Kimley»Horn

November 20, 2017

City of Aurora
Public Works Department
15151 E. Alameda Parkway
Suite 3200
Aurora, CO 80012

Attn: Mr. Victor A. Rachael, Jr., P.E.
Project Engineer

Re: Southern Glazer's Wine & Spirits (SGWS) on 19th Ave - Aurora
Southwest Corner of 19th Avenue and E-470
Traffic Study Letter
Aurora, Colorado

Dear Mr. Rachael:

This traffic study letter documents a trip generation comparison to identify conformance with the original traffic impact study for the proposed Southern Glazer's Wine and Spirit (SGWS) distribution center proposed within Prologis Park 70 in Aurora, Colorado. The proposed distribution center will ultimately consist of a building totaling 412,175 square feet of office and warehouse space and is located on the southwest corner of 19th Avenue and E-470 (toll road). The proposed building space will consist of 364,175 square feet of distribution center warehouse/shipping & receiving and 48,000 square feet of general office space ultimately after a future building expansion. The first phase of construction is proposed to include a 339,515 square foot building, with 48,000 square feet of this area allocated as office space. An additional 72,660 square feet of warehouse space is proposed as a future building expansion. A site plan is attached. This traffic study identifies the amount of traffic associated with full build out of this proposed development use with the ultimate building size.

The purpose of this letter is to provide trip generation comparison, trip distribution, and project traffic assignment for the proposed SGWS distribution center to determine the increase in traffic attributable to the proposed project. A vicinity map illustrating the location of project site is shown in **Figure 1.** Regional access to the SGWS distribution center is provided by Interstate 70 (I-70) and E-470. Primary access is provided by Colfax Avenue and Smith Road. Direct access is provided by four access driveways to be located along the south side of 19th Avenue between Picadilly Road and E-470.

This development area was studied within the "Prologis Park 70 Distribution Center Revised Traffic Impact Study Addendum", completed by Langan in March 2017 (2017 Langan study). The trip generation of the proposed distribution center and office is compared with the trip generation for the applicable uses evaluated as part of the original traffic study. The 2017 Langan traffic impact study provided an update to a previous study completed by Kimley-Horn and Associates, Inc., dated September 23, 2003 (2003 Kimley-Horn study). The 2017 Langan study assumed a new density plan by the developer which consisted of 3,486,267 square feet of warehousing land use compared to 4,320,000 square feet of warehousing land use assumed in the 2003 Kimley-Horn study. This new square footage is 833,733 less than what was originally studied and approved in the 2003 Kimley-Horn study. This reduction of 833,733 square feet in addition to the 1,015,740 square feet of warehousing land use proposed in the 2017 Langan study was analyzed to calculate the remaining approved trip generation estimates for the overall Prologis Park 70 project area. It was determined that 2,470,527 square feet of warehousing space remained under the current density plan. Trip generation estimates for the remaining 2,470,527 square feet of warehouse land use were calculated

in the 2017 Langan study based on the rates used in the 2003 Kimley-Horn study. The proposed SGWS distribution center trip generation will be compared to the trip generation of the remaining warehousing land use presented in the 2017 Langan study. Applicable trip generation calculations and report documentation from the 2017 Langan study are attached.

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 Report*[1] published by the Institute of Transportation Engineers (ITE). ITE has established trip rates in nationwide studies of similar land uses. Trip generation is based on the ITE Trip Generation, 9th Edition (most current edition) fitted curve equation for high-cube warehouse / distribution center (ITE Code 152) and the average rate equation for general office building (ITE Code 710) land use.

The following summarizes the anticipated trip generation for the proposed 291,515 square foot distribution center and 48,000 square foot office (trip generation calculations are attached) compared to the expected trip generation for the remaining 2,470,527 square feet of warehouse land use available as calculated in the 2017 Langan study.

Trip Generation Comparison
Prologis Park 70 (previous study) vs. SGWS on 19th Avenue (proposed)

USE AND SIZE	DAILY VEHICLE TRIPS	WEEKDAY VEHICLE TRIPS					
		AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
Previous Study – Prologis Park 70 Distribution Center							
Warehousing – 2,470,527 SF	**16,058**	**494**	**297**	**791**	**99**	**445**	**544**
Current Proposal – SGWS on 19th Avenue							
High-Cube warehouse / Distribution Center (152) – 364,175 SF	612	17	8	25	14	30	44
General Office Building (710) – 48,000 SF	530	66	9	75	12	60	72
Current Proposal Total 412,175 SF	**1,142**	**83**	**17**	**100**	**26**	**90**	**116**
Net Difference in Trips	*-14,916*	*-411*	*-280*	*-691*	*-73*	*-355*	*-428*

As summarized in the table, the currently proposed full build out of SGWS on 19th Avenue within Prologis Park 70 is anticipated to generate 1,142 daily weekday trips with 100 trips occurring during morning peak hour, and 116 trips occurring during the afternoon peak hour based on ITE equations and data. The outbound trucks leaving the facility will occur at 6:00 am with their arrivals occurring around 4:00 pm. The over the road truck arrivals occur in between the hours of 6:00 am and 2:30 pm.

Based on the previous traffic study assuming remaining development space of 2,470,527 square feet of warehousing land use within Prologis Park 70, the SGWS on 19th Avenue project is anticipated to

1 Institute of Transportation Engineers, *Trip Generation: An Information Report*, Ninth Edition, Washington DC, 2012.

generate traffic within the volume limits previously studied, leaving a remaining 14,916 average weekday daily trips than previously studied. During the weekday morning peak hour, 691 trips are available for future development, while during the afternoon peak hour, 428 trips are still available after development of this SGWS on 19th Avenue project to be in overall traffic compliance. The proposed development occupies approximately seven (7) percent of the remaining weekday daily trips based on the remaining land use available in the previous traffic study, with the morning peak hour occupying approximately 13 percent, and the afternoon peak hour occupying approximately 21 percent of the remaining available trip usage, respectively.

Trip distribution of the anticipated project traffic was identified based on the area street system characteristics, surrounding demographic information, and the access system for the project. Traffic assignment was obtained by applying the project trip distribution to the estimated traffic generation of the proposed development. **Figure 2** and **Figure 3** illustrates the expected trip distribution and traffic assignment, respectively, for the proposed project on the surrounding street network at the key intersections. The project traffic assignment does not represent a significant amount of added traffic volumes; therefore, the adjacent public streets and surrounding area intersections are expected to successfully accommodate this project traffic volume.

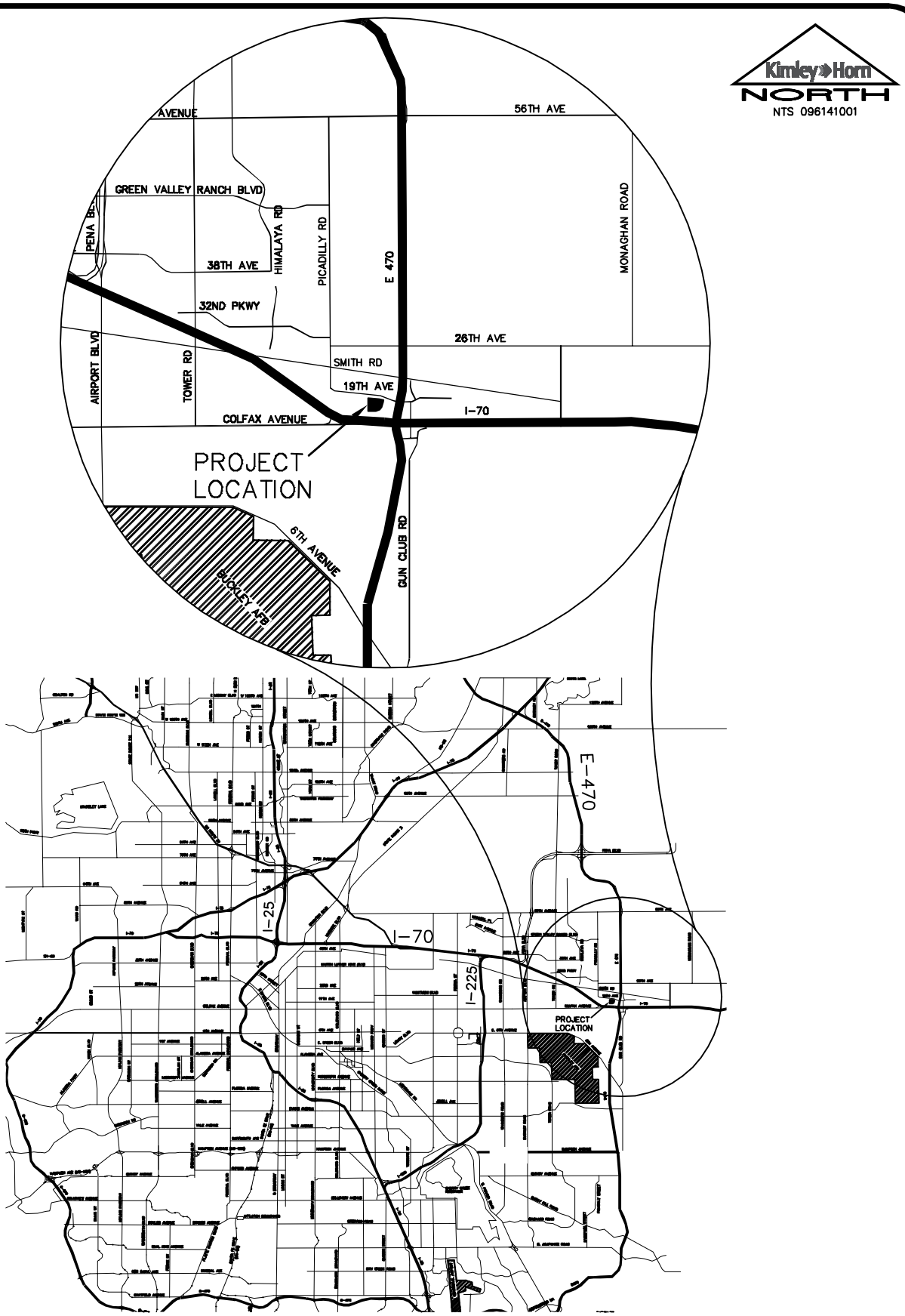
Based on the results of the trip generation comparison and traffic assignment, development of a 412,175 square foot Southern Glazer's Wine and Spirits distribution center should not change the results of the original traffic study as the adjacent public streets and surrounding area intersections are anticipated to successfully accommodate this project traffic volume. Therefore, the proposed SGWS distribution center within Prologis Park 70 project is believed to be in traffic compliance with the original "Prologis Park 70 Distribution Center Revised Traffic Impact Study Addendum", completed by Langan in March 2017, which included this development area. It is believed that all potential traffic impacts with the proposed project have been previously addressed within the original traffic impact study. We believe no further traffic analysis is needed due to this proposal. If you have any questions or require anything further, please feel free to call me at (303) 228-2304.

Sincerely,

KIMLEY-HORN AND ASSOCIATES, INC.

Curtis D Rowe

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



SGWS ON 19TH AVENUE – AURORA
19TH AVENUE & E-470
VICINITY MAP

FIGURE 1

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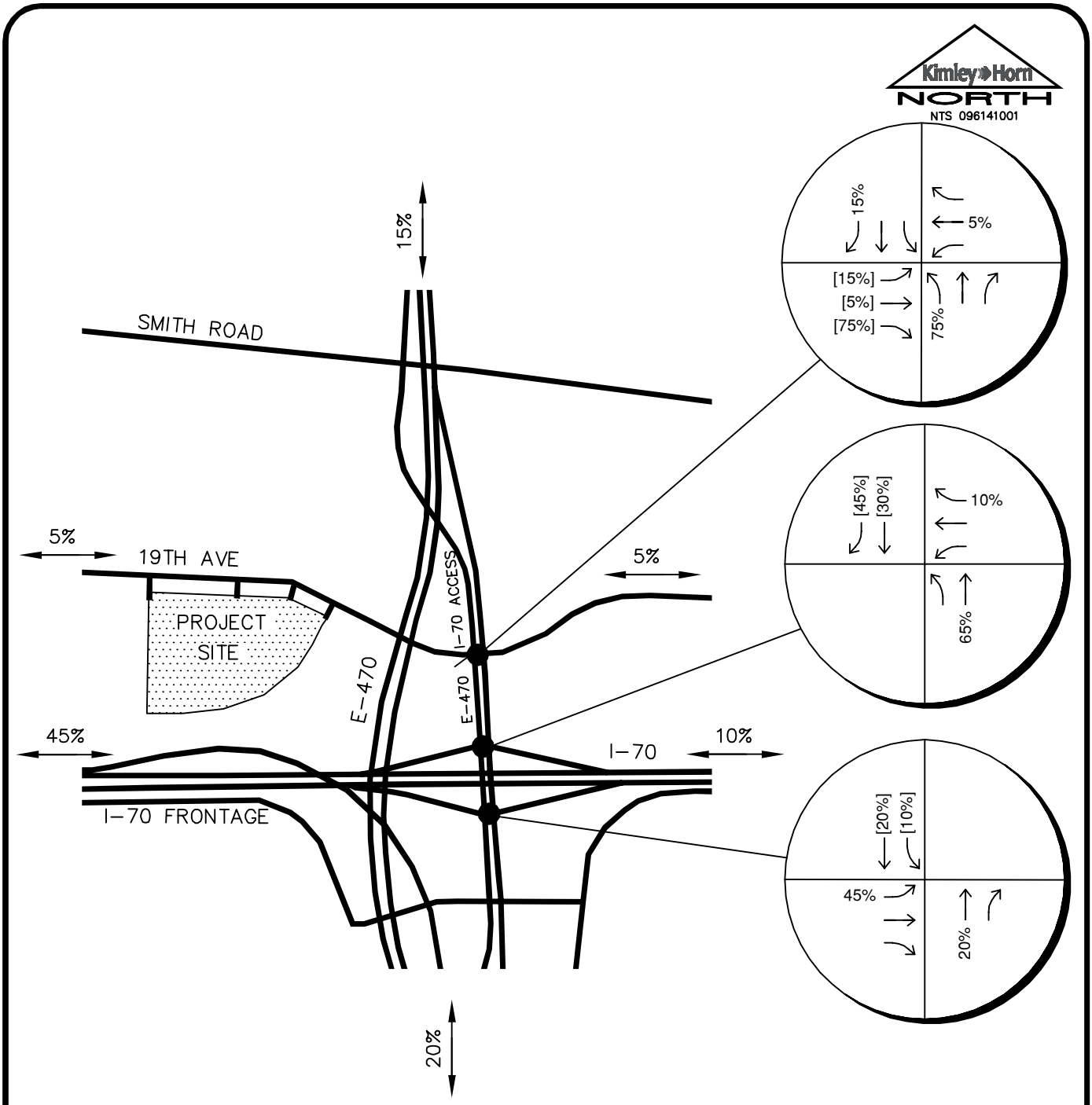

LEGEND

● Study Area Key Intersection

XX%[XX%] Entering[Exiting] Trip Distribution Percentage

SGWS ON 19TH AVENUE – AURORA
19TH AVENUE & E-470
PROJECT TRIP DISTRIBUTION

FIGURE 2

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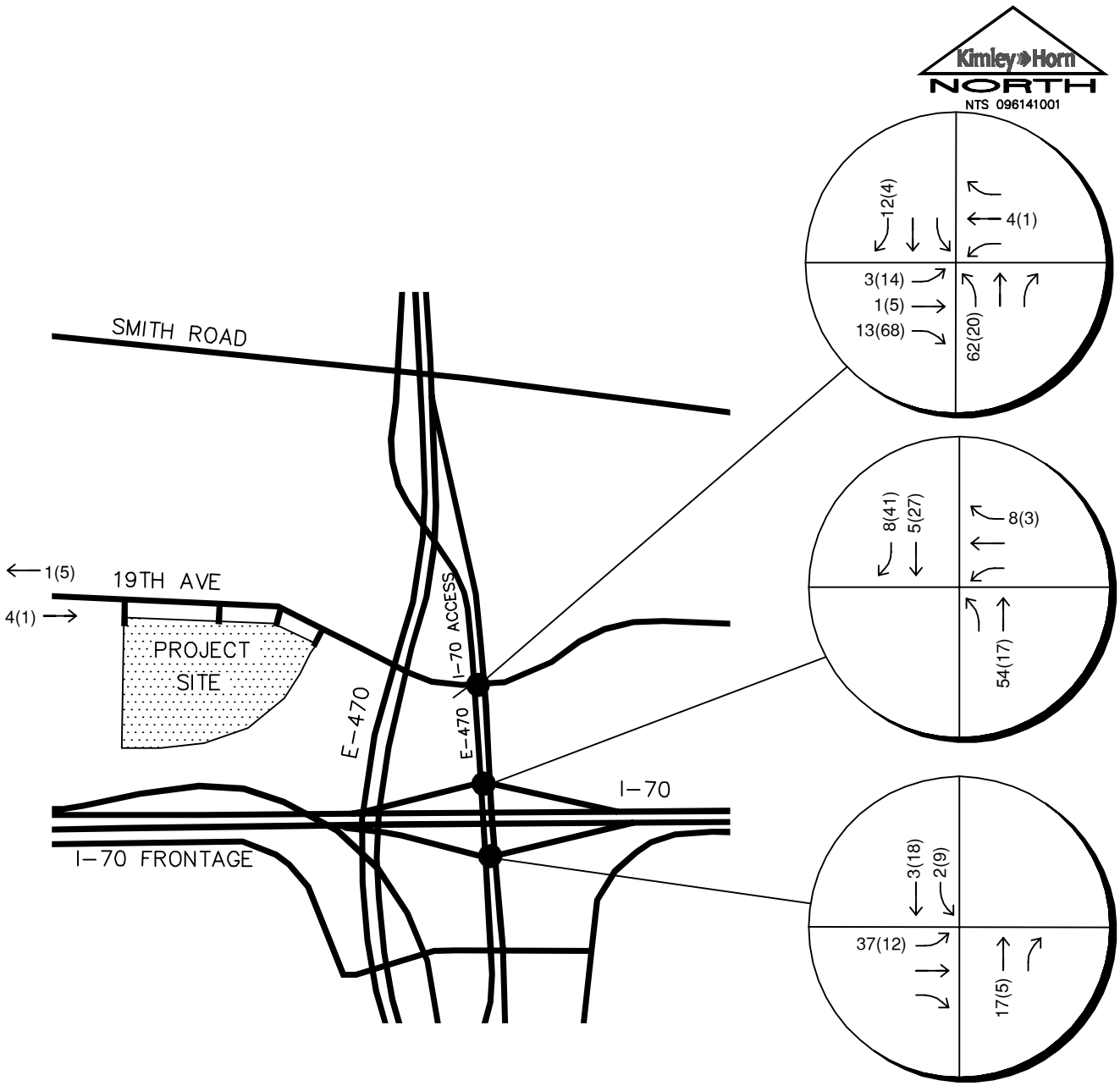

LEGEND

- ● Study Area Key Intersection
- XXX(XXX) Weekday AM(PM) Peak Hour Traffic Volumes
- XX,X00 Estimated Daily Traffic Volume

SGWS ON 19TH AVENUE – AURORA
19TH AVENUE & E-470
PROJECT TRAFFIC ASSIGNMENT

FIGURE 3

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Project	SGWS on 19th Ave - Aurora				
Subject	Trip Generation for High-Cube Warehouse/Distribution Center				
Designed by	Curtis Rowe	*Date*	November 20, 2017	*Job No.*	096373002
Checked by		*Date*		*Sheet No.*	1 of 1

TRIP GENERATION MANUAL TECHNIQUES

ITE Trip Generation Manual 9th Edition, Fitted Curve and Average Rate Equations

Land Use Code - High-Cube Warehouse/Distribution Center (152)

Independant Variable - 1000 Square Feet Gross Floor Feet (X)
Gross Floor Area = 364,175
X = 364.2
T = Average Vehicle Trip Ends

Peak Hour of Adjacent Street Traffic, One Hour Between 7 and 9 a.m. (page 274)

T = 0.14 (X) - 25.62
T = 0.14 * 364.175 -25.62

Directional Distribution: 69% ent. 31% exit.
T = 25 Average Vehicle Trip Ends
17 entering 8 exiting

17 + 8 = 25

Peak Hour of Adjacent Street Traffic, One Hour Between 4 and 6 p.m. (page 275)

T = 0.13(X) - 3.73
T = 0.13 * 364.175 -3.73

Directional Distribution: 31% ent. 69% exit.
T = 44 Average Vehicle Trip Ends
14 entering 30 exiting

14 + 30 (*) = 44

Weekday (page 273) (average rate)

T = 1.68 (X)
T = 1.68 * 364.175

Directional Distribution: 50% entering, 50% exiting
T = 612 Average Vehicle Trip Ends
306 entering 306 exiting

306 + 306 = 612

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Project	SGWS on 19th Ave - Aurora				
Subject	Trip Generation for Office Building				
Designed by	Curtis Rowe	*Date*	November 20, 2017	*Job No.*	096373002
Checked by		*Date*		*Sheet No.*	1 *of* 1

TRIP GENERATION MANUAL TECHNIQUES

ITE Trip Generation Manual 9th Edition, Average Rates

Land Use Code - General Office Building (710)

Independant Variable - 1000 Square Feet (X)

X = 48.000
T = Average Vehicle Trip Ends

Peak Hour of Adjacent Street Traffic, One Hour Between 7 and 9 a.m. (Page 1260)

Directional Distribution: 88% ent. 12% exit.

(T) = 1.56 (X) T = 75 Average Vehicle Trip Ends
(T) = 1.56 * (48.0) 66 entering 9 exiting

66 + 9 = 75

Peak Hour of Adjacent Street Traffic, One Hour Between 4 and 6 p.m. (page 1261)

Directional Distribution: 17% ent. 83% exit.

(T) = 1.49 (X) T = 72 Average Vehicle Trip Ends
(T) = 1.49 * (48.0) 12 entering 60 exiting

12 + 60 = 72

Weekday (page 1259)

Average Weekday Directional Distribution: 50% ent. 50% exit.

(T) = 11.03 (X) T = 530 Average Vehicle Trip Ends
(T) = 11.03 * (48.0) 265 entering 265 exiting

265 + 265 = 530

Saturday, Peak Hour of Generator (page 1207)

Daily Weekday Directional Distribution: 54% ent. 46% exit.

(T) = 0.41 (X) T = 20 Average Vehicle Trip Ends
(T) = 0.41 * (48.0) 11 entering 9 exiting

11 + 9 = 20

TRAFFIC IMPACT STUDY

For

Prologis Park 70
Distribution Center
City of Aurora
Adams County, Colorado

Prepared For:

Prologis
4545 Airport Way
Denver, CO 80239

Prepared By:

Langan Engineering & Environmental Services, Inc.
989 Lenox Drive
Suite 124
Lawrenceville, NJ 08648
NJ Certificate of Authorization No: 24GA27996400

Richard Burrow, P.E.
P.E. License No. 0050315

Alan W. Lothian

Revised 31 March 2017
Revised 25 January 2017
18 November 2016
100581601

PROPOSED CONDITIONS

Site-Generated Trips

The overall development was originally approved for 4,320,000 sf of warehouse space. The trip generation estimates for the original approval are summarized in Table 2. As per the 2003 traffic studies, the trip generation was determined based on the calculated rates (Appendix C page C3) for an existing Prologis warehouse facility located in Denver, Colorado. The data collected at the existing Prologis facility is contained in Appendix C on pages C4 – C12. According to the 2003 addendum study, the rates were approved by both the City of Aurora and CDOT for this project and were therefore used in place of standard ITE (Institute of Transportation Engineers) trip generation rates.

The rates and calculations in Table 2 below are summarized in Appendix C on page C3. The trip generation estimates in Table 2 were used as the full buildout traffic generation for the EastGate Industrial Warehouse in the September 23, 2003 addendum traffic study. The traffic generation estimates below included both trucks and passenger cars. The 2003 traffic study did not have a vehicle breakdown of the trips. However based on information from page C12 the approximate truck percentage would be 20% of the traffic generation in Table 2.

Table 2 – Trip Generation Estimates – Original Approval (4,320,000 sf)

Use	Daily	Weekday AM Peak Hour			Weekday PM Peak Hour		
		In	Out	Total	In	Out	Total
Rate	*6.5*	*0.2*	*0.12*	*0.32*	*0.04*	*0.18*	*0.22*
4,320,000sf	28,080	864	518	1,382	173	778	951

For the 1,015,740 sf proposed distribution center, located within the overall development, we prepared trip generation estimates based on tenant-specific projected operations. The specific projected operations information was provided by the proposed tenant of the 1,015,740 sf distribution center and is separate from the Prologis rates on page C3.

The proposed distribution center trip generation estimates are based on operations during the anticipated peak operating season (November – December). During other times of the year the trip generation would be significantly less (approximately 40 percent), as shown in the following table. Table 3 summarizes the trip generation estimates for the distribution center during the weekday morning and evening peak hours during both the peak and non-peak operating seasons. The tenant-specific data is contained in Appendix C on pages C1 and C2.

Table 3 – Future Trip Generation Estimates – Proposed 1,015,740 sf Warehouse

Use	Daily	Weekday AM Peak Hour			Weekday PM Peak Hour		
		In	Out	Total	In	Out	Total
Peak Operating Season (November – December)							
Passenger Cars*	3,532	752	8	760	802	802	1,604
Trucks*	336	5	8	13	27	22	49
Total	**3,868**	**757**	**16**	**773**	**829**	**824**	**1,653**
Non-Peak Operating Season							
Passenger Cars*	2,122	454	4	458	484	484	968
Trucks*	178	4	4	8	8	9	17
Total	**2,300**	**458**	**8**	**466**	**492**	**493**	**985**
Trip Difference							
Difference	**1,568**	**299**	**8**	**307**	**337**	**331**	**668**

*Based on Tenant specific data.

Unlike the Prologis data (Appendix C page C12) that suggests 20% heavy vehicles during the peak roadway hours (7:00 AM to 9:00 AM; 4:00 PM to 6:00 PM) the tenant-specific data, during peak season operations, has approximately 2% heavy vehicles generated during the peak roadway hours.

Taking into account the trip generation estimates of the original approval, and both operating seasons of the proposed 1,015,740 sf distribution center, the remaining trip generation of the original approval is as follows in Table 4.

Table 4 – Trip Generation Estimates – Remaining Approved

Use	Daily	Weekday AM Peak Hour			Weekday PM Peak Hour		
		In	Out	Total	In	Out	Total
Peak Operating Season (November – December)							
4,320,000sf	28,080	864	518	1,382	173	778	951
1,015,740sf Proposed	- 3,868	- 757	- 16	- 773	- 829	- 824	- 1,653
Total	**24,212**	**107**	**502**	**609**	**- 656**	**- 46**	**- 702**
Non-Peak Operating Season							
4,320,000sf	28,080	864	518	1,382	173	778	951
1,015,740sf Proposed	- 2,300	- 458	- 8	- 466	- 492	- 493	- 985
Total	**25,780**	**406**	**510**	**916**	**- 319**	**285**	**- 34**

Based on the most recent density plan provided by Prologis, the overall development has potential for a total of 3,486,267 sf of warehouse space inclusive of the proposed 1,015,740 sf distribution center, which is approximately 833,733 sf less than what was originally approved. The single tenant building is proposed to occupy 1,015,740 sf of the overall square footage; therefore, the remaining square footage of the current density plan is 2,470,527 sf. To date only roadway construction has occurred within the overall development and no building construction has yet to occur. The trip generation estimates for the 2,470,527 sf of warehouse

space, calculated based on the rates used in the 2003 traffic studies and shown on page C3, is summarized in Table 5. The calculations are also shown on page C3 in Appendix C.

Table 5 – Trip Generation Estimates (2,470,527 sf)

Use	Daily	Weekday AM Peak Hour			Weekday PM Peak Hour		
		In	Out	Total	In	Out	Total
Rate	*6.5*	*0.2*	*0.12*	*0.32*	*0.04*	*0.18*	*0.22*
2,470,527sf	16,058	494	297	791	99	445	544

The trip generation estimates, as shown in Table 5, for the remaining 2,470,527 sf were included as an approved development in the calculation of the background growth in the 2036 traffic volume projections. To be consistent with the information from the 2003 traffic studies we did not do a vehicle type breakdown of the remaining 2,470,527 sf warehouse space since the addendum study rates (Appendix C page C3) are based on overall vehicles. However based on information from page C12 the approximate truck percentage would be 20% of the traffic generation in Table 5.

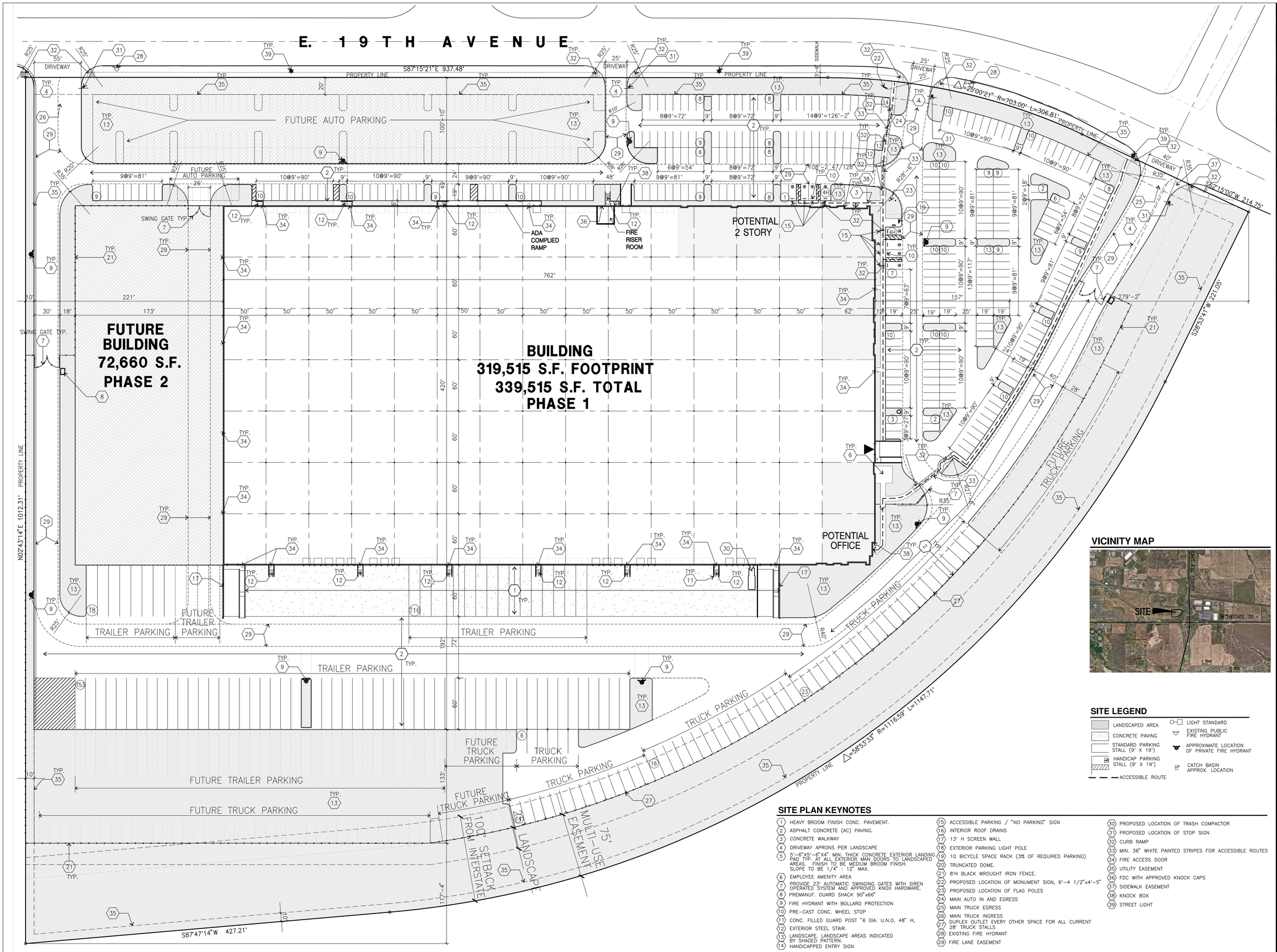
Trip Distribution

We determined the directional distribution of the site-generated trips based on existing and expected travel patterns in the study area, journey-to-work data, and a review of the prior distributions used in the 2003 traffic studies (Appendix F). To be conservative, and consistent with the 2003 traffic studies, we did not include the potential Picadilly Road or Harvest Road interchanges. Therefore, the trip distributions for both the 2018 and 2036 horizon years are the same. The directional distributions of site-generated trips are summarized in Table 6.

Table 6 – Trip Distribution

Direction (To/From)	Arrival	Departure
I-70 (East)	5%	5%
I-70 (West)	20%	20%
E-470 (North)	6%	6%
E-470 (South)	7%	19%
Gun Club Road (South)	22%	10%
Smith Road (West)	35%	35%
Picadilly Road (North)	5%	5%
Total	**100%**	**100%**

We assigned the site-generated traffic to the adjacent roadway system as per the above distributions. Figure 4 shows the arrival and departure distributions for both the short-term and long-term years. Figures 5 and 6 show the site-generated traffic for the passenger cars and trucks, respectively. Figure 7 shows the total site-generated traffic assigned to the roadway network.



VICINITY MAP

SITE LEGEND

- LANDSCAPED AREA
- CONCRETE PAVING
- STANDARD PARKING STALL (9' X 19')
- HANDICAP PARKING STALL (9' X 19')
- ACCESSIBLE ROUTE
- LIGHT STANDARD
- EXISTING PUBLIC FIRE HYDRANT
- APPROXIMATE LOCATION OF PRIVATE FIRE HYDRANT
- CATCH BASIN APPROX. LOCATION

SITE PLAN KEYNOTES

1. HEAVY BROOM FINISH CONC. PAVEMENT.
2. ASPHALT CONCRETE (AC) PAVING.
3. CONCRETE WALKWAY
4. DRIVEWAY APRONS PER LANDSCAPE
5. 5'-6"X5'-6"X4" MIN. THICK CONCRETE EXTERIOR LANDING PAD TYP. AT ALL EXTERIOR MAN DOORS TO LANDSCAPED AREAS. FINISH TO BE MEDIUM BROOM FINISH. SLOPE TO BE 1/4" : 12" MAX.
6. EMPLOYEE AMENITY AREA
7. PROVIDE 23' AUTOMATIC SWINGING GATES WITH SIREN OPERATED SYSTEM AND APPROVED KNOX HARDWARE.
8. PREMANUF. GUARD SHACK 90"x66"
9. FIRE HYDRANT WITH BOLLARD PROTECTION
10. PRE-CAST CONC. WHEEL STOP
11. CONC. FILLED GUARD POST "6 DIA. U.N.O. 48" H,
12. EXTERIOR STEEL STAIR.
13. LANDSCAPE. LANDSCAPE AREAS INDICATED BY SHADED PATTERN.
14. HANDICAPPED ENTRY SIGN
15. ACCESSIBLE PARKING / "NO PARKING" SIGN
16. INTERIOR ROOF DRAINS
17. 13' H SCREEN WALL
18. EXTERIOR PARKING LIGHT POLE
19. 10 BICYCLE SPACE RACK (3% OF REQUIRED PARKING)
20. TRUNCATED DOME.
21. 8'H BLACK WROUGHT IRON FENCE.
22. PROPOSED LOCATION OF MONUMENT SIGN, 6'-4 1/2"x4'-5"
23. PROPOSED LOCATION OF FLAG POLES
24. MAIN AUTO IN AND EGRESS
25. MAIN TRUCK EGRESS
26. MAIN TRUCK INGRESS
27. DUPLEX OUTLET EVERY OTHER SPACE FOR ALL CURRENT 28' TRUCK STALLS
28. EXISTING FIRE HYDRANT
29. FIRE LANE EASEMENT
30. PROPOSED LOCATION OF TRASH COMPACTOR
31. PROPOSED LOCATION OF STOP SIGN
32. CURB RAMP
33. MIN. 36" WHITE PAINTED STRIPES FOR ACCESSIBLE ROUTES
34. FIRE ACCESS DOOR
35. UTILITY EASEMENT
36. FDC WITH APPROVED KNOCK CAPS
37. SIDEWALK EASEMENT
38. KNOCK BOX
39. STREET LIGHT

OVERALL SITE PLAN (A)
scale: 1" = 40'-0"

SCALE: 1"=40'-0"
0' 40' 80' 120' TRUE NORTH

HPA architecture
hpa, inc.
18831 bardeen avenue, - ste. #100
irvine, ca
92612
tel: 949•863•1770
fax: 949•863•0851
email: hpa@hparchs.com

NOT FOR CONSTRUCTION

Owner:
SOUTHERN GLAZERS WINE AND SPIRITS
1600 N.W. 163rd St.
MIAMI, FL 33169

Project:
Aurora Distribution Center
Southern Glazer's Wine & Spirits
Aurora, CO

Consultants:

CIVIL	-
STRUCTURAL	-
MECHANICAL	-
PLUMBING	-
ELECTRICAL	-
LANDSCAPE	-
FIRE PROTECTION	-
SOILS ENGINEER	-
MATERIAL HANDLING	-

Title: OVERALL SITE PLAN

Project Number:	16098
Drawn by:	JL
Date:	11/20/2017
Revision:	

Sheet:

DAB-A1.1