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# MEMORANDUM

**DATE:** May 16, 2017

**TO:** Jen Desrude, Development Coordinator, City of Bloomington

**FROM:** Bob Green, P.E., PTOE
Stephen Smith

**SUBJECT:** **Friendship Village Parking Study**

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Alliant Engineering, Inc. has conducted a parking study in response to Friendship Village proposed building expansion located at 8100 Highwood Drive in Bloomington, MN. Friendship Village is an existing senior housing development with a current campus of 23.93 acres.

## 1. Introduction

Friendship Village has recently acquired the adjacent 1.75-acre property and plans to demolish the two existing commercial buildings. The project location and proposed site concept plan are illustrated in Figure 1. Table 1 summarizes the proposed land use characteristics.

**Table 1. Proposed Land Use Changes**

| Estimated Schedule | Land Use Changes | Parking Changes |
|---|---|---|
| Construction Start Date:<br>**Phase 1 (3-Story Health Center):**<br>Fall of 2017<br>**Phase 2 (3-Story Health Center):**<br>Late 2018<br>**Phase 3 (Residential Living Building):**<br>Late Spring 2018 | • Acquire 1.75 acre property and demolish two existing commerical buildings<br>•3-story healthcare center building<br>•4-story, 94-unit residential living building | •Remove all parallel street parking<br>•Remove 20 surface Stalls<br>•Remove 17 underground parking stalls<br>•Add 86 surface stalls<br>•Add 160 underground parking stalls |

To accomplish this goal, it is anticipated that the existing parking lot will be reconstructed. The total number of parking stalls may be reduced, reconfigured, or relocated to achieve the proposed expansion. The construction is expected to start in the spring or summer of 2017.

It should be noted that staff in the past has noticed a general shortage of parking, which resulted in vehicles parking in the fire lanes and drive isles around the site. The City of Bloomington requires the parallel parking to be removed permanently as part of this project due to fire truck access.

Based on the parking demand, zoning code requirements, and parking availability, concerns have been raised with the expansion. Friendship Village may apply for parking reduction flexibility under City Code Section 21.301.06 (e)(1)(A-D) "Proof of parking measures". This requires a parking study to prove that there is not a present need for the portion of parking for which the applicant is requesting proof of parking flexibility[1]. The objective of this parking study is to document the current parking demand of land use and to estimate the future total parking demand.

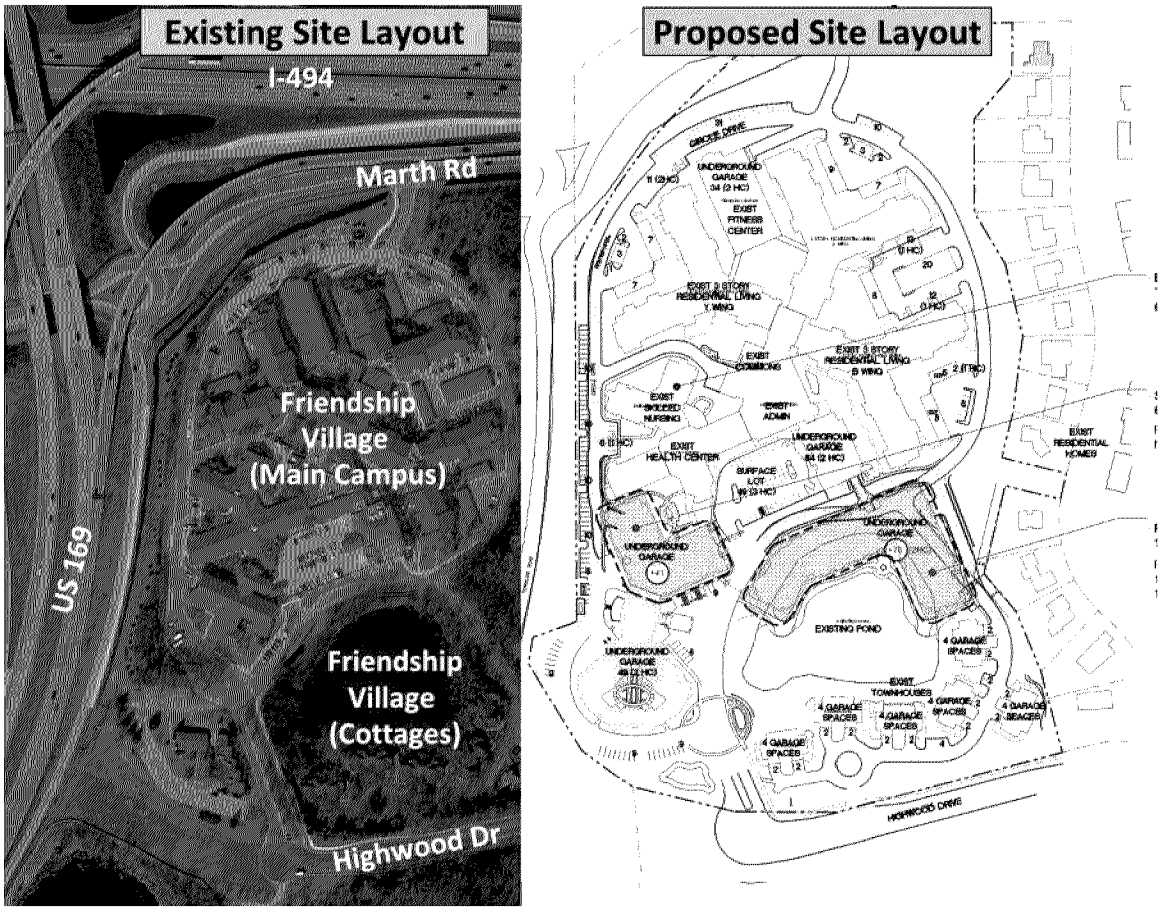



**Figure 1. Existing and Proposed Friendship Village Campus in Bloomington, MN**

### 1.1. Study Purpose

The purpose of the study is to analyze the existing parking operations of the Friendship Village, evaluate the expected parking demand, and establish the recommended parking supply required for the site.

The goals of this study are as follows:

- Determine the City of Bloomington Zoning Code off-street parking requirement;
- Estimate the yearly variations in parking generation based on staffing and resident data provided by Friendship Village;

[1] Bloomington, Minnesota. Code of Ordinances.

- Evaluate data provided by Friendship Village and develop estimated parking demand calculations based upon visitors and/or other measures/assumptions to be determined through the analysis;
- Establish the recommended parking supply required for the site, with the existing and proposed operation; and
- Develop charts and exhibits highlighting the parking demand versus supply analysis, illustrating peak parking demands and seasonal variation in the parking demand.

### 1.2. Existing Operations

The campus is comprised of five land uses – residential living apartments, residential living cottages, assisted living apartments, memory care apartments, and a skilled nursing facility. Friendship Village has 47 parallel street stalls and 197 surface parking stalls, 101 parking stalls in garages, and 112 parking stalls in underground secured parking. The facility has one meeting room that can hold approximately 50 to 100 people. The total number of employees for each of the five land uses is shown in Table 2.

**Table 2. Departments and Employees**

| Department | Total Staff | Daily Staff | | | |
|---|---|---|---|---|---|
| | | Mon-Fri | | Sat and Sun | |
| | | AM | PM | AM | PM |
| Adminstration | 19 | 14 | 1 | 1 | 1 |
| Residental Living | 146 | 55 | 27 | 20 | 24 |
| Skilled Nursing | 100 | 51 | 23 | 24 | 22 |
| Boarding Care[1] | 19 | 7 | 7 | 7 | 7 |
| | | | | | |
| Total Staff | 284 | 127 | 58 | 52 | 54 |

[1]Staff total includes: memory care and assisted living departments

# 2. Data Collection

### 2.1. Time, Location and Data Format

There are four parking categories located at the site which serve as visitors, employees, and resident parking. The Friendship Village campus consists of the following parking categories:

- Parallel Street Parking
- Surface Lot Parking
- Residential Garage Parking
- Underground Access Parking

Also, the Friendship Village campus includes restricted parking for visitors, equipment, and residents. The following is a list of restricted parking around the site:

- Plow Truck Parking Only – 1 stall
- Bus Parking - 2 stalls
- No Parking Maintenance Equipment Only – 2 stalls
- Visitor Parking Only - 4 stalls
- No Parking Resident Loading Only – 1 stall
- Fitness Center Visitor Parking Only – 4 stalls
- Resident Parking Only – 12 stalls
- Team Member of the Month – 1 stall

As part of the field collection, residential garages and cottages were excluded from the figures due to the personal and/or restricted nature. It should be noted that the cottages have a total of 32 surface stalls and maintained 100% availability during the field survey. Table 3, Table 4, and Table 5 documents the existing number of parking stalls by category as well as the total number of stalls at the site.

**Table 3. Total - Existing Parking Supply**

| Parallel Parking | Surface Lot | Residential Garage | Underground Parking | Total Stalls |
|---|---|---|---|---|
| 47 | 197 | 101 | 115 | 460 |

**Table 4. Main Campus - Existing Parking Supply**

| Parallel Parking | Surface Lot | Residential Garage | Underground Parking | Total Stalls |
|---|---|---|---|---|
| 47 | 165 | 77 | 115 | 404 |

**Table 5. Cottages - Existing Parking Supply**

| Parallel Parking | Surface Lot | Residential Garage | Underground Parking | Total Stalls |
|---|---|---|---|---|
| 0 | 32 | 24 | 0 | 56 |

**Table 6. Main Campus - Modified Parking Supply**

| Parallel Parking | Surface Lot | Residential Garage | Underground Parking | Total Stalls |
|---|---|---|---|---|
| 47 | 165 | 0 | 115 | 327 |

As stated above, residential garages and cottages will be excluded from the field survey and the ***modified parking supply*** from Table 6 is 327.

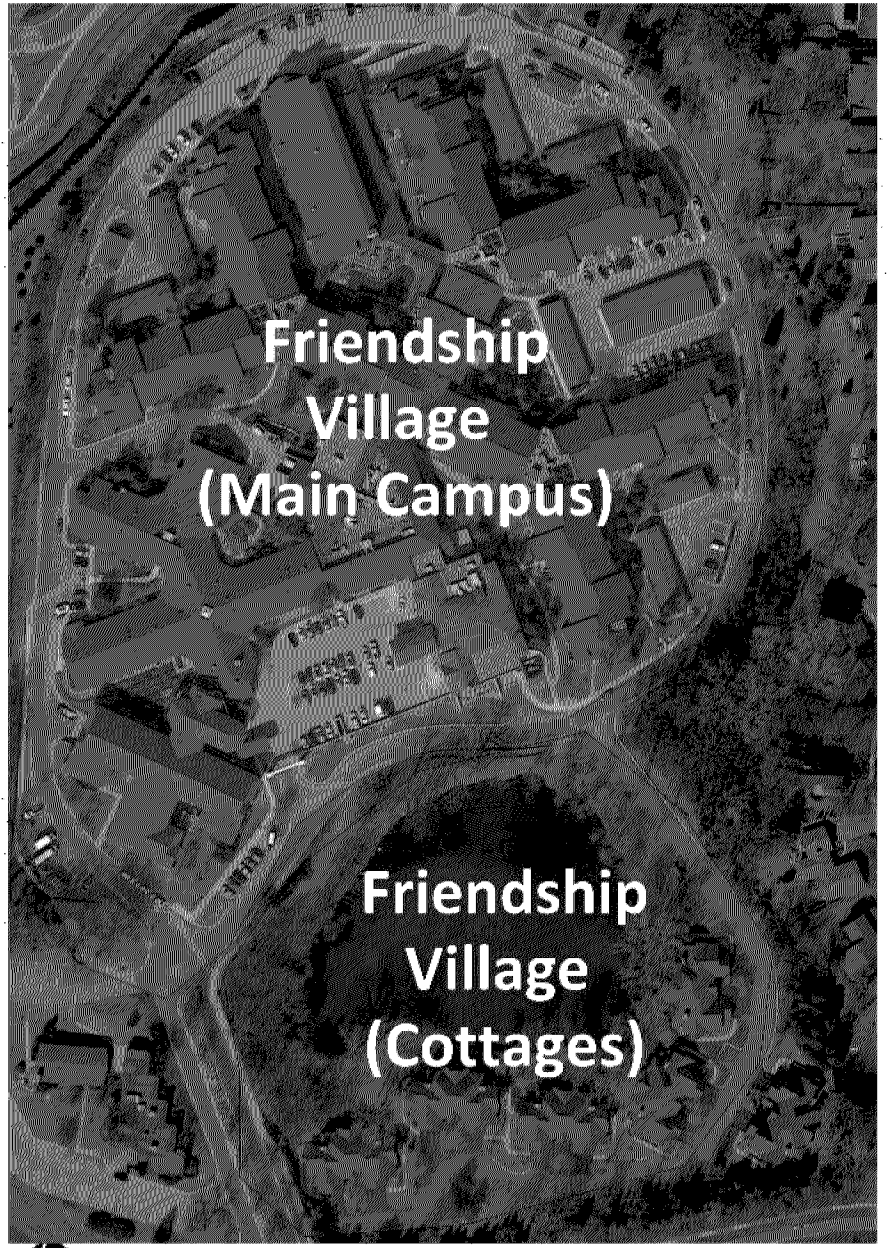
### 2.2. Method

To document normal weekday parking operations, existing parking data for the Friendship Village parking categories was collected on Thursday, January 12 and Sunday, January 15, 2017. Continuous parking data was collected between 9:00 a.m. and 5:00 p.m. for all parking categories. Every 30-minutes the total number of parking stalls and the total number of parked vehicles were documented. In addition to parking utilization, visitor data from Friendship Village was also gathered. The number of visitors for Friendship Village was collected for the two study dates.

### 2.2.1. Friendship Village Parking Demand

Figure 2 and Figure 3 summarize the results of the existing parking utilization field survey by each lot and the total for all lots (public and employees). The two days of data collection provided an accurate baseline for January based on the assumption that the data collection occurred over an adequate time period and on typical days—without major events or meetings. All vehicles in the parking lots were residents, employees or individuals that parked during the day. The data collected was used to better understand parking utilization across the lots and to identify the peak parking period in a given day.

# MAIN CAMPUS - Field Parking Count
## Thursday - January 12, 2017
### (Visitors: 26 Sign-Ins)

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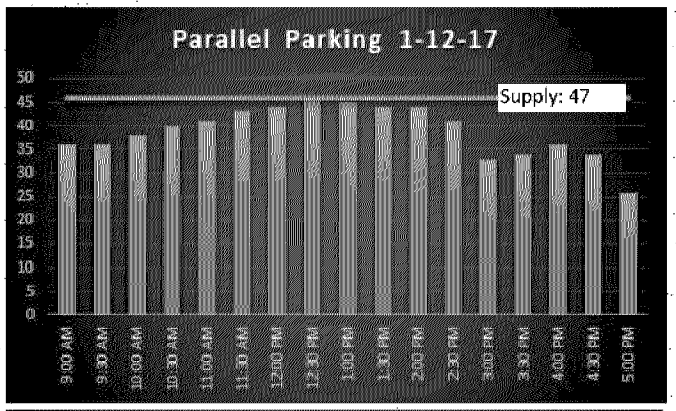
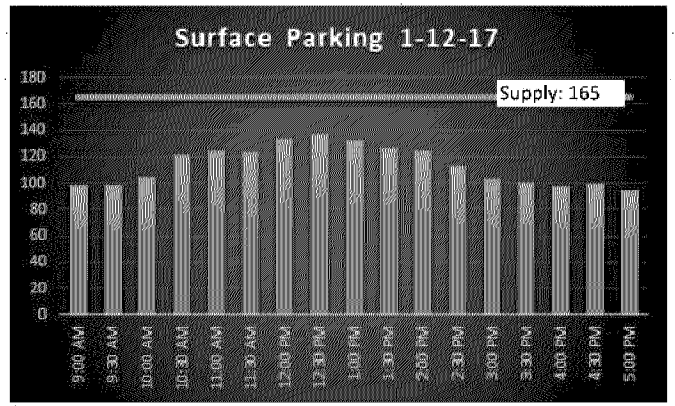
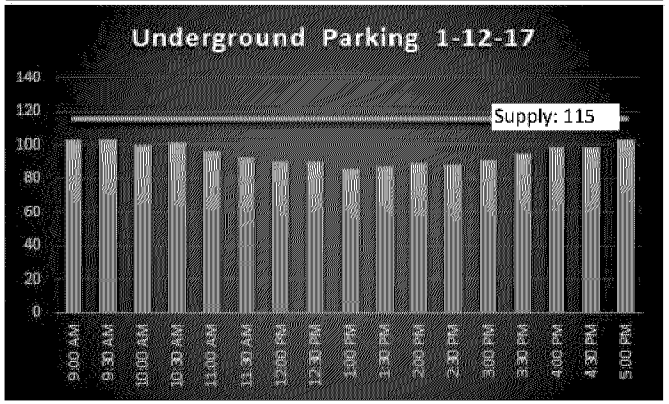
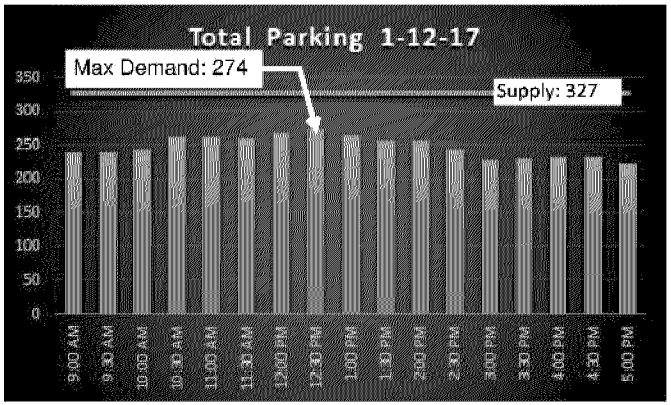


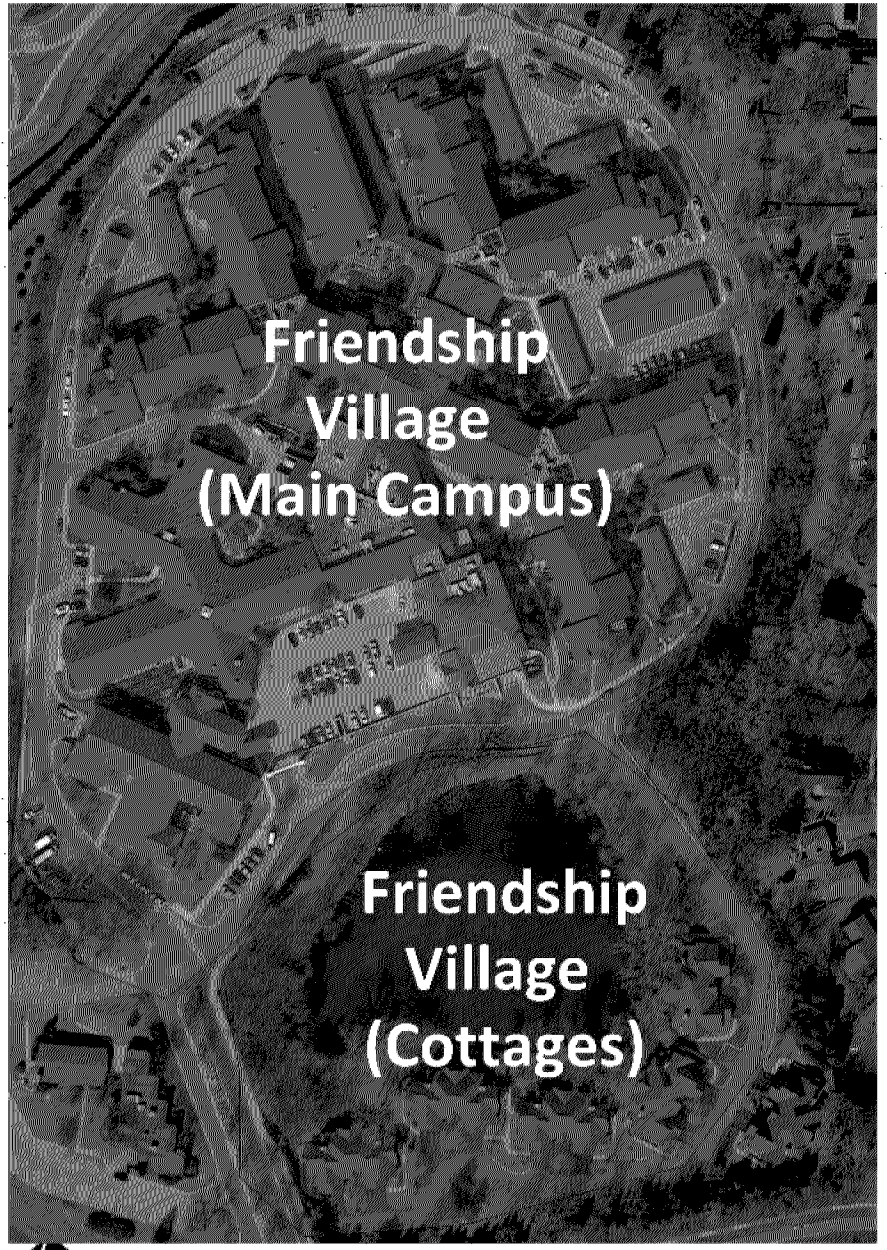




CASE FILE #PL201800072
CASE FILE #PL201800250

*Figure 2*
*Field Parking Count*
*January 12, 2017*

# MAIN CAMPUS - Field Parking Count
## Sunday - January 15, 2017
(Visitors: 17 Sign-Ins)

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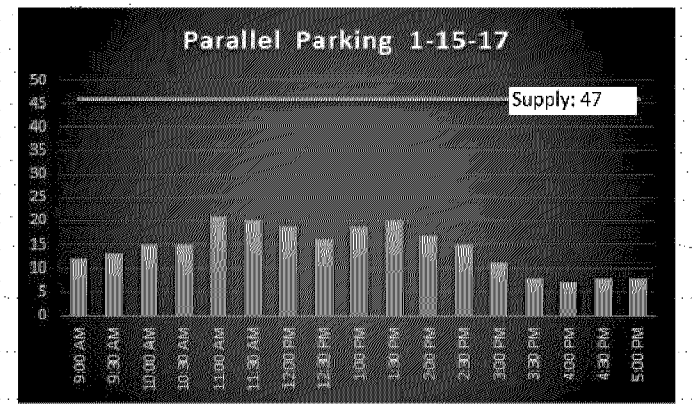


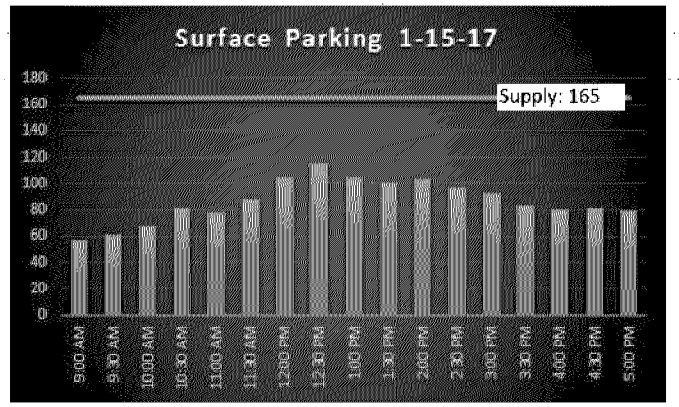


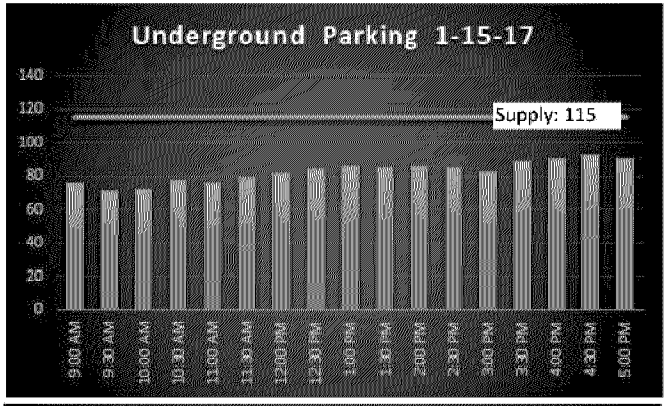


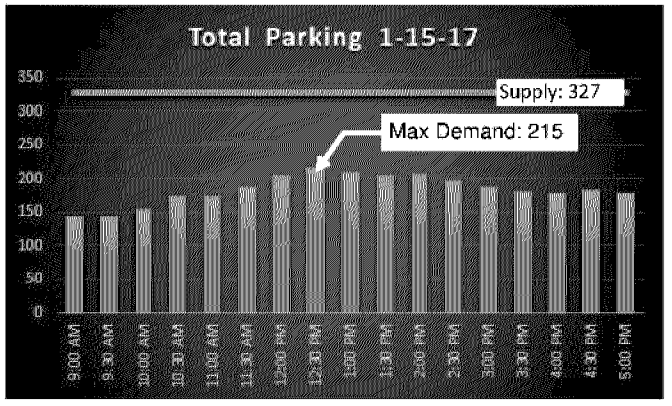


CASE FILE #PL201800072
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*Figure 3*
*Field Parking Count*
*January 15, 2017*

The maximum number of parked cars for each day was recorded between 12:30 p.m. and 1:00 p.m. and was found to be 274 (16% availability) on January 12th and 215 (34% available) on January 15th, which were all less than the total modified parking supply of 327 stalls. Friendship Village staff indicated that the heaviest period is between 9:00 a.m. and 1:00 p.m. The parking lot results are consistent with staffs' observations. Table 7 and Table 8 summarizes the detailed breakdown of the number of occupied parking stalls by time and parking category.

**Table 7. Occupied Parking Stalls – Thursday January 12, 2017**

| Time | Parallel Parking | % Occupied | Surface Parking | % Occupied | Underground Parking | % Underground Occupied | Total Parking | % Total Occupied |
|---|---|---|---|---|---|---|---|---|
| 9:00 AM | 37 | 79% | 99 | 60% | 103 | 90% | 239 | 73% |
| 9:30 AM | 37 | 79% | 99 | 60% | 103 | 90% | 239 | 73% |
| 10:00 AM | 39 | 83% | 105 | 64% | 100 | 87% | 244 | 75% |
| 10:30 AM | 41 | 87% | 121 | 73% | 101 | 88% | 263 | 80% |
| 11:00 AM | 42 | 89% | 125 | 76% | 96 | 83% | 263 | 80% |
| 11:30 AM | 44 | 94% | 124 | 75% | 92 | 80% | 260 | 80% |
| 12:00 PM | 45 | 96% | 134 | 81% | 90 | 78% | 269 | 82% |
| **12:30 PM** | **47** | **100%** | **137** | **83%** | **90** | **78%** | | **84%** |
| 1:00 PM | 46 | 98% | 133 | 81% | 86 | 75% | 265 | 81% |
| 1:30 PM | 45 | 96% | 127 | 77% | 87 | 76% | 259 | 79% |
| 2:00 PM | 45 | 96% | 125 | 76% | 89 | 77% | 259 | 79% |
| 2:30 PM | 42 | 89% | 113 | 68% | 88 | 77% | 243 | 74% |
| 3:00 PM | 34 | 72% | 104 | 63% | 91 | 79% | 229 | 70% |
| 3:30 PM | 35 | 74% | 101 | 61% | 95 | 83% | 231 | 71% |
| 4:00 PM | 37 | 79% | 98 | 59% | 99 | 86% | 234 | 72% |
| 4:30 PM | 35 | 74% | 100 | 61% | 99 | 86% | 234 | 72% |
| 5:00 PM | 27 | 57% | 94 | 57% | 103 | 90% | 224 | 69% |
| **Existing Stalls** | **47** | | **165** | | **115** | | **327** | |

**Table 8. Occupied Parking Stalls – Sunday, January 15, 2017**

| Time | Parallel Parking | % Parallel Occupied | Surface Parking | % Surface Occupied | Underground Parking | % Underground Occupied | Total Parking | % Total Occupied |
|---|---|---|---|---|---|---|---|---|
| 9:00 AM | 12 | 26% | 57 | 35% | 76 | 66% | 145 | 44% |
| 9:30 AM | 13 | 28% | 61 | 37% | 71 | 62% | 145 | 44% |
| 10:00 AM | 15 | 32% | 68 | 41% | 72 | 63% | 155 | 47% |
| 10:30 AM | 15 | 32% | 81 | 49% | 78 | 68% | 174 | 53% |
| 11:00 AM | 21 | 45% | 78 | 47% | 76 | 66% | 175 | 54% |
| 11:30 AM | 20 | 43% | 88 | 53% | 79 | 69% | 187 | 57% |
| 12:00 PM | 19 | 40% | 105 | 64% | 82 | 71% | 206 | 63% |
| **12:30 PM** | **16** | **34%** | **115** | **70%** | **84** | **73%** | | **66%** |
| 1:00 PM | 19 | 40% | 105 | 64% | 86 | 75% | 210 | 64% |
| 1:30 PM | 20 | 43% | 101 | 61% | 85 | 74% | 206 | 63% |
| 2:00 PM | 17 | 36% | 104 | 63% | 86 | 75% | 207 | 63% |
| 2:30 PM | 15 | 32% | 97 | 59% | 85 | 74% | 197 | 60% |
| 3:00 PM | 11 | 23% | 93 | 56% | 83 | 72% | 187 | 57% |
| 3:30 PM | 8 | 17% | 83 | 50% | 89 | 77% | 180 | 55% |
| 4:00 PM | 7 | 15% | 80 | 48% | 91 | 79% | 178 | 54% |
| 4:30 PM | 8 | 17% | 81 | 49% | 93 | 81% | 182 | 56% |
| 5:00 PM | 8 | 17% | 79 | 48% | 91 | 79% | 178 | 54% |
| **Existing Stalls** | **47** | | **165** | | **115** | | **327** | |

# 3. Parking Demand Analysis

The parking demand expected with the Project was estimated based on three methodologies – the City of Bloomington Zoning Code[2], the Institute of Transportation Engineers (ITE)[3], and the Parking Generation Manual, 2016 Resident, Staff, and Visitor Data[4].

## 3.1. Method 1 – City Code Parking Requirements

The City of Bloomington Code of Ordinances regulates the minimum off-street parking supply based on land uses. Example land uses include senior citizen housing and residential care facility. City Code parking requirements were provided by City staff and the existing uses and proposed beds/units were provided by Friendship Village, as shown in Table 9.

**Table 9. Friendship Village City Code Parking Requirements**

| Friendship Village Land Use Code | City of Bloomington Land Use Code | Existing | Proposed | New Total | Units | Parking Rate | Parking Required |
|---|---|---|---|---|---|---|---|
| Residential Cottages | Senior citizen ho | 12 | | 12 | Unit | 1.5 spaces per unit | 18 |
| Residential Apartments | Senior citizen ho | 296 | 94 | 390 | Unit | 1.5 spaces per unit | 585 |
| Assisted Living | Residential care | 26 | 16 | 42 | Bed | 1.5 spaces per 4 beds | 16 |
| Memory Care | Residential care | 26 | 6 | 32 | Bed | 1.5 spaces per 4 beds | 12 |
| Skilled Nursing | Residential care | 66 | | 66 | Bed | 1.5 spaces per 4 beds | 25 |
| Pavillion Room | Senior citizen ho | 3,390 | | 3,390 | Sq.FT | 1 space per 100 Sq.FT | 34 |
| | | | | | | Total | 690 |
| | | | | | | 10% Reduction | 69 |
| | | | | | | Total After Reduction | 621 |

A total of 690 parking stalls (541 for existing campus and 149 for the building expansion) is required by the City Code if the facility were not qualified for any parking reduction flexibility measurements under City Code Section 21.301.06 (e). Historically, the City has approved 10% parking supply reduction, which would lead to a total reduction of 69 stalls.

Assuming this parking reduction for Friendship Village is acceptable, the City Code would require a total of 621 parking stalls with the Friendship Village expansion. This number is lower than the proposed parking supply of 622 stalls on the campus, which emphasizes the need for empirical parking data collection and analysis in support of the reduction flexibility application. The proposed parking supply is shown in Table 10.

**Table 10. Friendship Village Proposed Parking Supply**

| Location | Surface Lot | Residential Garage | Underground Parking | Total Stalls |
|---|---|---|---|---|
| Main Campus | 233 | 77 | 258 | 568 |
| Cottages | 30 | 24 | 0 | 54 |
| | | | Total | 622 |

[2] Bloomington, Minnesota. Code of Ordinances.
[3] Institute of Transportation Engineers, Parking Generation Manual, 4th Edition
[4] Data provided by the Friendship Village

### 3.2. Method 2 – ITE Parking Generation Manual Methodology

In addition to the parking supply requirement calculated based on the City Code, and the actual observed demand presented previously, the Institute of Transportation Engineers (ITE) Parking Generation Manual (4th Edition) was also used to assess the estimated parking demand. The ITE Manual calculates required parking stalls based on land uses. Based on the business information provided by the City of Bloomington, land uses are concluded to be senior adult housing, continuing care retirement community, and assisted living. It is noted that ITE Manual defines and categorizes land use in a more detailed way, and concludes the parking ratio with much more available data than the City Code. Therefore, a different parking supply requirement result is expected. Table 11 below documents the results.

The "required spaces" column shows the required parking supply during peak periods for each land use respectively.

**Table 11. ITE Parking Generation Analysis Results**

| Friendship Village Land Use Code | ITE Land Use Code | Existing | Proposed | New Total | Units | Parking Rate | Parking Required |
|---|---|---|---|---|---|---|---|
| Residential Cottages | Senior Adult Housing (252) | 12 | | 12 | Unit | 0.59 spaces per unit | 8 |
| Residential Apartments | Continuing Care Retirement Community (255)[1] | 296 | 94 | 390 | Unit | 1.0 spaces per unit | 390 |
| Assisted Living | Assisted Living (254) | 26 | 16 | 42 | Bed | 0.41 spaces per bed | 18 |
| Memory Care | Assisted Living (254) | 26 | 6 | 32 | Bed | 0.41 spaces per bed | 14 |
| Skilled Nursing | Assisted Living (254) | 66 | | 66 | Bed | 0.41 spaces per bed | 28 |
| | | | | | | Total | 458 |

[1]Continuing care retirement communities (CCRCs) includes special services such as medical, dining, recreational, and meeting rooms. CCRCs is amid at allowing the residents to live in one community as their medical needs change.

### 3.3. Method 3 - Parking Model

#### 3.3.1. Visitor Parking Demand

In order to fully comprehend the parking demand patterns, 12-month historical information from 2016 was provided by Friendship Village. The data from Friendship Village was visitors that signed the sign-in sheet at the front desk. A few key observations in assessing the visitor data was:

- The month with the highest number of visitors was December.
- Visitors tend to have an average stay of one hour.
- Visitations tend to peak during the morning shift between 9:00 a.m. and 1:00 p.m.
- The highest 60-minute peak interval for visitations occurred between 10:00 a.m. to 11:00 a.m., which also correlates to the overall peak parking demand period for the Friendship Village.

Figure 4 illustrates the maximum peak hour by day for a 12-month period.

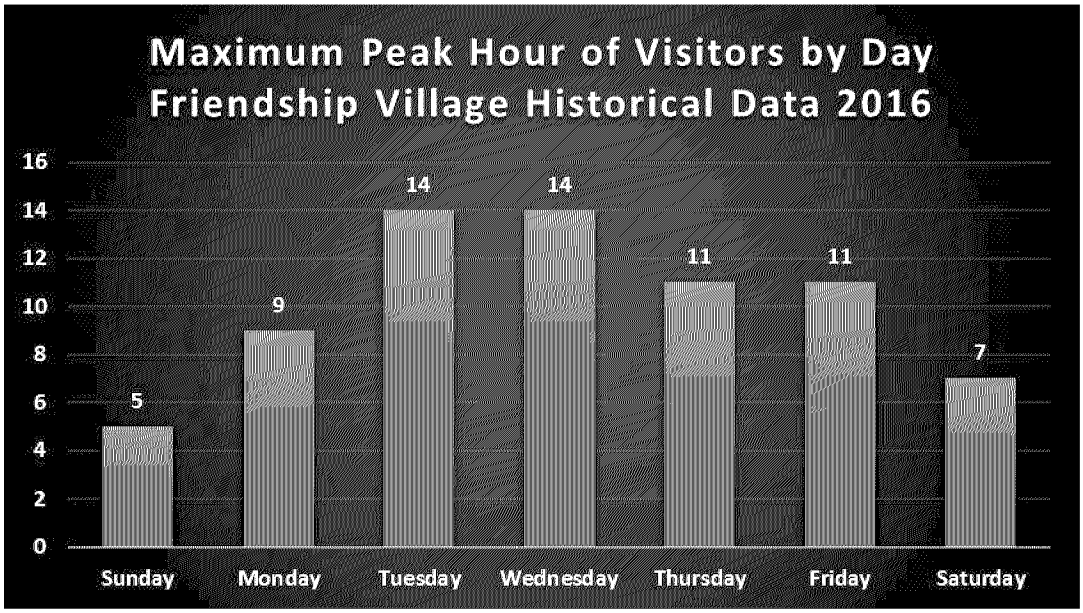


**Figure 4. Total Peak Hour Visitors by Day**

The maximum number of visitors by day over a 12-month period occurred on a Tuesday or Wednesday with a total number of 14 visits. Based on the sign-in log, the sign-ins correlate to a 1:1 ratio for sign-ins to visitor vehicles. Since some visitors forget to sign-in, the historical visitor data does not reflect all visitors for the year. The peak visitor parking demand was slightly increased by 5 vehicles to account for undocumented visitors. This information will be used to develop a parking demand model.

### 3.3.2. Forecast Parking Demand

The Friendship Village parking demand was based on visitors, employees, residents, and other facility data provided by the Friendship Village. The forecast model is based on the average number of people for each weekday during calendar year 2016 and the data identifies the average day for the morning shift peak parking demand. Based on historical records of visitors, the average duration of a visitor will last approximately one hour. Friendship Village indicated that morning staff will park between 9:00 a.m. to 1:00 p.m. and the peak parking demand will occur during the weekday. The associated peak parking demand will be a combination of the historical peak visitation log and parking for employees and residents.

The resident and employee data provided by Friendship Village can be further broken down to define the actual number of employees per resident and resident parking rate, per land use.

### 3.3.3. Weekday Meetings and Events

On occasion memorial and marketing events are held on weekday mornings during peak parking demand. The calendar year 2016 event schedule was reviewed and found that a meeting event of 30 to 100 people or less occurred approximately 17 times during a weekday in the past year. On a typical meeting day of 100 people or less, insufficient parking within the surface parking lots is expected. On those few days a year where a large peak event occurs, parking management strategies should be identified. Table 12

shows the events that occurred in calendar year 2016 and provides an indication of the types of events attendance that occurred. Based on the 2016 event information provided by the Friendship Village, a parking demand of 1 stall per 1.2 people is expected during an event.

**Table 12. Monday-Friday Events**

| Event Date | Day | Event | Time | Estimated Attendance |
|---|---|---|---|---|
| Jan 9th | Saturday | Memorial | 10am -3pm | 50 |
| Feb 16th | Tuesday | Marketing | 9am - 5pm | 30 |
| Mar 14th | Monday | Memorial | 9am-12pm | 50 |
| Mar 23th | Wednesday | Marketing | 1pm - 3pm | 75 |
| Mar 24th | Thursday | Memorial | 11am - 1pm | 50 |
| Apr 12th | Tuesday | Marketing | 1pm - 3pm | 50 |
| Apr 26th | Tuesday | Memorial | 11am - 4pm | 100 |
| May 26th | Thursday | Marketing | 9am - 5pm | 30 |
| Jul 16th | Saturday | Memorial | 12am - 4pm | 50 |
| Jul 19th | Tuesday | Marketing | 11am - 1pm | 75 |
| Jul 30th | Wednesday | Memorial | 12pm - 3pm | 50 |
| Aug 3th | Wednesday | Memorial | 1pm - 3pm | 50 |
| Aug 6th | Saturday | Memorial | 11am - 3pm | 50 |
| Aug 11th | Thursday | Memorial | 11am - 1pm | 50 |
| Aug 24th | Wednesday | Marketing | 2pm - 4pm | 75 |
| Oct 8th | Saturday | Memorial | 10am - 12pm | 50 |
| Oct 12th | Wednesday | Marketing | 2pm - 4pm | 75 |
| Oct 21st | Friday | Memorial | 12:30pm - 5pm | 50 |
| Nov 4th | Friday | Bazaar | 9am-5pm | 50 |
| Nov 16th | Wednesday | Marketing | 3am - 5pm | 75 |
| Nov 26th | Saturday | Memorial | 10am - 12pm | 50 |
| Dec 21st | Wednesday | Memorial | 12:30pm - 5pm | 50 |

Based on the calendar year 2016, the following provides a brief summary of the corresponding existing and proposed requirements for the peak parking period. Table 13, Table 14, and Table 15 on the following page, illustrates the estimated parking demand.

**Table 13. Existing Parking - Forecast Demand Model**

| Friendship Village - Existing Campus | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Main Campus - Parking Forecast | | | | | | | | | | | | | | | | | | | | | | Cottages - Parking Forecast | | | Existing Site -Parking Demand Forecast |
| Day | Adminstration Parking Rate 1:1 | Adminstration/ Resident | Residential Living | | | | | | | | Skilled Nursing | | | Boarding Care | | | Visitor Parking Rate 1:1 (Peak Hour) | Restricted Parking | Main Campus Total Parking Spaces | Event of 100 People Parking Rate 1.2:1 | Cottages | | Cottages Total Parking Spaces | |
| | | | Staff Parking Rate 1:1 | Staff/ Resident | Residents = 280 | | | | | | | Staff Parking Rate 1:1 | Staff/ Resident | Residents = 59 | Staff Parking Rate 1:1 | Staff/ Resident | Residents = 48 | | | | | Residents | Parking Rate | | |
| | | | | | Wing Y | Parking Rate | Wing G | Parking Rate | Wing B | Parking Rate | Total | | | | | | | | | | | | | | |
| Monday | 19 | 0.07 | 55 | 0.20 | 94 | 0.56 | 92 | 0.64 | 94 | 0.57 | 166 | 51 | 0.86 | 0 | 7 | 0.15 | 0 | 14 | 27 | 339 | 84 | 24 | 1 | 24 | 447 |
| Tuesday | 19 | 0.07 | 55 | 0.20 | 94 | 0.56 | 92 | 0.64 | 94 | 0.57 | 166 | 51 | 0.86 | 0 | 7 | 0.15 | 0 | 19 | 27 | 344 | 84 | 24 | 1 | 24 | 452 |
| Wednesday | 19 | 0.07 | 55 | 0.20 | 94 | 0.56 | 92 | 0.64 | 94 | 0.57 | 166 | 51 | 0.86 | 0 | 7 | 0.15 | 0 | 19 | 27 | 344 | 84 | 24 | 1 | 24 | 452 |
| Thursday | 19 | 0.07 | 55 | 0.20 | 94 | 0.56 | 92 | 0.64 | 94 | 0.57 | 166 | 51 | 0.86 | 0 | 7 | 0.15 | 0 | 16 | 27 | 341 | 84 | 24 | 1 | 24 | 449 |
| Friday | 19 | 0.07 | 55 | 0.20 | 94 | 0.56 | 92 | 0.64 | 94 | 0.57 | 166 | 51 | 0.86 | 0 | 7 | 0.15 | 0 | 16 | 27 | 341 | 84 | 24 | 1 | 24 | 449 |
| Saturday | 19 | 0.07 | 55 | 0.20 | 94 | 0.56 | 92 | 0.64 | 94 | 0.57 | 166 | 51 | 0.86 | 0 | 7 | 0.15 | 0 | 12 | 27 | 337 | 84 | 24 | 1 | 24 | 445 |
| Sunday | 19 | 0.07 | 55 | 0.20 | 94 | 0.56 | 92 | 0.64 | 94 | 0.57 | 166 | 51 | 0.86 | 0 | 7 | 0.15 | 0 | 10 | 27 | 335 | 84 | 24 | 1 | 24 | 443 |

**Table 14. Proposed Expansion Parking Only - Forecast Demand Model**

| Friendship Village - Expansion Parking Requirement | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Day | Adminstration Parking Rate 1:1 | Adminstration/ Resident | Residential Living | | | | | Boarding Care | | | Visitor Parking Rate 1:1 (Peak Hour) | Visitor/ Resident | Restricted Parking | Expansion Total Parking Demand |
| | | | Staff Parking Rate 1:1 | Staff/ Resident | Residents = 106 | | | Staff Parking Rate 1:1 | Staff/ Resident | Residents = 26 | | | | |
| | | | | | Building | Parking Rate | Total | | | | | | | |
| Monday | 9 | 0.07 | 21 | 0.20 | 106 | 0.59 | 63 | 4 | 0.15 | 0 | 7 | 0.05 | 10 | 114 |
| Tuesday | 9 | 0.07 | 21 | 0.20 | 106 | 0.59 | 63 | 4 | 0.15 | 0 | 9 | 0.07 | 10 | 117 |
| Wednesday | 9 | 0.07 | 21 | 0.20 | 106 | 0.59 | 63 | 4 | 0.15 | 0 | 9 | 0.07 | 10 | 117 |
| Thursday | 9 | 0.07 | 21 | 0.20 | 106 | 0.59 | 63 | 4 | 0.15 | 0 | 8 | 0.06 | 10 | 115 |
| Friday | 9 | 0.07 | 21 | 0.20 | 106 | 0.59 | 63 | 4 | 0.15 | 0 | 8 | 0.06 | 10 | 115 |
| Saturday | 9 | 0.07 | 21 | 0.20 | 106 | 0.59 | 63 | 4 | 0.15 | 0 | 6 | 0.04 | 10 | 113 |
| Sunday | 9 | 0.07 | 21 | 0.20 | 106 | 0.59 | 63 | 4 | 0.15 | 0 | 5 | 0.04 | 10 | 112 |

**Table 15. Total Parking Required - Forecast Demand Model**

| Forecast Parking Requirement | | | |
|---|---|---|---|
| Day | Friendship Village Existing | Friendship Village Expansion | Total |
| Monday | 447 | 114 | 561 |
| Tuesday | 452 | 117 | 569 |
| Wednesday | 452 | 117 | 569 |
| Thursday | 449 | 115 | 564 |
| Friday | 449 | 115 | 564 |
| Saturday | 445 | 113 | 558 |
| Sunday | 443 | 112 | 555 |

Based on the field data collected on Thursday, January 12, 2016, it is estimated that 274 parking stalls will be occupied on the main campus with the addition of 77 garage parking stall the total for the main campus is 351 parking stalls. During a weekday, the parking model estimated that between 335 to 341 parking stalls will be occupied on the main campus during a non-event. The field survey and parking model correlates within a 3 percent margin of error. Therefore, the parking model can be considered to provide an accurate representation of parking demand.

### 3.4. Parking Demand Comparison

Table 16 below compares the parking supply requirement calculations based on City Code, ITE Parking Generation Manual and the empirical methods. The empirical method adopted by this parking study takes into account the time of day and day of week difference in peak parking demand for each land use in the future. This leads to a much lower, and more expected parking demand than the theoretical methods.

**Table 16. Parking Requirements based on City Code, ITE and Empirical Methods**

| Site | City Code (1) | ITE | Empirical (2) |
|---|---|---|---|
| Friendship Village | 621 | 458 | 569 |

(1) Numbers include parking reduction of 69 stalls historically approved by the City of Bloomington (discussed in chapter 2).

(2) Numbers are maximum parking demands observed/derived based on empirical data collection; the existing peak demands; the future total parking demand includes the peak visitor parking.

Based on the observed parking demand at both the proposed expansion and the existing campus, the proposed parking supply of 621 stalls is expected to be sufficient. Table 18 demonstrates how parking should be utilized on site based on the forecast parking demand model and the proposed parking by Friendship Village.

**Table 18. Forecast Parking Utilization by Parking Category**

| Main Campus | Model Demand | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Available Parking | Visitors | Residents | Staff | Event | Restricted | Total Demand | Total Supply | Available Stalls |
| Surface | 29 | 0 | 60 | 84 | 37 | 210 | 233 | 23 |
| Resident Garage | | 77 | | | | 77 | 77 | 0 |
| Underground | | 152 | 106 | | | 258 | 258 | 0 |
| **Total Main Campus** | **29** | **229** | **166** | **84** | **37** | **545** | **568** | **23** |
| Cottages | Model Demand | | | | | | | |
| Available Parking | Visitors | Residents | Staff | Event | Restricted | Total Demand | Total Supply | Available Stalls |
| Garage | | 24 | | | | 24 | 24 | 0 |
| Surface | 0 | | | | | 0 | 30 | 30 |
| **Total Cottages** | **0** | **24** | **0** | **0** | **0** | **24** | **54** | **30** |
| ***Site Total*** | ***29*** | ***253*** | ***166*** | ***84*** | | ***569*** | ***622*** | ***53*** |

Table 18 was developed using the following three assumptions: 1) All residents use garages and underground parking; 2) Underground parking will be fully utilized by residents and staff; and 3) an event of 100 people. Under this scenario, a total of 53 stalls will be available for the total site. The breakdown of available stalls is 23 stalls available

on the main campus and 30 stalls for the cottages (cottages include 24 driveway stalls, 6 surface stalls).

# 4. Conclusions

Based on the 2017 parking study, the following conclusions are made:

- The proposed site plan has a total of 622 spaces including garages, surface lots, and underground parking.
- City Code with a 10% reduction requires 621 spaces.
- The parking study model estimates peak demand of 569.
- Overall, the proposed parking supply will be sufficient. However, it will be important to fully utilize the underground parking to provide convenient access to surface. It should be noted that employees currently park in the surface lots and administrative staff park in the underground garage.
- While the provided parking should be sufficient on most days, it is possible that peak events may cause a shortage of parking in the most convenient surface lots. It is anticipated that the parking along the west property line will be underutilized.

**Recommendations**

- All residents should be provided space in the parking garages or underground garages.
- Employees should be required to park in the underground garages to the extent possible.
- For large events, signage should be provided directing visitors from the main entrance to available parking on west side.
- In extreme cases the City of Bloomington does allow overflow parking to park on Highwood Drive.