Terry O. Brown P.E.

Golf Course Rd Development

(McMahon Blvd / Golf Course Rd)

Traffic Impact Study

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Presented to:

City of Albuquerque
Transportation Development Section

Prepared for:

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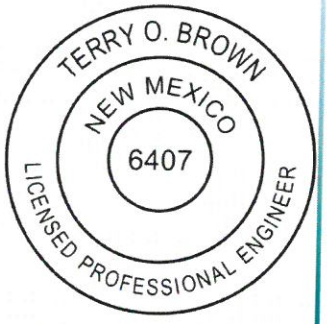

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Zone A-12

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TRAFFIC IMPACT STUDY

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TRAFFIC IMPACT STUDY

STUDY PURPOSE

The study is being conducted in conjunction with a request for approval of a multi-use development plan such as the one shown in the Appendix (Page A-3) of this report. The purpose of this study is to identify the impact of the proposed development on the adjacent transportation system, and to make recommendations to mitigate any significant adverse impact on the adjacent transportation system resulting from the implementation of the proposed plan. This report is being prepared to meet the requirements of the City of Albuquerque Transportation Development Division in association with the development of the Golf Course Rd Development located on Golf Course Rd between Irving Blvd and McMahon Blvd.

STUDY PROCEDURES

The basic procedure to be followed is to evaluate the NO BUILD and BUILD traffic conditions for the implementation year (2015) for the signalized intersections of Irving Blvd / Golf Course Rd., McMahon Blvd. / Golf Course Rd., and McMahon Blvd. / Bandelier Dr. and for the access driveways associated with this project. The procedure followed in this study is outlined as follows:

1) Calculate the generated trips for the proposed development consisting of a 140 unit assisted/independent living facility, 10 detached Senior Housing units, 3,800 S.F. of medical / dental office space, 21,980 S.F. of retail commercial space, and a 4 lane drive-in bank (See more detailed trip generation rate table in Appendix – Pages A-7 thru A-12).
2) Calculate growth rate for the area utilizing Traffic Flow Maps from the Mid-Region Council of Governments to define area traffic growth rate. (See Pages A-13 thru A-22)
3) Calculate trip distribution for the newly generated trips by this development. The new office / residential trips will be distributed based on year 2015 population citywide while the new commercial trips will be distributed based on year 2015 population within a two-mile radius of the proposed new development.
4) Determine Trip Assignments for the newly generated trips based on the results of the Trip Distribution Analysis and logical routing to and from the site (See Appendix Pages A-22 thru A-37 of this report).
5) Apply a 20% pass-by trip reduction to only the PM trip generation.
6) Conduct new AM and PM Peak Hour traffic counts for the intersections of Irving Blvd. / Golf Course Rd., McMahon Blvd. / Golf Course Rd., McMahon Blvd. / Bandelier Dr. and the apartment driveway across Golf Course Rd from the project.
7) Determine 2015 NO BUILD Volumes by growing the existing turning movement counts to the year 2015 utilizing the calculated annual historic growth rate for the area.
8) Add in data from Trip Assignments Maps and Tables to the 2015 NO BUILD Volumes to obtain 2015 BUILD Volumes for this project. (See Pages A-38 thru A-49)
9) Provide signalized and / or unsignalized intersection analyses for the following intersections:

INTERSECTION	TYPE CONTROL	NO BUILD	BUILD
1) Irving Blvd. / Golf Course Rd.	Traffic Signal	2015	2015
2) McMahon Blvd. / Golf Course Rd.	Traffic Signal	2015	2015
3) McMahon Blvd. / Bandelier Dr.	Traffic Signal	2015	2015
4) Driveway "A" / Golf Course Rd.	Unknown	2015	2015
5) Driveway "B" / Golf Course Rd.	Unsignalized	2015	2015

GENERAL AREA CHARACTERISTICS

The proposed development plan is located on Golf Course Rd between Irving Blvd. and McMahon Blvd. as shown on the Vicinity Map on Page A-1 of the Appendix of this report. The property is bounded on the north by the Smith's shopping center, on the east by Golf Course Rd., and on the south by the Calabacillas Arroyo. The total area of land addressed in this Traffic Impact Study is approximately 13 acres.

This project is located in an area of mixed uses including retail commercial and dense residential.

AREA STREET NETWORK

McMahon Blvd. is classified as a Principal Arterial Street on the Long Range Roadway System Plan for the Albuquerque Urban Area. McMahon Blvd. (west of Golf Course Rd.) is a Limited Access Arterial Street. Access to McMahon Blvd. is regulated by the McMahon Blvd. (Westside Blvd.) Corridor Plan.

Golf Course Rd. is classified as a Urban Minor Arterial Street on the Long Range Roadway System Plan for the Albuquerque Urban Area. It is a four lane paved street with curbs and gutters. The posted speed limit on Golf Course Rd. near McMahon Blvd. is 40 MPH.

Irving Blvd. is classified as a Urban Collector Street on the Long Range Roadway System Plan for the Albuquerque Urban Area. It is a four lane paved street with curbs and gutters. The posted speed limit on Irving Blvd near Golf Course Rd. is 35 MPH.

Bandelier Dr. is not classified on the Long Range Roadway System Plan for the Albuquerque Urban Area. It is considered a local street for the purpose of this report.

EXISTING TRAFFIC VOLUMES

2009 Average Weekday Traffic Volumes (AWDT) for major streets in the site plan area are shown on Page A-4 in the Appendix.

Existing AM and PM peak hour turning movement counts for the intersections of Irving Blvd. / Golf Course Rd., McMahon Blvd. / Golf Course Rd., McMahon Blvd. / Bandelier Dr. and the apartment drive / Golf Course Rd. were obtained by the consultant for this study.

The counts and volume data are included in the Appendix (Pages A-97 thru A-99).

EXISTING (2011) LEVELS OF SERVICE

The existing (2011) analyses of the intersections targeted for analysis in this study are summarized in the following tables:

Irving Blvd. / Golf Course Rd.	LOS – Delay (Sec.)	
2011	A.M.	P.M.
Existing Geometry	C – 30.4	***D – 49.3***

McMahon Blvd. / Golf Course Rd.	LOS – Delay (Sec.)	
2011	A.M.	P.M.
Existing Geometry	***D – 46.7***	***D – 39.6***

McMahon Blvd. / Bandelier Rd.	LOS – Delay (Sec.)	
2011	A.M.	P.M.
Existing Geometry	C – 30.9	B – 13.2

NOTE: Bold italicized designations of LOS / Delay indicate at least one turning movement is LOS "E" or "F".

The Highway Capacity Manual defines Level of Service (LOS) for signalized intersections in terms of average controlled delay per vehicle as follows:

LOS A	10.0" or less	Most Vehicles do not stop
LOS B	10.1 to 20.0"	Some Vehicles stop
LOS C	20.1 to 35.0"	Significant number of vehicles stop.
LOS D	35.1 to 55.0"	Many vehicles stop.
LOS E	55.1 to 80.0"	Limit of acceptable delay.
LOS F	> 80.0"	Unacceptable delay.

Level of Service D is generally considered acceptable in urban areas and is the desirable base condition for analysis in a traffic study. In addition to consideration of the overall level-of-service of the signalized intersection, the levels-of-service of each individual movement should be considered also.

Existing levels-of-service were not determined for this study.

EXISTING TRANSIT SERVICE

This area is serviced by the ABQ Ride Transit System with Routes 92, 155 and 3/157, as well as the Northwest Transit Center (NWTC) at Ellison Rd / Coors By-pass, which includes a Park & Ride.

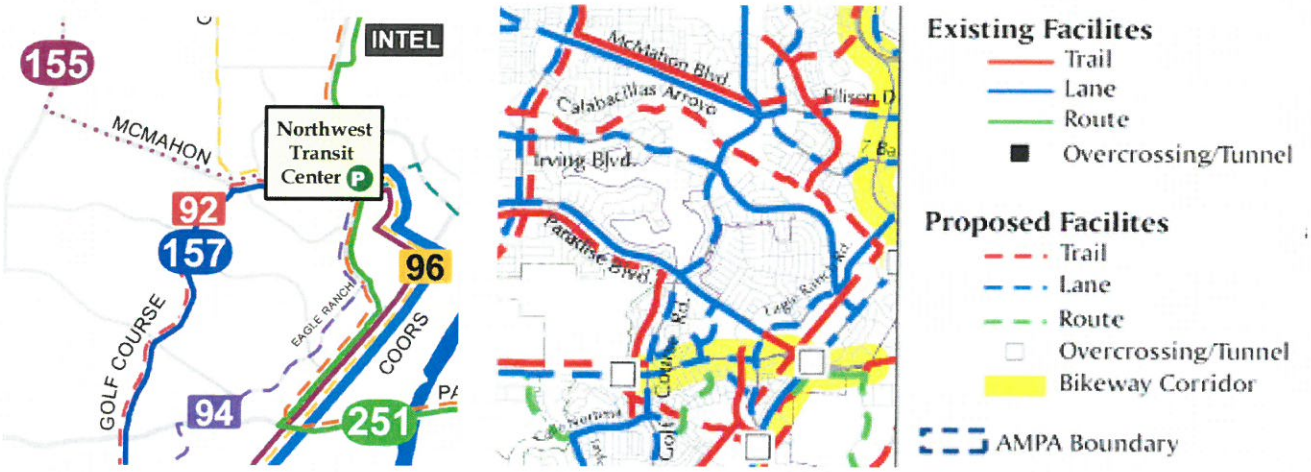
Route 92 (Taylor Ranch Express) is a weekday only route that runs from the NWTC west on McMahon Blvd, south on Golf Course Rd, west to Unser Blvd, then east to downtown &

University Blvd on Interstate 40 twice a day at 6:15 & 6:45 AM southbound and 4:30 & 5:00 PM northbound. It connects with the free-of-charge D-Ride bus loop downtown.

Route 155 (Coors Blvd Line) runs from the NWTC east on Ellison Dr, and south on Coors Blvd to Gun Club Rd round trip beginning at 5:40 AM every 30 minutes. Additionally, during rush hour this route runs round trip west & north on McMahon & Unser Blvds to Southern Blvd.

Route 3/157 (Montano / Uptown / Kirkland) runs from the NWTC west on McMahon Blvd, south on Golf Course Rd, east on Montano (Montgomery), and south on Louisiana Blvd to Gibson round trip beginning at 5:30 AM every 45 minutes. (See Bus Routes on Pages A-103 thru A-106 of the Appendix.)

Following are portions of the ABQ Ride Route Map and ABQ Bike Route Map, respectively.



PROPOSED DEVELOPMENT

The proposed project consists of a 140 unit assisted/independent living facility, 10 detached Senior Housing units, 3,800 SF of medical / dental office space, 21,980 SF of retail commercial space, and a 4 lane drive-in bank. (See Conceptual Site Plan on Page A-3 of the Appendix.)

TRIP GENERATION

Projected trips were calculated from data in the Institute of Transportation Engineers Trip Generation report (8th Edition, 2007). Trips for the development were determined based on land uses defined on the Conceptual Site Development Plan on Page A-3 in the Appendix of this report.

The resulting numbers of trips generated for the proposed development are summarized in the following table:

Golf Course Rd. Development

Trip Generation Data (ITE Trip Generation Manual - 8th Edition)

USE (ITE CODE) / DESCRIPTION		24 HR VOL	A. M. PEAK HR.		P. M. PEAK HR.	
		GROSS	ENTER	EXIT	ENTER	EXIT
Summary Sheet	Units					
Assisted Living (254)	140	343	13	7	14	17
Senior Adult Housing - Detached (251)	10	76	11	21	5	3
Medical-Dental Office Building (720)	3.80	(60)	7	2	4	12
Drive-In Bank (912)	4	557	22	16	54	56
Shopping Center (820)	21.98	2,536	38	25	113	118
Subtotal		**3,452**	**91**	**71**	**190**	**206**
Subtotal Commercial Trips		**3,093**	**60**	**41**	**167**	**174**
Pass-by Credit	20%				(33)	(35)
Commercial Trips (w/Pass-by Adj.)		**3,093**	**60**	**41**	**134**	**139**
Subtotal non-Commercial Trips		**359**	**31**	**30**	**23**	**32**

A 20% adjustment was made to the trip generation rates for PM Pass-by Trips.

TRIP DISTRIBUTION

Primary and Diverted Linked Trips:

Trips were distributed as follows:

Office & Residential Land Uses

Primary and diverted linked trips for office / residential development have been distributed proportionally to the 2015 projected population of Subareas area wide. Population data for 2004 and 2030 were taken from the *2030 Socioeconomic Forecasts for Data Analysis Subzones for the MRCOG Region (S-07-01)*, supplied by the Mid-Region Council of Governments (MRCOG). Population Data was interpolated linearly to obtain 2015 values and adjusted for distance from the proposed new facility. The trip distribution worksheets and associated map of subareas are shown in the Appendix. The Trip Distribution Map for Office / Residential use can be found in the Appendix on Page A-27.

Commercial Land Uses

Primary and diverted linked trips for the commercial land use development were distributed proportionally to the 2015 projected population of Data Analysis Subzones within a two mile radius of the proposed development. Population data for the years 2004 and 2030 were taken from the 2030 Socioeconomic Forecasts by Data Analysis Subzones for the Mid-Region of New Mexico, supplied by the Mid-Region Council of Governments (MRCOG).

Population data from the years 2004 and 2030 was interpolated linearly to obtain 2015 population data to utilize for this analysis. Population Subzones were grouped based on the most likely major street(s) or route(s) to the subject development. The trip distribution worksheets and associated map of data analysis subzones is shown in the Appendix. The Trip Distribution map can be found in the Appendix on Page A-34.

TRIP ASSIGNMENT

Trip assignments are first made on a percentage basis derived from data established in the trip distribution determination process and logical routing. Those percentages are then applied to the projected trips to determine individual traffic movements. Percentage trip assignments are shown on Appendix Pages A-28 thru A-29 (Residential) and Pages A-35 thru A-36 (Commercial).

BACKGROUND TRAFFIC GROWTH

Background traffic growth rates were considered for each individual approach to an intersection that was targeted for analysis based on data from the 2005, 2006, 2007, 2008, and 2009 Traffic Flow maps prepared by the Mid-Region Council of Governments (MRCOG). Almost all of the Traffic Flow Data for those years taken from the MRCOG Traffic Flow Maps were Standard Data. The data from those years for each approach was plotted on a graph and a linear "regression trend line" calculated using the equation format $y=mx+b$. The growth rate was determined by calculating the average volume increase per year during the time period considered and dividing that volume into the most recent AWDT used in the analysis from which future volumes will be calculated. The rate of growth of that trend line was utilized as the growth rate for each approach if that calculated rate appeared feasible. However, there were some instances where the rate indicated a negative growth trend. In those cases, an appropriate growth rate from an adjacent segment of the same roadway was considered. Due to the potential for growth in the area, it was believed that a zero percent growth rate was inappropriate for this study. Additionally, if the R^2 value of the trend line was low, other means of establishing a probable growth rate from the data accumulated was considered. Historical Growth Rate Graphs with linear regression trendlines are shown in the Appendix on Pages A-13 thru A-20. A Historic Growth Map can be found on Appendix Pages A-21.

The growth rate utilized for each approach to an intersection is printed at the top of the Turning Movement sheets for each intersection (Appendix Pages A-40 thru A-49).

PROJECTED PEAK HOUR TURNING MOVEMENTS FOR 2015 BUILDOUT

The calculated growth rates for the intersections studied in this report were applied to the most recent peak hour traffic counts to establish the 2015 background traffic volumes. To these volumes, the generated trips based on implementation of the proposed Golf Course Rd. Development Plan were added to obtain BUILD volumes for the intersection analyses. See Appendix Pages A-40 thru A-49 for further information regarding turning movement counts.

INTERSECTION CAPACITY ANALYSIS

Intersection capacity analyses were performed in accordance with the procedures for signalized and unsignalized intersections in the Highway Capacity Manual, Special Report 209, Transportation Research Board, 2000, using Trafficware's Synchro version 7 Highway Capacity Software for signalized and unsignalized intersections. For signalized intersections, the operational method of analysis was used for 2015 conditions (BUILD).

Capacity analyses were performed for the following traffic conditions.

2015 without development of the subject property (2015 NO BUILD)
2015 with total development as per the Proposed Site Plan (2015 BUILD).

The results of the existing, 2015 NO BUILD and 2015 BUILD capacity analyses are summarized in the following sections - *Results and Discussion of Intersection Capacity Analyses.*

RESULTS OF INTERSECTION CAPACITY ANALYSES

IMPLEMENTATION YEAR (2015)

Intersection #1: Irving Blvd. / Golf Course Rd. – Appendix Pages A-50 thru A-57

The results of the 2015 implementation year analysis of the signalized intersection of Irving Blvd. / Golf Course Rd. are summarized in the following tables:

Existing Geometry (Irving Blvd. / Golf Course Rd.)

Approach	Left Turn Lanes	Thru/Lefts	Thru Lanes	Thru/Rights	Right Turn Lanes
EB Irving Blvd.	2	0	1	1	0
WB Irving Blvd.	1	0	2	0	1
NB Golf Course Rd.	1	0	1	1	0
SB Golf Course Rd.	2	0	2	0	1

Intersection: **#1 - Irving Blvd. / Golf Course Rd.**

	2015 AM Peak Hour					2015 PM Peak Hour				
	BASE GEOMETRY			MIT. GEOM.*		BASE GEOMETRY			MIT. GEOM.*	
	NO BUILD		BUILD	BUILD		NO BUILD		BUILD	BUILD	
	Lanes	LOS-Delay	LOS-Delay	Lanes	LOS-Delay	Lanes	LOS-Delay	LOS-Delay	Lanes	LOS-Delay
Eastbound - Irving Blvd.										
L	2	D - 46.8	E - 56.0	2	D - 50.6	2	F - 108	F - 203	2	F - 203
T	2	D - 52.6	D - 54.2	2	D - 51.2	2	E - 55.1	E - 58.9	2	E - 58.9
R	>	D - 52.6	D - 54.2	>	D - 51.2	>	E - 55.1	E - 58.9	>	E - 58.9
Westbound - Irving Blvd.										
L	1	D - 46.3	E - 56.8	1	D - 51.6	1	F - 103	F - 103	1	F - 103
T	2	C - 33.4	D - 39.7	2	D - 36.8	2	F - 87.0	F - 87.0	2	F - 87.0
R	1	B - 18.7	C - 22.0	1	C - 20.4	1	F - 97.5	F - 108	1	F - 108
Northbound - Golf Course Rd.										
L	1	C - 22.5	C - 25.3	1	C - 24.6	1	C - 24.0	C - 24.1	1	C - 24.1
T	2	D - 37.4	D - 39.2	2	D - 40.5	2	F - 90.3	F - 101	2	F - 101
R	>	D - 37.4	D - 39.2	>	D - 40.5	>	F - 90.3	F - 101	>	F - 101
Southbound - Golf Course Rd.										
L	2	D - 43.8	D - 52.5	2	D - 52.0	2	C - 27.8	C - 32.4	2	C - 24.0
T	2	B - 12.7	B - 13.2	2	B - 14.1	2	A - 8.7	A - 9.2	2	B - 11.5
R	1	A - 4.9	A - 5.5	1	B - 16.2	1	A - 4.9	A - 1.1	1	A - 3.8
Intersection:		**C - 33.6**	**D - 36.7**		**D - 36.2**		**E - 63.4**	**E - 72.7**		**E - 72.5**

NOTE: > denotes a shared thru/right and / or thru/left turn lane.

* - Mitigated Condition is with Driveway "A" Signalized.

The queuing analysis for this intersection are summarized in the following table:

Queueing Analysis Summary Sheet

Project: Golf Course Rd Development

Intersection: **Irving Blvd / Golf Course Rd**

2015

Approach	Left Turns			Thru Movements			Right Turns		
Eastbound	# Lanes	Vol.	Length	# Lanes	Vol.	Length	# Lanes	Vol.	Length
Existing Lane Length	*2*	*127*	*125*	*2*	*431*	*Cont*	*0*	*103*	*0*
AM NO BUILD Queue	2	135	125	2	459	325	0	110	175
AM BUILD Queue	**2**	**143**	**150**	**2**	**459**	**325**	**0**	**110**	**175**
Existing Lane Length	*2*	*156*	*125*	*2*	*250*	*Cont*	*0*	*54*	*0*
PM NO BUILD Queue	2	166	175	2	266	225	0	57	125
PM BUILD Queue	**2**	**185**	**175**	**2**	**266**	**225**	**0**	**57**	**125**
Westbound	# Lanes	Vol.	Length	# Lanes	Vol.	Length	# Lanes	Vol.	Length
Existing Lane Length	*1*	*11*	*175*	*2*	*49*	*Cont*	*1*	*161*	*250*
AM NO BUILD Queue	1	11	50	2	51	75	1	167	250
AM BUILD Queue	**1**	**11**	**50**	**2**	**51**	**75**	**1**	**181**	**250**
Existing Lane Length	*1*	*51*	*175*	*2*	*396*	*Cont*	*1*	*715*	*250*
PM NO BUILD Queue	1	53	100	2	410	325	1	741	**900**
PM BUILD Queue	**1**	**53**	**100**	**2**	**410**	**325**	**1**	**772**	**>1,000**
Northbound	# Lanes	Vol.	Length	# Lanes	Vol.	Length	# Lanes	Vol.	Length
Existing Lane Length	*1*	*26*	*175*	*2*	*536*	*Cont*	*0*	*14*	*0*
AM NO BUILD Queue	1	30	75	2	622	425	0	16	50
AM BUILD Queue	**1**	**30**	**75**	**2**	**640**	**450**	**0**	**16**	**50**
Existing Lane Length	*1*	*135*	*175*	*2*	*995*	*Cont*	*0*	*23*	*0*
PM NO BUILD Queue	1	157	250	2	1,154	**775**	0	27	75
PM BUILD Queue	**1**	**157**	**250**	**2**	**1,186**	**800**	**0**	**27**	**75**
Southbound	# Lanes	Vol.	Length	# Lanes	Vol.	Length	# Lanes	Vol.	Length
Existing Lane Length	*2*	*616*	*200*	*2*	*913*	*Cont*	*1*	*45*	*125*
AM NO BUILD Queue	2	690	475	2	1,023	650	1	50	100
AM BUILD Queue	**2**	**701**	**475**	**2**	**1,038**	**650**	**1**	**56**	**100**
Existing Lane Length	*2*	*293*	*200*	*2*	*636*	*Cont*	*1*	*150*	*125*
PM NO BUILD Queue	2	328	**275**	2	712	525	1	168	**250**
PM BUILD Queue	**2**	**361**	**300**	**2**	**747**	**525**	**1**	**188**	**275**

	AM	PM
Cycle Length:	120	130

NOTE: Queue lengths are in feet.

Intersection #2: McMahon Blvd. / Golf Course Rd. – Appendix Pages A-58 thru A-65

The results of the 2015 implementation year analysis of the signalized intersection of McMahon Blvd. / Golf Course Rd. are summarized in the following tables:

Existing Geometry (McMahon Blvd. / Golf Course Rd.)

Approach	Left Turn Lanes	Thru/Lefts	Thru Lanes	Thru/Rights	Right Turn Lanes
EB McMahon Blvd.	1	0	2	0	1
WB McMahon Blvd.	2	0	2	0	1
NB Golf Course Rd.	2	0	2	0	1
SB Golf Course Rd.	2	0	2	0	1

Intersection: **#2 - McMahon Blvd. / Golf Course Rd.**

	2015 AM Peak Hour						2015 PM Peak Hour					
	BASE GEOMETRY			MIT. GEOM.*			BASE GEOMETRY			MIT. GEOM.*		
	NO BUILD		BUILD	BUILD			NO BUILD		BUILD	BUILD		
	Lanes	LOS-Delay	LOS-Delay	Lanes	LOS-Delay		Lanes	LOS-Delay	LOS-Delay	Lanes	LOS-Delay	
Eastbound - McMahon Blvd.												
L	1	D - 52.0	E - 63.6	1	E - 62.3		1	F - 115	F - 115	1	F - 115	
T	2	F - 140	F - 154	2	F - 157		2	E - 58.3	F - 83.8	2	F - 83.8	
R	1	F - 170	F - 168	1	F - 185		1	C - 27.3	C - 29.8	1	C - 29.8	
Westbound - McMahon Blvd.												
L	2	F - 98.2	F - 176	2	F - 130		2	F - 96.5	F - 91.8	2	F - 91.8	
T	2	D - 36.1	D - 44.4	2	D - 39.0		2	E - 79.1	F - 90.3	2	F - 90.3	
R	1	B - 19.2	C - 26.8	1	C - 22.6		1	C - 26.3	C - 27.0	1	C - 27.0	
Northbound - Golf Course Rd.												
L	2	D - 35.5	D - 36.2	2	D - 51.1		2	E - 78.1	E - 71.3	2	F - 82.1	
T	2	B - 19.8	B - 15.6	2	B - 13.6		2	C - 32.4	C - 30.7	2	D - 39.7	
R	1	B - 14.4	B - 12.7	1	A - 7.8		1	B - 12.8	B - 15.1	1	B - 11.0	
Southbound - Golf Course Rd.												
L	2	D - 36.9	D - 49.3	2	D - 43.6		2	D - 51.1	D - 51.1	2	D - 51.1	
T	2	F - 171	F - 122	2	F - 154		2	E - 63.4	E - 75.6	2	E - 75.6	
R	1	B - 18.3	C - 20.2	1	B - 20.0		1	C - 23.3	C - 23.9	1	C - 23.9	
Intersection:		**F - 113**	**F - 109**		**F - 117**			**E - 57.1**	**E - 62.6**		**E - 64.8**	

NOTE: > denotes a shared thru/right and / or thru/left turn lane.

* - Mitigated Condition is with Driveway "A" Signalized.

The queuing analysis for this intersection are summarized in the following table:

Queueing Analysis Summary Sheet

Project: Golf Course Rd Development

Intersection: McMahon Blvd / Golf Course Rd

2015

Approach	Left Turns			Thru Movements			Right Turns		
Eastbound	# Lanes	Vol.	Length	# Lanes	Vol.	Length	# Lanes	Vol.	Length
Existing Lane Length	*1*	*104*	*280*	*2*	*693*	*Cont*	*1*	*631*	*250*
AM NO BUILD Queue	1	141	225	2	937	600	1	853	>1,000
AM BUILD Queue	**1**	**141**	**225**	**2**	**937**	**600**	**1**	**868**	**>1,000**
Existing Lane Length	*1*	*171*	*280*	*2*	*601*	*Cont*	*1*	*323*	*250*
PM NO BUILD Queue	1	231	325	2	813	575	1	437	**575**
PM BUILD Queue	**1**	**231**	**325**	**2**	**813**	**575**	**1**	**474**	**600**
Westbound	# Lanes	Vol.	Length	# Lanes	Vol.	Length	# Lanes	Vol.	Length
Existing Lane Length	*2*	*185*	*300*	*2*	*297*	*Cont*	*1*	*57*	*230*
AM NO BUILD Queue	2	207	175	2	333	250	1	64	125
AM BUILD Queue	**2**	**237**	**200**	**2**	**333**	**250**	**1**	**64**	**125**
Existing Lane Length	*2*	*335*	*300*	*2*	*726*	*Cont*	*1*	*170*	*230*
PM NO BUILD Queue	2	375	**300**	2	813	575	1	190	275
PM BUILD Queue	**2**	**427**	**350**	**2**	**813**	**575**	**1**	**190**	**275**
Northbound	# Lanes	Vol.	Length	# Lanes	Vol.	Length	# Lanes	Vol.	Length
Existing Lane Length	*2*	*175*	*240*	*2*	*324*	*Cont*	*1*	*265*	*220*
AM NO BUILD Queue	2	196	175	2	363	275	1	297	375
AM BUILD Queue	**2**	**207**	**175**	**2**	**369**	**275**	**1**	**321**	**400**
Existing Lane Length	*2*	*514*	*240*	*2*	*883*	*Cont*	*1*	*272*	*220*
PM NO BUILD Queue	2	576	**425**	2	989	**675**	1	305	**425**
PM BUILD Queue	**2**	**616**	**450**	**2**	**1,009**	**700**	**1**	**362**	**475**
Southbound	# Lanes	Vol.	Length	# Lanes	Vol.	Length	# Lanes	Vol.	Length
Existing Lane Length	*2*	*121*	*175*	*2*	*766*	*Cont*	*1*	*59*	*140*
AM NO BUILD Queue	2	170	150	2	1,079	675	1	83	150
AM BUILD Queue	**2**	**170**	**150**	**2**	**1,087**	**700**	**1**	**83**	**150**
Existing Lane Length	*2*	*133*	*175*	*2*	*625*	*Cont*	*1*	*133*	*140*
PM NO BUILD Queue	2	187	175	2	880	625	1	187	275
PM BUILD Queue	**2**	**187**	**175**	**2**	**898**	**625**	**1**	**187**	**275**

	AM	PM
Cycle Length:	120	130

NOTE: Queue lengths are in feet.

Intersection #3: McMahon Blvd. / Bandelier Dr. – Appendix Pages A-66 thru A-71

The results of the 2015 implementation year analysis of the signalized intersection of McMahon Blvd. / Bandelier Dr. are summarized in the following tables:

Existing Geometry (McMahon Blvd. / Bandelier Dr.)

Approach	Left Turn Lanes	Thru/Lefts	Thru Lanes	Thru/Rights	Right Turn Lanes
EB McMahon Blvd.	1	0	1	1	0
WB McMahon Blvd.	1	0	2	0	1
NB Bandelier Dr.	1	0	0	1	0
SB Bandelier Dr.	1	0	0	1	0

Intersection: **#3 - McMahon Blvd. / Bandelier Rd.**

	2015 AM Peak Hour			2015 PM Peak Hour		
	BASE GEOMETRY			BASE GEOMETRY		
	NO BUILD		BUILD	NO BUILD		BUILD
	Lanes	LOS-Delay	LOS-Delay	Lanes	LOS-Delay	LOS-Delay
Eastbound - McMahon Blvd.						
L	1	B - 12.2	B - 14.0	1	A - 8.6	A - 9.0
T	2	D - 51.2	D - 54.9	2	B - 13.0	B - 13.5
R	>	D - 51.2	D - 54.9	>	B - 13.0	B - 13.5
Westbound - McMahon Blvd.						
L	1	B - 17.8	B - 19.8	1	A - 6.6	A - 6.9
T	2	B - 17.5	B - 19.0	2	B - 14.4	B - 14.8
R	1	B - 15.2	B - 16.4	1	A - 9.2	A - 9.3
Northbound - Bandelier Rd.						
L	1	B - 16.4	B - 17.5	1	C - 22.1	C - 22.6
T	1	B - 18.6	C - 20.1	1	C - 22.5	C - 23.1
R	>	B - 18.6	C - 20.1	>	C - 22.5	C - 23.1
Southbound - Bandelier Rd.						
L	1	E - 75.1	E - 71.0	1	C - 28.1	C - 29.8
T	1	B - 16.4	B - 17.5	1	C - 22.0	C - 22.6
R	>	B - 16.4	B - 17.5	>	C - 22.0	C - 22.6
Intersection:		**D - 43.0**	**D - 44.8**		**B - 14.3**	**B - 14.8**

NOTE: > denotes a shared thru/right and / or thru/left turn lane.

The queuing analysis for this intersection are summarized in the following table:

Queueing Analysis Summary Sheet

Project: Golf Course Rd Development

Intersection: McMahon Blvd / Bandelier Dr

2015

Approach	Left Turns			Thru Movements			Right Turns		
Eastbound	# Lanes	Vol.	Length	# Lanes	Vol.	Length	# Lanes	Vol.	Length
Existing Lane Length	*1*	*5*	*110*	*2*	*1,007*	*Cont*	*0*	*4*	*0*
AM NO BUILD Queue	1	5	25	2	1,092	700	0	4	25
AM BUILD Queue	**1**	**5**	**25**	**2**	**1,101**	**700**	**0**	**4**	**25**
Existing Lane Length	*1*	*15*	*110*	*2*	*606*	*Cont*	*0*	*24*	*0*
PM NO BUILD Queue	1	16	50	2	657	475	0	26	75
PM BUILD Queue	**1**	**16**	**50**	**2**	**681**	**500**	**0**	**26**	**75**
Westbound	# Lanes	Vol.	Length	# Lanes	Vol.	Length	# Lanes	Vol.	Length
Existing Lane Length	*1*	*39*	*115*	*2*	*372*	*Cont*	*1*	*28*	*150*
AM NO BUILD Queue	1	44	100	2	417	300	1	31	75
AM BUILD Queue	**1**	**46**	**100**	**2**	**424**	**325**	**1**	**32**	**75**
Existing Lane Length	*1*	*138*	*115*	*2*	*1,058*	*Cont*	*1*	*194*	*150*
PM NO BUILD Queue	1	155	250	2	1,185	800	1	217	325
PM BUILD Queue	**1**	**163**	**250**	**2**	**1,210**	**800**	**1**	**223**	**325**
Northbound	# Lanes	Vol.	Length	# Lanes	Vol.	Length	# Lanes	Vol.	Length
Existing Lane Length	*1*	*7*	*90*	*1*	*1*	*Cont*	*0*	*183*	*0*
AM NO BUILD Queue	1	8	25	1	1	0	0	205	275
AM BUILD Queue	**1**	**8**	**25**	**1**	**1**	**0**	**0**	**208**	**300**
Existing Lane Length	*1*	*5*	*90*	*1*	*1*	*Cont*	*0*	*100*	*0*
PM NO BUILD Queue	1	6	25	1	1	0	0	112	200
PM BUILD Queue	**1**	**6**	**25**	**1**	**1**	**0**	**0**	**120**	**200**
Southbound	# Lanes	Vol.	Length	# Lanes	Vol.	Length	# Lanes	Vol.	Length
Existing Lane Length	*1*	*261*	*100*	*1*	*5*	*Cont*	*0*	*14*	*0*
AM NO BUILD Queue	1	292	375	1	6	25	0	16	50
AM BUILD Queue	**1**	**294**	**375**	**1**	**6**	**25**	**0**	**16**	**50**
Existing Lane Length	*1*	*115*	*100*	*1*	*3*	*Cont*	*0*	*11*	*0*
PM NO BUILD Queue	1	129	200	1	3	25	0	12	50
PM BUILD Queue	**1**	**135**	**225**	**1**	**3**	**25**	**0**	**12**	**50**

	AM	PM
Cycle Length:	120	130

NOTE: Queue lengths are in feet.

Intersection #4: Driveway 'A' / Golf Course Rd. – Appendix Pages A-72 thru A-79

The results of the 2015 implementation year analysis of the unsignalized intersection of Driveway 'A' / Golf Course Rd. are summarized in the following tables:

Base Geometry (Driveway 'A' / Golf Course Rd.)

Approach	Left Turn Lanes	Thru/Lefts	Thru Lanes	Thru/Rights	Right Turn Lanes
EB Driveway 'A'	1	0	0	1	0
WB Driveway 'A'	0	0	1+	0	0
NB Golf Course Rd.	1*	0	1	1	0
SB Golf Course Rd.	1	0	2	0	1*

1+ denotes a single approach used by all turning movements.
*Although the project site has never been developed, these turn lanes currently exist at a length of 125'±.

Intersection: **#4 - Driveway "A" / Golf Course Rd.**

	2015 AM Peak Hour					2015 PM Peak Hour				
	BASE GEOMETRY			MIT. GEOM.*		BASE GEOMETRY			MIT. GEOM.*	
	NO BUILD		BUILD	BUILD		NO BUILD		BUILD	BUILD	
	Lanes	LOS-Delay	LOS-Delay	Lanes	LOS-Delay	Lanes	LOS-Delay	LOS-Delay	Lanes	LOS-Delay
Eastbound - Driveway "A"										
L	1	A - 0.0	F - 999	1	E - 60.4	1	A - 0.0	F - 999	1	E - 79.7
T	1	A - 0.0	F - 999	1	E - 60.4	1	A - 0.0	F - 999	1	E - 79.7
R	>	A - 0.0	F - 999	>	E - 60.4	>	A - 0.0	F - 999	>	E - 79.7
Westbound - Driveway "A"										
L	>	F - 109	F - 700	>	E - 58.8	>	F - 675	F - 999	>	D - 45.3
T	1	F - 109	F - 700	1	E - 58.8	1	F - 675	F - 999	1	D - 45.3
R	>	F - 109	F - 700	>	E - 58.8	>	F - 675	F - 999	>	D - 45.3
Northbound - Golf Course Rd.										
L	1	A - 0.0	C - 21.7	1	B - 11.0	1	A - 0.0	C - 16.2	1	A - 4.3
T	2	A - 0.0	A - 0.0	2	A - 1.3	2	A - 0.0	A - 0.0	2	A - 4.1
R	>	A - 0.0	A - 0.0	>	A - 1.3	>	A - 0.0	A - 0.0	>	A - 4.1
Southbound - Golf Course Rd.										
L	1	B - 10.3	B - 10.3	1	A - 0.6	1	C - 21.3	C - 20.9	1	B - 14.8
T	2	A - 0.0	A - 0.0	2	A - 1.6	2	A - 0.0	A - 0.0	2	A - 5.9
R	1	A - 0.0	A - 0.0	1	A - 0.5	1	A - 0.0	A - 0.0	1	A - 6.7
Intersection:					A - 4.4					A - 9.2

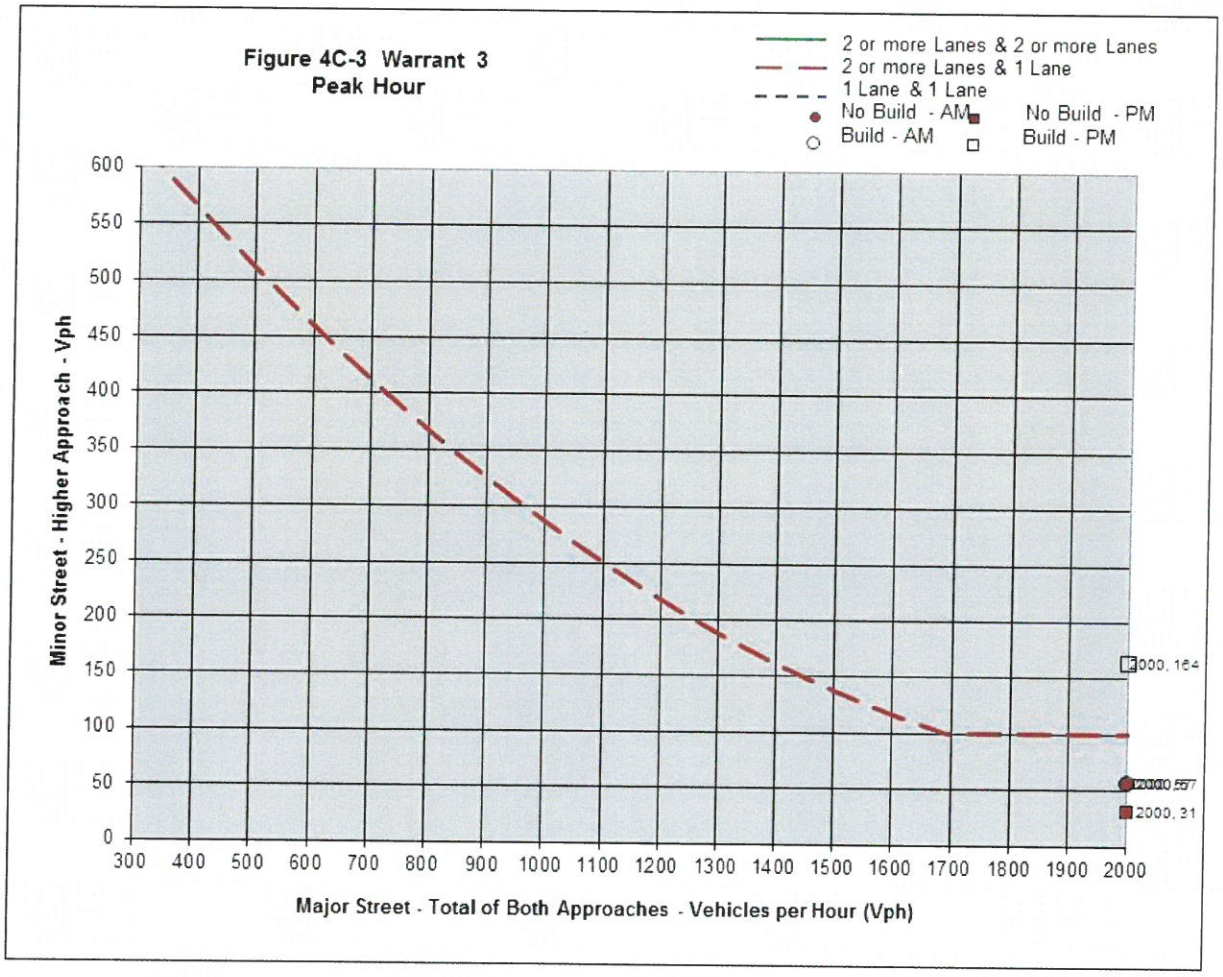
NOTE: > denotes a shared thru/right and / or thru/left turn lane.
* - Mitigated Condition is signalized.

It was noted during the AM Traffic Count that the northbound City bus stop also operates as a middle school bus stop at about 7:30 AM.

The intersection of Driveway 'A' / Golf Course Rd. is projected to operate with excessive delays as an unsignalized intersection. Due to the poor performance, the 2015 projected peak hour volumes were applied to Warrant #3 in the Manual on Uniform Traffic Control

Devices (2003 Edition) to determine if the Peak Hour Warrant for a Traffic Signal was satisfied.

The Peak Hour Warrant Graph below demonstrates that the 2015 PM BUILD Volumes for this intersection meet the warrant for a traffic signal:



In addition to the Peak Hour Signal Warrant analysis, the Measure of Effectiveness (MOE) was calculated for each case (without and with Driveway "A" signalized). See Appendix Pages A-85 thru A-96 for MOE reports. The long delays projected at the unsignalized intersection of Driveway "A" / Golf Course Rd. for the BUILD condition results in a higher MOE value associated with unsignalized Driveway "A" than with the new signal. Therefore, it has been demonstrated that the implementation of the new signal at Driveway "A" will result in an MOE reduced from 403.9 to 238.7 during the 2015 AM Peak Hour and from 906.5 to 251.2 during the 2015 PM Peak Hour. A significant benefit to the system is realized by constructing a new traffic signal at Driveway "A". However, it should be emphasized that the signal should be operated as a two phase signal with preference of green time on the major street (Golf Course Rd.). Side street green times should be calibrated so that the side street traffic experiences LOS "E" (greater than 55 seconds but less than 80 seconds average delay).

Finally, the progression of traffic on Golf Course Rd. was considered for the two conditions considered in this study (without and with the signal at Driveway "A"). Time-space diagrams

for Golf Course Rd. from Irving Blvd. to McMahon Blvd. are on Appendix Pages A-83 and A-84 demonstrating that there is sufficient green time on Golf Course Rd. at Driveway "A" such that there is minimal impact to the corridor during the 2015 AM Peak Hour period and reasonable impact tot the corridor during the 2015 PM Peak Hour period. It appears that there will be up to 10 or 11 vehicle (per lane) queuing for southbound traffic and up to 8 to 9 vehicle (per lane) queuing for northbound traffic during the 2015 PM Peak Hour. The AM Peak Hour queuing is less than 5 vehicles (per lane).

Intersection #5: Driveway 'B' / Golf Course Rd. – Appendix Pages A-80 thru A-81

Driveway 'B' is proposed as a right-in, right-out only driveway. The results of the 2015 implementation year analysis of the signalized intersection of Driveway 'B' / Golf Course Rd. are summarized in the following tables:

Assumed Geometry (Driveway 'B' / Golf Course Rd.)

Approach	Left Turn Lanes	Thru/Lefts	Thru Lanes	Thru/Rights	Right Turn Lanes
EB Driveway 'B'	0	0	1+	0	0
WB N/A	0	0	0	0	0
NB Golf Course Rd.	0	0	2	0	0
SB Golf Course Rd.	0	0	1	1	0

Driveway 'B' / Golf Course Rd.	2015 BUILD	
	A.M.	P.M.
Major Street (Golf Course Rd.)		
NB Left Turns	N/A	N/A
Major Street (Driveway 'B')		
EB Right Turns	C – 22.0	C – 18.2

The intersection of Driveway 'B' / Golf Course Rd. is projected to operate at a satisfactory level-of-service for the projected 2015 AM and PM Peak Hour NO BUILD and BUILD Conditions.

CONCLUSIONS

This analysis was conducted using the following methodology: Trip Generation was established using the Institute of Transportation Engineers' (ITE's) Trip Generation Manual (8th Edition). Generated commercial trips were distributed proportionately based on the population data within a two-mile radius of the project; residential / office trips were distributed based on citywide employment data; growth rate of background traffic volumes was established from Traffic Flow Map data from 2005 through 2009; and the intersection analyses were generally performed in accordance with the 2000 Highway Capacity Manual (Synchro 7 software). The Traffic Impact Study showed a minor increase in traffic congestion for the adjacent transportation network based on 100% buildout of the proposed project.

The impact of this project on the existing signalized intersections of Irving Blvd. / Golf Course Rd., McMahon Blvd. / Golf Course Rd., and McMahon Blvd. / Bandelier Rd. are minimal. Implementation of an unsignalized driveway to access this project will result in extremely excessive delays on the side street (driveway). As a result, consideration was given to constructing a two phase traffic signal at Driveway "A" to assist side street traffic in exiting the

project. The signal will also remedy long delays for the existing driveway across the street on the east side of Golf Course Rd. Since this report has demonstrated the excessive failure of the operation of Driveway "A" as an unsignalized intersections, and since signalization of Driveway "A" as recommended in this report will result in improved Measures of Effectiveness (MOE's) and the progression of traffic on Golf Course Rd. will be reasonably unimpeded, then this study recommends construction of a new two-phase traffic signal to control traffic at the intersection of Driveway "A" / Golf Course Rd. Since the new signal will be located near the bottom of a relatively steep hill, it is recommended that signal warning flashers be constructed upstream of Driveway "A" to the north and to the south to alert approaching traffic that they are approaching a red light.

In summary, the proposed development plan for mixed use development presents no significant adverse impact to the adjacent transportation system provided that the following recommendations are followed:

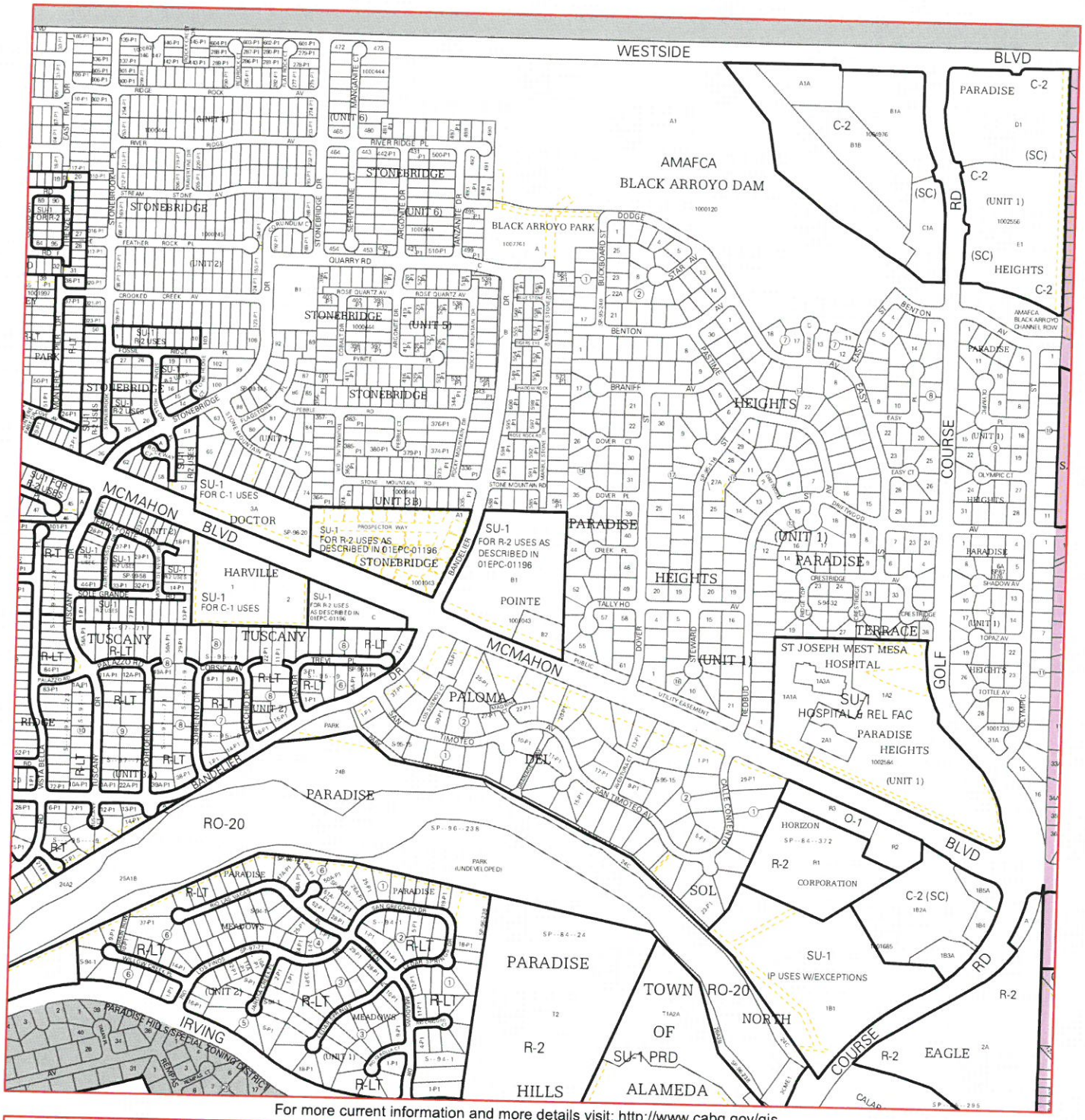
RECOMMENDATIONS

FROM IMPLEMENTATION YEAR (2015) ANALYSIS

- Construct two driveways to access the project. Driveway "A" should be a new full access signalized driveway to align with the existing driveway located approximately 1,140 feet south of McMahon Blvd. (centerline to centerline along the curvature of Golf Course Rd.). Driveway "B" should be constructed as a new right-in, right-out only driveway located approximately 350 feet south of Driveway "A" (centerline to centerline).
- Construct a new two phase traffic signal at Driveway "A" / Golf Course Rd. The signal should be timed to minimize the green time on the side street (Driveway "A") so the level-of-service for traffic on Driveway "A" will experience delays of at least 55 seconds but less than 80 seconds (LOS "E"). The new traffic signal shall be interconnected to the two existing signals to the north and to the south (Irving Blvd. / Golf Course Rd. and McMahon Blvd. / Golf Course Rd.).
- Construct "Signal Ahead" flashers to the north and south of Driveway "A" to alert approaching traffic on Golf Course Rd. of an impending red light.
- Construct Driveway "A" with one entering lane and two exiting lanes (one exclusive left turn lane and a thru/right turn lane).
- Construct Driveway "B" with one entering lane and one exiting lane.
- Driveways shall be constructed using a minimum of 25-foot radius curb returns or larger is required to accommodate delivery trucks.
- All design and construction for this project shall insure that adequate site distances at the proposed access points and any offsite intersection for which improvements are constructed.

Appendix

Appendix



For more current information and more details visit: http://www.cabq.gov/gis

AGIS
Albuquerque Geographic Information System

Map amended through: 1/24/2011

Note: Grey Shading Represents Area Outside of the City Limits

Zone Atlas Page:

A-12-Z

Selected Symbols

- SECTOR PLANS
- Design Overlay Zones
- City Historic Zones
- H-1 Buffer Zone
- Petroglyph Mon.
- Escarpment
- 2 Mile Airport Zone
- Airport Noise Contours
- Wall Overlay Zone

0 750 1,500 Feet


Cll Sombra NW
Olympic St NW
Ellison Rd NW
Easy St NW
Crestridge Ave NW
Redbud St NW
Cll Contento
Steward St NW
Dover St NW
San Timoteo Ave NW
Bandelier Dr NW
Trevi Pl NW
Vecchio Dr NW
Sorrento Dr NW
Portofino Dr NW
Bandelier Dr
McMahon Blvd NW
Greene Ave NW
Green Meadows Dr NW
Irving Blvd NW
Sandhurst Dr NW
Sandpoint Rd NW
Summerlin Rd NW
Rempas Dr NW
Gelfand Pl NW
Rio Las Vacas Rd NW
Willow Creek Pl NW
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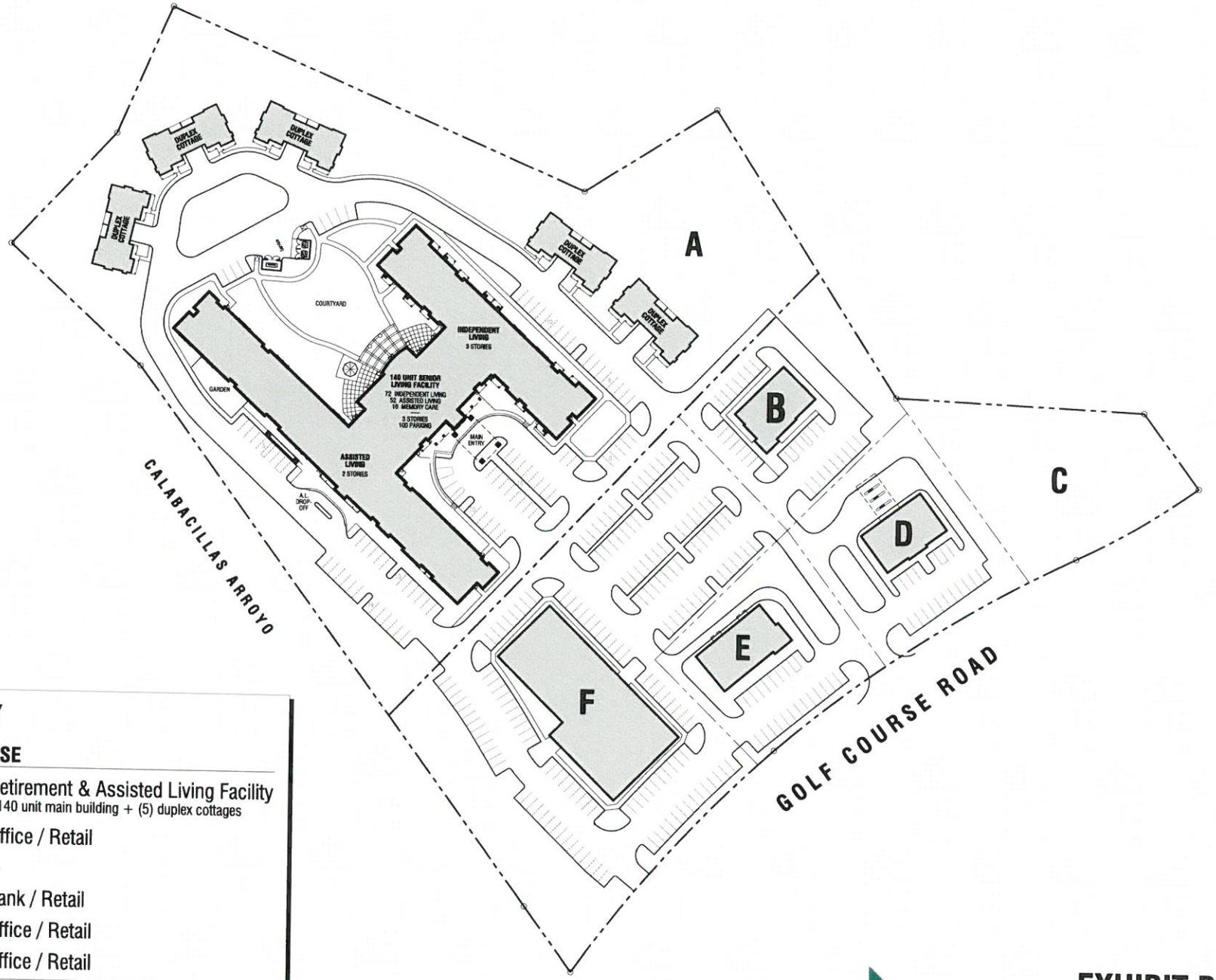

SUMMARY

LOT	SIZE	USE
A	7.58 ac	Retirement & Assisted Living Facility - 140 unit main building + (5) duplex cottages
B	0.78 ac	Office / Retail
C	0.83 ac	--
D	0.83 ac	Bank / Retail
E	0.72 ac	Office / Retail
F	2.81 ac	Office / Retail

13.55 TOTAL ACRES

SPECTRUM
RETIREMENT COMMUNITIES, LLC

EXHIBIT B
PRELIMINARY SITE PLAN

APRIL 5 2011