

**Drainage Reports**

**Abbreviated Water & Sewer Need Reports**

**Water Study**

**Wastewater Study**

**Stormwater Waiver Application**





June 19, 2017

Phillip H. Kercher, P.E., PTOE  
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**RE: Category 1 Traffic Impact and Mitigation Analysis for the Rezoning of 4 Parcels on Northeast Corner of Miller and Pinnacle Peak Roads, from S-R to R1-10 – Scottsdale**

Dear Mr. Shirk:

This Category 1 Traffic Impact and Mitigation Analysis (TIMA) has been prepared to assess the effects of a redevelopment of four individual parcels totaling approximately 17¼ acres on the northeast corner of Miller and Pinnacle Peak Roads in the City of Scottsdale. A small, private, gated community of up to 48 single-family detached homes is proposed to redevelop the site of the headquarters of P.F. Chang's China Bistro, Inc. (PFCCBI), the parent corporation of two popular chains of Asian food restaurants, Pei Wei and P.F. Chang's.

PFCCBI is seeking rezoning from the existing S-R, Service Residential, zoning to a R1-10 residential zoning. (The R1-10 zoning is for single-family homes on lots averaging more than 10,000 and less than 18,000 square feet.) The neighboring La Vista at Pinnacle Peak subdivision, which abuts the redevelopment site on the east and north, is similarly zoned R1-10. **Attachment 1** is a preliminary site plan.

**EXECUTIVE SUMMARY**

PFCCBI is proposing to allow redevelopment of its four individual parcels totaling approximately 17¼ acres on the northeast corner of Miller and Pinnacle Peak Roads in Scottsdale into a small, private, gated community of up to 48 single-family detached homes. The new community would have a single access point from Miller Road and be opened in 2018. The community will replace a 50,728-square foot office building completed circa 2002 and purchased by PFCCBI in 2004. This Category 1 TIMA is intended to become one component of a complete application package for the rezoning of the two lots from S-R, Service Residential, zoning, to an R1-10 residential zoning. The following are the conclusions of the trip generation and comparison statement prepared for this project:

- CivTech estimates that projected 2018 daily traffic volumes could be 15,250 vpd on Pinnacle Peak Road between Scottsdale and Miller Roads, 1,250 vpd on 77<sup>th</sup> Street north of Pinnacle Peak Road, and that approximately 16,250 vpd currently enter the intersection with 16,500 vpd projected to enter the intersection in 2018, excluding any new trips generated by the redevelopment.
- Based on a review of crashes recorded in Scottsdale from 2013 to 2015, CivTech could not find any that occurred on 77<sup>th</sup> Street north of Pinnacle Peak Road and only one (in 2013) related to the intersection of 77<sup>th</sup> Street at Pinnacle Peak Road. Therefore, CivTech discerned no pattern of crashes susceptible to any kind of treatment and concludes that no mitigation measures are needed either on 77<sup>th</sup> Street or Pinnacle Peak Road or at their intersection.



- The new community, if developed as proposed under the requested R1-10 zoning currently being sought, could generate 534 trips daily, with 43 trips generated during the AM peak hour (11 in/32 out) and 54 trips during the PM peak hour (34 in/20 out). These are an estimated 114 more trips daily (36 fewer during the AM peak hour and 30 fewer during the PM peak hour) than is estimated for the current use as a corporate headquarters building under the current S-R zoning.

## BACKGROUND

The City's guidelines allow a Category 1 TIMA for developments that are expected to generate fewer than 100 trips per hour. For developments with single land uses, the City allows that a residential development with up to 100 dwelling units (DUs) qualifies for a Category 1 TIMA. PFCCBI's proposed small, private, gated community of up to 48 single-family detached homes would, therefore, qualify for a Category 1 TIMA, for which only certain basic information is required. (CivTech understands that a Category 2 TIMA may eventually be required to fully address concerns identified by area residents.) This letter-format report documents the TIMA. A site plan is required, as well as adjacent street volumes, a crash history, and a trip generation comparing the trips expected from the proposed land uses to those generated by existing land uses. Since time constraints did not allow CivTech to record traffic counts at the existing site driveways, CivTech will base its trip generation comparison on a land use category into which the current use fits, that of a Corporate Headquarters.

## EXISTING CONDITIONS

**Figure 1** shows the vicinity of the project. To the east of the proposed development site is the 133-home La Vista at Pinnacle Peak subdivision. Abutting the redevelopment site on the east and north, La Vista has a similar R1-10 zoning that is being sought for the site. Across Pinnacle Peak Road to the south is the Sunset at Pinnacle Peak neighborhood commercial plaza with shops, restaurants, and offices. Across Miller Road are the Toledo Mixed-Use Facility Condominiums, a two-story office complex, surrounding a small City-owned parcel on the corner and the Las Portones townhomes to the north.

**Pinnacle Peak Road** is a rural minor arterial street that runs east-west from Cave Creek Road in the City of Phoenix, 6.3 miles west of Miller Road, into Legend Canyon another four miles to the east. The speed limit on Pinnacle Peak Road is posted at 45 mph. East of Miller Road, in keeping with the City's "rural" designation, neither side of Pinnacle Peak Road is finished with curb, gutter, and sidewalk. A two-way left turn lane separates the east- and westbound travel lanes. Eastbound, two lanes have been provided, one of which is a through lane; the other serves as a continuous right turn lane for the Sunset development's two driveways. Westbound, Pinnacle Peak Road is widened to provide right turn lanes at



Figure 1 – Vicinity



both 77<sup>th</sup> Street and Miller Road; a single westbound lane is provided between the two streets. It is expected that the new development will provide whatever finishing the City requires to the north half of Pinnacle Peak Road. The City of Scottsdale publishes traffic volumes biennially. In 2014, Pinnacle Peak Road carried 14,800 vehicles per day (vpd) between Scottsdale and Miller Roads in the year 2014, only slightly higher than the 14,200 vpd reported in 2010. In 2012, volumes were down slightly from 2010: only 14,000 vpd were reported. CivTech estimated that 2017 volumes may be slightly higher than 2014 volumes at 15,000 vpd and projects an increase of another two percent to 15,300 vpd in 2018.

**77<sup>th</sup> Street** is a minor collector street that runs northerly from Pinnacle Peak Road into the gated La Vista subdivision, where it becomes private just beyond the existing development site access. 77<sup>th</sup> Street provides just one lane of travel in each direction and is striped only on the approach to Pinnacle Peak Road. There is no speed limit posted. Similar to the existing PFCCBI site, La Vista has two accesses, both gated, the 77<sup>th</sup> Street extension and one from Miller Road at Mariposa Grande Road. The City of Scottsdale does not publish traffic volumes on 77<sup>th</sup> Street north of Pinnacle Peak Road. Since 77<sup>th</sup> Street serves only a portion of the PFCCBI and La Vista developments, CivTech estimates that the volume on 77<sup>th</sup> Street approaching Pinnacle Peak Road is approximately 1,250 vpd. Based on a trip generation for La Vista and the P.F. Chang's offices, CivTech estimated the intersection volumes below. The developer does not expect to be required to make any improvements to 77<sup>th</sup> Street.

The intersection of **77<sup>th</sup> Street and Pinnacle Peak Road** is a four-legged intersection that includes a driveway approach from the south that is offset slightly (45-50 feet) to the west of 77<sup>th</sup> Street. (CivTech understands that the developer expects to realign 77<sup>th</sup> Street on the north to align with the existing retail plaza driveway on the south.) It operates under stop control on the southbound 77<sup>th</sup> Street and northbound driveway approaches. Left- and right-turn lanes are provided on both Pinnacle Peak Road approaches with a single approach lane on 77<sup>th</sup> Street and the driveway. The City does not publish intersection volumes at this intersection. (At the nearby Miller Road/Pinnacle Peak Road intersection, City maps indicates entering volumes of 21,800 vpd in 2010, 22,600 vpd in 2012, and 22,000 vpd in 2014.) CivTech estimates current 2017 volumes of approximately 16,250 vpd entering the intersection with 16,500 vpd projected to enter the intersection in 2018, excluding any new trips generated by the redevelopment.

Transit. The proposed development is not located near any existing Scottsdale Trolley stops, none of which is located north of McDonald Drive. The nearest bus route is Valley Metro Local Route 72, which stops at Thompson Peak Pkwy & Scottsdale Healthcare Drive, approximately one mile to the south; no express routes currently serve the area.

Crash History. CivTech excerpted from the statewide data base it purchases each year from the Arizona Department of Transportation, crashes referenced to 77<sup>th</sup> Street and Pinnacle Peak Road in order to identify segment crashes on both roadways as well as intersection-related crashes. CivTech used the data for the three calendar year period, 2013 to 2015. (Crash data for 2016 is expected to be ready later in June.) CivTech extracted just a single incident, a two-vehicle crash without injury related to the intersection of 77<sup>th</sup> Street and Pinnacle Peak Road.

The crash occurred on May 23, 2013 just after 10:30 in the morning in daylight conditions on dry pavement. Both vehicles carried drivers only and no passengers. The coding indicates that the crash was an angle type collision and that one of the vehicles was northbound. Since the northbound approach is a private driveway offset slightly to the west of 77<sup>th</sup> Street, CivTech must conclude that the vehicle was exiting the private driveway and executing a left turn maneuver onto



Pinnacle Peak Road when hit by another eastbound vehicle. However, the crash was not intersection-related, as coded, but driveway-related.

*Analysis.* Based on the one incidents that was recorded in 2013, CivTech discerned no pattern of crashes susceptible to any kind of treatment. CivTech concludes that no mitigation measures are needed either on 77<sup>th</sup> Street or Pinnacle Peak Road or at their intersection.

### **PROPOSED DEVELOPMENT**

P.F. Chang's China Bistro, Inc. (PFCCBI), is proposing to redevelop the site of its 50,728-SF corporate headquarters with a small, private, gated community of up to 48 single-family detached homes. The site is located on the northeast corner of Miller and Pinnacle Peak Roads in the City of Scottsdale. A conceptual site plan is attached (See **Attachment 1.**) Per the Maricopa County Assessor website, the site's four parcels total 17¼ acres. CivTech understands that this Category 1 TIMA is intended to become one component of a complete application package for the rezoning of the four lots from S-R to R1-10 zoning, which would allow the proposed residential development.

*Access to the site* will be via a new driveway to Miller Road. An existing site driveway to 77<sup>th</sup> Street will be closed when 77<sup>th</sup> Street is realigned. The driveway will be constructed as necessary to provide a gated access with a turnaround, etc., in conformance to City of Scottsdale guidelines. A secondary, emergency vehicle access is planned along 77<sup>th</sup> Street at approximately the location of the existing site driveway.

### **TRIP GENERATION COMPARISON**

As noted, PFCCBI's proposed development consists of a small, private, gated community of up to 48 single-family detached homes. The community will replace the company's 50,728-SF corporate headquarter office building. One of the requirements of a Category 1 TIMA is to estimate the trips generated by the proposed development and to compare them to the trips that are likely being generated by its current use as a corporate headquarters building.

The trip generation potential of a development is usually estimated using the most current edition of the Institute of Transportation Engineers' (ITE) *Trip Generation Manual* as a primary reference. The *Trip Generation Manual* contains data for a wide variety of land uses and is currently in its 9<sup>th</sup> edition, published in 2012. The data are summarized in the document and average rates and equations developed from the data are provided that correlate the relationship between an independent variable that describes the development size and the trips generated for each categorized land use. The manual provides information for daily and peak hour trips and, for certain uses, for other time periods as well.

**Table 1** is a detailed trip generation comparison that shows the amount of trips expected to be generated by a corporate headquarters building and for the 50 DUs now proposed. The lower portions of **Table 1** shows the numeric differences in trips between the scenarios. Please note that all trips were generated using the available regression equations; the averages shown represent the total trips generated using the regression equations divided by the planned number of units.



**Table 1 – Trip Generation Comparison**

Land Use	ITE LUC	ITE Land Use Name	Quantity/Units*	AM Distribution		PM Distribution					
				In	Out	In	Out				
<b>Current Use Under S-R Zoning</b>											
PFCCBI Offices	714	Corporate Headquarters	50,728 KSF	93%	7%	10%	90%				
<b>Proposed Use Under R1-10 Zoning</b>											
Gated Community	210	Single-Family Detached Housing	48 DUs	25%	75%	63%	37%				
Land Use	ADT			AM Peak Hour			PM Peak Hour				
	Avg. Rate*	Total	Avg. Rate*	In	Out	Total	Avg. Rate*	In	Out	Total	
<b>Current Use Under S-R Zoning</b>											
PFCCBI Offices		8.27	420	1.56	73	6	79	1.66	8	76	84
<b>Proposed Use Under R1-10 Zoning</b>											
Gated Community		11.14	534	0.89	11	32	43	1.12	34	20	54
<b>Differences (Proposed - Prior Uses)</b>											
Differences (#)			+114		-62	+26	-36		+26	-56	-30
Differences (%)			+27%		-85%	+433%	-46%		+325%	-74%	-36%

Notes: \*Average rate was calculated by dividing total trips generated using regression equation by the number of dwelling units. (See below.)  
 \* KSF = 1,000 square feet; DUs = Dwelling Units

Land Use [Units]	CALCULATIONS (Equations shown only where applicable)		
	Daily	AM Peak Hour	PM Peak Hour
Corporate Headquarters [KSF]	$\text{Ln}(T_{\text{Day}}) = \text{Ln}(50,728) \times 0.97 + 2.23 = 420$	$\text{Ln}(T_{\text{AM}}) = \text{Ln}(50,728) \times 0.96 + 0.60 = 79$	$\text{Ln}(T_{\text{PM}}) = \text{Ln}(50,728) \times 0.88 + 0.98 = 84$
Single-Family Detached Housing [DUs]	$\text{Ln}(T_{\text{Day}}) = \text{Ln}(48) \times 0.92 + 2.72 = 534$	$T_{\text{AM}} = 48 \times 0.70 + 9.74 = 43$	$\text{Ln}(T_{\text{PM}}) = \text{Ln}(48) \times 0.90 + 0.51 = 54$

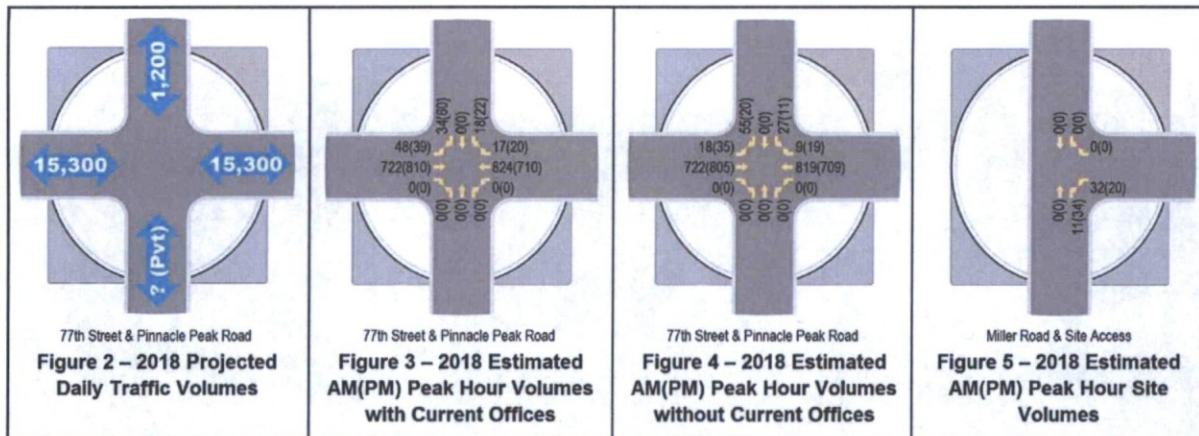
A review of the detailed trip generation in **Table 1** reveals that PFCCBI's new community, if developed as proposed under the requested R1-10 zoning currently being sought, could generate 534 trips daily, with 43 trips generated during the AM peak hour (11 in/32 out) and 54 trips during the PM peak hour (34 in/20 out). These are an estimated 114 more trips daily (36 fewer during the AM peak hour and 30 fewer during the PM peak hour) than is estimated for the current use as a corporate headquarters building under the current S-R zoning.

Please note that the mathematically large percentage increases in outbound trips in the morning and inbound trips in the afternoon are based on small numbers. They reflect the anticipated change of land use from an employment center to a residential area: instead of commuters from out of the area approaching the existing office building in the morning and leaving it in the afternoon, the future residents could be expected to leave their homes in the morning to their places of employment and return in the afternoon. The actual numerical increases are relatively small in terms of traffic, just 26 each in the morning and afternoon, average increases of less than one vehicle every two minutes during each of the peak hours. Overall, fewer trips are expected during both peak hours and 180 more trips are expected in the 22 non-peak hours each day since there is more activity in a neighborhood at different hours when compared to a typical office building. Even so, the increase in trips daily is just over eight trips per hour on average.

**The TRAFFIC VOLUMES**

**Figure 2** shows the projected 2018 daily traffic volumes on the adjacent roadways. **Figure 3** shows estimated AM and PM peak hour turning movements at the intersection of 77<sup>th</sup> Street and Pinnacle Peak Road should the site remain as the Chang's corporate headquarters. The turning movements shown in **Figure 4** are the result of removing the office trips from the intersection. **Figure 5** shows the trips from the proposed homes onto Miller Road.





**CONCLUSIONS AND RECOMMENDATIONS**

From the above, the following can be concluded:

- CivTech estimates that projected 2018 daily traffic volumes could be 15,250 vpd on Pinnacle Peak Road between Scottsdale and Miller Roads, 1,250 vpd on 77<sup>th</sup> Street north of Pinnacle Peak Road, and that approximately 16,250 vpd currently enter the intersection with 16,500 vpd projected to enter the intersection in 2018, excluding any new trips generated by the redevelopment.
- Based on a review of crashes recorded in Scottsdale from 2013 to 2015, CivTech could non that occurred on 77<sup>th</sup> Street north of Pinnacle Peak Road and only one (in 2013) related to the intersection of 77<sup>th</sup> Street at Pinnacle Peak Road. Therefore, CivTech discerned no pattern of crashes susceptible to any kind of treatment and concludes that no mitigation measures are needed either on 77<sup>th</sup> Street or Pinnacle Peak Road or at their intersection.
- The new community, if developed as proposed under the requested R1-10 zoning currently being sought, could generate 534 trips daily, with 43 trips generated during the AM peak hour (11 in/32 out) and 54 trips during the PM peak hour (34 in/20 out). These are an estimated 114 more trips daily (36 fewer during the AM peak hour and 30 fewer during the PM peak hour) than is estimated for the current use as a corporate headquarters building under the current S-R zoning.

Thank you for your time and prompt attention in reviewing and approving this amendment. Please contact me if you have any questions or comments.

Sincerely,

Joseph F. Spadafino, P.E., PTOE, PTP  
 Project Manager/Senior Traffic Engineer

Attachment 1 – Site Plan



