Kimley»Horn

June 7, 2021

Ms. Kortney Pedigo
McDonald's USA, LLC
4643 South Ulster Street
Suite 1300
Denver, CO 80237

Re: McDonald's – Chambers Road
Traffic Compliance Letter
Parker, Colorado

Dear Ms. Pedigo:

This traffic study letter has been prepared to provide a trip generation comparison to identify compliance with the original traffic impact study for a McDonald's restaurant to be developed as part of the Chambers and Hess project in Parker, Colorado. An approximate 4,540 square foot McDonald's fast-food restaurant with drive thru is proposed within a portion of the Chambers and Hess development area on the northeast corner of the Hess Road and Chambers Road intersection. Specifically, McDonald's is planned on Lot 3, with direct frontage along Chambers Road (site plan attached). The site is currently undeveloped land. Rick Engineering Company completed the "Chambers and Hess Development Traffic Impact Study" in September 2020 which included this development area. The trip generation of this proposed McDonald's restaurant is compared with the trip generation for the applicable use evaluated as part of the original traffic study within the same development area. Applicable documents from the original traffic study are attached for reference.

**Site Information and Trip Generation Comparison**
McDonald's is proposed to contain an approximate 4,540 square foot restaurant building with drive thru. The original Chambers and Hess traffic study identified development of two fast-food restaurants with drive thru for a total of 4,500 square feet of building space. Therefore, the larger of the two originally studied fast-food restaurants at 2,500 square feet was compared with the development of this proposed McDonald's fast-food restaurant on Lot 3. Therefore, the purpose of this letter is to summarize a comparison of the trip generation from the proposed McDonald's site to the originally studied fast food restaurant use. Other uses evaluated in the overall development traffic study included a daycare center, office space, pharmacy with a drive-thru window, a bank, a coffee shop with drive thru, quick lubrication vehicle shop, auto care center, gas station, and a car wash.

Site-generated traffic estimates are determined through a process known as trip generation. Rates and equations are applied to the proposed land use to estimate traffic generated by the development during a specific time interval. The acknowledged source for trip generation rates is the *Trip Generation Manual*[1] published by the Institute of Transportation Engineers (ITE). ITE has established trip rates in nationwide studies of similar land uses.

1 Institute of Transportation Engineers, *Trip Generation Manual*, Tenth Edition, Washington DC, 2017.

Trip generation for the original traffic study and the currently proposed land use is based on the ITE Trip Generation, 10th Edition (most current edition) average rates for Fast-Food Restaurant with Drive Through (ITE Land Use Code 934). The following table compares the trip generation from the original study compared to the expected trip generation for the proposed McDonald's site. The trip generation calculation sheets from the original traffic study, as well as from the current proposal are attached for reference.

**Trip Generation Comparison: Original Study vs. Current Proposal**

| Use and Size | Daily Vehicle Trips | Weekday Vehicle Trips | | | | | |
|---|---|---|---|---|---|---|---|
| | | AM Peak Hour | | | PM Peak Hour | | |
| | | In | Out | Total | In | Out | Total |
| ***Original Traffic Study – Fast Food Restaurant*** | | | | | | | |
| Fast-Food Restaurant w/ DT (ITE 934) – 2,500 Square Feet | 1,177 | 51 | 49 | 100 | 43 | 39 | 82 |
| ***Current Proposal – McDonald's Restaurant*** | | | | | | | |
| Fast-Food Restaurant w/ DT (ITE 934) – 4,540 Square Feet | 2,140 | 93 | 89 | 182 | 77 | 71 | 148 |
| ***Net Difference in Trips*** | ***+963*** | ***+42*** | ***+40*** | ***+82*** | ***+34*** | ***+32*** | ***+66*** |

As summarized in the table, the larger (2,500 square foot) of the two fast food restaurants originally studied was anticipated to generate approximately 1,177 weekday daily trips, with 100 of these trips occurring during the morning peak hour, and 82 trips occurring during the afternoon peak hour. The proposed McDonald's restaurant is expected to generate 2,140 weekday daily trips, with 182 trips occurring during the morning peak hour, and 107 trips occurring during the afternoon peak hour according to the ITE trip equations based on building area. Therefore, this proposed McDonald's is anticipated to generate 82 more trips during the morning peak hour and 66 more trips during the afternoon peak hour than previously studied.

When comparing to the total number of trips generated by the Chambers and Hess project, the increase in traffic attributable to this proposed McDonald's being a larger building than the fast food restaurants originally studied is anticipated to account for an increase of approximately 10 percent of the daily traffic. Likewise, the morning peak hour trips are anticipated to increase by 10 percent, while the afternoon peak hour trips are anticipated to increase by 8 percent. Of note, this will be one of the first projects in the overall development area. As the development continues to be constructed, the other land use intensities may be less than the original study and should continue to be evaluated by the Town. Since this is an early project in the overall development area without more specificity of how the remain area will develop at this time, this traffic volume isn't anticipated to change the identified level of service of the adjacent intersections.

**Drive-Through Queuing Analysis**
As provided in the Institute of Transportation Engineers (ITE) Drive-Through Queue Generation, 1st Edition, by Mike Spack, P.E., PTOE (data and information attached), the recommended vehicle queue length for fast food restaurants with drive-thru is 240 feet or 12 vehicles, represented by the 85th percentile queue. As shown in the attached site plan, the queue of cars anticipated to be accommodated specifically within the drive-through lane is 13 vehicles. Therefore, it is believed that the site has been designed with an appropriate configuration to accommodate the drive-through queueing needs onsite.

**Conclusions**
The proposed McDonald's within the Chambers and Hess development is anticipated to increase traffic (by approximately 10 percent) from what was previously studied within the original "Chambers and Hess Development Traffic Impact Study" prepared by Rick Engineering Company dated September 2020. However, it is believed that development of this 4,540 square foot McDonald's to be located on Lot 3 within the Chambers and Hess development will be accommodated successfully on the surrounding street network with the original traffic study recommendations. Please let us know if you have any questions or require anything further.

Sincerely,

KIMLEY-HORN AND ASSOCIATES, INC.

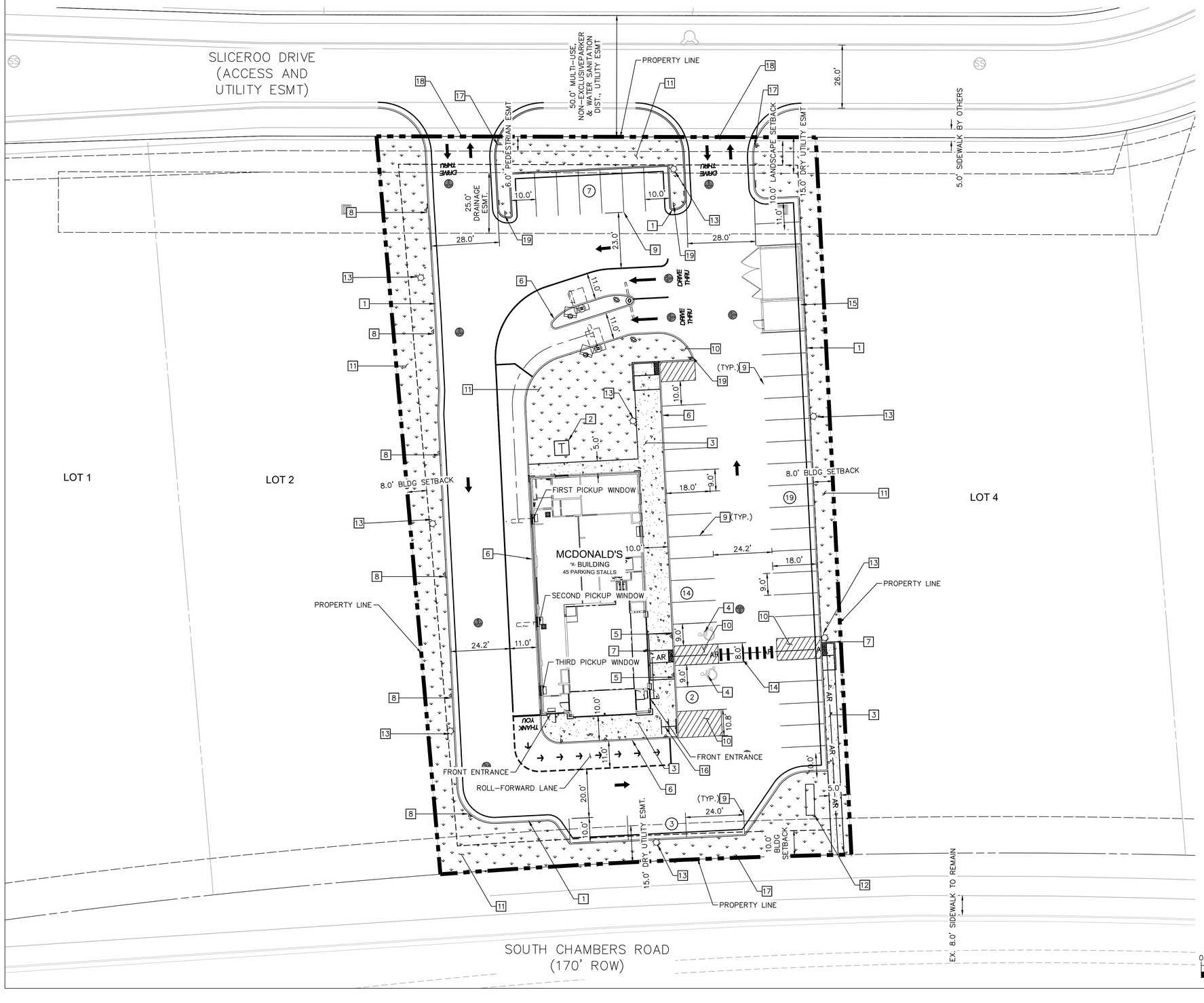
Curtis D. Rowe, P.E., PTOE
Vice President

# Conceptual Site Plan

# DOUGLAS 234 FILING NO. 6, LOT 3

A PORTION OF THE SOUTHEAST 1/4 OF THE SECTION 29,
TOWNSHIP 6 SOUTH, RANGE 66 WEST OF THE 6TH P.M.
TOWN OF PARKER, COUNTY OF DOUGLAS, STATE OF COLORADO

## SITE PLAN




## LEGEND

- PROPERTY LINE
- SETBACK
- EASEMENT
- AR — ACCESSIBLE ROUTE
- SCREEN WALL
- LANDSCAPE
- CONCRETE SIDEWALK
- (#) PARKING STALL COUNT

## KEY NOTES

1. PROPOSED CURB AND GUTTER
2. PROPOSED TRANSFORMER LOCATION
3. PROPOSED CONCRETE SIDEWALK (DIMENSION PER PLAN)
4. PROPOSED ADA SYMBOL
5. PROPOSED ADA SIGN
6. PROPOSED 6" WIDE X 6" TALL CURB HEAD
7. PROPOSED ADA RAMP
8. PROPOSED "NO PARKING FIRE LANE" SIGN
9. PROPOSED 4" WIDE PARKING STRIPE
10. PROPOSED 4" WIDE DIAGONAL PAVEMENT MARKINGS AT 36" ON CENTER
11. PROPOSED LANDSCAPING (REF. LANDSCAPING PLANS)
12. PROPOSED MONUMENT SIGN
13. PROPOSED SITE LIGHT (REF. PHOTOMETRIC PLANS FOR DETAILS)
14. PROPOSED CROSSWALK
15. PROPOSED TRASH ENCLOSURE AND SHED
16. PROPOSED BIKE PARKING (3 SPACES)
17. PROPOSED STOP SIGN
18. PROPOSED DRIVEWAY ACCESS
19. PROPOSED DO NOT ENTER SIGN

Know what's below. Call before you dig.

| BY | DESCRIPTION | DATE | REV |
|---|---|---|---|
| | | | |

Kimley»Horn

PREPARED BY:

PRELIMINARY
FOR REVIEW ONLY
NOT FOR CONSTRUCTION
Kimley»Horn
Kimley-Horn and Associates, Inc.

PREPARED FOR:
McDonald's USA, LLC



| DRAWN BY | CHECKED BY | DATE |
|---|---|---|
| JJM | STD ISSUE | 7/1/21 |
| REVIEWED BY | | |
| JRH | | |
| DATE ISSUED | | |
| 7/1/21 | | |

TITLE: **SITE PLAN**

DESCRIPTION: **SITE PLAN**

SITE ID: 00150785

SITE ADDRESS: LOT 3, DOUGLAS 234 FILING NO. 6

# Trip Generation Calculations

Kimley»Horn

| | | | | | |
|---|---|---|---|---|---|
| *Project* | McDonald's - Chambers Road | | | | |
| *Subject* | Trip Generation for Fast-Food Restaurant with Drive-Through Window | | | | |
| *Designed by* | MAG | *Date* | June 04, 2021 | *Job No.* | 096806010 |
| *Checked by* | | *Date* | | *Sheet No.* | 1 *of* 1 |

**TRIP GENERATION MANUAL TECHNIQUES**

ITE Trip Generation Manual 10th Edition, Average Rate Equations

Land Use Code - Fast Food Restaurant With Drive-Through Window (934)

Independant Variable - 1000 Square Feet Gross Floor Area (X)
Gross Floor Area = 4,540 Square Feet
X = 4.540
T = Average Vehicle Trip Ends

**Peak Hour of Adjacent Street Traffic, One Hour Between 7 and 9 a.m. (900 Series page 158)**

Average Weekday — Directional Distribution: 51% ent. 49% exit.
T = 40.19 (X) — T = 182 Average Vehicle Trip Ends
T = 40.19 * 4.540 — 93 entering 89 exiting

93 + 89 = 182

**Peak Hour of Adjacent Street Traffic, One Hour Between 4 and 6 p.m. (900 Series page 159)**

Average Weekday — Directional Distribution: 52% ent. 48% exit.
T = 32.67 (X) — T = 148 Average Vehicle Trip Ends
T = 32.67 * 4.540 — 77 entering 71 exiting

77 + 71 = 148

**Weekday (900 Series page 157)**

Average Weekday — Directional Distribution: 50% entering, 50% exiting
T = 470.95 (X) — T = 2140 Average Vehicle Trip Ends
T = 470.95 * 4.540 — 1070 entering 1070 exiting

1070 + 1070 = 2140

**Saturday Peak Hour of Generator (900 Series page 163)**

Directional Distribution: 51% ent. 49% exit.
T = 54.86 (X) — T = 249 Average Vehicle Trip Ends
T = 54.86 * 4.540 — 127 entering 122 exiting

127 + 122 = 249

**Non Pass-By Trip Volumes (Per ITE Trip Generation Handbook, 3rd Edition September 2017)**

AM Peak Hour = 51% Non-Pass By — PM Peak Hour = 50% Non-Pass By

| | IN | Out | Total | |
|---|---|---|---|---|
| AM Peak | 47 | 45 | 93 | |
| PM Peak | 39 | 36 | 74 | |
| Daily | 535 | 535 | 1070 | PM Peak Hour Rate Applied to Daily |

**Pass-By Trip Volumes (Per ITE Trip Generation Handbook, 3rd Edition September 2017)**

AM Peak Hour = 49% Pass By — PM Peak Hour = 50% Pass By

| | IN | Out | Total | |
|---|---|---|---|---|
| AM Peak | 46 | 44 | 89 | |
| PM Peak | 39 | 36 | 74 | |
| Daily | 535 | 535 | 1070 | PM Peak Hour Rate Applied to Daily |

# Drive-Through Queueing Information

COUNTINGcars.com

# Drive-Through Queue Generation

**Mike Spack, PE, PTOE, Max Moreland, EIT, Lindsay de Leeuw, Nate Hood**

## 1.0 Introduction

This report provides queuing data for businesses with drive-through services. It is intended to be an aid for site designers and reviewers, similar to the Institute of Transportation Engineers' *Trip Generation* and *Parking Generation* reports. The data presentation is modeled on the *Parking Generation* report and data is provided based on at least six sites, similar to data sets marked as statistically significant in *Trip Generation*.

Businesses with drive-through lanes are very common in the United States and having data that gives usage information for drive-through lanes will assist designers as well as cities in determining the appropriate amount of storage needed for proposed drive-through businesses. Data for drive-through queues was published by the ITE Technical Council Committee 5D-10 in 1995 based on information collected between the late 1960's and the 1990's. A paper was also published in 2009 by Mark Stuecheli, PTP giving updated information for bank and coffee shop drive-through lanes. The results from the 2009 study are incorporated into this paper (thank you Mark for your assistance).

## 2.0 Data Collection

Data was collected using COUNTcam video recording systems at a total of 30 drive-through locations in Minneapolis, MN and several surrounding suburbs between 2010 and 2012 (26 of the 30 videos were recorded in February of 2012, which should represent peak usage in the cold Minnesota winter). Videos of drive-through lanes were collected at banks, car washes, coffee shops, fast food restaurants and pharmacies. A total of six locations were selected for each of the five different land uses. Each location was recorded for between one and five days where the majority of locations were recorded for two consecutive days. The days of the week that each video was recorded on varies.

The 24-hour videos were watched at high speeds with the PC-TAS counting software and maximum queues throughout the day were noted. Most of the COUNTcams were set up such that the entire queue lane could be seen, but at a few locations the drive-through lanes wrapped around the building in a way that the entire queue length would not be able to be seen. For these situations, the COUNTcams were set up so that the ordering window and back of the queue could be seen and it was noted how many vehicles could fit between the ordering window and the front of the queue. For drive-through locations with multiple lanes, the number of lanes was noted but the maximum queue is defined as the sum of the queues at each lane for any given point in time, not the queue per lane. This approach provides overall demand, which may assist designers in determining how many drive through lanes are appropriate in addition to determining how long they should be.

Once the maximum queue for each day at each location was determined, the data was compiled and statistics for each land use were calculated. The average maximum queue, standard deviation, coefficient of variation, range, 85th percentile and 33rd percentile were calculated for each land use.

Data for drive-through coffee shops and banks from the Kansas City, Kansas metropolitan area was published in the 2009 paper New Drive-Through Stacking Information for Banks and Coffee Shops by Mark Stuecheli. This data is included in the analysis.

## 3.0 Data Analysis

Based on the peak queue lengths, it is apparent that each land use will require a different minimum drive through stacking distance. The results for each land use can be found below. The peak queue lengths for each location, broken down by land use and day of the week, can be found in the Appendix.

### 3.1 Banks

Data collection was done at six banks with drive-through services (including one credit union) in August 2011 and February 2012. Twelve days of data were collected. The banks were located in the cities of Minneapolis, Robbinsdale and St. Louis Park, MN.

All of the locations had a lane with a drive-through ATM and at least two other lanes. Though service times may differ for ATM lanes compared to the regular lanes, the maximum queues were counted together. This is because based upon what was observed, vehicles would occasionally switch the lane they were in. For example, a vehicle waiting in the ATM line with a queue of three vehicles may move over to a regular line with a queue of only one vehicle. Much of what can be done at the bank's drive-through lane can also be accomplished at that bank's ATM and vice versa. Vehicles being served were counted as being in the queue.

Nine days of data from the Kansas City, Kansas area is also included. This data does not factor in vehicles in ATM lanes.

**Table 3.1 – Drive-Through Bank Maximum Queue Statistics**

| | Minnesota Data | Minnesota + Kansas Data |
|---|---|---|
| **Number of Data Points** | **12** | **21** |
| **Average Maximum Queue (Vehicles)** | **5.83** | **5.76** |
| **Standard Deviation (Vehicles)** | **1.85** | **2.21** |
| **Coefficient of Variation** | **32%** | **38%** |
| **Range (Vehicles)** | **3 to 8** | **1 to 10** |
| **85th Percentile (Vehicles)** | **8.00** | **8.00** |
| **33rd Percentile (Vehicles)** | **5.00** | **5.00** |

Coffee shops produced the longest maximum queues of any of the land uses in this study with all of the maximum queues occurring in the morning. In four of the six cases, the queues spilled out of the parking lot and into the street. These spillovers would typically only happen once or twice a day and last only a few minutes, however, one location had stacking into the street for about 15 minutes in addition to multiple periods of several minutes where cars would queue in the street.

With an 85$^{th}$ percentile maximum queue of 13 vehicles, the data suggests that coffee shops with drive-through lanes should be able to accommodate at least 260 feet of vehicle stacking during morning hours.

## 3.4 Fast Food Restaurants

Data collection was done at six fast food restaurants with drive-through services in August 2011 and February 2012. Fourteen days of data were collected. The restaurants were located in the cities of Golden Valley, Hopkins, Minneapolis and St. Louis Park, MN. Vehicles being served were counted as being in the queue.

**Table 3.4 – Drive-Through Fast Food Restaurant Maximum Queue Statistics**

| | |
|---|---|
| **Number of Data Points** | **14** |
| **Average Maximum Queue (Vehicles)** | **8.50** |
| **Standard Deviation (Vehicles)** | **2.68** |
| **Coefficient of Variation** | **32%** |
| **Range (Vehicles)** | **5-13** |
| **85th Percentile (Vehicles)** | **12.00** |
| **33rd Percentile (Vehicles)** | **7.90** |

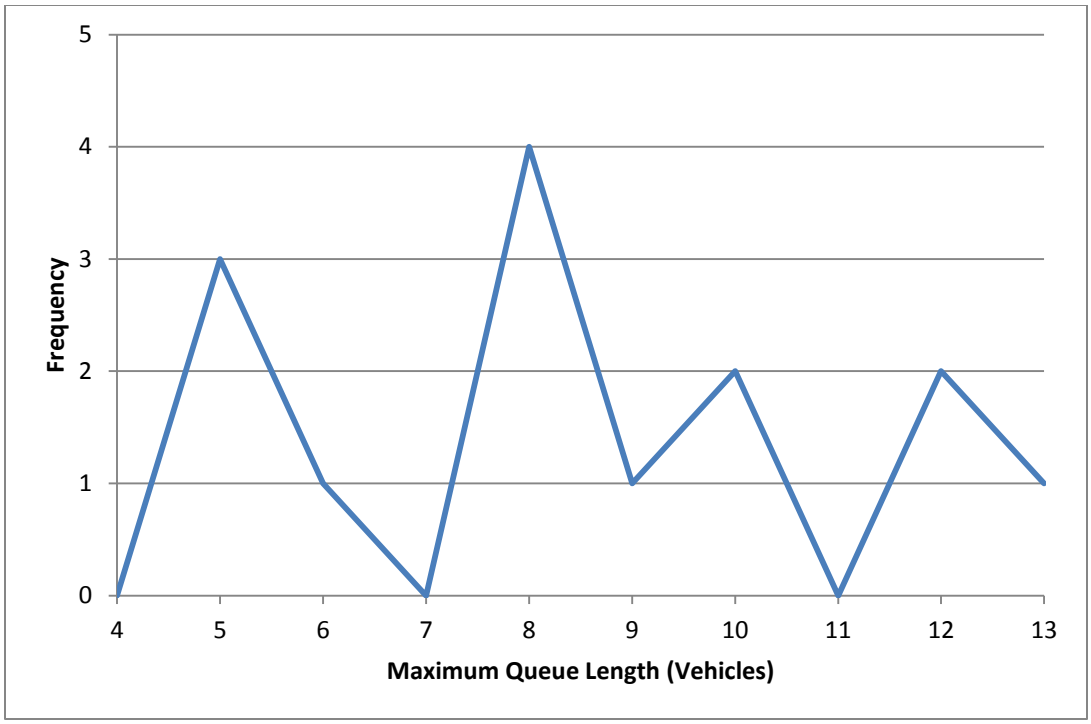



**Figure 3.4 – Drive-Through Fast Food Restaurant Maximum Queue Frequency**

The maximum queues for fast food restaurants were spread throughout the day from 8:00am to 10:00pm. With an 85$^{th}$ percentile maximum queue of 12 vehicles, the data suggests that fast food restaurants with drive-through lanes should be able to accommodate 240 feet of vehicle stacking throughout the day.

## 3.5 Pharmacies

Data collection was done at six pharmacies with drive-through services in February 2012. Twelve days of data were collected. The pharmacies were located in the cities of Hopkins, Minneapolis, New Hope and Robbinsdale, MN. Vehicles being served were counted as being in the queue.

**Table 3.5 – Drive-Through Pharmacy Maximum Queue Statistics**

| | |
|---|---|
| **Number of Data Points** | **12** |
| **Average Maximum Queue (Vehicles)** | **2.92** |
| **Standard Deviation (Vehicles)** | **1.16** |
| **Coefficient of Variation** | **40%** |
| **Range (Vehicles)** | **1-5** |
| **85th Percentile (Vehicles)** | **4.05** |
| **33rd Percentile (Vehicles)** | **2.00** |

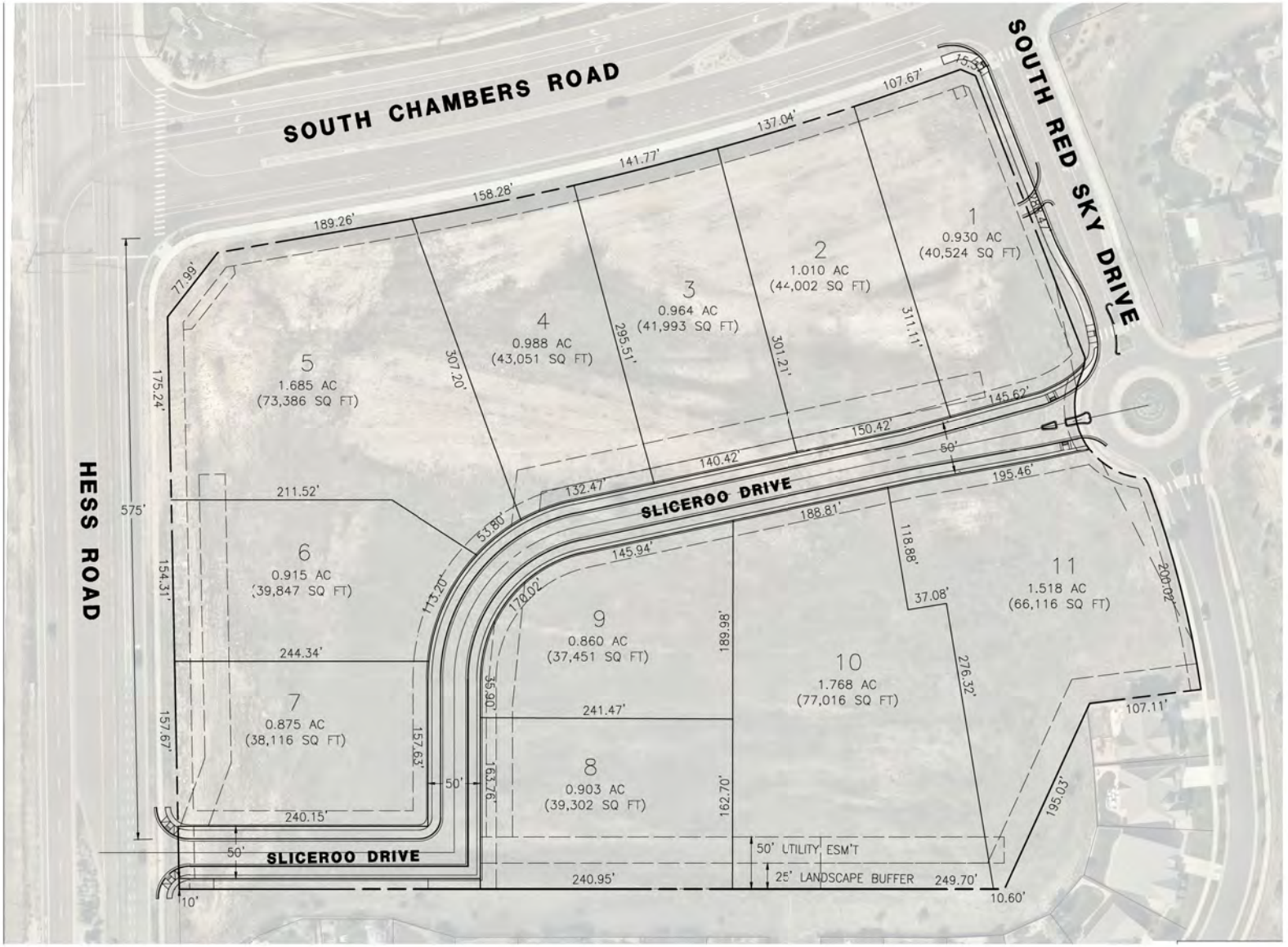
# Original Traffic Study Documents

# CHAMBERS AND HESS DEVELOPMENT
# TRAFFIC IMPACT STUDY (TIS)
# TOWN OF PARKER, CO

**ORIGINAL JANUARY 23, 2020**
**REVISED SEPTEMBER 14, 2020**

**PREPARED FOR:**
**VENTANA CAPITAL**
**9801 EAST EASTER AVENUE**
**CENTENNIAL, CO 80112**


**PREPARED BY:**




NOT TO SCALE

RICK ENGINEERING COMPANY

# EXHIBIT 2

PROJECT SITE PLAN

CHAMBERS AND HESS DEVELOPMENT

RICK ENGINEERING COMPANY

**TABLE 3**
**PROJECT TRIP GENERATION SUMMARY**
**CHAMBERS AND HESS DEVELOPMENT**

| LAND USE | QUANTITY | | ITE Trip Gen. 10th Edition Code | ADT | AM PEAK HOUR VOLUMES | | | PM PEAK HOUR VOLUMES | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | IN | OUT | TOTAL | IN | OUT | TOTAL |
| Day Care Center | 13 | TSF | 565 | 619 | 76 | 67 | 143 | 68 | 77 | 145 |
| General Office Building | 15 | TSF | 710 | 168 | 35 | 6 | 41 | 3 | 16 | 19 |
| Pharmacy/Drugstore With a Drive-Through Window | 12 | TSF | 881 | 1310 | 24 | 22 | 46 | 61 | 62 | 123 |
| Drive-in Bank | 3 | TSF | 912 | 324 | 14 | 10 | 24 | 26 | 26 | 51 |
| Fast-Food Restaurant with Drive-Through Window | 2.5 | TSF | 934 | 1177 | 51 | 49 | 100 | 43 | 39 | 82 |
| Fast-Food Restaurant with Drive-Through Window | 2 | TSF | 934 | 942 | 41 | 39 | 80 | 34 | 31 | 65 |
| Coffee/Donut Shop with Drive-Through Window | 2 | TSF | 937 | 1641 | 91 | 87 | 178 | 44 | 44 | 87 |
| Quick Lubrication Vehicle Shop | 3 | TSF | 941 | 209 | 13 | 4 | 17 | 11 | 15 | 26 |
| Automobile Care Center[1] | 6 | TSF | 942 | See Footnote 1 | 9 | 5 | 14 | 12 | 14 | 26 |
| Gasoline/Service Station with Convenience Market | 16 | VFP | 945 | 3134 | 106 | 101 | 207 | 114 | 110 | 224 |
| Automated Car Wash [2] | 1 | CWT | 948 | See Footnote 2 | | | | 39 | 39 | 78 |
| | | | Sub Total | 9,524 | 460 | 390 | 850 | 455 | 473 | 926 |
| | | | Internal Capture | 74 | 21 | 17 | 38 | 23 | 22 | 44 |
| | | | External Walk, Bike | 79 | 4 | 4 | 8 | 3 | 4 | 7 |
| | | | **TOTAL NET NEW PROJECT TRIPS** | **9,371** | **435** | **369** | **804** | **429** | **446** | **875** |

Source : *Fehr and Peers MXD + Methodology and Validation Technical Memorandum, Dated May 06, 2020* - with revisions based on Town's Comments on July 16, 2020, and further coordination with the Town on August 7, 2020

TSF = Thousand Square Feet

VFP = Vehicle Fueling Position

CWT = Car Wash Tunnels

[1]ITE Trip Generation Manual does not publish Weekday Daily Trips for Auto Care Centers. Instead, weekend (Saturday/Sunday) trips are provided in ITE to depict realistic use and hours of operation.

[2]ITE Trip Generation Manual does not publish Weekday Daily Trips or AM peak hour for Automated Car Wash. Instead, weekend (Saturday/Sunday) trips are provided in ITE to depict realistic use and hours of operation.