

# Dairy Queen

5605 SE Division St.

## Traffic Impact and Queue Analysis (Revised)



Prepared by:

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May, 2019

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### **Dairy Queen - Reconstruction**

5605 SE Division St.

Portland, OR 97206

Application/Case No.18-210965-000-00-CO

## Background

This focused summary report is prepared in support of the applicant's request for reconstruction of a Dairy Queen restaurant located at 5605 SE Division Street in Portland with improved on-site queue storage length and modified site access points which better complies with the City of Portland access spacing standards (See Figure 2- Site Layout).

Under existing conditions, the Dairy Queen restaurant has a walk-up window and a drive through window with one car length capacity. In addition, there are two full access points to SE Division Street, spaced approximately 65 feet apart (See Figure 1- Existing Site Plan).

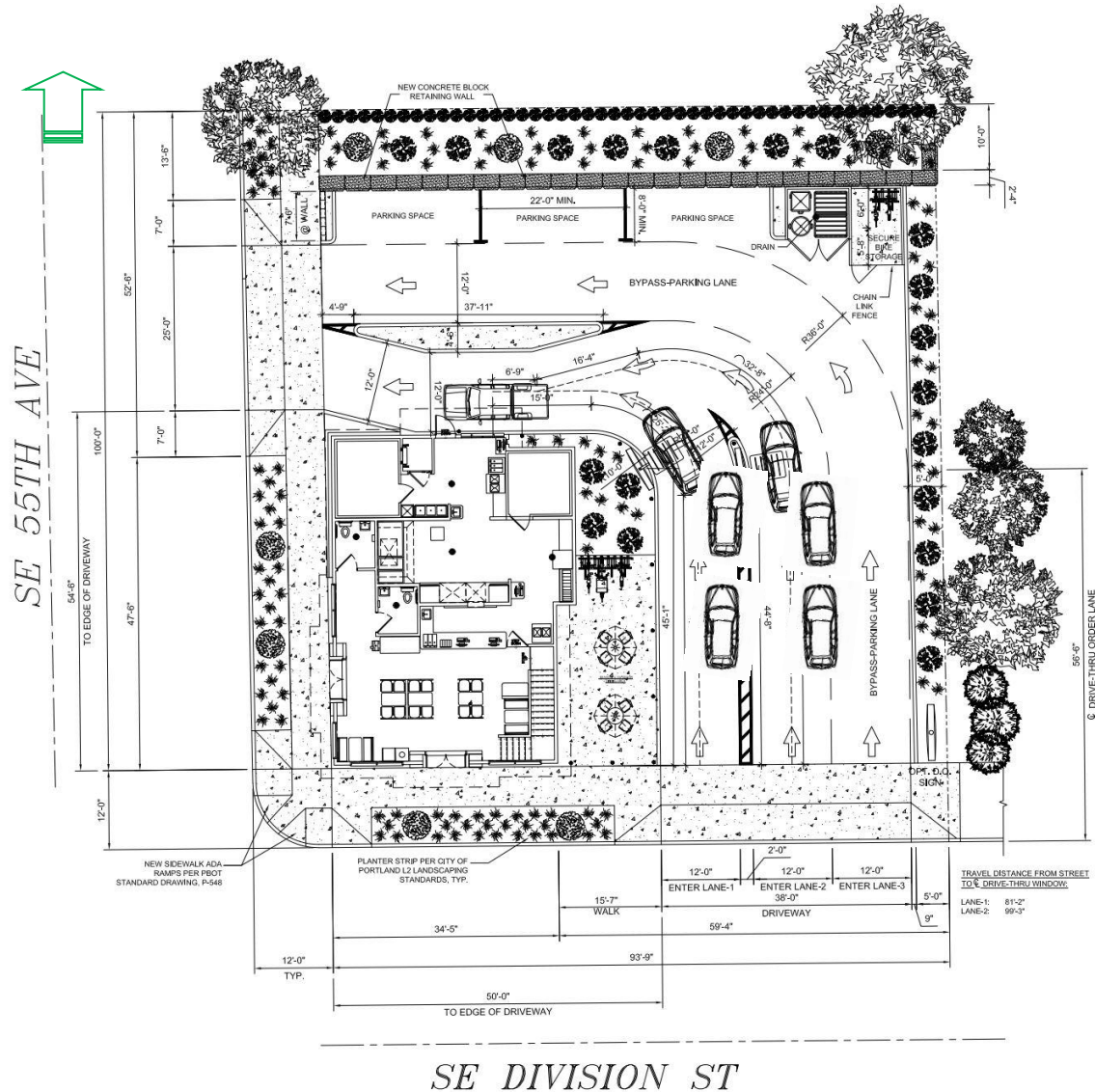


**Figure 1 - Existing Site Plan**



Based on the directions provided during the pre-application meeting on August 26, 2018 and based on the understanding that the proposed changes, new trip generation rates, and site circulation were to be analyzed for the PM peak period and presented in this report.

**Figure 2- Site Layout**



## **Existing Infrastructure, Street Network and Trip Generation**

This section of SE Division Street is a 34-feet wide, Neighborhood Collector (NC) with curb and gutters, and sidewalks on both sides of the project sites' frontage.

In addition to sidewalks, street lights, bus line 4 serves SW Division Street (east/west) which classified as Frequent Service bus line run every 15 minutes or better most of the day, every day.

These key features which provides multi-modal access to the project site, cuts a significant portion of the vehicular trips, and based on the location of this site, and availability of bus service and sidewalks, a request for SDC reduction may be also justified.

Franklin High School, George H. Atkinson Elementary School and Clinton City Park are all within walking distance as well as other community social gathering places. This will have a direct impact on encouraging more walking to the Dairy Queen site instead of driving.

Based on the established data available from the current operation, the applicant believes that Person Trips resulting from the new Dairy Queen will be less than trips established in the City Rate Study and latest published ITE Trip Generation rates. This analysis will use the common traffic engineering practices to show the anticipated new site trips based on ITE Site Trip Generation rates will not have an adverse impact to the new access, onsite queue length and nearby signalized intersections.

It is also noteworthy to mention that due to nature and location of this restaurant, the great majority (90 percent) of patrons and trips entering the site are pass-by trips

## **Data Collection**

In order to complete such analysis, existing site trips were counted during PM Peak hours (December 19, 2018). Since this data collection was done while the schools were closed, a conservative 3 percent adjustment factor was applied to the summarized results shown in Table 1. Additional PM Peak hours counts were collected on January 10<sup>th</sup> at two nearby signalized intersections (SE 52<sup>nd</sup> and Division and SE 60<sup>th</sup> and SE Division Street).

The PM peak results are summarized in Table 2 per direction from City staff. PM Peak trips are the focus of this study. Most of the students/patrons arrive on foot around 3 PM.

**Table 1 – 12/18/2018 Driveway PM Counts**

Existing Site Volume	Mode of Arrival							
	Auto		Walk		Bike		Transit	
15:35-16:35	in	out	in	out	in	out	in	out
	15	15	7	6	0	0	0	0
Mode Split	~70%		~30%		-		-	

**Table 2 – PM Peak Volumes**

PM Peak Volumes	Eastbound			Westbound			Northbound			Southbound			Total
	L	T	R	L	T	R	L	T	R	L	T	R	
SE Division @ SE 52nd	0	574	88	97	381	1	84	4	149	6	67	7	1,458
SE Division @ SE 60th	131	620	-	-	411	252	-	-	-	365	-	101	1,883

**Table 3 – PM Peak Vehicular (ITE) Trip Generation vs. Existing**

Study Site	Size (SF)	PM Peak (proj)		Existing(*)		Pass By Trips (90%)	Percent Change
		Enter	Exit	Enter	Exit		
Dairy Queen Drive Through Only (ITE code 935)	1,180	3	3	15	15	14	-
Fast Food + Drive Through (ITE CODE 934)	1,791	15	14	-	-	13	0 to (-12%)

(\*) – Actual numbers were inflated by a factor of 3% to account for closure of nearby schools at the time of data collection.

## **Traffic and Queuing Analysis**

Presently, the existing Dairy Queen Restaurant is a drive through restaurant only with no indoor seating. Data collected during PM peak hours (4:30-5:30) shows approximately 15 vehicles entering the site during the busiest one-hour period. Under current building location and drive through window, there is about 25 feet of queue length available for vehicles entering the site to place an order at the window. With this limited queue length some vehicles enter the site and park before placing an order at the walk-up window.

The new Dairy Queen Restaurant will replace the existing building by reconstructing a new 1,791 SF building (2 stories), an extended and double queue lanes, allowing a combined queue length of at least 85 feet which will accommodate 6 average length vehicles comfortably as well as a queue bypass through lane entering from SE Division street and exiting on SE 55<sup>th</sup> Avenue.

In addition, after placing their order at the drive-up window the vehicles will exit on SE 55<sup>th</sup> Avenue. The increased queue length as well as eliminating one of two full accesses on SE Division to one "enter only" and one exit only access on SE 55<sup>th</sup> Avenue, will enhance site circulation, site access and queue length significantly. The enhancement is in line with City of Portland recommendations and highly desired.

While not necessary, the analysis of two signalized intersections on either side of the Dairy Queen site (SE Division/SE 52<sup>nd</sup> Avenue and SE Division/SE 60<sup>th</sup> Avenue) show that neither intersections are adversely impacted by the proposed change at this site.

Longer on-site queue storage capacity is expected to eliminate queue spills back onto sidewalk and SE Division Street and eliminate traffic congestion at entrance and exit driveways. This important improvement will make the site traffic operation safer for pedestrians, patrons, and on street traffic while reducing congestion and eliminating entering and exiting delays due to existing on site inadequate queue capacity.

The traffic analysis shows that the maximum expected on site vehicular queue length to be up to 4 vehicles during the busiest time (PM Peak). With at least 6 vehicle on site queue capacity, the on site circulation will see significant improvement.

The average arrival rate for 16 entering vehicles is 4 vehicles in a 15-minute period. Average length of time for a vehicle to enter the site, select from the menu, order and then pull forward to pick the food is under 5 minutes. So, the worst-case scenario in any 5 minutes period is having 4 vehicles arrive simultaneously. With enough on-site storage available to accommodate at least 6 vehicles. There is no queue spill back onto SE Division Street expected on more than 95 percent of operating hours.

While there is no center left turn lane available on SE Division Street, there is enough width on street (eastbound) to allow eastbound traffic to get past any vehicles that might be waiting to turn left onto site.

Due to the nature and location of the fast food restaurant, over 90 percent of the patrons are expected to be pass by trips with little or no new trips anticipated. Even with an expanded seating area, since the current trips arriving and leaving is slightly larger than ITE trip generation rates for a fast food restaurant with drive through as well as inside seating, the site generated trips will be at or below current level.

Due to change in site layout, double queue lanes and a bypass through lane, it is highly recommended to use accurate signing to direct unfamiliar (first time) visitors/drivers to navigate the site correctly and efficiently.

Traffic counts were collected during PM Peak hours at two nearby signalized intersections of SE 52<sup>nd</sup> Avenue and SE 60<sup>th</sup> Avenue with SE Division Street.

Both intersections are operating at or below capacity at present time and with virtually no additional anticipated trip generation, and with 90 percent trips to and from the site being from pass by trips, no measurable operational impact at either intersection is expected.

### **On Site Turning Radius Analysis**

Appendix C, shows the turning radius graphically based on the largest anticipated design vehicle.

### **Parking Analysis**

Under existing conditions, due to inadequate drive through lane queuing capacity, some of the patrons park on site, walk up to the front window, place and pick their order and either leave or sit in the limited outdoor seating area. With the improved drive through Currently the site has ample parking, but due to poor positioning of the drive-up window, and frequent queue spill over onto SE Division Street, many customers are unable to utilize the drive through facility and instead park and walk up to the order window to place their order before leaving.

With anticipated and planned improvement to the onsite queue storage, most customers will utilize the drive-up window, therefore less on-site parking is needed. The applicant is willing and able to provide additional on-site parking, if set back variance along the north property line is granted.

SE 52<sup>nd</sup> Avenue also has available off-site parking for employees or customers who wish to use the expanded indoor seating area. It is noteworthy that majority of the patrons during the busiest hours are anticipated to be walkers.

## **Conclusion and Recommendation**

Within the scope of this analysis and with no overall change to the anticipated and projected trip generation for the reconstruction of this Dairy Queen Restaurant, ample on-site queue storage will be available during the PM Peak period.

Nearby SE 52<sup>nd</sup> and SE 60<sup>th</sup> intersections with SE Division Street are expected to operate at current level of service with no measurable impacts due to reconstruction of the restaurant.

New and improved on site signing must be provided to direct unfamiliar drivers to navigate the site as they enter and exit the drive-up window or as they enter the site, park and then exit at a new egress point onto SE 55<sup>th</sup> Avenue.

The City of Portland must consider a reduction in SDC rates due to a possible reduction of up to 12 percent of trips to and from the site after the change in building location, ingress and egress points and improved site circulation which also enhance traffic flow, reduce congestion, reduce delays on SE Division Street, and reduce potential for crashes along the frontage of the site on SE Division Street.



EXP: June 2020



## **Appendix A**

### **Supporting Data**

#### **PM Peak Data**

- **Site Access**
- **SE Division at SE 52<sup>nd</sup> Avenue**
- **SE Division Street at SE 60<sup>th</sup> Avenue**



7409 SW Tech Center Dr  
Tigard, OR 97223  
(503) 620-4242

Site Code : 14864001  
Location Dairy Queen at 5605 SE Division St  
Date : 12/18/2018

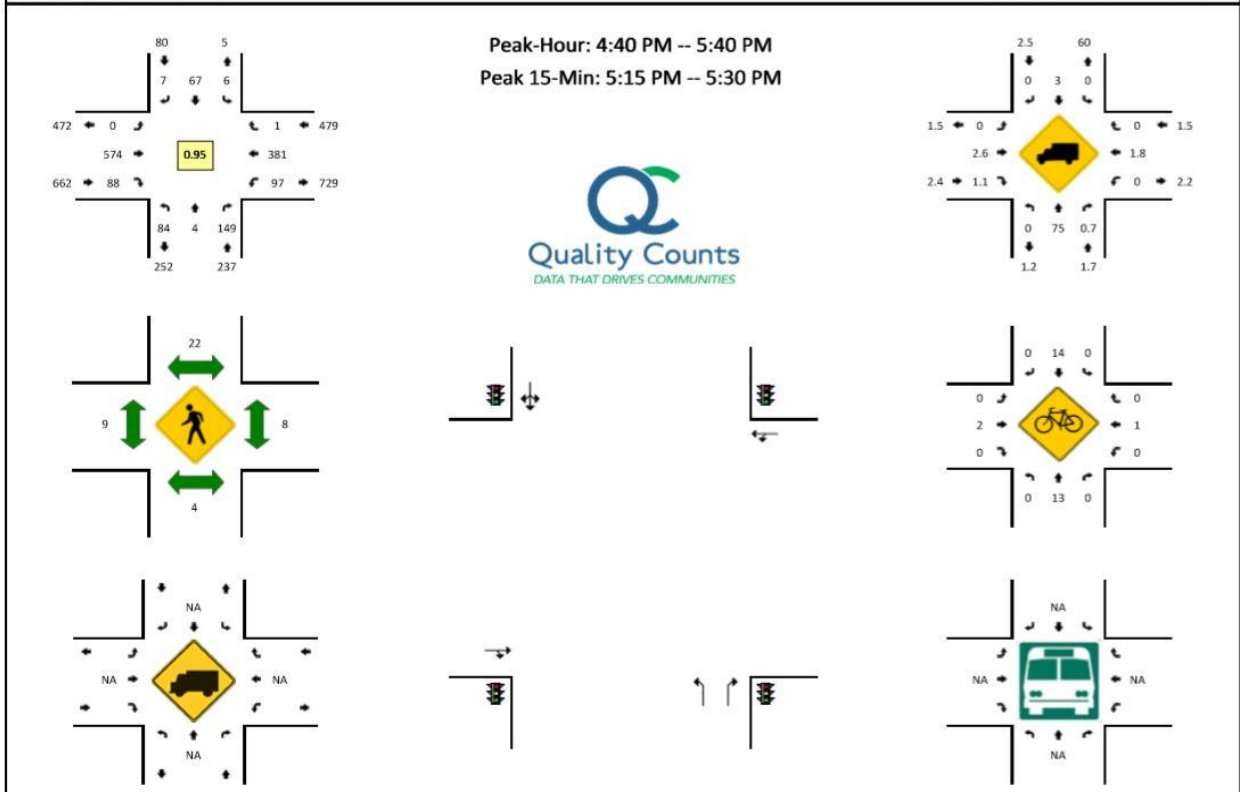
Time	Ins	Outs	Interval Totals
15:00	2	2	4
15:05	0	0	0
15:10	0	0	0
15:15	2	2	4
15:20	0	1	1
15:25	3	0	3
15:30	0	2	2
15:35	2	2	4
15:40	1	1	2
15:45	2	1	3
15:50	1	1	2
15:55	0	0	0
16:00	1	3	4
16:05	1	0	1
16:10	2	2	4
16:15	0	1	1
16:20	2	1	3
16:25	1	2	3
16:30	2	1	3
16:35	0	0	0
16:40	0	2	2
16:45	2	0	2
16:50	0	0	0
16:55	1	2	3
17:00	0	0	0
17:05	2	2	4
17:10	0	1	1
17:15	0	0	0
17:20	0	0	0
17:25	3	0	3
17:30	0	2	2
17:35	0	1	1
17:40	1	0	1
17:45	1	2	3
17:50	1	1	2
17:55	3	1	4
<b>TOTAL:</b>	<b>36</b>	<b>36</b>	<b>72</b>

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: SE 52nd Ave -- SE Division S  
CITY/STATE: Multnomah, OR

QC JOB #: 14885801  
DATE: Thu, Jan 17 2019



5-Min Count Period Beginning At	SE 52nd Ave (Northbound)				SE 52nd Ave (Southbound)				SE Division S (Eastbound)				SE Division S (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	3	0	12	0	0	7	1	0	0	41	9	0	13	32	0	0	118	
4:05 PM	9	1	18	0	0	3	1	0	0	35	9	0	6	25	0	0	107	
4:10 PM	8	0	11	0	0	10	3	0	0	45	9	0	4	27	0	0	117	
4:15 PM	8	0	12	0	1	6	1	0	0	46	5	0	16	29	0	0	124	
4:20 PM	14	1	8	0	0	10	0	0	0	42	5	0	8	33	0	0	121	
4:25 PM	4	0	7	0	1	4	0	0	0	59	8	0	5	23	0	0	111	
4:30 PM	7	0	11	0	0	6	1	0	0	48	11	0	9	24	0	0	117	
4:35 PM	5	0	11	0	0	8	1	0	0	36	1	0	9	28	0	0	99	
4:40 PM	10	1	10	0	1	9	1	0	0	48	2	0	7	26	0	0	115	
4:45 PM	5	1	12	0	0	2	0	0	0	49	8	0	13	41	0	0	131	
4:50 PM	8	0	17	0	1	6	1	0	0	51	7	0	6	29	0	0	126	
4:55 PM	3	0	4	0	0	1	0	0	0	47	8	0	5	36	0	0	104	
5:00 PM	8	1	15	0	0	2	0	0	0	44	11	0	5	25	0	0	111	1390
5:05 PM	8	0	13	0	1	5	0	0	0	45	7	0	8	40	0	0	127	1383
5:10 PM	2	0	8	0	2	3	0	0	0	46	13	0	5	35	0	0	114	1403
5:15 PM	9	0	17	0	0	6	1	0	0	42	7	0	11	27	0	0	120	1400
5:20 PM	12	1	9	0	0	9	1	0	0	47	8	0	9	34	0	0	130	1396
5:25 PM	2	0	14	0	0	12	0	0	0	58	8	0	9	31	0	0	134	1405
5:30 PM	6	0	18	0	1	6	0	0	0	46	6	0	8	28	1	0	120	1428
5:35 PM	11	0	12	0	0	6	3	0	0	51	3	0	11	29	0	0	126	
5:40 PM	4	0	4	0	1	11	0	0	0	57	0	0	4	31	0	0	112	1455
5:45 PM	7	0	8	0	0	6	0	0	0	45	6	0	11	32	0	0	115	1439
5:50 PM	2	0	13	0	0	3	1	0	0	54	9	0	8	34	0	0	124	1437
5:55 PM	7	1	9	0	0	6	0	0	0	43	8	0	15	34	0	0	123	1456
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	92	4	160	0	0	108	8	0	0	588	92	0	116	368	0	0	1536	
Heavy Trucks	0	4	0		0	4	0		0	8	0		0	8	0		24	
Pedestrians		12				36				16				20			84	
Bicycles	0	4	0		0	2	0		0	1	0		0	1	0		8	
Railroad																		
Stopped Buses																		

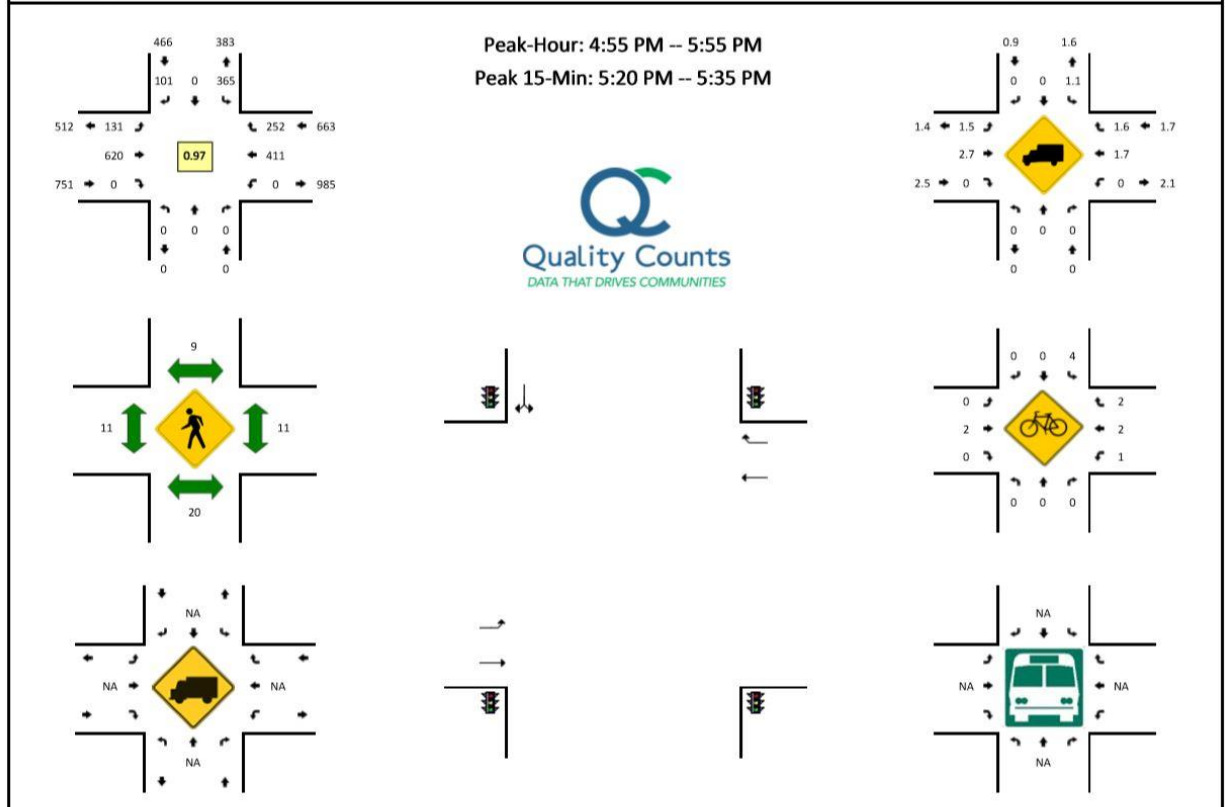
Comments:

Report generated on 1/22/2019 3:05 PM

SOURCE: Quality Counts, LLC (<http://www.qualitycounts.net>) 1-877-580-2212

LOCATION: SE 60th Ave -- SE Division St  
CITY/STATE: Multnomah, OR

QC JOB #: 14885802  
DATE: Thu, Jan 17 2019



5-Min Count Period Beginning At	SE 60th Ave (Northbound)				SE 60th Ave (Southbound)				SE Division St (Eastbound)				SE Division St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	0	0	0	22	0	8	0	14	38	0	0	0	26	25	0	133	
4:05 PM	0	0	0	0	36	0	6	0	9	46	0	0	0	46	18	0	161	
4:10 PM	0	0	0	0	29	0	9	0	9	51	0	0	0	37	19	0	154	
4:15 PM	0	0	0	0	39	0	6	0	10	47	0	0	0	34	16	0	152	
4:20 PM	0	0	0	0	30	0	4	0	8	44	0	0	0	23	21	0	130	
4:25 PM	0	0	0	0	43	0	6	0	10	46	0	0	0	30	16	0	151	
4:30 PM	0	0	0	0	29	0	8	0	15	50	0	0	0	36	20	0	158	
4:35 PM	0	0	0	0	17	0	6	0	8	36	0	0	0	39	24	0	130	
4:40 PM	0	0	0	0	32	0	11	0	7	39	0	0	0	29	20	0	138	
4:45 PM	0	0	0	0	26	0	10	0	9	60	0	0	0	37	20	0	162	
4:50 PM	0	0	0	0	30	0	14	0	9	45	0	0	0	22	22	0	142	
4:55 PM	0	0	0	0	40	0	9	0	8	54	0	0	0	31	20	0	162	1773
5:00 PM	0	0	0	0	28	0	4	0	13	56	0	0	0	35	22	0	158	1798
5:05 PM	0	0	0	0	30	0	11	0	10	48	0	0	0	37	25	0	161	1798
5:10 PM	0	0	0	0	28	0	14	0	12	44	0	0	0	27	19	0	144	1788
5:15 PM	0	0	0	0	22	0	5	0	12	44	0	0	0	46	19	0	148	1784
5:20 PM	0	0	0	0	30	0	7	0	13	51	0	0	0	30	22	0	153	1807
5:25 PM	0	0	0	0	31	0	7	0	9	61	0	0	0	25	20	0	153	1809
5:30 PM	0	0	0	0	36	0	11	0	9	57	0	0	0	38	30	0	181	1832
5:35 PM	0	0	0	0	33	0	7	0	8	48	0	0	0	34	20	0	150	1852
5:40 PM	0	0	0	0	26	0	8	0	9	56	0	0	0	38	12	0	149	1863
5:45 PM	0	0	0	0	33	0	9	0	12	44	0	0	0	37	27	0	162	1863
5:50 PM	0	0	0	0	28	0	9	0	16	57	0	0	0	33	16	0	159	1880
5:55 PM	0	0	0	0	26	1	14	0	7	39	0	0	0	34	22	0	143	1861
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	0	0	0	0	388	0	100	0	124	676	0	0	0	372	288	0	1948	
Heavy Trucks	0	0	0	0	4	0	0	0	0	12	0	0	0	4	4	0	24	
Pedestrians		12				12				8				12			44	
Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	
Railroad																		
Stopped Buses																		

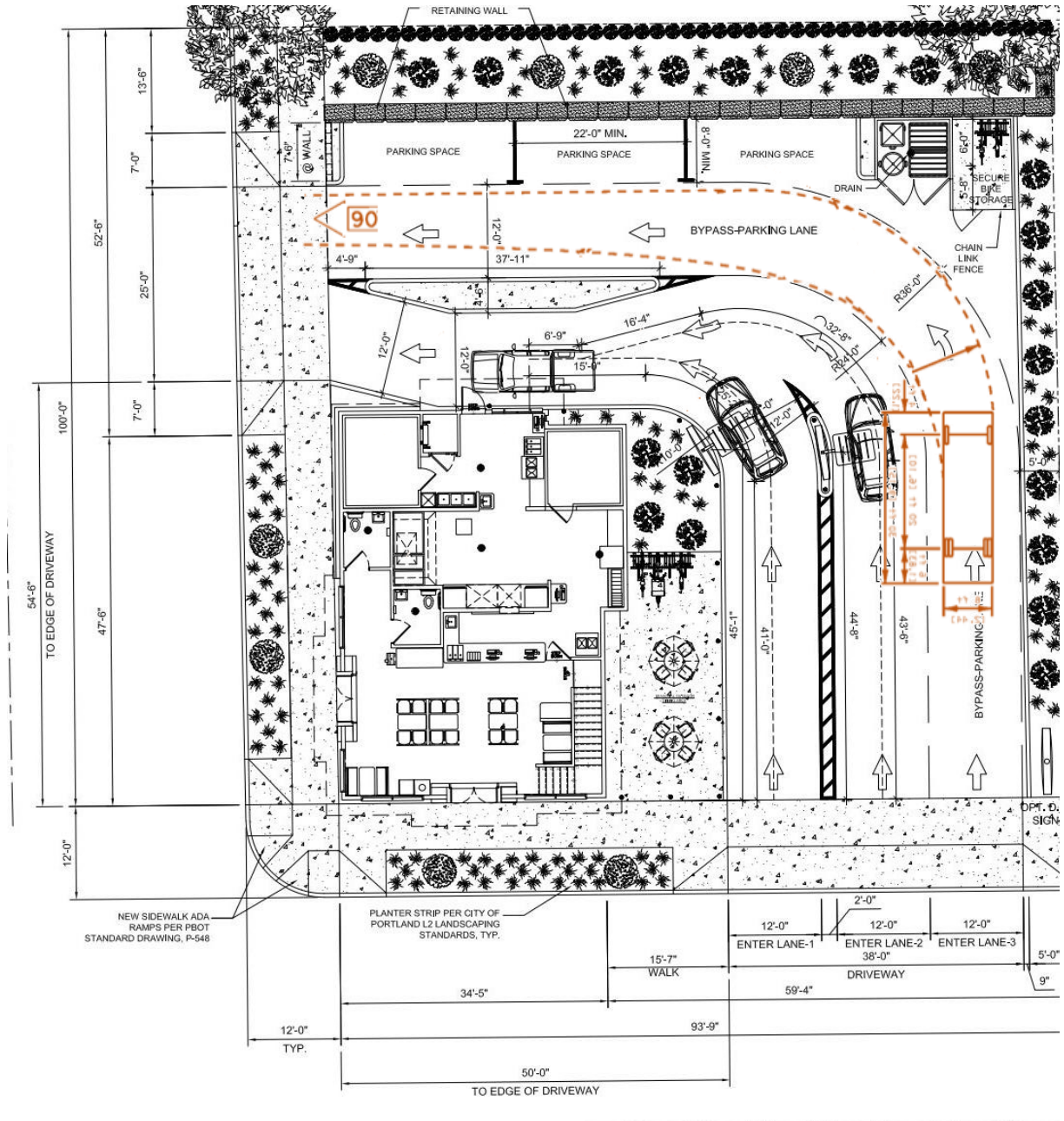
Comments:

Report generated on 1/22/2019 3:05 PM

SOURCE: Quality Counts, LLC (<http://www.qualitycounts.net>) 1-877-580-2212



**Appendix C**  
**Turning Radii Review**  
**Single Unit (SU) Truck Design Vehicle**  
**Turning Radius = 42 Ft.**



*SE DIVISION ST*