

Ben Holmes

March 7, 2016

Chief Executive Officer

Aeronaut Brewery

RE: Parking & Traffic Impacts of Aeronaut

Dear Ben,

This letter outlines what we believe to be the parking and traffic impacts for your facility as you expand occupancy to 240 people. A summary of our analysis shows that:

1. Almost half of your patrons reach the brewery on foot, bicycle or transit (47%). Almost one fifth arrived by taxi, Uber or Lyft (chauffeured vehicle). Only eighteen percent of patrons brought cars, while the remaining patrons were passengers in those cars.
2. Given, that your facility doesn't open until 5PM we estimate that your facility generates only 9 extra motor vehicle trips during afternoon peak hours.
3. At full capacity you would need 42 parking spaces to meet your parking needs. Parking demand varies greatly by time of day and week. Average occupancy based on sales data demonstrates that on most week nights and Saturday you will need a total of 35 to 38 spaces. Currently you have 17 deeded night time spaces. You will need to acquire another 21 spaces to meet normal peak period parking needs.
4. We surveyed parking lot occupancy during peak business days and hours (Friday/ Saturday/ Sunday). During these times there is a minimum of 47 available spaces in the upper and lower parking lots at the Ames Business Complex.
5. The Ames Business Complex has agreed to rent you an additional 21 parking spaces to meet your patron needs as outlined in this report.

Parking & Traffic Demand Analysis

We estimated parking and traffic network demand based on patron surveys that were conducted in 2014, 2015 and 2016. Our surveys queried visitors to the brewery as they entered the facility to determine how they arrived at the facility. Our surveyors positioned themselves next to Aeronaut staff checking ideas. Each patron was queried, "how did you get to Aeronaut tonight". If they replied that they came in a car or drove they were further asked if they were the driver and if there were any passengers in the group who shared a ride with them.

For purposes of our analysis here we are using the 2016 data as this most closely reflects current demand. This most recent data-set includes 1279 patron responses.

Results

As seen in Table 1 below, our surveys found that almost half of your patrons reach the brewery on foot, bicycle or transit (47%). Almost one fifth arrived by taxi, Uber or Lyft (chauffeured vehicle). Eighteen percent of patrons brought cars, while the remaining patrons were passengers in those cars.

TABLE 1: SURVEY RESULTS OF PATRON MODE OF TRANSPORTATION

| Mode | 2014 Survey | 2015 Survey | 2016 Survey | Total | 2016 Percent |
|------------------|-------------|-------------|-------------|-------|--------------|
| Foot | 282 | 40 | 459 | 781 | 36% |
| Bike | 37 | 4 | 67 | 108 | 5% |
| Transit | 42 | 17 | 72 | 131 | 6% |
| Taxi/ Uber/ Lyft | 152 | 49 | 248 | 449 | 19% |
| Car Driver | 77 | 20 | 225 | 322 | 18% |
| Car Passenger | 93 | 20 | 208 | 321 | 16% |
| Total | 683 | 150 | 1279 | 2112 | 100% |

Hours of Operation and Facility Occupancy

The number of vehicles arriving at the facility to park or let-off passengers varies greatly by time of day. Aeronaut's public hours are as follows:

Tuesday to Friday: 5pm-midnight

Saturday: 2pm-midnight

Sunday: 2pm-8pm

Monday: Closed

On typical days of operation occupancy fluctuates greatly during the day. We analyzed sales data to compile the average percent occupancy of the Aeronaut facility by hour and time of week. This is shown in Table 2 below:

TABLE 2: AVERAGE TAP ROOM OCCUPANCY BY HOUR OF DAY/ DAY OF WEEK

| Hour/ Day | 2:00 PM | 3:00 PM | 4:30 PM | 5:30 PM | 6:30 PM | 7:30 PM | 8:30 PM | 9:30 PM | 10:30 PM | 11:30 PM | Midnight |
|---------------------------|------------|------------|------------|------------|------------|------------|------------|------------|-------------|-------------|----------|
| Monday | Closed | Closed | Closed | Closed | Closed | Closed | Closed | Closed | Closed | Closed | Closed |
| Tuesday to Thursday | Closed | Closed | Closed | 9% | 17% | 33% | 48% | 59% | 67% | 34% | Closed |
| Friday | Closed | Closed | Closed | 11% | 22% | 41% | 60% | 73% | 83% | 42% | Closed |
| Saturday | 51% | 73% | 84% | 90% | 88% | 75% | 65% | 63% | 71% | 41% | Closed |
| Sunday | 35% | 50% | 57% | 61% | 60% | 51% | Closed | Closed | Closed | Closed | Closed |

This occupancy data derived from sales is used to determine peak period traffic impacts and parking demand for the Aeronaut facility during average nights at the facility.

Peak Period Traffic Impacts

Peak-period traffic impacts consider the impacts on roadway capacity during the busiest times of the week. Typically this includes morning and evening peaks. This analysis focuses only on the evening peak (4 to 6PM) as Aeronaut is not open in the morning.

We used the data from our patron survey (Table 1 above) and hourly occupancy (Table 2 above) to estimate trip generation for the facility. Aeronaut opens its doors at 5:00 PM and by 6:00 PM. Vehicle trips can be calculated as such:

Car drivers: 18%

Uber/ Taxi/ Lyft drivers: 15% (we assume that about ½ of the chauffeured vehicles in Table 1 contain 2 passengers)

Vehicles as a percent of patrons= 33%

Using sales data, we estimate that 27 people will visit the facility between 5 and 6 PM. They will generate 9 vehicle trips or a little over one vehicle every 6 minutes. Based on the analysis of the traffic study done for Petra by DCI (March 2012) we find that this will not add a significant amount of traffic to area streets during peak periods.

Parking Demand

As noted in the patron surveys (Table 1) above only 18% of patrons arrive at the facility needing to park an automobile. The rest arrive by foot, bicycle, taxi or car-passenger (with a driver). Therefore based on your maximum occupancy of 240 persons, the most parking Aeronaut will need is 42 parking spaces.

As with traffic impacts, parking needs vary greatly by time of day. Furthermore while there are episodic peaks where the facility is 100% full, we base our parking demand on the average occupancy data in based in Table 2 above.

Using the patron arrival occupancy data (Table 2) and pairing it with journey to facility survey data (Table 1) we estimate that you will generate the following parking demand during hours when the brewery is open to the public:

TABLE 3: PARKING DEMAND BY HOUR AND DAY OF WEEK

| Hour/ Day | 2:00 PM | 3:00 PM | 4:30 PM | 5:30 PM | 6:30 PM | 7:30 PM | 8:30 PM | 9:30 PM | 10:30 PM | 11:30 PM | Midnight |
|--|------------|------------|------------|------------|------------|------------|------------|------------|-------------|-------------|----------|
| Weekday Average Patrons | Closed | Closed | Closed | 26 | 53 | 98 | 144 | 175 | 199 | 101 | Closed |
| Weekday Parking Demand | Closed | Closed | Closed | 5 | 9 | 17 | 25 | 31 | 35 | 18 | Closed |
| Saturday Average Patrons | 122 | 175 | 202 | 216 | 211 | 180 | 156 | 175 | 199 | 101 | Closed |
| Saturday Parking Demand | 22 | 31 | 35 | 38 | 37 | 32 | 27 | 31 | 35 | 18 | Closed |
| Sunday Average Patrons | 84 | 120 | 137 | 146 | 144 | 122 | Closed | Closed | Closed | Closed | Closed |
| Sunday Parking Demand | 15 | 21 | 24 | 26 | 25 | 22 | Closed | Closed | Closed | Closed | Closed |

The table above shows that parking demand peaks (shaded) between 8:30 and 10:30 on weekday evenings and from 3PM to 11:30 on Saturdays: On most business days during peak hours you will need between 35 and 38 parking spaces to meet patron parking needs.

Net New Parking Needs

It is important to note that the gross parking needs shown in Table 3 are inclusive of the current parking demand which is generated from the current allowed occupancy. The actual net new parking demand generated is roughly half of what is shown above. So while total parking needs during peak hours average 35 to 38 spaces, net new parking needs are half this amount: between 18 and 21 spaces.

Parking Supply

In order to determine parking supply we counted free parking spaces in the two largest Ames Business Park parking lots: one on Dane Street and another on the corner of Dane and Tyler. They are hereafter referred to as the Upper and Lower Lots. The Upper Lot contains 96 spaces and the Lower Lot 45. These two lots are the most commonly used by visitors to the Ames Business Complex and are the only lots encouraged for use by Aeronaut to its customers.

We analyzed parking supply during the three busiest days for Aeronaut; Friday night, Saturday and Sunday (January 29-31, 2016). The results of our findings are found in Table 4 below:

TABLE 4: UPPER AND LOWER PARKING LOT VACANCY DURING AERONAUT HOURS

| Time | Both Lots | Both Lots | Both Lots | Both Lots | | Upper Lot | Upper Lot | Upper Lot | Upper Lot | | Lower Lot | Lower Lot | Lower Lot | Lower Lot |
|-------|--------------|-----------|-----------|-----------|--|--------------|-----------|-----------|-----------|--|--------------|-----------|-----------|-----------|
| Hour | Total spaces | Fri | Sat | Sun | | Total spaces | Fri | Sat | Sun | | Total spaces | Fri | Sat | Sun |
| 2:30 | 141 | closed | 56 | 63 | | 96 | closed | 36 | 42 | | 45 | closed | 20 | 21 |
| 3:30 | 141 | closed | 43 | 54 | | 96 | closed | 34 | 40 | | 45 | closed | 9 | 14 |
| 4:30 | 141 | closed | 49 | 54 | | 96 | closed | 36 | 39 | | 45 | closed | 13 | 15 |
| 5:30 | 141 | 47 | 61 | 56 | | 96 | 35 | 51 | 42 | | 45 | 12 | 10 | 14 |
| 6:30 | 141 | 50 | 74 | 68 | | 96 | 33 | 58 | 51 | | 45 | 17 | 16 | 17 |
| 7:30 | 141 | 51 | 79 | 86 | | 96 | 30 | 57 | 61 | | 45 | 21 | 22 | 25 |
| 8:30 | 141 | 58 | 90 | closed | | 96 | 38 | 68 | closed | | 45 | 20 | 22 | closed |
| 9:30 | 141 | 73 | 97 | closed | | 96 | 52 | 70 | closed | | 45 | 21 | 27 | closed |
| 10:30 | 141 | 90 | 104 | closed | | 96 | 72 | 75 | closed | | 45 | 18 | 29 | closed |
| 11:30 | 141 | 111 | 114 | closed | | 96 | 79 | 83 | closed | | 45 | 32 | 31 | closed |

The data shows that adequate free parking exists in the upper and lower lots even during peak hours (shaded cells) to satisfy the needs of Aeronaut customers.

Recognizing the parking concerns of neighbors, Aeronaut does not encourage parking on Tyler Street and Properzi Way. Aeronaut informs patrons that on-street regulations prohibit non Somerville resident from parking on Tyler and Properzi after 8PM. None the less we examined parking availability on street during that time as occupancy data on these streets would be of general interest to the abutting residents and City Staff. On street vacancy data is shown below:

TABLE 5: ON STREET PARKING VACANCY; PROPERZI WAY & TYLER STREETS

| Time/Day | Pro-perzi | Pro-perzi | Pro-perzi | Pro-perzi | | Tyler | Tyler | Tyler | Tyler |
|----------|--------------|-----------|-----------|-----------|--|--------------|--------|-------|--------|
| Hour | Total Spaces | Fri | Sat | Sun | | Total Spaces | Fri | Sat | Sun |
| 2:30 | 22 | closed | 2 | 2 | | 21 | closed | 0 | 3 |
| 3:30 | 22 | closed | 1 | 0 | | 21 | closed | 1 | 2 |
| 4:30 | 22 | closed | 1 | 0 | | 21 | closed | 2 | 0 |
| 5:30 | 22 | 3 | 0 | 0 | | 21 | 4 | 2 | -3 |
| 6:30 | 22 | 1 | 5 | 9 | | 21 | 8 | 6 | 7 |
| 7:30 | 22 | 5 | 5 | 10 | | 21 | 4 | 6 | 12 |
| 8:30 | 22 | 7 | 11 | closed | | 21 | 4 | 13 | closed |
| 9:30 | 22 | 6 | 12 | closed | | 21 | 10 | 12 | closed |
| 10:30 | 22 | 4 | 11 | closed | | 21 | 11 | 16 | closed |
| 11:30 | 22 | 12 | 13 | closed | | 21 | 16 | 15 | closed |

The data shows that on street parking is very difficult up until the early evenings on every day surveyed. We recommend that Aeronaut continue to discourage patrons from parking on street as parking supply in the lots is more than adequate to meet the needs of your patrons.

Parking Recommendation

We recommend that you acquire 21 additional parking spaces in the Ames Business Complex Shared parking Upper and Lower Parking lots to meet your anticipated parking needs. You may consider leasing an additional 4 spaces to cover occasional full-house scenarios.

Thank you for this opportunity to serve you,



Mark Chase

Urban Transportation Planner