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Memorandum

To: **Kevin Serafin and Chris Lindley**
CEMCON, Ltd.

From: Bill Grieve, P.E., PTOE
Senior Transportation Engineer

Date: June 4, 2018 (Updated June 11, 2018)

Subject: ***Apartment Parking Demand Calculations***
Polo Club – Naperville, Illinois

There are 309 apartments planned as part of the proposed Polo Club residential development in Naperville, Illinois. The apartment mix is to include 168 1-bedroom, 120 2-bedroom, and 21 3-bedroom dwelling units (DU). City of Naperville code does not distinguish parking supply requirements based on the number of bedrooms. Rather, a uniform supply 2.00 parking spaces per unit for residents plus 0.25 spaces per unit for visitors are required.

The apartments at the Polo Club are requesting a variation for the 1-bedroom apartments to provide 250 spaces (208 resident + 42 guest), for a parking ratio of 1.49, instead of the required 378 spaces. The overall parking provided would be 567 spaces, versus the 695 spaces required, for an overall parking ratio for the 309 apartments of 1.83 spaces per DU.

Gewalt Hamilton Associates, Inc. (GHA) offers the following information in support of the variation request. Various pages are attached from documents referenced.

Institute of Transportation Engineers (ITE) -*Parking Generation*, 4th Edition

- The average peak period parking demand ratio is 1.23 vehicles per unit, resulting in 381 spaces. The 95% Confidence Interval ranged from 1.10-1.37 vehicles per dwelling unit.
- The graphed equation is (P = 1.42x – 38), which results in 401 spaces.

Other

- Tracy Cross & Associates recently researched parking provide at three apartment complexes in Glenview, Illinois that ranged from 125 to 290 DU. As with the apartments at the Polo Club, there was a mix of 1, 2, and 3-bedroom residences. The parking ratios provided were a low of 1.36 per DU to a high of 1.68 spaces per DU.
- The Village of Northbrook has recently had two large apartment complexes successfully go through their plan review and approval process. Both developments are on Skokie Boulevard along the I-94 corridor, so neither were considered Transit Oriented Developments (TOD). For Northshore 770, parking ratios of 1.75 per DU and 1.11 per bedroom were approved. For 1000 Skokie, parking ratios of 1.65 per DU and 1.5 spaces for 1-bedroom apartments were approved.

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Key Finding. Based on the above information, the proposed variation to provide 1.59 parking spaces for the 1-bedroom apartments should adequately accommodate the peak resident and visitor demands.

Land Use: 221
Low/Mid-Rise Apartment

Description

Low/mid-rise apartments are rental dwelling units located within the same building with at least three other dwelling units: for example, quadraplexes and all types of apartment buildings. The study sites in this land use have one, two, three, or four levels. High-rise apartment (Land Use 222) is a related use.

Database Description

The database consisted of a mix of suburban and urban sites. Parking demand rates at the suburban sites differed from those at urban sites and, therefore, the data were analyzed separately.

- Average parking supply ratio: 1.4 parking spaces per dwelling unit (68 study sites). This ratio was the same at both the suburban and urban sites.
- Suburban site data: average size of the dwelling units at suburban study sites was 1.7 bedrooms, and the average parking supply ratio was 0.9 parking spaces per bedroom (three study sites).
- Urban site data: average size of the dwelling units was 1.9 bedrooms with an average parking supply ratio of 1.0 space per bedroom (11 study sites).

Saturday parking demand data were only provided at two suburban sites. One site with 1,236 dwelling units had a parking demand ratio of 1.33 vehicles per dwelling unit based on a single hourly count between 10:00 and 11:00 p.m. The other site with 55 dwelling units had a parking demand ratio of 0.92 vehicles per dwelling unit based on counts between the hours of 12:00 and 5:00 a.m.

Sunday parking demand data were only provided at two urban sites. One site with 15 dwelling units was counted during consecutive hours between 1:00 p.m. and 5:00 a.m. The peak parking demand ratio at this site was 1.00 vehicle per dwelling unit. The peak parking demand occurred between 12:00 and 5:00 a.m. The other site with 438 dwelling units had a parking demand ratio of 1.10 vehicles per dwelling unit based on a single hourly count between 11:00 p.m. and 12:00 a.m.

Four of the urban sites were identified as affordable housing.

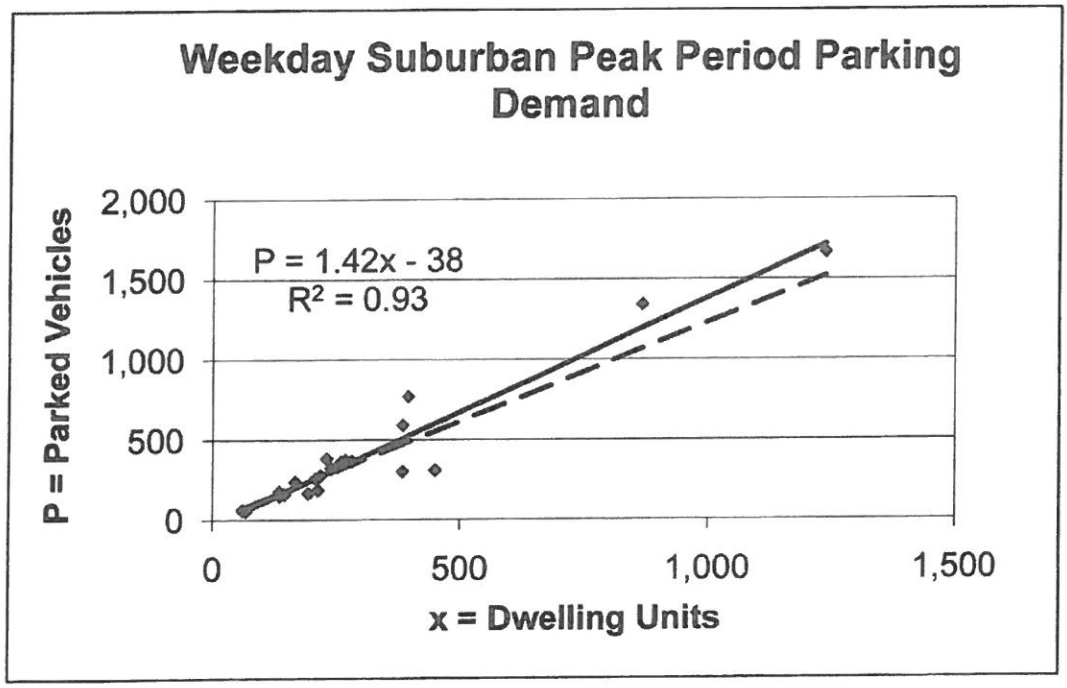
Several of the suburban study sites provided data regarding the number of bedrooms in the apartment complex. Although these data represented only a subset of the complete database for this land use, they demonstrated a correlation between number of bedrooms and peak parking demand. Study sites with an average of less than 1.5 bedrooms per dwelling unit in the apartment complex reported peak parking demand at 92 percent of the average peak parking demand for all study sites with bedroom data. Study sites with less than 2.0 but greater than or equal to 1.5 bedrooms per dwelling unit reported peak parking demand at 98 percent of the average. Study sites with an average of 2.0 or greater bedrooms per dwelling unit reported peak parking demand at 13 percent greater than the average.

For the urban study sites, the parking demand data consisted of single or discontinuous hourly counts and therefore a time-of-day distribution was not produced. The following table presents a time-of-day distribution of parking demand at the suburban study sites.

Land Use: 221
Low/Mid-Rise Apartment

Average Peak Period Parking Demand vs. Dwelling Units
On a: Weekday
Location: Suburban

Statistic	Peak Period Demand
Peak Period	12:00–5:00 a.m.
Number of Study Sites	21
Average Size of Study Sites	311 dwelling units
Average Peak Period Parking Demand	1.23 vehicles per dwelling unit
Standard Deviation	0.32
Coefficient of Variation	21%
95% Confidence Interval	1.10–1.37 vehicles per dwelling unit
Range	0.59–1.94 vehicles per dwelling unit
85th Percentile	1.94 vehicles per dwelling unit
33rd Percentile	0.68 vehicles per dwelling unit



◆ Actual Data Points ——— Fitted Curve - - - - Average Rate

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PROPOSED APARTMENT DEVELOPMENTS
– MIDTOWN SQUARE, AVON, AND GLENSTAR –
GLENVIEW, ILLINOIS

Midtown Square

Total Units: 125

Parking Spaces: 170 (Enclosed/Structured) Ratio = 1.36

Average Unit Size: 951 Sq. Ft.

Unit Mix:

1 BR:	74 Units (59.2%);	801 - 855 Sq. Ft.
1+Den BR:	15 Units (12.0%);	882 - 1,054 Sq. Ft.
2 BR:	36 Units (28.8%);	1,183 - 1,318 Sq. Ft.

Avon

Total Units: 238

Parking Spaces: 331 (Enclosed/Structured) / 20 (Surface)

Average Unit Size: 923 Sq. Ft. Ratio = 1.39

Unit Mix:

Studio:	15 Units (6.3%);	620 - 660 Sq. Ft.
1 BR:	66 Units (27.7%);	700 - 870 Sq. Ft.
1+Den BR:	66 Units (27.7%);	800 - 870 Sq. Ft.
2 BR:	74 Units (31.1%);	1,020 - 1,150 Sq. Ft.
3 BR:	17 Units (7.2%);	1,320 - 1,380 Sq. Ft.

GlenStar

Total Units: 290

Parking Spaces: 486 (Enclosed/Structured) / 23 (Surface)

Average Unit Size: 873 Sq. Ft. Ratio = 1.68

Unit Mix:

Studio:	31 Units (10.7%);	605 Sq. Ft.
1 BR:	151 Units (52.1%);	696 - 822 Sq. Ft.
2 BR:	108 Units (37.2%);	998 - 1,194 Sq. Ft.

Source: The Village of Glenview

Variation - Residential Parking
Reduction from 1,014 to 580 spaces

Parking Requirement - Multiple Family Dwelling Units	# of Parking Spaces Per Dwelling Unit	# of Parking Spaces Per Bedroom
MFRC District	2.5	
RLC District and Units over Commercial Use	2.0	
All other Multiple Family Dwellings	3.0	
1000 Skokie – Current Proposal	**1.72**	**1.26**
NorthShore 770	1.75	**1.11**
1000 Skokie - Based Upon PC Recommendation for NorthShore 770	**1.65**	1.5 space/1-bdrm 2.0 spaces/2-bdrm