

Town of Ellington
Planning Department



Posted 6/15/2020
[Signature]

MEMO

DATE: June 9, 2020

TO: Bernice Dixon, Vernon Town Clerk

FROM: Barbra Galovich, CZET, Land Use Assistant [Signature]

SUBJECT: Z202008 – MJS Leasing LLC & Chilson Realty Co. owners/ Town of Vernon & Town of Ellington applicants request for Site Plan Approval for the construction of four full-size soccer fields, associated parking and access roads, concession and restroom buildings, and associated site improvements on properties along the east side of Windermere Ave near the Vernon town line, at APNs 011-033-0000 019-005-0004 and 019-005-0005.

RECEIVED
VERNON TOWN CLERK
20 JUN 15 AM 8:33

Please see the attached PZC application pursuant to 8-7d(f) of the Connecticut General Statutes:

1. IWA application for Windermere Fields, APN 011-033-0000 and 019-005-0005
2. Soil Scientist Report from Datum Engineering & Surveying, LLC, Richard Zulick dated March 10, 2020.
3. Overall Site Plan - Photo; Windermere Fields, Windermere Avenue, Ellington & Vernon, CT; Town of Vernon, Engineering Department, 14 Park Place, Vernon, CT 06066; Scale: As Noted; Sheet: 1 of 7; Date: May 4, 2020, Revised Date: June 3, 2020.
4. Overall Site Plan; Windermere Fields, Windermere Avenue, Ellington & Vernon, CT; Town of Vernon, Engineering Department, 14 Park Place, Vernon, CT 06066; Scale: As Noted; Sheet: 2 of 7; Date: May 4, 2020, Revised Date: June 3, 2020.
5. Site Plan Field - 1; Windermere Fields, Windermere Avenue, Ellington & Vernon, CT; Town of Vernon, Engineering Department, 14 Park Place, Vernon, CT 06066; Scale: 1"=40'; Sheet: 3 of 7; Date: May 4, 2020, Revised Date: June 3, 2020.
6. Site Plan Field - 2 & 3; Windermere Fields, Windermere Avenue, Ellington & Vernon, CT; Town of Vernon, Engineering Department, 14 Park Place, Vernon, CT 06066; Scale: 1"=40'; Sheet: 4 of 7; Date: May 4, 2020, Revised Date: June 3, 2020.
7. Site Plan Field - 4; Windermere Fields, Windermere Avenue, Ellington & Vernon, CT; Town of Vernon, Engineering Department, 14 Park Place, Vernon, CT 06066; Scale: 1"=40'; Sheet: 5 of 7; Date: May 4, 2020, Revised Date: June 3, 2020.
8. Details; Windermere Fields, Windermere Avenue, Ellington & Vernon, CT; Town of Vernon, Engineering Department, 14 Park Place, Vernon, CT 06066; Scale: As Noted; Sheet: 6 of 7; Date: May 4, 2020, Revised Date: June 3, 2020.
9. Details; Windermere Fields, Windermere Avenue, Ellington & Vernon, CT; Town of Vernon, Engineering Department, 14 Park Place, Vernon, CT 06066; Scale: As Noted; Sheet: 7 of 7; Date: May 4, 2020, Revised Date: June 3, 2020.
10. Map Amendment/Wetland Re-Designation; Windermere Fields, Windermere Avenue, Ellington & Vernon, CT; Town of Vernon, Engineering Department, 14 Park Place, Vernon, CT 06066; Scale: As Noted; Sheet: 1 of 1; Date: May 4, 2020, Revised Date: June 3, 2020.

Thank you

See vernon-ct.gov/neighboringtown for full text.



1A

2

3

4

Windermere Fields

Windermere Avenue, Ellington, CT.

Site Plan Review

Ellington Parcels

011-033-0000 owned by MJS Leasing, LLC. 11.21 acres Industrial Park Zone

019-005-0005 owned by Chilson Realty Co. 21.31 acres Industrial Park Zone

Vernon Parcel

22-0039-00003 owned by MJS Leasing, LLC. 1.9 +/- acres PRD Zone

May 21, 2020
David A. Smith, CT PELS 14173
Vernon Town Engineer

Project Narrative

The current proposal includes four full size soccer fields, associated parking and access roads surfaced with recycled bituminous millings, amenities such as a concession building with restrooms and storage facilities on the upper level and a second separate building with restrooms for the lower terrace fields. Additionally, an area has been reserved for a more formal playground. Potable water will be provided by CT Water, sanitary waste will be directed to an on-site disposal field. Storm water runoff from the fields, parking and other grass surfaces will be directed to localized recharge systems.

The proposed project is located on two separate parcels which will be acquired by the Town of Vernon and merged into a single tract. The 21.3 Acre parcel currently owned by Chilson Realty Co. (m19-b5-15) is located in the northerly portion of the project, and the 11.2 Acre parcel currently owned by MJS Leasing, LLC. (m11-b33-100) is located in the southerly portion of the project, 9.3 acres and 1.9 acres in Ellington and Vernon respectively.

The site contains upland soils, soils of alluvial origin and traditional Poorly or Very Poorly wetland soils. The limits of these various soils as determined by a field investigation are shown on the attached plans. The official wetland limits as shown on the Town of Ellington Website is also shown on the plans along with the 100-year flood limit as published by the FEMA FIRM map. Both Parcels have recently been in active crop production, throughout the parcels without regard to soil category or flood potential.

The change from the current agricultural practices to a stable lawn cover should reduce soil erosion and maintain/improve rainwater infiltration. In order to prepare drought resistant fields and reduce the needs for irrigation in fields 1, 2, and 3 it is suggested that topsoil and loam layers be separately stripped and reserved for replacement after the sandy/gravelly soils are shaped to mirror the finished grading. This will ensure favorable conditions for deep rooted plantings and rainwater infiltration. Field 4 is within the 100 year flood zone and will be regraded to the finished surface without importing any materials to prevent the loss of flood storage.

These techniques and the installation of leaching catch basins will capture runoff to the maximum extent possible. The configuration of the fields and access roads have been developed to eliminate any increases to streamflow volumes and velocity.

Initial Step – the site has been in corn production for a number of years and may or may not be clear of vegetation depending on when or if a cover crop has been planted. The first activity should be to protect the native topsoil from wind and water erosion with a vigorous cover crop.

Phase 1 -includes the construction of the park access road to future Concession Stand and northerly most parking area; the actual parking area, and field #1 and the extension of the Utilities to a central terminus. Landscaping, water management elements and stabilization of the surrounding non-play grass areas.

Phase 2 -includes the construction of field #2, the second parking area, the concession stand, landscaping, water management elements, septic system and leaching field, and stabilization of the surrounding non-play grass areas.

Phase 3 -includes the extension of the access drive and the remaining parking area, field #3, landscaping, water management elements, second restroom building, required utilities connections and stabilization of the surrounding non-play grass areas.

Phase 4 -includes the construction of the service road, construction of field #4, and stabilization of the surrounding non-play grass areas. Field #4 is located within the 100-yr flood area and the final grades are developed to balance the volumes of cuts and fills such that no loss of flood storage will occur. The access path will mimic the existing grades and is only for emergency or maintenance use. No parking areas or structures are proposed in this vicinity.

The project is divided into 4 phases to allow regrading and subsequent stabilization to proceed as rapidly as possible. Construction activities will also be influenced by funding schedules and the availability of resources. Landscaping including buffer trees, gardens, fencing and the location sign will be installed as the project progresses. The tree species shown on the Site Plans are suggested. Variation from those listed species will be permitted only with the permission of the Ellington Parks and Recreation Director.

Applications to the Ellington IWC, Vernon IWC, North Central District Health Department, and the CT DEEP Stormwater division will also be part of this Project.

The attached plan set and supplemental documents have been provided to assist the Ellington Planning and Zoning Commission in their review of this proposal.

Abutters List



Property Information

Property ID 019-005-0005
Location WEST RD REAR
Owner CHILSON REALTY CO



MAP FOR REFERENCE ONLY
NOT A LEGAL DOCUMENT

Town of Ellington, CT makes no claims and no warranties, expressed or implied, concerning the validity or accuracy of the GIS data presented on this map.

Geometry updated 7/1/2018
Data updated 11/19/2018

ATTIC SELF STORAGE OF ELLINGTON LLC
65 WINDERMERE AVE
ELLINGTON, CT 06029

ROCKSAN LLC
ONE CVS DR
WOONSOCKET, RI 02895

CHILSON REALTY CO
PO BOX 611
VERNON, CT 06066

SPIELMAN DAVID J + BETH A
50 WINDERMERE AVE
ELLINGTON, CT 06029

FISHER LYNETTE G
36 WINDERMERE AVE
ELLINGTON, CT 06029

PAQUETTE ROBERT F + SHERYL ANN
30 WINDERMERE AVE
ELLINGTON, CT 06029

SURETTE IRENE H
46 WINDERMERE AVE
ELLINGTON, CT 06029

CHASSERAL MEADOWS
CHASSERAL MEADOWS
ELLINGTON, CT 06029

SUTYLA CHRISTOPHER + RAYMOND +
SANDRA
57 WINDERMERE AVE
ELLINGTON, CT 06029

VICTORIAN ARMS CONDO ASSOCIATION
24 WEST RD
ELLINGTON, CT 06029

MESSINO JANICE
48 WINDERMERE AVE
ELLINGTON, CT 06029

MARANDINO ERIC
42 WINDERMERE AVE
ELLINGTON, CT 06029

QUANTUM OF ELLINGTON II LLC
PO BOX 3
CROMWELL, CT 06416

WRONIAK LISA + TOM
40 WINDERMERE AVE
ELLINGTON, CT 06029

SEVEN (7) ELEVEN INC
3200 HACKBERRY RD
IRVING, TX 75603

HILLER ERIKA
38 WINDERMERE AVE
ELLINGTON, CT 06029

SPIELMAN DANE
44 WINDERMERE AVE
ELLINGTON, CT 06029

PARE JOHN J
238 JOBS HILL RD
ELLINGTON, CT 06029

GJONBALAJ FATON MAL
61 WINDERMERE AVE
ELLINGTON, CT 06029

DARLING WANDA S
32 WINDERMERE AVE
ELLINGTON, CT 06029

KRAJEWSKI STEPHEN E + DANIELLE D
61 THRALL RD
VERNON, CT 06066

On-site Waste Water Disposal

This project includes two parcels in Ellington, one of which also crosses the town line into Vernon. The northerly parcel, currently owned by Chilson Realty has been included in the Ellington WPCA Sewer Service Area, while the other is not. That portion of the second parcel in Vernon, could access the public sewers, but the location and topography make such a connection impractical.

At the suggestion of Tim Webb, Ellington DPW, the focus was directed toward on-site wastewater disposal. This would not only provide an easy option for disposal, but would be consistent with the idea of recharging the water cycle where it would be most beneficial.

The Town of Vernon Department of Public Works executed 4 deep test pits and prepared a percolation test. Wes Lirot from the North Central District Health Department observed and recorded the data with David Smith, PEELS, Town Engineer for Vernon. The results of that investigation are attached.

The soils are very suitable for on-site waste water disposal for the proposed use. A detailed design will be prepared at a future date for review and approval by the Health District. The leaching fields will be located on the parcel that does not have an allocation from the Ellington WPCA. The flow allocation from the Chilson Realty parcel could be available to other properties if the WPCA desired.

0000	Windermere Ave	Ellington	
Lot Num	Street # St_name	Town	Subdivision
Mjs Leasing Llc	27 Standish Street	Ellington	Ct 06029
Owner	Owner Address	Town	St Zip

SPECIAL CONDITIONS

System design larger than 2,000 g.p.d?	<input type="radio"/> Yes <input type="radio"/> No	Limited suitable area?	<input type="radio"/> Yes <input type="radio"/> No
Water supply watershed?	<input type="radio"/> Yes <input type="radio"/> No	Excessive slope (over 25%)?	<input type="radio"/> Yes <input type="radio"/> No
Possible seasonal high ground water?	<input type="radio"/> Yes <input type="radio"/> No	Marginal soil (30-60 mins / inch)?	<input type="radio"/> Yes <input type="radio"/> No
Watercourse, marsh or pond?	<input type="radio"/> Yes <input type="radio"/> No	Shallow ledge (less than 5 ft.)?	<input type="radio"/> Yes <input type="radio"/> No
High ground water (less than 3 ft.)?	<input type="radio"/> Yes <input type="radio"/> No	Underlying tight soil (less than 4 ft.)?	<input type="radio"/> Yes <input type="radio"/> No
Possible seasonal flooding?	<input type="radio"/> Yes <input type="radio"/> No	Other?	<input type="radio"/> Yes <input type="radio"/> No

CONCLUSION

Suitable for sewage disposal?	<input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Pending	Engineer's plan required	<input checked="" type="radio"/> Required
Additional investigation required?	<input type="radio"/> Yes <input checked="" type="radio"/> No		<input type="radio"/> Not Required
Retest during wet season?	<input type="radio"/> Yes <input checked="" type="radio"/> No		<input type="radio"/> Recommended

DESIGN REQUIREMENTS:

*note percolation hole total depth = 45" from surface. Perc hole depth of 21" begins at 24" cut down from soil surface.
 Soil testing conducted for possible septic system suitability for potential restrooms and snack bar for sports recreation fields. The soil conditions encountered within the test pit locations are acceptable for construction of a subsurface sewage system, an engineers site development plan including the subsurface sewage design parameters would be required for review by NCDHD.

David Smith Investigator	Westford Lirot, R.S. Confirmed/Witnessed by	Prepared By: _____	Sanitarian Date: 5/15/2020
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Drainage Review

It is the intent of this proposal to capture and recharge stormwater runoff to the maximum extent possible. The site is fortunate to have favorable grades and to be underlain with well drained sand and gravel. The access road will slope into the site and the grading for Field #1 will be below the elevation of Windermere Avenue. No water will flow from the site to the road or any town storm drainage system, nor will there be any adverse impact to the Hockanum River system. In addition to the well-drained soils in the area of the Fields, Parking and other improvements, there is an extensive area of poor or very poorly drained Hydric Soils in the center of the campus that provides natural nutrient attenuation, water storage and groundwater recharge.

Adjacent to Fields #1,2 and 3 leaching catch basins have been proposed to supplement natural infiltration, typical of areas with rich well drained soils with a grass cover. The proposed contours are developed to direct water into these structures. Field #4 is located adjacent to traditional wetland soils and rainfall that doesn't infiltrate on the field will easily be accommodated in these wetlands. Each field is graded to provide a uniform 1 to 2% grade and will support a vigorous stand of grass, both characteristics of a strong infiltration program.

The percentage of precipitation that is infiltrated increases with the conversion from bare soil/corn agriculture to uniformly graded grass areas. Approximately $\frac{3}{4}$ of an acre of the existing agriculture use will be developed to provide access and parking for the complex. It is proposed that recycled bituminous millings be used rather than bituminous pavement. This is obviously a cost savings, but the millings also tend to be less impermeable when compared to blacktop. They are however still more impervious than agriculture or grass surfaces.

Using the rational runoff method, we can approximate the potential impacts of this surface change on the site hydrology.

Thunderstorm - A 10 year storm with a time of concentration of 10 minutes will have an precipitation rate of 5.3 inch/hour. The infiltration coefficient for blacktop is 0.9 and for grass is 0.2. If the millings represent a compromise between the two surfaces, let's use a value of 0.55. The conversion from grass to millings would therefore be 0.35. The area of access drive and parking is $\frac{3}{4}$ acres. The runoff increase would be 0.75 acres x 5.3 iph x 0.35 or 1.4 cfs. Over the storm duration, this would result in 840 cubic feet of runoff water. Each of the 5 leaching catch basin provides approximately 500 cubic feet of storage, and will exfiltrate this stored water rapidly in the coarse-grained soils. It is interesting that the 100 year storm is 12 inch/hour, only slightly double the intensity of the 10 year storm. In this case we can predict about 1900 cubic feet of runoff water due to the change from agriculture to reasonably porous driveway and parking lot treatments. This is also less than the storage capacity of the 5 leaching catch basins.

Really Wet Day - A 10 year storm with a duration of 24 hours will have an precipitation rate of 0.21 inch/hour. The conversion from grass to millings is still 0.35. The area of access drive and parking is $\frac{3}{4}$ acres. The runoff increase would be 0.75 acres x 0.21 iph x 0.35 or 0.055 cfs. Over

the storm duration, this would result in approximately 4800 cubic feet of runoff water. Each of the 5 leaching catch basin provides approximately 500 cubic feet of storage, and will exfiltrate ~~this excess water rapidly in the native coarse-grained soils. The 100-year storm for the same~~ duration is 0.525 inch/hour, also only slightly double the intensity of the 10-year storm. In this case we can predict about 12000 cubic feet of runoff water due to the change from agriculture to reasonably porous driveway and parking lot treatments. While it is conceivable that even this volume could be accepted by the leaching catch basins, the result of them being overtaxed is merely that the swale and field will retain standing water until it can be infiltrated either in the basins or the ground surface. Recall this is the 100 year event, with a steady rain for 24 hours. Standing water will be observed, and games should be canceled. No other impacts on surrounding properties will occur.

Traffic Considerations

A traffic counting device was installed along Windermere Avenue on Monday March 2 to Monday March 9, 2020. This was considered a typical traffic window, school was in session, no holidays are included in this period and the Covid -19 restrictions had not yet be implemented. Data was collected related to vehicle speed, direction of travel, hour of travel.

During this period, Windermere Avenue experienced 22522 vehicle trips, or an Average Daily Trips (ADT) of 3217 in both directions. This was divided nearly equally, 1604 and 1613, between northbound and southbound travel directions respectively. The mean travel speed was 36.9 miles per hour.

The weekday morning peak hour is generally 7 am or 8 am while the weekday afternoon peak hour is generally 4 pm or 5 pm. Weekend peaks generally occur in mid-day hours. The data generated in this evaluation is consistent with this pattern. Actual volumes for these peak hours are as follows:

Weekday AM Ave Peak Hour	114 northbound	145 southbound
Weekday PM Ave Peak Hour	177 northbound	167 southbound
Weekend AM Ave Peak Hour	119 northbound	120 southbound
Weekend PM Ave Peak Hour	133 northbound	118 southbound

The Institute of Traffic Engineers shows a trip generation rate for Soccer Complexes as 16.43 trips per field to the PM Peak hour. The four fields proposed, once all on line would therefore be expected to add and additional 66 trips to the base traffic. The nature of public recreational complex such as the one proposed is to be most fully utilized on the weekends. With the projected increased traffic, combined with the weekend data, we see that projected peak hours would be only slightly higher than the a busy weekday around 4 or 5 pm.

Windermere Avenue is reasonably level and straight and sightlines are ample to enter and exit this road at the proposed driveway. The proposed driveway entrance provides for a single lane in and two lanes to exit, providing for separate right and left hand turns onto Windermere. It is expected that much of the exiting traffic will be turning southbound when the fields are used by Vernon Soccer League teams, but when programed for Ellington use or when visiting teams are playing a more balance traffic flow is expected.

Other than the construction of the driveway itself and making sure that proposed landscaping does not encroach on the sightlines, no other proposed improvements along Windermere Avenue are anticipated.

Monday PM

T2 Center
STARNet Report

Site Code:
 Station ID:
 Location 1:
 Location 2:
 Location 3:
 Location 4:
 3/2/2020 Northbound, Lane 1 Southbound, Lane 2
 Comment 1:
 Comment 2:
 Comment 3:
 Comment 4:
 Latitude: 0.000000
 Longitude: 0.000000

Time	1	2	Total
12:00 AM			0
1:00			0
2:00			0
3:00			0
4:00			0
5:00			0
6:00			0
7:00			0
8:00			0
9:00			0
10:00			0
11:00			0
12:00 PM			0
1:00			0
2:00	83	59	142
3:00	159	149	308
4:00	182	158	340
5:00	161	170	331
6:00	120	94	214
7:00	92	54	146
8:00	87	83	170
9:00	30	32	62
10:00	11	24	35
11:00	6	8	14
Total	931	831	1762
Percent	52.8%	47.2%	
AM Peak			
Volume	0	0	0
PM Peak	4:00	5:00	4:00
Volume	182	170	340

T2 Center
STARNext Report

Tuesday

Site Code:
Station ID:
Location 1:
Location 2:
Location 3:
Location 4:

Comment 1:
Comment 2:
Comment 3:
Comment 4:
Latitude: 0.0000000
Longitude: 0.0000000

Time	Northbound, Lane 1	Southbound, Lane 2	Total
12:00 AM	6	4	10
1:00	3	2	5
2:00	0	1	1
3:00	3	3	6
4:00	7	5	12
5:00	31	20	51
6:00	74	68	142
7:00	114	140	254
8:00	83	150	233
9:00	82	94	176
10:00	87	103	179
11:00	86	93	179
12:00 PM	107	118	225
1:00	115	107	222
2:00	129	117	246
3:00	145	150	295
4:00	163	160	323
5:00	150	158	308
6:00	101	112	213
7:00	51	62	113
8:00	40	37	77
9:00	33	32	65
10:00	9	21	30
11:00	9	17	26
Total	1608	1774	3382
Percent	47.5%	52.5%	
AM Peak Volume	7:00 114	8:00 150	7:00 254
PM Peak Volume	4:00 163	4:00 160	4:00 323

T2 Center
STARNext Report

Wednesday

Site Code:
Station ID:
Location 1:
Location 2:
Location 3:
Location 4:

Comment 1:
Comment 2:
Comment 3:
Comment 4:
Latitude: 0.000000
Longitude: 0.000000

Time	Northbound, Lane 1	Southbound, Lane 2	Total
12:00 AM	2	9	11
1:00	5	3	8
2:00	0	1	1
3:00	3	6	9
4:00	8	9	15
5:00	32	25	57
6:00	75	67	142
7:00	103	134	237
8:00	87	148	235
9:00	75	93	168
10:00	84	102	186
11:00	95	90	185
12:00 PM	116	86	212
1:00	91	101	192
2:00	127	113	240
3:00	133	154	287
4:00	139	143	282
5:00	181	164	355
6:00	123	111	234
7:00	80	61	151
8:00	59	30	89
9:00	35	24	59
10:00	10	17	27
11:00	7	12	19
Total	1688	1713	3401
Percent	49.6%	50.4%	
AM Peak	12:00 PM	8:00	7:00
Volume	116	148	237
PM Peak	5:00	5:00	5:00
Volume	191	164	355

T2 Center
STARNext Report

Thursday

Site Code:
Station ID:
Location 1:
Location 2:
Location 3:
Location 4:

Comment 1:
Comment 2:
Comment 3:
Comment 4:
Latitude: 0.000000
Longitude: 0.000000

Time	Northbound, Lane 1	Southbound, Lane 2	Total
12:00 AM	6	9	15
1:00	8	4	10
2:00	1	2	3
3:00	0	0	0
4:00	6	11	17
5:00	33	18	51
6:00	88	74	142
7:00	124	145	269
8:00	79	132	211
9:00	91	86	177
10:00	76	85	161
11:00	121	109	230
12:00 PM	76	131	207
1:00	109	93	202
2:00	123	100	223
3:00	145	148	293
4:00	169	167	336
5:00	181	185	346
6:00	137	104	241
7:00	94	59	153
8:00	74	41	115
9:00	35	32	67
10:00	33	21	54
11:00	13	10	23
Total	1780	1766	3546
Percent	50.2%	49.8%	
AM Peak Volume	7:00 124	7:00 145	7:00 269
PM Peak Volume	4:00 169	5:00 185	5:00 346

T2 Center
STARNext Report

Friday

Site Code:
Station ID:
Location 1:
Location 2:
Location 3:
Location 4:

Comment 1:
Comment 2:
Comment 3:
Comment 4:
Latitude: 0.000000
Longitude: 0.000000

Time	Northbound, Lane 1	Southbound, Lane 2	Total
12:00 AM	5	16	21
1:00	6	4	10
2:00	2	1	3
3:00	5	2	7
4:00	5	11	16
5:00	40	19	59
6:00	75	60	135
7:00	124	146	270
8:00	91	149	240
9:00	85	92	177
10:00	87	101	188
11:00	120	123	243
12:00 PM	112	123	235
1:00	127	112	239
2:00	128	138	264
3:00	135	134	269
4:00	167	146	313
5:00	179	165	344
6:00	108	87	195
7:00	79	60	139
8:00	50	38	88
9:00	33	31	64
10:00	20	23	43
11:00	15	14	29
Total	1796	1785	3581
Percent	50.2%	49.8%	
AM Peak	7:00	8:00	7:00
Volume	124	149	270
PM Peak	5:00	5:00	5:00
Volume	179	165	344

T2 Center
STARNext Report

Setwd 7

Site Code:
Station ID:
Location 1:
Location 2:
Location 3:
Location 4:

Comment 1:
Comment 2:
Comment 3:
Comment 4:
Latitude: 0.0000000
Longitude: 0.0000000

Time	Northbound, Lane 1	Southbound, Lane 2	Total
12:00 AM	12	14	26
1:00	9	10	19
2:00	0	1	1
3:00	1	3	4
4:00	4	3	7
5:00	7	11	18
6:00	28	22	50
7:00	26	57	83
8:00	79	86	165
9:00	90	104	194
10:00	108	112	220
11:00	124	134	258
12:00 PM	131	130	261
1:00	135	105	240
2:00	110	95	205
3:00	129	102	231
4:00	86	89	175
5:00	107	93	200
6:00	64	59	123
7:00	69	53	122
8:00	39	42	81
9:00	32	26	58
10:00	33	20	53
11:00	24	26	50
Total	1447	1397	2844
Percent	50.9%	48.1%	
AM Peak	12:00 PM	11:00	12:00 PM
Volume	131	134	261
PM Peak	1:00	12:00 PM	12:00 PM
Volume	135	130	261

T2 Center
STARNeXI Report

Sunday

Site Code:
Station ID:
Location 1:
Location 2:
Location 3:
Location 4:

Comment 1:
Comment 2:
Comment 3:
Comment 4:
Latitude: 0.000000
Longitude: 0.000000

Time	Northbound, Lane 1	Southbound, Lane 2	Total
12:00 AM	10	14	24
1:00	8	10	18
2:00	0	0	0
3:00	7	9	16
4:00	4	1	5
5:00	7	4	11
6:00	9	17	26
7:00	19	34	53
8:00	44	38	83
9:00	63	73	136
10:00	90	84	174
11:00	105	107	212
12:00 PM	98	105	203
1:00	105	86	191
2:00	132	103	235
3:00	113	100	213
4:00	78	81	159
5:00	62	83	145
6:00	62	77	139
7:00	80	61	121
8:00	44	42	86
9:00	31	20	51
10:00	21	19	40
11:00	10	11	21
Total	1182	1180	2362
Percent	50.0%	50.0%	
AM Peak	11:00	11:00	11:00
Volume	105	107	212
PM Peak	2:00	12:00 PM	2:00
Volume	132	105	235

T2 Center
STARNext Report

Monday Am

Site Code:
Station ID:
Location 1:
Location 2:
Location 3:
Location 4:

Comment 1:
Comment 2:
Comment 3:
Comment 4:
Latitude: 0.0000000
Longitude: 0.0000000

Time	Northbound, Lane 1	Southbound, Lane 2	Total
12:00 AM	3	3	6
1:00	3	3	6
2:00	2	2	4
3:00	2	2	4
4:00	7	8	15
5:00	35	17	52
6:00	67	67	134
7:00	107	129	236
8:00	88	141	229
9:00	75	94	169
10:00	89	81	170
11:00	97	101	198
12:00 PM	112	98	208
1:00	109	104	213
2:00	27	26	53
3:00	.	.	0
4:00	.	.	0
5:00	.	.	0
6:00	.	.	0
7:00	.	.	0
8:00	.	.	0
9:00	.	.	0
10:00	.	.	0
11:00	.	.	0
Total	823	874	1697
Percent	48.5%	51.5%	
AM Peak	12:00 PM	8:00	7:00
Volume	112	141	236
PM Peak	12:00 PM	1:00	1:00
Volume	112	104	213
Grand Total	11255	11320	22575
Percent	49.9%	50.1%	
ADT	ADT: 2,822	ADT: 2,822	AADT: 2,822

T2 Center
STARNetXt Report

Latitude: 0.000000
Longitude: 0.000000

Direction: Combined														
3/2/2020	Time 0 - 15 MPH	> 15 - 20 MPH	> 20 - 25 MPH	> 25 - 30 MPH	> 30 - 35 MPH	> 35 - 40 MPH	> 40 - 45 MPH	> 45 - 50 MPH	> 50 - 55 MPH	> 55 - 60 MPH	> 60 - 65 MPH	> 65 - 70 MPH	> 70 MPH	Total
12:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00	7	7	5	6	12	82	29	4	0	0	0	0	0	142
4:00	0	0	1	6	22	113	61	15	8	2	1	0	0	308
5:00	0	0	1	8	18	155	79	17	3	1	0	0	0	340
6:00	0	0	1	2	26	144	60	17	1	0	0	0	0	331
7:00	0	0	1	9	22	89	33	3	1	0	0	0	0	214
8:00	0	0	0	4	13	47	25	9	0	0	0	0	0	146
9:00	0	0	0	1	12	64	24	9	6	1	0	0	0	170
10:00	0	0	0	1	11	33	3	0	0	0	0	0	0	62
11:00	0	0	0	0	3	9	8	2	1	0	0	0	0	35
Total	8	8	32	139	445	899	325	79	21	4	1	0	0	1782

TZ Center
STARNext Report

Latitude: 0.000000
Longitude: 0.000000

Direction: Combined															
3/3/2020	Time	0 - 15 MPH	> 15 - 20 MPH	> 20 - 25 MPH	> 25 - 30 MPH	> 30 - 35 MPH	> 35 - 40 MPH	> 40 - 45 MPH	> 45 - 50 MPH	> 50 - 55 MPH	> 55 - 60 MPH	> 60 - 65 MPH	> 65 - 70 MPH	> 70 MPH	Total
12:00 AM		0	0	0	0	1	2	3	2	1	0	0	0	0	10
1:00		1	0	0	0	0	3	0	0	0	0	0	0	0	5
2:00		0	0	0	0	1	0	0	0	0	0	0	0	0	1
3:00		0	0	0	0	0	1	3	0	0	0	0	0	0	6
4:00		0	0	0	0	2	4	2	1	0	0	0	0	0	12
5:00		0	0	0	2	2	2	21	4	0	0	0	0	0	51
6:00		3	1	1	2	7	15	21	18	2	1	0	0	0	142
7:00		0	0	4	14	16	53	87	21	6	0	0	0	0	254
8:00		2	0	5	17	30	92	91	23	2	0	0	0	0	233
9:00		0	0	3	7	45	72	30	15	4	0	0	0	0	176
10:00		0	0	0	15	48	58	32	14	0	0	0	0	0	179
11:00		0	0	2	11	41	66	46	10	1	2	0	0	0	225
12:00 PM		0	0	4	16	68	69	51	14	0	1	0	0	0	222
1:00		0	0	2	11	61	99	37	11	0	0	0	0	0	246
2:00		0	0	2	19	63	103	43	13	3	0	0	0	0	295
3:00		0	0	2	30	78	105	60	10	3	0	0	0	0	323
4:00		0	1	7	30	78	142	64	14	2	0	0	0	0	308
5:00		1	0	6	18	77	116	47	9	0	0	0	0	0	213
6:00		0	2	4	39	83	55	22	5	3	0	0	0	0	113
7:00		0	0	3	15	41	36	12	2	0	0	0	0	0	77
8:00		1	0	3	8	15	38	13	4	0	0	0	0	0	65
9:00		0	0	1	3	17	24	13	3	2	0	0	0	0	30
10:00		0	0	0	0	7	12	8	2	0	0	0	0	0	26
11:00		0	2	0	0	11	8	2	2	0	0	0	0	0	26
Total		8	8	53	264	866	1268	675	199	32	7	0	1	1	3382

T2 Center
STARNext Report

Latitude: 0.000000
Longitude: 0.000000

Direction: Combined														
3/4/2020	Time 0 - 15 MPH	> 15 - 20 MPH	> 20 - 25 MPH	> 25 - 30 MPH	> 30 - 35 MPH	> 35 - 40 MPH	> 40 - 45 MPH	> 45 - 50 MPH	> 50 - 55 MPH	> 55 - 60 MPH	> 60 - 65 MPH	> 65 - 70 MPH	> 70 MPH	Total
12:00 AM	0	0	0	0	2	2	0	0	0	0	0	0	0	11
1:00	0	0	0	0	2	2	1	1	0	0	0	0	0	8
2:00	0	0	0	0	0	1	0	0	0	0	0	0	0	1
3:00	0	0	0	0	2	3	1	0	1	0	0	0	0	9
4:00	0	0	0	1	4	6	2	1	0	0	0	0	0	15
5:00	0	0	2	3	18	19	12	1	1	3	0	0	0	57
6:00	1	0	3	8	32	42	38	14	3	1	1	0	0	142
7:00	0	1	8	17	33	89	67	16	6	0	0	0	0	237
8:00	1	4	8	20	59	76	50	14	1	0	0	0	0	235
9:00	1	0	3	13	43	65	38	4	1	0	0	0	0	168
10:00	0	0	4	22	52	70	28	8	2	0	0	0	0	185
11:00	0	0	1	17	50	63	34	14	3	2	1	0	0	185
12:00 PM	0	0	4	20	45	80	55	4	4	0	0	0	0	212
1:00	0	0	4	12	48	73	44	8	3	0	0	0	0	192
2:00	0	0	6	24	68	88	47	5	1	1	0	0	0	240
3:00	0	0	9	15	82	102	54	19	3	0	0	0	0	287
4:00	3	0	0	27	75	100	65	13	2	0	0	0	0	282
5:00	2	1	7	28	89	141	76	10	1	0	0	0	0	355
6:00	0	1	4	15	85	80	37	10	2	0	0	0	0	234
7:00	1	1	9	10	55	38	28	5	1	3	0	0	0	151
8:00	0	0	0	7	32	30	18	2	0	0	0	0	0	89
9:00	0	0	2	2	15	22	10	8	0	0	0	0	0	59
10:00	0	0	0	5	4	11	5	0	1	1	0	0	0	27
11:00	0	0	0	3	5	6	2	3	0	0	0	0	0	19
Total	9	8	75	275	899	1213	713	161	36	10	2	0	0	3401

T2 Center
STARNetXI Report

Latitude: 0.000000
Longitude: 0.000000

Direction: Combined															
3/5/2020	Time	0 - 15 MPH	> 15 - 20 MPH	> 20 - 25 MPH	> 25 - 30 MPH	> 30 - 35 MPH	> 35 - 40 MPH	> 40 - 45 MPH	> 45 - 50 MPH	> 50 - 55 MPH	> 55 - 60 MPH	> 60 - 65 MPH	> 65 - 70 MPH	> 70 MPH	Total
	12:00 AM	0	0	0	0	4	6	4	1	0	0	0	0	0	15
	1:00	0	0	0	1	5	1	2	0	1	0	0	0	0	10
	2:00	0	0	0	0	3	0	0	0	0	0	0	0	0	3
	3:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:00	0	0	2	3	1	5	3	2	1	0	0	0	0	17
	5:00	0	0	1	2	14	16	14	2	2	0	0	0	0	51
	6:00	0	0	1	12	20	45	33	10	2	0	1	0	0	142
	7:00	2	3	11	20	52	92	72	16	8	0	0	0	0	289
	8:00	0	0	9	19	25	87	41	11	5	0	0	0	0	211
	9:00	8	1	14	8	43	70	44	7	3	0	0	0	0	177
	10:00	0	1	1	15	34	68	26	13	1	0	0	0	0	161
	11:00	1	1	2	8	62	77	51	9	2	0	0	0	0	230
	12:00 PM	3	0	7	23	53	79	39	15	0	0	0	0	0	207
	1:00	0	0	6	10	48	75	46	11	1	0	0	0	0	202
	2:00	0	2	4	16	58	85	38	18	1	0	0	0	0	223
	3:00	0	0	9	11	67	127	62	14	3	0	0	0	0	293
	4:00	0	0	6	27	65	149	72	10	1	0	0	0	0	336
	5:00	3	3	5	10	101	145	62	17	2	0	0	0	0	346
	6:00	1	0	4	25	87	71	43	8	3	0	0	0	0	241
	7:00	0	0	3	16	50	50	28	4	2	0	0	0	0	153
	8:00	2	0	2	10	35	39	16	10	0	0	1	0	0	115
	9:00	0	0	0	7	20	21	13	4	2	0	0	0	0	67
	10:00	0	0	2	4	19	16	12	0	1	0	0	0	0	54
	11:00	0	0	0	2	7	7	4	3	0	0	0	0	0	23
	Total	21	15	89	258	873	1331	725	187	44	1	2	0	0	3546

T2 Center
STARNext Report

Latitude: 0.000000
Longitude: 0.000000

Direction: Combined														
3/6/2020														
Time	0 - 15 MPH	> 15 - 20 MPH	> 20 - 25 MPH	> 25 - 30 MPH	> 30 - 35 MPH	> 35 - 40 MPH	> 40 - 45 MPH	> 45 - 50 MPH	> 50 - 55 MPH	> 55 - 60 MPH	> 60 - 65 MPH	> 65 - 70 MPH	> 70 MPH	Total
12:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00	1	0	0	0	0	0	0	0	0	0	0	0	0	3
4:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 PM	2	2	2	2	2	2	2	2	2	2	2	2	2	23
1:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:00	2	2	2	2	2	2	2	2	2	2	2	2	2	23
3:00	2	2	2	2	2	2	2	2	2	2	2	2	2	23
4:00	7	7	7	7	7	7	7	7	7	7	7	7	7	64
5:00	2	2	2	2	2	2	2	2	2	2	2	2	2	18
6:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	24	31	68	276	892	1285	732	224	39	7	3	0	0	3561

Direction: Combined														
3/7/2020														
Time	0 - 15 MPH	> 15 - 20 MPH	> 20 - 25 MPH	> 25 - 30 MPH	> 30 - 35 MPH	> 35 - 40 MPH	> 40 - 45 MPH	> 45 - 50 MPH	> 50 - 55 MPH	> 55 - 60 MPH	> 60 - 65 MPH	> 65 - 70 MPH	> 70 MPH	Total
12:00 AM	1	0	0	1	7	8	3	5	0	0	0	0	0	26
1:00	0	0	0	1	5	6	3	3	0	0	0	0	0	19
2:00	0	0	0	0	0	0	0	1	0	0	0	0	0	1
3:00	0	0	0	1	0	1	1	0	0	0	0	0	0	4
4:00	0	0	0	0	0	2	2	0	1	0	0	0	0	7
5:00	0	0	0	0	1	5	9	1	2	0	0	0	0	18
6:00	0	0	0	0	3	8	22	0	2	2	0	0	0	50
7:00	2	0	0	1	7	19	23	11	3	0	0	0	0	83
8:00	2	0	0	7	11	32	24	24	5	0	0	0	1	185
9:00	4	0	0	6	7	44	58	38	19	0	0	0	0	194
10:00	4	1	1	9	11	44	69	50	10	0	0	0	0	220
11:00	2	1	2	11	19	86	74	44	10	1	0	0	0	258
12:00 PM	10	1	9	22	19	67	90	56	12	0	0	0	0	261
1:00	0	1	5	18	30	55	103	63	13	0	0	0	0	240
2:00	0	2	10	19	64	72	49	41	11	0	0	0	0	205
3:00	1	2	1	19	51	80	82	39	9	1	0	0	0	231
4:00	0	0	4	36	56	82	41	12	1	0	0	0	0	175
5:00	0	0	1	7	44	70	34	14	3	1	0	0	0	200
6:00	0	0	0	18	63	73	33	9	1	0	0	0	0	123
7:00	2	0	2	12	40	44	17	5	1	0	0	0	0	122
8:00	0	0	1	10	28	52	24	3	3	1	0	0	0	81
9:00	0	0	2	6	17	30	18	4	2	0	0	0	0	58
10:00	0	0	1	5	12	24	16	0	0	0	0	0	0	53
11:00	0	0	0	3	25	13	11	1	0	0	0	0	0	50
12:00	0	0	1	2	18	12	14	2	1	0	0	0	0	50
Total	23	9	56	238	731	1009	591	145	31	8	1	2	0	2844

T2 Center
STARNext Report

Latitude: 0.000000
Longitude: 0.000000

Direction: Combhaid															
3/8/2020	Time	0 - 15 MPH	> 15 - 20 MPH	> 20 - 25 MPH	> 25 - 30 MPH	> 30 - 35 MPH	> 35 - 40 MPH	> 40 - 45 MPH	> 45 - 50 MPH	> 50 - 55 MPH	> 55 - 60 MPH	> 60 - 65 MPH	> 65 - 70 MPH	> 70 MPH	Total
	12:00 AM	0	0	0	0	6	7	4	1	0	0	0	0	0	24
	1:00	0	0	0	1	5	5	3	3	1	0	0	0	0	18
	2:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:00	0	0	0	1	4	4	4	2	0	0	0	0	0	16
	4:00	0	0	0	1	1	0	2	0	0	0	0	0	0	5
	5:00	0	0	0	1	2	2	1	3	0	0	0	0	0	11
	6:00	0	0	0	4	4	10	5	2	0	0	0	0	0	26
	7:00	0	0	0	1	4	16	12	7	0	0	1	0	0	53
	8:00	0	0	0	1	10	16	12	7	1	0	0	1	0	83
	9:00	0	0	0	8	17	25	18	12	1	0	0	0	0	136
	10:00	0	5	0	7	23	55	37	8	1	0	0	0	0	174
	11:00	2	1	1	14	41	67	34	11	1	0	0	0	0	212
	12:00 PM	0	1	3	17	52	80	48	8	1	0	0	0	0	203
	1:00	0	0	4	15	39	72	54	15	3	0	0	0	0	191
	2:00	0	0	1	11	51	70	49	7	2	0	0	0	0	235
	3:00	0	0	3	11	55	94	56	12	4	0	0	0	0	213
	4:00	0	0	5	16	63	69	44	13	2	1	0	0	0	159
	5:00	0	0	5	14	42	56	32	7	1	0	0	0	0	145
	6:00	1	0	2	12	33	53	30	14	0	0	0	0	0	139
	7:00	0	0	0	8	33	64	25	8	1	0	0	0	0	121
	8:00	0	0	2	16	32	45	21	3	2	0	0	0	0	86
	9:00	0	0	0	11	29	28	16	1	1	0	0	0	0	51
	10:00	1	0	1	2	12	22	13	0	0	0	0	0	0	40
	11:00	0	0	2	7	13	10	6	1	0	0	1	0	0	21
	Total	4	7	38	191	571	881	520	139	21	7	2	1	0	2382

T2 Center
STARNext Report

Latitude: 0.000000
Longitude: 0.000000

Direction: Combined

Time	0 - 15 MPH	> 15 - 20 MPH	> 20 - 25 MPH	> 25 - 30 MPH	> 30 - 35 MPH	> 35 - 40 MPH	> 40 - 45 MPH	> 45 - 50 MPH	> 50 - 55 MPH	> 55 - 60 MPH	> 60 - 65 MPH	> 65 - 70 MPH	> 70 MPH	Total
3/9/2020														
12:00 AM	0	0	0	1	2	1	2	0	0	0	0	0	0	6
1:00	0	0	0	0	3	1	0	0	1	0	0	0	0	6
2:00	0	0	0	0	0	3	0	0	1	0	0	0	0	4
3:00	0	0	0	0	2	0	1	1	0	0	0	0	0	4
4:00	0	0	0	0	3	8	2	0	0	0	0	0	0	15
5:00	0	0	2	0	3	20	9	8	1	0	0	0	0	52
6:00	0	2	2	1	13	45	18	13	1	0	0	0	0	134
7:00	1	2	11	8	35	104	45	10	0	2	0	0	0	236
8:00	0	0	11	20	44	104	45	10	0	0	0	0	0	229
9:00	12	0	3	12	42	76	70	13	1	0	0	0	0	169
10:00	0	0	3	10	39	73	31	9	2	0	0	0	0	170
11:00	1	0	3	12	54	61	32	7	4	0	0	0	0	198
12:00 PM	1	0	6	17	57	71	30	12	2	1	1	0	0	208
1:00	0	4	5	17	49	84	37	7	2	0	0	0	0	213
2:00	0	2	5	13	58	77	43	13	2	0	0	0	0	0
3:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	17	8	51	111	401	824	321	91	15	4	1	0	0	1644
Grand Total	114	94	462	1752	5678	8290	4602	1225	239	48	12	4	1	22522

Mean Speed (Average) 38.9
 10 MPH Pace Speed 30.39
 Number In Pace 13838
 Percent In Pace 62.0%
 Number > 30 MPH 20100
 Percent > 30 MPH 89.7%

Percentile Speed
 15th 31
 50th 36.6
 85th 42.2
 95th 45.9

INSTITUTE OF TRANSPORTATION ENGINEERS COMMON TRIP GENERATION RATES (PM Peak Hour)

(Trip Generation Manual, 10th Edition)

Code	Description	Unit of Measure	Trip Per Unit	Setting/Location	Dense Multi-Use Urban
PORTLAND TERMINAL					
30	International Truck Terminal	1,000 SF OFA	1.72	General Urban / Suburban	Dense Multi-Use Urban
80	Park-and-Ride Lot with Bus Service	Parking Spaces	0.43		
RECREATION					
110	General Light Industrial	1,000 SF OFA	0.62		
130	Industrial Park	1,000 SF OFA	0.40		
140	Manufacturing	1,000 SF OFA	0.67		
150	Warehousing	1,000 SF OFA	0.19		
151	Auto-Warehouses	1,000 SF OFA	0.17		
154	High-Clear Truss/Box & Stern Farm Storage Warehouse	1,000 SF OFA	0.10		
155	High-Clear Fullheight Corridor Warehouse	1,000 SF OFA	1.37		
160	High-Clear Portal High Warehouses	1,000 SF OFA	0.64		
167	High-Clear Cold Storage Warehouse	1,000 SF OFA	0.17		
180	Data Center	1,000 SF OFA	0.09		
170	Offices	1,000 SF OFA	2.77		
180	Specialty Trade Contractor	1,000 SF OFA	1.87		
RESIDENTIAL					
210	Single-Family Detached Housing	Dwelling Units	0.99		
220	Medium-Density Housing (Low-Rise)	Dwelling Units	0.56		
221	Medium-Density Housing (Mid-Rise)	Dwelling Units	→	0.44	0.16
222	Medium-Density Housing (High-Rise)	Dwelling Units	→	0.36	0.18
231	Mid-Rise Residential with 1st-Floor Commercial	Dwelling Units	0.26		
232	High-Rise Residential with 1st-Floor Commercial	Dwelling Units	0.21		
240	Mobile Home Park	Dwelling Units	0.46		
251	Senior ADU Housing - Detached	Dwelling Units	0.20		
252	Senior ADU Housing - Attached	Dwelling Units	0.29		
253	Geriatric Care Facility	Dwelling Units	0.18		
254	Assisted Living	1,000 SF OFA	0.48		
255	Continuing Care Retirement Community	Units	0.18		
260	Recreation Homes	Dwelling Units	0.20		
265	Townhomes	Dwelling Units	0.63		
270	Residential Planned Unit Development	Dwelling Units	0.66		
LODGING					
310	Hotel	Rooms	0.69		
315	All Suites Hotel	Rooms	→	0.54	0.17
317	Business Hotel	Rooms	0.32		
320	Hotel	Rooms	0.38		
330	Resort Hotel	Rooms	0.41		
RECREATION					
411	Public Park	Acres	0.11		
416	Campground / Recreation Vehicle Park	Acres	0.94		
420	Marina	Boats	0.21		
430	Golf Course	Acres	0.28		
431	Maneuver Golf Course	Holes	0.33		

Code	Description	Unit of Measure	Trip Per Unit	Setting/Location	Dense Multi-Use Urban
437	Self-Driving Range	Tees/Driving Positions	1.25		
438	Boating Marina	Boats	2.22		
439	Rec. Openers Gym	1,000 SF OFA	1.64		
439	Multi-Purpose Recreational Facility	1,000 SF OFA	3.39		
438	Transmission Park	1,000 SF OFA	1.50		
437	Boating Mar	1,000 SF OFA	1.16		
440	Adult Center	1,000 SF OFA	2.97		
444	Movie Theater	1,000 SF OFA	0.17		
445	Multiple Movie Theater	1,000 SF OFA	4.91		
452	Horse Rideship	Seats	0.01		
454	Dog Race Track	Attendees	0.11		
460	Arena	1,000 SF OFA	0.47		
462	Professional Baseball Stadium	Attendees	0.18		
465	Ice Skating Rink	1,000 SF OFA	1.23		
466	Snow Ski Area	Skiers	29.00		
473	Campus/Veter Library / Academic Bldg	1,000 SF OFA	13.48		
480	Amusement Park	Acres	3.85		
482	Water Slide Park	Parking Spaces	0.28		
484	Swim Complex	Fields	18.43	→	
480	Tennis Courts	Courts	4.21		
481	Recreation Tennis Club	Courts	2.82		
487	Health/Spa Club	1,000 SF OFA	3.41		
493	Amble Club	1,000 SF OFA	0.29		
495	Recreational Community Center	1,000 SF OFA	2.31		
EDUCATION					
520	Elementary School	1,000 SF OFA	1.27		
522	Middle School / Junior High School	1,000 SF OFA	1.19		
530	High School	1,000 SF OFA	0.97		
534	Private School (K-12)	Students	0.29		
534	Private School (16-17)	Students	0.17		
537	Charter Elementary School	Students	0.14		
538	School District Office	1,000 SF OFA	2.04		
540	Junior / Community College	1,000 SF OFA	1.68		
550	University/College	1,000 SF OFA	1.17		
560	Church	1,000 SF OFA	0.49		
561	Synagogue	1,000 SF OFA	2.83		
562	Mosque	1,000 SF OFA	4.22		
565	Daycare Center	1,000 SF OFA	11.12		
568	Community	Acres	0.48		
571	Prison	1,000 SF OFA	2.91		
575	Fire and Rescue Station	1,000 SF OFA	0.48		
580	Museum	1,000 SF OFA	0.19		
590	Library	1,000 SF OFA	0.18		

INSTITUTE OF TRANSPORTATION ENGINEERS COMMON TRIP GENERATION RATES (PM Peak Hour)

(Trip Generation Manual, 16th Edition)

Code	Description	Unit of Measure	Trips Per Unit	Existing Location	
				General Utility/ Suburban	Dense Urban
800	HOSPITAL				
801	Hospital	1,000 SF GFA	0.87		
802	Nursing Home	1,000 SF GFA	0.54		
803	Office	1,000 SF GFA	→	3.28	3.18
804	Animal Hospital (Veterinary Clinic)	1,000 SF GFA	3.33		
805	Free-Standing Emergency Room	1,000 SF GFA	1.32		
	OFFICE				
710	General Office Building	1,000 SF GFA	→	1.15	0.87
711	Small Office Building	1,000 SF GFA	2.45		
712	Corporate Headquarters Building	1,000 SF GFA	0.60		
713	Single Tenant Office Building	1,000 SF GFA	1.74*		
714	Medical-Dental Office Building	1,000 SF GFA	3.48		
715	Government Office Building	1,000 SF GFA	3.31		
716	State Motor Vehicle Department	1,000 SF GFA	8.70		
717	United States Post Office	1,000 SF GFA	11.21		
718	Government Office Complex	1,000 SF GFA	2.63		
719	Office Park	1,000 SF GFA	1.07		
720	Research and Development Center	1,000 SF GFA	0.49		
721	Business Park	1,000 SF GFA	0.42		
	RETAIL				
810	Tire/Service Station	1,000 SF GFA	1.40		
811	Construction Equipment Rental Store	1,000 SF GFA	0.89		
812	Building Materials and Lumber Store	1,000 SF GFA	2.06		
813	Free-Standing Discount Superstore	1,000 SF GFA	4.33		
814	Variety Store	1,000 SF GFA	0.84		
815	Free Standing Discount Store	1,000 SF GFA	4.83		
816	Hardware/Paint Store	1,000 SF GFA	2.88		
817	Nursery (Garden Center)	1,000 SF GFA	0.94		
818	Nursery (Wholesale)	1,000 SF GFA	5.18		
819	Shipping Center	1,000 SF GFA	3.81		4.82
820	Factory Outlet Center	1,000 SF GFA	2.29		
821	Automobile Sales (New)	1,000 SF GFA	2.43		
822	Automobile Sales (Used)	1,000 SF GFA	3.75		
823	Recreational Vehicle Sales	1,000 SF GFA	0.77		
824	Automobile Parts Sales	1,000 SF GFA	4.81		
825	The Store	1,000 SF GFA	3.88		
826	The Superstore	1,000 SF GFA	2.11		
827	Supermarket	1,000 SF GFA	9.24		
828	Convenience Market (Open 24 Hours)	1,000 SF GFA	48.11		
829	Convenience Market with Gasoline/Pumps	1,000 SF GFA	47.29		
830	Discount Supermarket	1,000 SF GFA	8.35		
831	Discount Club	1,000 SF GFA	4.18		
832	Wholesale Market	1,000 SF GFA	1.78		
833	Spa/Beauty Services	1,000 SF GFA	→	2.92	1.85
834	Home Improvement Superstore	1,000 SF GFA	→	2.33	3.35
835	Electronics Superstore	1,000 SF GFA	4.28		
	RESTAURANT				
900	Fast Food Restaurant	1,000 SF GFA	12.13		
901	Fast Food Restaurant with Drive-Through Window	1,000 SF GFA	20.45		
902	Fast Food Restaurant with Drive-Through Window and No Indoor Seating	1,000 SF GFA	14.13		
903	Fast Food Restaurant with Drive-Through Window and No Indoor Seating	1,000 SF GFA	14.13		
904	Fast Food Restaurant with Drive-Through Window and No Indoor Seating	1,000 SF GFA	14.13		
905	Fast Food Restaurant with Drive-Through Window and No Indoor Seating	1,000 SF GFA	14.13		
906	Fast Food Restaurant with Drive-Through Window and No Indoor Seating	1,000 SF GFA	14.13		
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913	Fast Food Restaurant with Drive-Through Window and No Indoor Seating	1,000 SF GFA	14.13		
914	Fast Food Restaurant with Drive-Through Window and No Indoor Seating	1,000 SF GFA	14.13		
915	Fast Food Restaurant with Drive-Through Window and No Indoor Seating	1,000 SF GFA	14.13		
916	Fast Food Restaurant with Drive-Through Window and No Indoor Seating	1,000 SF GFA	14.13		
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999	Fast Food Restaurant with Drive-Through Window and No Indoor Seating	1,000 SF GFA	14.13		

Note: All land uses in the 800 and 900 series are entitled to a "pass-by" trip reduction of 80% if less than 50,000 ft² or a reduction of 40% if equal to or greater than 50,000ft².

*From 16th edition, use PM peak hour to 1990

















