37°21'20"W	8.61'	8.63'
C43	31°31'31"	50.00'	N16°39'03"W	27.17'	27.51'
C44	47°55'00"	50.00'	S23°44'48"W	40.61'	41.82'
C45	41°45'45"	50.00'	S21°05'34"E	35.64'	36.44'
C46	24°40'02"	50.00'	S54°18'28"E	21.36'	21.53'
C47	24°40'02"	50.00'	S78°58'30"E	21.36'	21.53'
C48	24°19'06"	50.00'	N76°31'57"E	21.08'	21.22'
C49	7°07'17"	175.00'	S67°58'02"W	21.74'	21.75'
C50	16°41'40"	175.00'	S79°50'31"W	50.81'	50.99'

CURVE TABLE					
CURVE NO.	DELTA	RADIUS	CHORD BEARING	CHORD LENGTH	ARC LENGTH
C51	3°03'32"	225.00'	N86°39'35"E	12.01'	12.01'
C52	15°43'20"	225.00'	N77°16'09"E	61.55'	61.74'
C53	5°00'51"	225.00'	N86°54'03"E	19.68'	19.69'
C54	0°27'35"	1975.00'	S64°37'25"W	15.85'	15.85'
C55	1°28'15"	1975.00'	S65°35'20"W	50.69'	50.70'
C56	1°19'00"	2025.00'	S65°39'57"W	46.54'	46.54'
C57	0°36'50"	2025.00'	S64°42'02"W	21.69'	21.69'
C58	35°44'02"	75.00'	N43°28'24"W	46.02'	46.78'
C59	33°31'19"	75.00'	N76°06'04"W	43.26'	43.88'
C60	38°39'35"	75.00'	S20°13'05"E	49.65'	50.61'
C61	19°43'07"	75.00'	S49°24'26"E	25.68'	25.81'
C62	11°00'21"	75.00'	S64°46'10"E	14.38'	14.41'
C63	24°12'56"	25.00'	N12°59'46"W	10.49'	10.57'
C64	22°19'59"	75.00'	N59°06'21"W	29.05'	29.23'
C65	23°16'21"	72.01'	N36°46'22"W	29.05'	29.25'
C66	16°46'04"	358.84'	S86°34'37"W	104.85'	105.23'
C67	11°02'09"	225.00'	S69°53'28"W	43.27'	43.34'
C68	12°46'49"	225.00'	S81°47'57"W	50.08'	50.19'
C69	42°52'38"	194.41'	S70°24'09"W	142.12'	145.49'
C70	250°38'53"	50.00'	S9°35'55"W	81.59'	218.73'
C71	52°17'09"	50.00'	N71°13'14"W	44.06'	45.63'
C72	113°42'41"	50.00'	S25°46'52"W	83.73'	99.23'
C73	29°06'25"	50.00'	S45°37'41"E	25.13'	25.40'
C74	55°32'39"	50.00'	S87°57'13"E	46.60'	48.47'
C75	89°59'53"	25.00'	N70°36'26"W	35.35'	39.27'
C76	89°59'57"	25.00'	S19°23'36"W	35.36'	39.27'

LINE TABLE		
LINE NO.	BEARING	DISTANCE
L1	N85°08'16"E	19.72'
L2	N80°36'55"W	11.14'
L3	N01°49'15"W	31.78'
L4	N76°23'45"W	14.68'
L5	S11°18'01"W	28.55'
L6	S70°16'21"E	40.00'
L7	S25°36'22"E	25.00'
L8	N50°09'46"E	18.69'
L9	N21°30'54"E	22.04'

FOR PLAN VIEW
REFER TO SHEET 2

KIM C. STELZER
NEW MEXICO
7482
REGISTERED PROFESSIONAL LAND SURVEYOR

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Plotted: 3/23/2018 11:27:22 AM, By:Mathiesen, Corbin
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Last Saved:3/23/2018 9:00:50 AM, cmathiesen

FINAL PLAT
MIRADOR
TRACT A-19-A-1, A-19-A-2A, AND A-19-A-2B
BEING A PART OF THE RAMON VIGIL GRANT
LOS ALAMOS COUNTY, NEW MEXICO
MARCH 2018

CURVE TABLE					
CURVE NO.	DELTA	RADIUS	CHORD BEARING	CHORD LENGTH	ARC LENGTH
C1	22°41'59"	1650.00'	N77°40'27"E	649.44'	653.71'
C2	39°56'23"	320.00'	S71°00'22"E	218.58'	223.06'
C3	17°20'35"	175.00'	S34°16'40"E	52.77'	52.97'
C4	22°41'59"	1675.00'	N77°40'27"E	659.28'	663.61'
C5	22°41'59"	1625.00'	N77°40'27"E	639.60'	643.80'
C6	28°36'20"	345.01'	S76°46'34"E	170.47'	172.25'
C7	44°57'21"	260.52'	S58°45'08"E	199.21'	204.41'
C8	18°00'58"	198.90'	S42°01'42"E	61.66'	61.91'
C9	20°40'02"	139.50'	S35°56'24"E	50.08'	50.36'
C10	70°31'44"	25.00'	S29°07'46"W	28.87'	30.77'
C11	250°31'44"	50.00'	N90°52'14"W	81.65'	218.63'
C12	1°34'67"	1653.17'	S67°07'43"W	45.25'	45.26'
C13	1°46'66"	1625.00'	S68°48'14"W	50.15'	50.15'
C14	1°46'24"	1625.00'	S70°34'29"W	50.29'	50.29'
C15	1°46'49"	1625.00'	S72°21'05"W	50.49'	50.49'
C16	1°47'20"	1625.00'	S74°08'09"W	50.73'	50.73'
C17	2°32'42"	1625.00'	S76°18'10"W	72.18'	72.18'
C18	1°52'21"	1625.00'	S78°30'42"W	53.10'	53.11'
C19	1°52'21"	1625.00'	S80°23'02"W	53.10'	53.11'
C20	1°52'21"	1625.00'	S82°15'23"W	53.10'	53.11'
C21	1°52'21"	1625.00'	S84°07'44"W	53.10'	53.11'
C22	3°57'32"	1625.00'	S87°02'41"W	112.26'	112.28'

CURVE TABLE					
CURVE NO.	DELTA	RADIUS	CHORD BEARING	CHORD LENGTH	ARC LENGTH
C23	45°56'35"	50.00'	S16°50'12"W	39.03'	40.09'
C24	38°55'18"	50.00'	S59°16'08"W	33.32'	33.97'
C25	39°27'01"	50.00'	N81°32'42"W	33.75'	34.43'
C26	85°56'58"	50.00'	N18°50'43"W	68.17'	75.00'
C27	31°04'17"	47.51'	N39°11'31"E	25.45'	25.76'
C28	14°18'45"	37.50'	N58°11'14"E	9.34'	9.37'
C29	110°36'57"	50.00'	N54°25'11"E	82.22'	96.53'
C30	110°36'57"	25.00'	N54°25'11"E	41.11'	48.27'
C31	110°36'57"	50.00'	N54°25'11"E	82.22'	96.53'
C32	24°12'58"	25.00'	N12°59'48"W	10.49'	10.57'
C33	30°20'19"	50.00'	S14°16'52"W	26.17'	26.48'
C34	41°19'15"	50.00'	S50°06'40"W	35.28'	36.06'
C35	33°01'31"	50.00'	S87°17'03"W	28.42'	28.82'
C36	5°55'51"	50.00'	N73°14'18"W	5.17'	5.18'
C37	8°19'36"	139.60'	N42°06'38"W	20.27'	20.29'
C38	12°20'24"	139.60'	N31°46'35"W	30.01'	30.07'
C39	22°39'54"	352.87'	S44°51'00"W	138.68'	139.59'
C40	77°45'51"	16.83'	N78°38'41"E	21.13'	22.84'
C41	90°51'58"	16.83'	S5°36'11"E	23.98'	26.69'
C42	1°09'54"	1675.00'	S86°49'22"W	34.05'	34.05'
C43	1°37'08"	1675.00'	S88°12'53"W	47.32'	47.32'
C44	6°20'17"	1675.00'	S69°29'38"W	185.20'	185.29'

LINE TABLE		
LINE NO.	BEARING	DISTANCE
L1	S25°36'22"E	25.00'
L2	S70°16'21"E	19.04'
L3	N19°25'29"E	23.40'
L4	S49°29'21"E	20.77'
L5	S46°16'25"E	32.31'
L6	S50°14'14"E	8.17'
L7	S60°00'57"E	14.13'
L8	S60°00'57"E	14.13'
L9	S50°10'12"E	8.17'
L11	S51°02'11"E	14.34'
L12	S33°16'46"E	35.79'

NOTES: UNLESS OTHERWISE INDICATED:

Parcels 1 thru 9 will remain in private ownership to be maintained by a Homeowners Association (HOA). Tracts A, B and C are being dedicated to the County of Los Alamos by this plat. Also to vacate an existing 50' Ingress/Egress and Utility Easement, to eliminate previous Tract lines, and to create a 50' Public Access & Utility Easement, a 20' Public Utility Easement, 3 variable width Public Utility Easements, 20' wide Electrical Utility Easements, 20' x 20' Electrical Utility Easements and a 40' Public Utility & Pedestrian Easement.

There is a ten (10) foot wide public utility easement within all lots and tracts adjacent to road rights-of-way being granted hereon except for corner lots where the easement width adjacent to the side street is only five (5) feet wide per the detail shown hereon. There is also a five (5) foot wide public public utility easement within all lots and tracts on all other side and rear property lines.

All property corners are found or set with a 5/8" x 24" rebar with red or yellow plastic cap stamped LS 7482.

Bearings are based on those for Tract A-19-A, Los Alamos County Tracts. Distances are horizontal ground distances in feet. All bearings and distances are record.

Lot lines are radial or perpendicular to street lines (unless otherwise indicated).

A.E. - access easement

D.E. - drainage easement

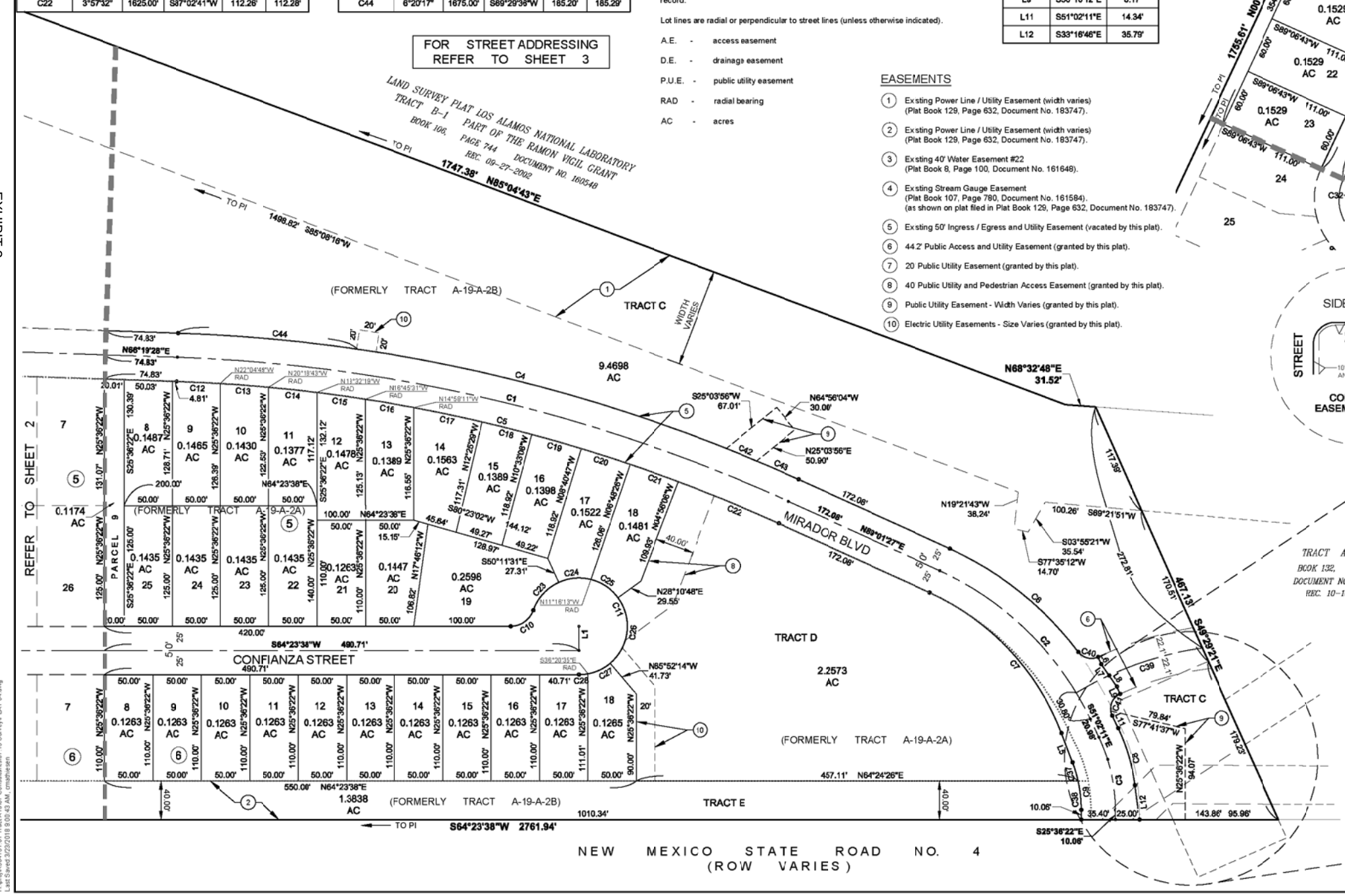
P.U.E. - public utility easement

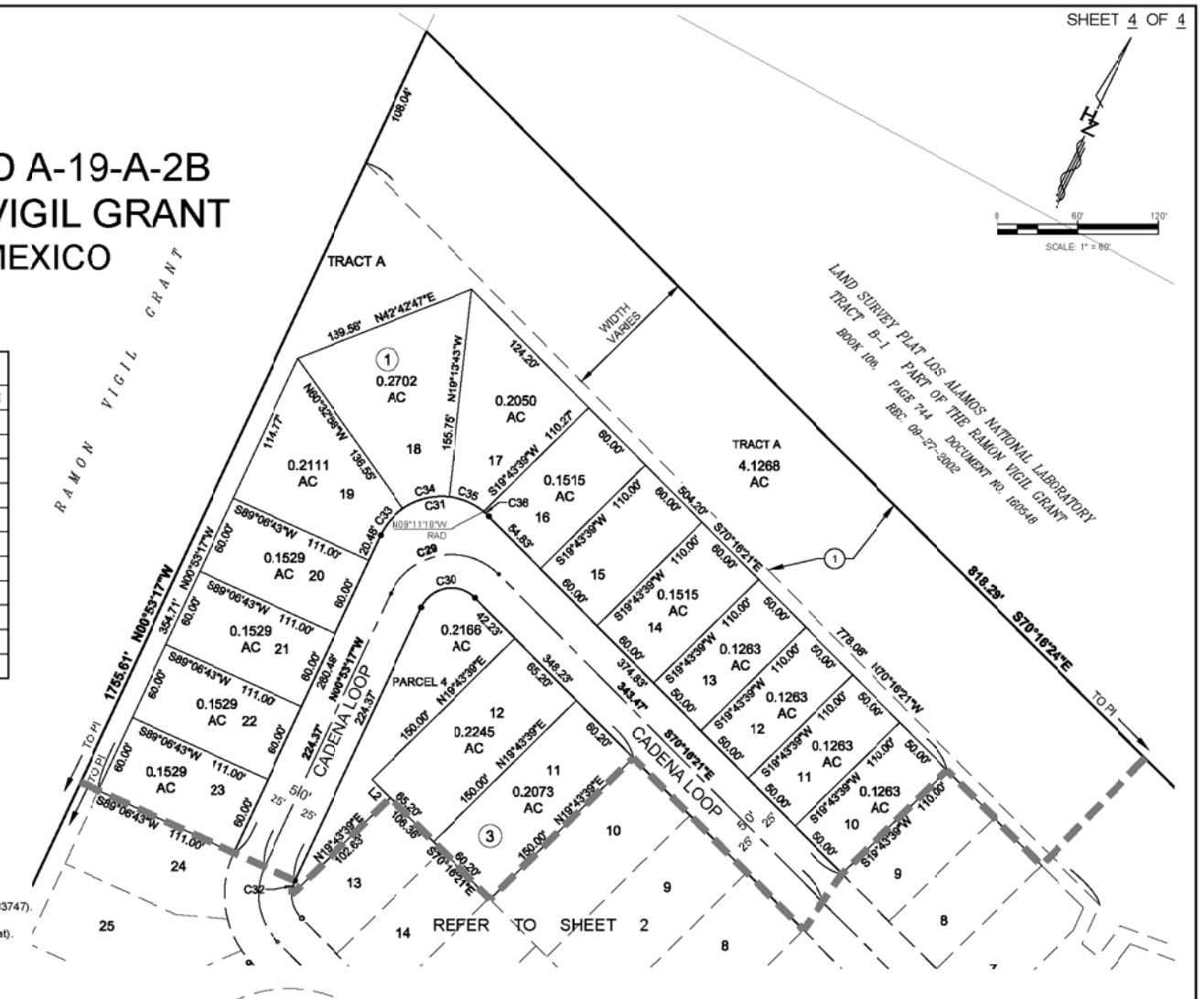
RAD - radial bearing

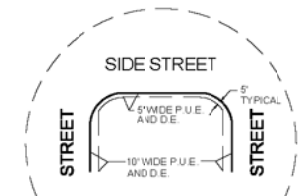
AC - acres

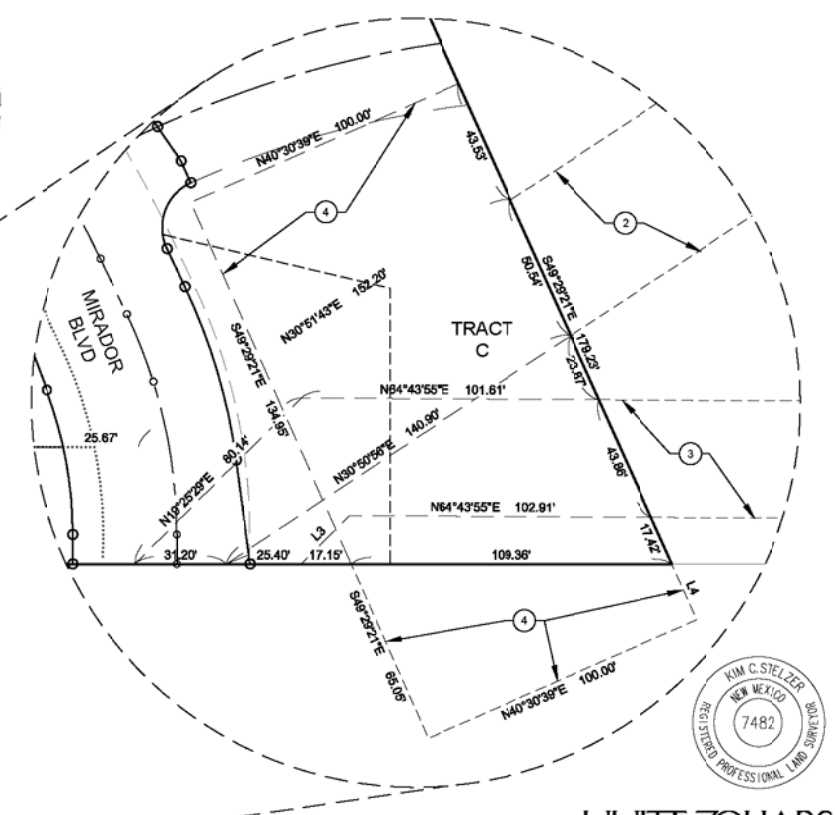
EASEMENTS

1. Existing Power Line / Utility Easement (width varies) (Plat Book 129, Page 632, Document No. 183747).
2. Existing Power Line / Utility Easement (width varies) (Plat Book 129, Page 632, Document No. 183747).
3. Existing 40' Water Easement #22 (Plat Book 8, Page 100, Document No. 161648).
4. Existing Stream Gauge Easement (Plat Book 107, Page 780, Document No. 161584). (as shown on plat filed in Plat Book 129, Page 632, Document No. 183747).
5. Existing 50' Ingress / Egress and Utility Easement (vacated by this plat).
6. 44.2' Public Access and Utility Easement (granted by this plat).
7. 20' Public Utility Easement (granted by this plat).
8. 40' Public Utility and Pedestrian Access Easement (granted by this plat).
9. Public Utility Easement - Width Varies (granted by this plat).
10. Electric Utility Easements - Size Varies (granted by this plat).









KIM C. STELZER NEW MEXICO 7482 REGISTERED PROFESSIONAL LAND SURVEYOR

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