Planning
Transportation
Land Development
Environmental

May 5, 2014

Mr. Bill Thompson
Astorbuck Properties, LLC
50 South Buckhout Street
Irvington, NY 10533

Re: Proposed new 43-space parking lot at the Stanford Bridge Building

Dear Mr. Thompson:

VHB has reviewed the plan to construct a new 43-space parking lot on the west side of South Buckhout Street immediately south of the Stanford Bridge Building's entrance driveway, as prepared by Kaaterskill Associates, dated 3/14/14. It is our conclusion that the proposed layout will operate effectively and that the new parking lot will not have an adverse impact on area traffic operating conditions.

Parking Lot Layout

The parking lot will have a width of 58 feet, with a 22-foot, two-way travel aisle, along either side of which will be 18-foot deep by 9-foot wide parking spaces. Parking lot will be accessed from the Stanford Bridge Building entrance driveway by a 24-foot wide driveway and the travel aisle will extend 9 feet beyond the last two parking spaces to allow vehicles parked in these spaces room to reverse out of the space and drive out of the parking lot.

The proposed spaces are 6 inches narrower and two feet shorter than prescribed in the Village Code, however, for the reasons described below, they will function as intended and will be very similar in operation to the Village's Aqueduct Lot on Main Street, which was most recently laid out by former Police Chief Lou Grieco, Former Village Administrator Don Marra and the ad hoc transportation committee in 2006.

In Figure 7-2 of its publication *The Dimensions of Parking, 5th Edition* (attached), the Urban Land Institute recommends that parking spaces should be between 8'-3" and 9'-0" wide, depending on their intended use. Low turnover spaces (for residents or employees) may be as narrow as 8'-3" while high-turnover spaces (retail or medical facilities) should be at least 8'-9" wide and preferably 9'-0". Since the proposed parking spaces are intended primarily for employee use, at 9'-0" they will be 6 to 9 inches (6% to 9%) wider than recommended or needed.

In Figure 7-3 of its publication *The Dimensions of Parking, 5th Edition* (attached), the Urban Land Institute recommends that parking bays such as the one proposed be 59'-0" feet wide, wall to wall, consisting of two 18-foot long spaces and a 23-foot wide travel aisle. The proposed parking lot will be 58'-0", curb to curb, with two 18-foot long spaces and a 22-foot wide travel aisle. Thus, the travel aisle will be 1 foot (or less than 5%) narrower than recommended value.

50 Main Street, Suite 360
White Plains, New York 10606
914.467.6600 ▪ FAX 914.761.3759
email: info@vhb.com
www.vhb.com

The acts of parking and unparking, as they are related to parking lot dimensions, are governed by two factors, 1. The width available to pull into or out of a space and, 2. The depth of the travel aisle. Narrower spaces can be compensated for (within reason) by wider travel aisles while narrower travel aisles compensated for (within reason) by wider spaces. In this instance, since the parking spaces are between 6% and 9% wider than needed, this will more than compensate for the fact that the travel aisle will be just less than 5% narrower than recommended. Thus, from a technical perspective, the proposed parking lot layout satisfies the general industry standards for an employee or resident parking lot.

From a practical perspective, the dimensions of the proposed parking lot will be virtually identical to the Village's Aqueduct Municipal lot, where the spaces are 9'-3" wide, 18'-0" long and the width of the lot varies from 55 feet (at the north end) to 58 feet (at the south end). This lot was restriped in 2006 by the Village and serves the local residents on a daily basis.

Parking Lot Access and Circulation
Motorists will enter the new parking lot by first turning into the Stanford Bridge Building property from Buckhout Street at the south end of the building and then turning left into the parking lot. This access is easily accomplished either from South Buckhout Street or Station Road and will not require any physical changes to the street system thereat. Motorists will exit the new parking lot by left out of it and proceeding around the Stanford Bridge Building to South Astor Street. From here they will be able to turn left or right and continue on their journey. This egress is easily accomplished and will not require any physical changes to the street system.

Potential Traffic Implications of the Parking Lot
Based on the understanding that the Stanford Bridge Building is presently fully occupied, it is concluded that the construction of the proposed 43 parking spaces will not generate any new traffic. Instead, the new parking lot will just accommodate parking activity currently occurring on the adjacent streets. By providing these 43 parking spaces on-site, visitors and employees of the Stanford Bridge Building, most of whom likely come down Station Road, will have a clear destination to head to and will no longer circulate on South Buckhout Street looking for available parking, possibly ending up pointing in the wrong direction when they want to go home and consequently doing U-turns on the street. Thus, the provision of these additional 43 spaces will improve overall traffic circulation and operating conditions on the streets surrounding the Stanford Bridge Building.

Sincerely,

VHB Engineering, Surveying and Landscape Architecture, P.C.

John Canning

John Canning, P.E.
Office Managing Director
Enclosure

FIGURE 7-2: Recommended Minimum Widths for Parking Stalls

	Feet	Meters
Low turnover (employees, students, etc.)	8′ 3″–8′ 6″	2.51–2.59
Low to moderate turnover (offices, regional retail centers, long-term airport parking, etc.)	8′ 6″–8′ 9″	2.59–2.66
Moderate to high turnover (community retail, medical facilities, etc.)	8′ 9″–9′ 0″	2.66–2.74

Source: Parking Consultants Council, *Guidelines for Parking Geometrics* (Washington, D.C.: National Parking Association, 2002).

to take account of what kind of parking facilities users are likely to be accustomed to: for example, a self-park facility in a downtown location in a large city can be designed with less generous dimensions than a self-park structure in an upscale suburban mall or in a smaller, rural community.

Finally, designers must be aware that vehicle sizes no longer vary significantly by region and locality. SUVs are just as popular in California and Hawaii as in rural areas and the Snowbelt. The sole exception is in the Southwest, where pickups are more likely to be used for everyday transportation than elsewhere in the country.

Other critical elements determining the dimensions of parking facilities are the width of the vehicles and the ease of maneuvering the vehicles into and out of the parking space. The ease of maneuvering, in turn, depends on three related factors: the width of the space itself, the angle of parking, and the width of the aisle. Within reasonable limits, the same degree of turning comfort can be achieved with a wider aisle and a narrower parking space, or with a wider parking space and a narrower aisle.

DETERMINING THE DIMENSIONS OF PARKING SPACES

Because a parking space that has sufficient clearance for doors to be opened comfortably will be wide enough for vehicle maneuvering if the adjacent aisle is properly sized, the widths of parking spaces have generally been based on required clearances for opening doors (that is, on the necessary distance between vehicles). Door opening clearances should range from 20 inches (51 centimeters) for vehicles in low-turnover facilities to 24 to 27 inches (61 to 69 centimeters) for vehicles in high-turnover facilities.[3] Combining these dimensions with the width of the current design vehicle results in parking-space widths that range from 8 feet, 3 inches (2.5 meters) to 9 feet, 0 inches (2.7 meters).

As noted earlier, turnover plays a strong role in determining parking geometrics; parking spaces are no exception. Figure 7-2 lists recommendations for adjusting stall widths on the basis of turnover.

Unlike width, the length of a parking space is not affected by turnover rate or user type. Currently, the recommended length of a parking space is 18 feet (5.5 meters). This recommendation is based on the length of the design vehicle—17 feet, 3 inches (5.25 meters)—plus nine inches (23 centimeters) to account for the typical distance from the bumper of a parked vehicle to the end of the stall (i.e., the edge of the stall farthest from the aisle).[4]

DETERMINING THE DIMENSIONS OF DRIVE AISLES AND MODULES

The drive aisle is the space between two vehicles that are parked directly opposite each other. The parking design term *module* refers to the distance created by the width of the drive aisle, combined with the length of the vehicle (or vehicles) parked on one (or both sides) of the drive aisle. When a vehicle is located on only one side of the drive aisle, this is referred to as a single-loaded module. When vehicles are located on both sides of the drive aisle, it is referred to as a double-loaded module.

In the early days of the parking garage, the size of parking modules was determined by trial and error. But in the 1950s, Edmund Ricker, an early pioneer in the field of parking geometrics,

FIGURE 7-3: Common Parking Dimensions

Angle (in Degrees)	Base Module	Vehicle Projection	Aisle Width	Single-Loaded Module	Wall to Interlock (8′ 6″)	Interlock to Interlock (8′ 6″)	Curb to Curb	Overhang	Width of 8′ 3″ Width Projection	8′ 3″ Interlock	8′ 6″ Width Projection	8′ 6″ Interlock
Θ	M_1	VP	A	M_2	M_3	M_4	M_5	o	WP	i	WP	i
30	41′ 2″	15′ 1″	11′ 0″	26′ 1″	37′ 6″	33′ 10″	38′ 8″	1′ 3″	16′ 6″	3′ 7″	17′ 0″	3′ 8″
35	43′ 0″	16′ 0″	11′ 0″	27′ 0″	39′ 6″	36′ 0″	40′ 2″	1′ 5″	13′ 5″	3′ 5″	14′ 10″	3′ 6″
40	44′ 10″	16′ 11″	11′ 0″	27′ 11″	41′ 7″	38′ 4″	41′ 8″	1′ 7″	12′ 10″	3′ 2″	13′ 3″	3′ 3″
45	47′ 0″	17′ 7″	11′ 10″	29′ 5″	44′ 0″	41′ 0″	43′ 6″	1′ 9″	11′ 8″	2′ 11″	12′ 0″	3′ 0″
50	48′ 6″	18′ 2″	12′ 2″	30′ 4″	45′ 9′	43′ 0″	44′ 8″	1′ 11″	10′ 9″	2′ 8″	11′ 1″	2′ 9″
55	50′ 0″	18′ 8″	12′ 8″	31′ 4″	47′ 7″	45′ 2″	45′ 10″	2′ 1″	10′ 1″	2′ 4″	10′ 5″	2′ 5″
60	51′ 6″	19′ 0″	13′ 6″	32′ 6″	49′ 4″	47′ 2″	47′ 2″	2′ 2″	9′ 6″	2′ 1″	9′ 10″	2′ 2″
65	53′ 0″	19′ 2″	14′ 8″	33′ 10″	51′ 2″	49′ 4″	48′ 6″	2′ 3″	9′ 1″	1′ 9″	9′ 5″	1′ 10″
70	54′ 0″	19′ 3″	15′ 6″	34′ 9″	52′ 7″	51′ 2″	49′ 4″	2′ 4″	8′ 9″	1′ 5″	9′ 1″	1′ 5″
75	55′ 0″	19′ 1″	16′ 10″	35′ 11″	53′ 10″	50′ 10″	50′ 2″	2′ 5″	8′ 6″	1′ 1″	8′ 10″	1′ 1″
90	59′ 0″	18′ 0″	23′ 0″	41′ 0″	59′ 0″	59′ 0″	54′ 0″	2′ 6″	8′ 3″	0′ 0″	8′ 6″	0′ 0″

All dimensions are rounded to the nearest inch.

Recommendations assume (1) one-way traffic for angles less than 90 degrees, and two-way traffic for 90-degree parking; (2) double-loaded aisles; and (3) a design vehicle that is 6′ 7″ by 17′ 3″.

1. In structures, or in lots where at least 30 percent of the stalls have guides or curbs, 1 foot (0.3 meters) may be deducted from the aisle width and the corresponding module.
2. In stalls that are adjacent to walls, columns, or other obstructions that might interfere with door opening or turning movement into the stall, add at least 10 inches (25 centimeters) to the width of the stall.
3. In stalls that are adjacent to curbs or islands, add at least 10 inches (25 cen
4. Aisle width may be increased by up to 3 feet (0.9 meters) to provide a hig
5. Light poles and columns may protrude into a parking module a maximum o the stalls. For example, either a 1-foot (0.3-meter) encroachment on both sid acceptable.
6. Where columns, light poles, or other obstructions encroach on more than
7. For each 1-inch (2.5-centimeter) addition to the width of the stall—to a ma deducted from the module without decreasing turning comfort.

developed a series of equations that modeled the movement of a vehicle into a parking space. These equations are still in use, although they have been refined over the years to more accurately simulate the relationship between the aisle and a parking space. The combination of these equations and practical experience has led to a set of recommended minimum dimensions for modules that provide an acceptable level of comfort for the turning movement. (See the shaded portion of Figure 7-3.)

Parking and traffic consultants [illegible]

sions of the parking space, the actual resulting width of the drive aisle is greater, since the distance from the back of the parked vehicle to the end of the parking space can be utilized as additional width to the drive aisle. In simple terms, the drive aisle is the space between two vehicles parked directly opposite each other, not the distance between the parking space lines painted on the floor. By taking this approach, the consultant can achieve a more efficient parking layout (i.e.,

stall widths according to user needs, the designer can ensu comfortable parking dimensions.

It is important to note that the dimensions listed in this chapter are recommended minimums. Depending on the characteristics of the site and the users, it may be prudent to provide larger spaces and modules. Generally, parking consultants have found that to maintain the desired level o comfort it is preferable to increase stall width and decreas