

The traffic letter was updated with a buildout year of 2023 using a 2% background growth rate.

The pre-application notes for the project indicated that only project trip generation, a site circulation plan, and a vehicle queuing analysis at each access needed to be provided in a traffic study letter.

Further, analysis at the intersection of 32nd Avenue and Chambers Road was not provided as the Aurora TIS standards state that a TIS may be required where the site is estimated to generate 75 per hour at any time. This site expansion is not anticipated to generate more than 75 trips in any single hour.

2022-12-22 (DJK)
Build-out analysis? 2023, 2024 or 2025 should be considered with at min a 2% background traffic growth for a more conservative analysis of the proposed site conditions.

Additionally, no counts or analyses of the adjacent signal at 32nd & Chambers?

Aurora, Colorado

Site Plan / Contextual Site Plan (CSP)	Yes* if > 75 trips/ hour or unusual conditions	A traffic study or an abbreviated study may be required in conjunction with a site plan where the site is estimated to generate at least 75 trips per hour at any time of the day or where an unusual condition exists which warrants study (such as existing high volumes, high accident incidence, commercial connection to residential area, etc.).
----------------------------------------	------------------------------------------------	--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

generation, trip or the proposed 32nd Avenue in an existing facility ice space. The

expansion project is proposed to add 9,282 square feet of service bays and 1,600 square feet of office space. Therefore, upon completion of the expansion, Penske will have a total of 19,098 square feet of service bays and 6,760 square feet of office space. A conceptual site plan for the Penske expansion is attached.

Regional access to Penske is provided by Interstate 70 (I-70) and Interstate 225 (I-225) while primary access is provided along 32nd Avenue. Direct access is provided by two existing full movement accesses along the south side of 32nd Avenue, approximately 550 feet and 850 feet east of Chambers Road.

TRIP GENERATION

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 Manual¹ published by the Institute of Transportation Engineers (ITE). ITE has established trip rates in nationwide studies of similar land uses. However, the ITE Trip Generation Manual does not have a land use code applicable to the Penske Truck Leasing facility. Therefore, trip generation was based on existing counts collected entering and exiting the existing site (traffic counts attached). To provide a conservative analysis, the trip generation of the proposed expansion was assumed to be prorated to the service bay expansion, with an approximate 95 percent increase in that use size as compared to the office expansion being an approximate 31 percent increase in size. The following Table 1 summarizes the estimated trip generation for the Penske expansion.

¹ Institute of Transportation Engineers, *Trip Generation Manual*, Eleventh Edition, Washington DC, 2021.

64 AM trips/14,936 sf=4.3 trips/1,000 sf
 45 PM trips/14,936 sf=3.0 trips/1,000 sf
 4.3x25.818 total 1,000 sf = 111 AM trips
 3x25.818 = 77 PM trips
 (assuming just a s.f. increase est.)

Table 1 – Penske Expansion Traffic Generation

Use	Weekday Vehicles Trips					
	AM Peak Hour of Adjacent Street			PM Peak Hour of Adjacent Street		
	In	Out	Total	In	Out	Total
Existing	35	29	64	20	25	45
Expanded	33	28	61	19	24	43
Total	68	57	125	39	49	88

95% increase is more conservative

As summarized in Table 1, the Penske expansion morning peak hour and 43 more trips during the afternoon peak hour for the entire facility after the approximately 125 trips occurring during the morning peak hour.

To provide a conservative analysis a 95% increase in trips was previously utilized in the original study and the revised study.

the in ng

TRIP DISTRIBUTION, TRAFFIC ASSIGNMENT, AND TOTAL TRAFFIC

Trip distribution of traffic to Penske was identified based on the area street system characteristics, surrounding demographic information, and the access system for the project. The distribution of traffic is a means to quantify the percentage of site-generated traffic that approaches the site from a given direction and departs the site back to the original source. Expansion project traffic assignment was obtained by applying the project trip distribution to the estimated project traffic generation of the development shown in Table 1. Figure 2 illustrates the trip distribution on the surrounding street network while Figure 3 illustrates traffic assignment volumes for the proposed Penske expansion at the adjacent intersections and accesses. Site generated traffic volumes at the project accesses were added to the existing volumes to represent estimated traffic conditions for the 2022 buildout horizon. These total traffic volumes for the project accesses are illustrated for the buildout year in Figure 4.

VEHICLE QUEUING ANALYSIS

A vehicle queuing analysis was performed using 2023 data. Results are shown in the following Table 2 with calculations provided within the attached level of service operational sheets.

The report was updated to a buildout year of 2023

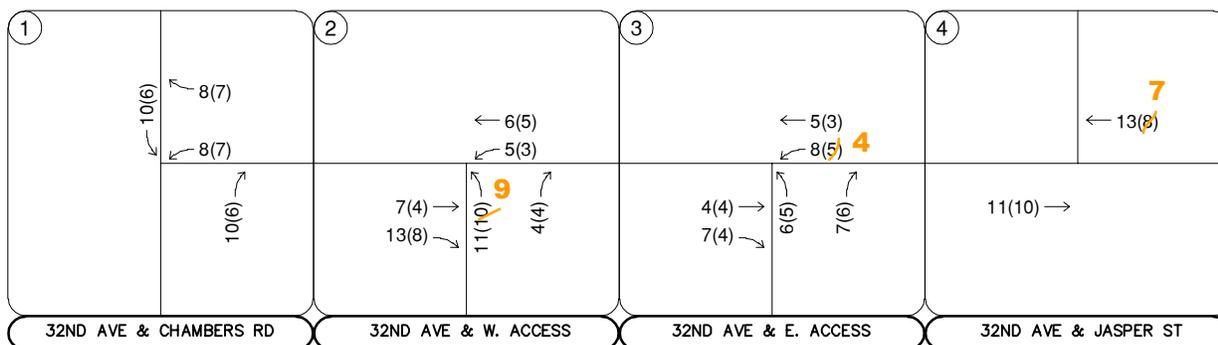
2022 is over, what is realistic build-out year?

ons. The queuing percentile queue

Table 2 – Project Access Vehicle Queuing Analysis

Intersection Turn Lane	Existing Turn Lane Length (feet)	Existing Plus Project Calculated Queue (feet)	Existing Plus Project Recommended Length (feet)
32nd Ave & West Access (#2)			
Northbound Approach	C (50')	1 Vehicle (40')	C (50')
Westbound Through/Left	C	1 Vehicle (40')	C
32nd Ave & East Access (#3)			
Northbound Approach	C (40')	1 Vehicle (40')	C (40')
Westbound Through/Left	C	1 Vehicle (40')	C

C = Continuous Lane



$13+5+7+8=33$ AM enter
 $11+4+6+7=28$ AM exit totals 61 new AM trips
 $8+3+4+5=20(19)$ PM enter
 $10+4+5+6=25(24)$ PM exit totals 45 new PM trips

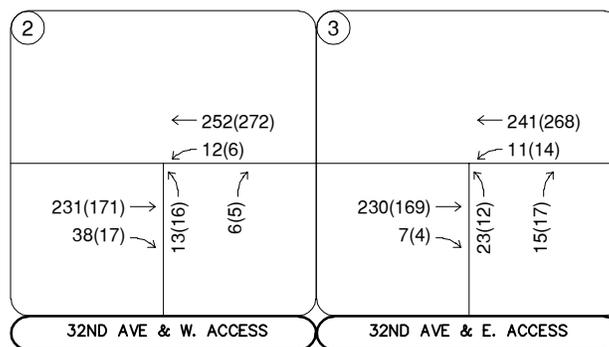
Some of these numbers were rounded up in the analysis software in the original submittal. Assignment was updated in the revised study.

LEGEND

 Study Area Key Intersection
 XXX(XXX) Weekday AM(PM) Peak Hour Traffic Volumes

PENSKE
 AURORA, COLORADO
 PROJECT TRAFFIC ASSIGNMENT

FIGURE 3



The AM traffic volumes are correct as they show 68 trips entering (38+12+7+11) and 57 trips exiting (13+6+23+15) for 125 total trips (68+57). The afternoon trips do not match the trip generation due to rounding in the analysis software, therefore these were updated to match the trip generation exactly.

38+12+7+11=68 AM enter
13+6+23+15=54 AM exit totals 122 AM trips
17+6+4+14=41 PM enter
16+5+12+17=50 PM exit totals 91 PM trips

Need to check math/percentages, not matching trip gen chart

PENSKE
 AURORA, COLORADO
 EXISTING PLUS PROJECT
 TRAFFIC VOLUMES (ACCESS)

LEGEND

(X) Study Area Key Intersection

XXX(XXX) Weekday AM(PM)
 Peak Hour Traffic Volumes

FIGURE 4