
**KITTRIDGE STREET TRACT #52652
RESIDENTIAL DEVELOPMENT
ACCESS & CIRCULATION ANALYSIS
LOS ANGELES COUNTY - CALIFORNIA**

Prepared for:

**Naïm Associates Architecture & Development
West Hollywood, California**

Prepared on:

September 16, 2016



COCO TRAFFIC PLANNERS, INC.



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Prepared by:

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TRAFFIC • DESIGN • PARKING • MODELING • URBAN PLANNING

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September 16, 2016

Mr. Phil Cocker
Battalion Chief, Fire Prevention Division
Los Angeles County Fire Department
1320 North Eastern Avenue
Los Angeles, California 90063-3294

Subject: Kittridge Street Tract #52652 Residential Development Access & Circulation Analysis - Los Angeles County, California

Dear Chief Cocker,

At the request of Mr. Naim, representing the above mentioned Tract #52652 Residential Development, we have conducted an analysis of the traffic impacts associated with the subject development project. The site is located on the north side of Randiwood Lane, between Kittridge Street, and Welby Way, in the West Hills area of the County of Los Angeles (COLA), California. The site currently consists of undeveloped rural land. The proposed project currently entails 2 development plans for the construction of 25 single family dwelling units (SFU), and 29 SFU respectively, with common appurtenances.

Concerns have been expressed by neighbors, residing within the Kittridge Community (west of Valley Circle Boulevard), with regard to the evacuation time between the area, and the intersection of Kittridge Street and Valley Circle Boulevard, during potential fire emergencies. Specifically, Kittridge Street virtually is the only route to access this area of West Hills, which consists of a total of 176 single family units. Consequently, the addition of 25 or 29 single family units may impact the evacuation time of the area. The present analysis quantifies the subject impact under two development scenarios, and evaluates the need for mitigation measures. The traffic generated will be used to evaluate the proposed project's evacuation time at the intersection of Kittridge Street and Valley Circle Boulevard. The results of the analysis will be compared with the existing area evacuation time, which will be based upon the number of residential units and Knapp Ranch park related vehicles discharging on Kittridge Street.

The development scenarios evaluated relate to 25, and 29 45 single family units (SFU) respectively. It should be noted that under the 29 SFU scenario the project plans entail the creation, in each house, of individual safe rooms, or shelter-in-place (SIP), where people may find short term protection during a local fire emergency. The availability of the SIP will reduce the traffic down to Valley Circle Boulevard as some residents may decide to stay in the safe room.

The points of potential congestion to be evaluated consist of: **1)** the segment of Kittridge Street west of Valley Circle Boulevard, which will experience the highest flow of traffic out of the area, and **2)** the intersection of Kittridge/Valley Circle Boulevard, controlled by the traffic signal. The analysis will provide the maximum time needed to completely evacuate the Kittridge Community, which represents the time needed by the last vehicle out of the Kittridge Community. On average, each vehicle will be evacuated in half that time.

In order to evaluate the time needed to evacuate the Kittridge Community our analysis made the following assumptions, aimed at evaluating the roadway maximum load:

- The entire Kittridge Community will decide to leave the area during a fire emergency. This is a worst case scenario because the Fire Department reported that only "exposed" streets (Kittridge Street and Welby Way) would be under a mandatory evacuation;
- The entire Kittridge Community will decide to leave the area at the same time;
- Every Single Family Unit will generate two vehicle trips leaving the area during a fire emergency;
- Vehicles fully occupy the 53 parking stalls, located in two off-street lots, serving the Knapp Ranch Park. Each vehicle generating one trip;
- Vehicles fully occupy the up to 75 curb parking stalls along Kittridge Street, which have been reported by the West Hills HOA, as being park related. Each vehicle generating one trip;
- Kittridge Street is the only route to evacuate the Kittridge Community (two alternative exit points are found via Ellenvue Avenue, into Valley Circle Boulevard, and Victory Boulevard respectively);
- Since Kittridge Street is a "local collector" street, with a width of 40 feet curb-to-curb (providing one lane plus parking in each direction of traffic), it presents no constraints, or limitations during a fire emergency. For this type of conditions, the Highway Capacity Manual (HCM), published by the Transportation Research Board, recommends a capacity (saturation flow rate) of 1,700 passenger cars per hour (pch).
- No traffic control officer will be available during a fire emergency to assist evacuating traffic (worst case scenario);
- No right-turns on red from eastbound Kittridge Street;
- During a fire emergency, the evacuation time is based upon the operations of the key intersection (Kittridge/Valley Circle) consequently, the flow of traffic at that location will be controlled by that traffic signal; the County Department of Public Works, as well as the available literature, suggests for these conditions a capacity of 1,600 vehicles per lane, per hour of green time (vplphg).



Based upon those assumptions, Table 1 shows the results of the evacuation time for the roadway segment of Kittridge Street, west of Valley Circle Boulevard. As indicated in Table 1, the 176 existing dwelling units, along with the vehicles parked in adjacent Knapp Ranch Park, with a capacity of 53 parking stalls, and the area curb parking, with a capacity of 75 stalls, will generate a total of 480 vehicle trips. Based upon the above mentioned assumptions, and a lane capacity of 1,700 vph, those trips will be handled in 1,016 seconds, or 16 minutes and 56 seconds. The time associated with the proposed project's increase in evacuation time is reported for the two development scenarios identified above.

As indicated in Table 1, the addition of the proposed project's traffic will determine a marginal increase to the evacuation time, adding 106 seconds, or one minute and 45 seconds, under the 25 SFU scenario, while it would add 61 seconds, or one minutes and one second under the 29 SFU scenario. As reported above, the reduced quantity of time is due to the fact that under the 29 SFU scenario, the project will provide a shelter-in-place in each house. During a fire emergency people may find short term protection in the shelters, thus reducing the quantity of traffic reaching Valley Circle Boulevard to evacuate the area. Consequently, the addition of the proposed project's traffic will increase the total area evacuation time to 18 minutes and 42 seconds, with the 25 SFU, and 17 minutes and 57 seconds, with the 29 SFU.

It should be noted that, at the present time, Kittridge Street has a roadway width of 40 feet curb-to-curb, or 20 feet in each direction of travel. Each side of the road provides for a 12 foot travel lane, plus 8 feet for parking. However, in the vicinity of Valley Circle Boulevard, the roadway width could be utilized more efficiently by restriping the west approach with a total of three lanes, instead of two. Specifically, one 14 foot inbound (westbound) lane, one 12 foot eastbound left only lane, and one 14 foot thru-right lanes. A preliminary design of the subject 3-lane west approach is shown in Figure 1. As indicated, the proposed striping would extend for a minimum of about 165 feet from Valley Circle Boulevard.

The capacity of one lane of an intersection's approach, is measured in vehicles per lane per hour of green time (vplphg). Based upon the "Traffic Impact Analysis Report Guidelines" of the Los Angeles County Department of Public Works the subject capacity is conservatively set at 1,600 vplphg.

Field investigations conducted at the analysis intersection showed that the traffic signal is of the "semi-actuated" type, which provides green time to Valley Circle Boulevard, as long as traffic is not detected on Kittridge Street. At that point, the traffic signal is timed to provide up to 26 seconds to the eastbound approach (outbound). Given that one full cycle is set at about 60 seconds, the phase for the Kittridge Community outbound movement (green time) is about 43% of the full cycle ($26 \div 60$). It should be noted that



TABLE 1

ROADWAY SEGMENT EVACUATION TIME CALCULATION

Kittridge Street Tract #52652 Residential Development Access & Circulation Analysis - County of Los Angeles

L A N D U S E	SIZE	UNIT 1)	LAND USE CODE	TRAFFIC GENERATION TE Rate 2) Trip Ends 3)	ROADWAY CAPACITY vplph 4)	V/C RATIO %	EVACUATION TIME sec min & sec
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Area Existing Development

Single Family	176	DU	210	2.00 352	1700	20.7%	745 = 12 min & 25 sec
Knapp Ranch Park	53	STLS	N/A	1.00 53	1700	3.1%	112 = 1 min & 52 sec
Area Street Parking	75	STLS	N/A	1.00 75	1700	4.4%	159 = 2 min & 38 sec
Worst Case Scenario Evacuation Time				480	1700	28.2%	1,016 = 16 min & 56 sec

Proposed Development Alternatives

Single Family	25	DU	210	2.00 50	1700	2.9%	106 = 1 min & 45 sec
Single Family (5)	29	DU	210	1.00 29	1700	1.7%	61 = 1 min & 1 sec

Site Development Alternatives - Total Area Evacuation Time

Total w/25 Single Family	25	DU	210	2.00 530	1700	31.2%	1,122 = 18 min & 42 sec
Total w/29 Single Family (5)	29	DU	210	1.00 509	1700	29.9%	1,078 = 17 min & 57 sec

Site Development Alternatives - Total Area Evacuation Time With Mitigation Measures (6)

Total w/25 Single Family	25	DU	210	2.00 530	3400	15.6%	561 = 9 min & 21 sec
Total w/29 Single Family (5)	29	DU	210	1.00 509	3400	15.0%	539 = 8 min & 58 sec

1) DU = Dwelling Units; STLS = Parking Stalls.

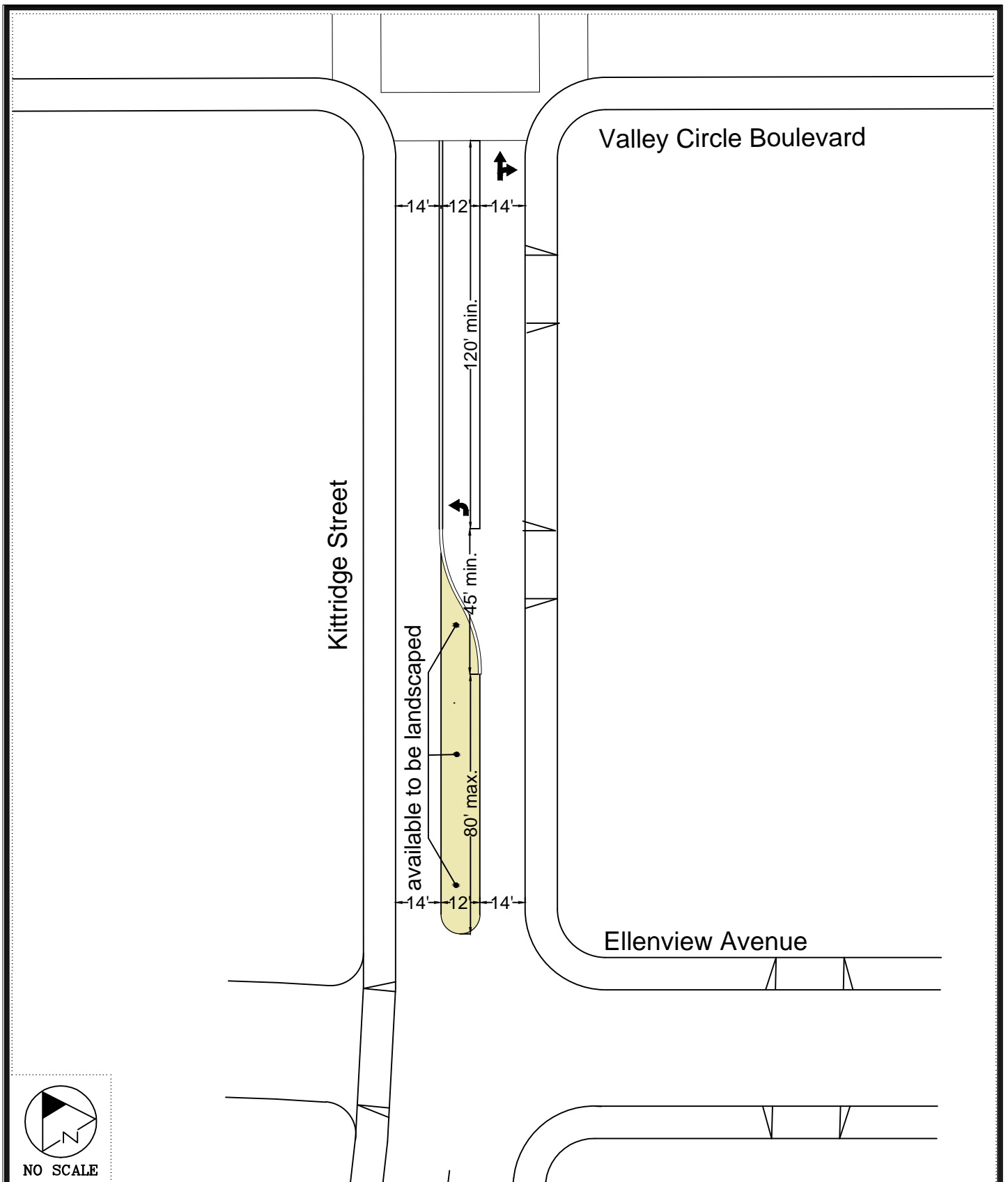
2) TE Rate is the average number of Trip Ends generated per "SIZE" Unit (i.e. DU).

3) Trip End is a one-way vehicle movement entering or leaving the traffic generator.

4) vplph = vehicles per lane, per hour. Lane capacity is 1,700 vplph.

5) The 29 DU plan provides an individual safe room in each house (SIP). It is assumed that only 50% of the new development dwellers will utilize the SIP.

6) Mitigation Measures consist of striping the eastbound approach of Kittridge/Valley Circle with one left only and one thru-right lanes, for about 165 feet from Valley Circle Boulevard.



NO SCALE



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**PROPOSED KEY
INTERSECTION LANE
CONFIGURATION**

a full cycle consists of one sequence of all the phases programmed in a traffic signal. From a time standpoint, the signal cycle is the length of time between the beginning of a given signal phase (example the start of the green light), and the time when the signal will show that same phase. The analysis of the operations of the intersection of Kittridge Street and Valley Circle Boulevard is summarized in Table 2.

As indicated in that Table, the Service Volume of the eastbound approach of the study intersection is 780 vehicles per lane per hour (vplph). This is based upon the County requirement that we assume that each vehicle needs 2 seconds to clear the intersection. The 26 seconds per cycle allocated to the eastbound approach translate into 13 vehicles per cycle ($26 \div 2$), or 780 vplph (13×60). Based upon that Service Volume, Table 2 shows that under existing conditions, the area evacuation time for the 480 vehicles (worst case scenario) is 2,215 seconds, or 36 minutes and 55 seconds. Under the same conditions, the proposed project would add 3 minutes and 50 seconds under the 25 SFU scenario, or 2 minutes and 12 seconds under the 29 SFU scenario. The lower value for the larger development has been explained above, and is the result of the provision of the shelter-in-place in each house.

The combined evacuation time also is reported in Table 2, and consists of 40 minutes and 46 seconds under the 25 SFU scenario, or 39 minutes and 9 seconds under the 29 SFU scenario. As indicated earlier, the roadway width could be utilized more efficiently by restriping the eastbound leg (west approach) of the intersection of Kittridge Street and Valley Circle Boulevard with two eastbound lanes (one left only, and one thru-right), instead of one. Table 2, shows this scenario as "With Mitigation Measures". For this condition, the COLA Traffic and Lighting Division requested that a "worst case scenario" be considered, assuming that only four vehicles will be able to turn left from the proposed left turn only lane each cycle. That translates into a service volume of 240 vph (4×60). Consequently, the service volume of the intersection of Kittridge Street and Valley Circle Boulevard eastbound leg will be 1020 vph ($780 + 240$).

Based upon that Service Volume, Table 2 shows that the future area evacuation time will be 31 minutes and 10 seconds under the 25 SFU scenario, or 29 minutes and 56 seconds under the 29 SFU scenario. This evacuation time is about 16 percent faster than the current evacuation time of 36 minutes and 55 seconds. Table 2 also shows the evacuation time under a more realistic assumption, where both of Kittridge Street eastbound lanes have the same 780 vplph, for a total of 1,560 vph. This assumptions, certainly is reasonable under the critical conditions determined by a fire emergency. Based upon that Service Volume, Table 2 shows that with the proposed mitigation measure, the future area evacuation time will be reduced to 19 minutes and 34 seconds, under the 29 SFU scenario. This evacuation time is about 47 percent faster than the current evacuation time of 36 minutes and 55 seconds.



TABLE 2

INTERSECTION EVACUATION TIME CALCULATION

Kittridge Street Tract #52652 Residential Development Access & Circulation Analysis - County of Los Angeles

LAND USE	SIZE	UNIT 1)	LAND USE CODE	TRAFFIC GENERATION		SERVICE VOLUME vplph 4)	VOLUME TO SRVC VOL RATIO	EVACUATION TIME	
				TE Rate 2)	Trip Ends 3)			sec	min & sec

Area Existing Development

Single Family	176	DU	210	2.00	352	780 (5)	45.1%	1,625	= 27 min & 4 sec
Knapp Ranch Park	53	STLS	N/A	1.00	53	780	6.8%	245	= 4 min & 4 sec
Area Street Parking	75	STLS	N/A	1.00	75	780	9.6%	346	= 5 min & 46 sec
Worst Case Scenario Evacuation Time					480	780	61.5%	2,215	= 36 min & 55 sec

Proposed Development Alternatives

Single Family	25	DU	210	2.00	50	780	6.4%	231	= 3 min & 50 sec
Single Family (5)	29	DU	210	1.00	29	780	3.7%	134	= 2 min & 13 sec

Site Development Alternatives - Total Area Evacuation Time

Total w/25 Single Family	25	DU	210	2.00	530	780	67.9%	2,446	= 40 min & 46 sec
Total w/29 Single Family (6)	29	DU	210	1.00	509	780	65.3%	2,349	= 39 min & 9 sec

Site Development Alternatives - Total Area Evacuation Time With Mitigation Measures (7)

Total w/25 Single Family	25	DU	210	2.00	530	1020 (8)	52.0%	1,871	= 31 min & 10 sec
Total w/29 Single Family (6)	29	DU	210	1.00	509	1020	49.9%	1,796	= 29 min & 56 sec
Total w/29 Single Family (6)	29	DU	210	1.00	509	1560 (9)	32.6%	1,175	= 19 min & 34 sec

1) DU = Dwelling Units; STLS = Parking Stalls.

2) TE Rate is the average number of Trip Ends generated per "SIZE" Unit (i.e. DU).

3) Trip End is a one-way vehicle movement entering or leaving the traffic generator.

4) vplph = vehicles per lane, per hour. Lane capacity is 1,600 vplph of green time (vplphg).

5) Assumes 26 secs of green time per cycle, 2 secs per vehicle, or 13 vehicles per cycle, and 60 cycles per hour.

6) The 29 DU plan provides an individual safe room in each house (SIP). It is assumed that only 50% of the new development dwellers will utilize the SIP.

7) Mitigation Measures consist of striping the eastbound approach of Kittridge/Valley Circle with one left only and one thru-right lanes, for about 165 feet from Valley Circle Boulevard.

8) Assumes only 4 vehicles per cycle turning left from the additional lane, or 240 vehicles per hour.

9) Assumes that both eastbound lanes have the same capacity of 780 vehicles per hour.

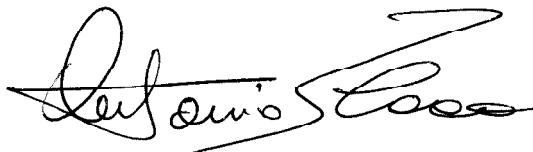
As indicated above, the 6 percent increase in traffic, associated with the 29 SFU scenario, or the 10 percent increase associated with the 25 SFU scenario, is not substantial even under the very conservative assumptions used in our analysis. Proportional changes would be experienced in the evacuation time. It should be noted that on average the change in the evacuation time will be experienced mainly by the traffic associated with the proposed project, which is located farthest from Valley Circle Boulevard. Consequently, the Kittridge Community motorists using the area street system will not experience noticeable changes in traffic operations due to the traffic generated by the proposed development with either one of the 25 SFU, and 29 SFU plans. During a fire emergency, the 29 SFU scenario has been shown that it could have a lesser impact than the 25 SFU scenario, due to the availability, in each house, of a shelter-in-place (SIP), where people will find short term protection during a local fire emergency. Should the proposed mitigation measures be implemented, traffic operation at the intersection of Kittridge Street and Valley Circle Avenue will see a significant improvement, while during a local fire emergency the area evacuation time will experience a major improvement, with a 47 percent reduction in total evacuation time.

* * * * *

Please call me if you have any questions with regard to our study. It has been a pleasure to serve you on this most interesting project.

Very truly yours,

COCO TRAFFIC PLANNERS, INC.



Dr. Antonio S. Coco, P.E.
President

ASC/bl
#2K16020AC



