Date:	March 28, 2022
Prepared by:	Abby Pal
To:	Colton Unified School District, Bloomington
Site:	17713 Slover Avenue Industrial Project
Subject:	**Safety Study along the West and North Project Perimeter for 17713 Slover Avenue Industrial Project**

This memo evaluates the prevailing safety conditions for the proposed 259,481 SF speculative high-cube warehouse located at the southeast corner of the intersection of Alder Avenue and Slover Avenue in unincorporated San Bernardino County. The existing site is currently vacant. The location of the project is shown in Figure 1 and the project site plan is shown in Figure 2. Access will be provided via two driveways on Slover Avenue (Project Dwy 1and 2) and one driveway on Alder Avenue (Project Dwy 3). It is to be noted that Project Dwy 1 is only accessible to trucks. Project Dwy 2 is accessible to both passenger vehicles and trucks, and Project Dwy 3 is only accessible to passenger vehicles.

Figure 1: Project Location

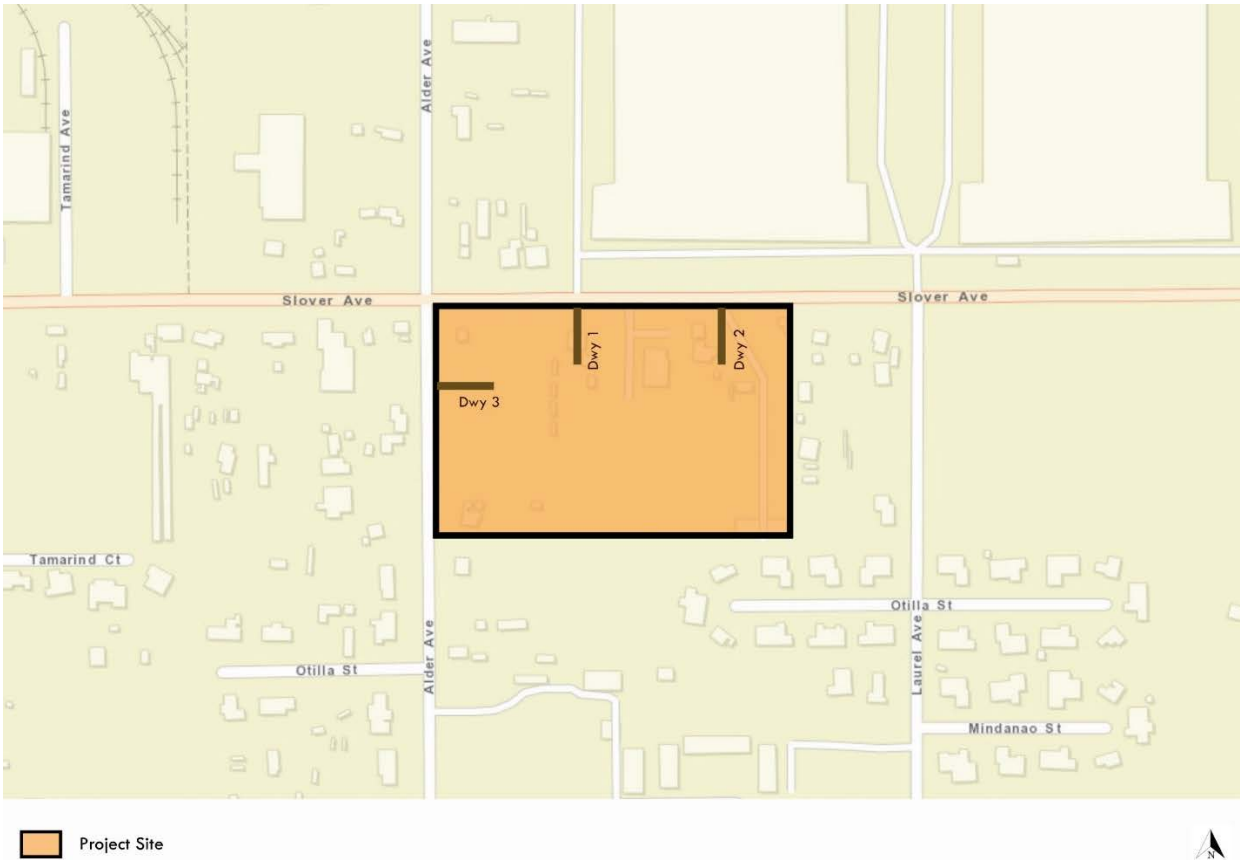
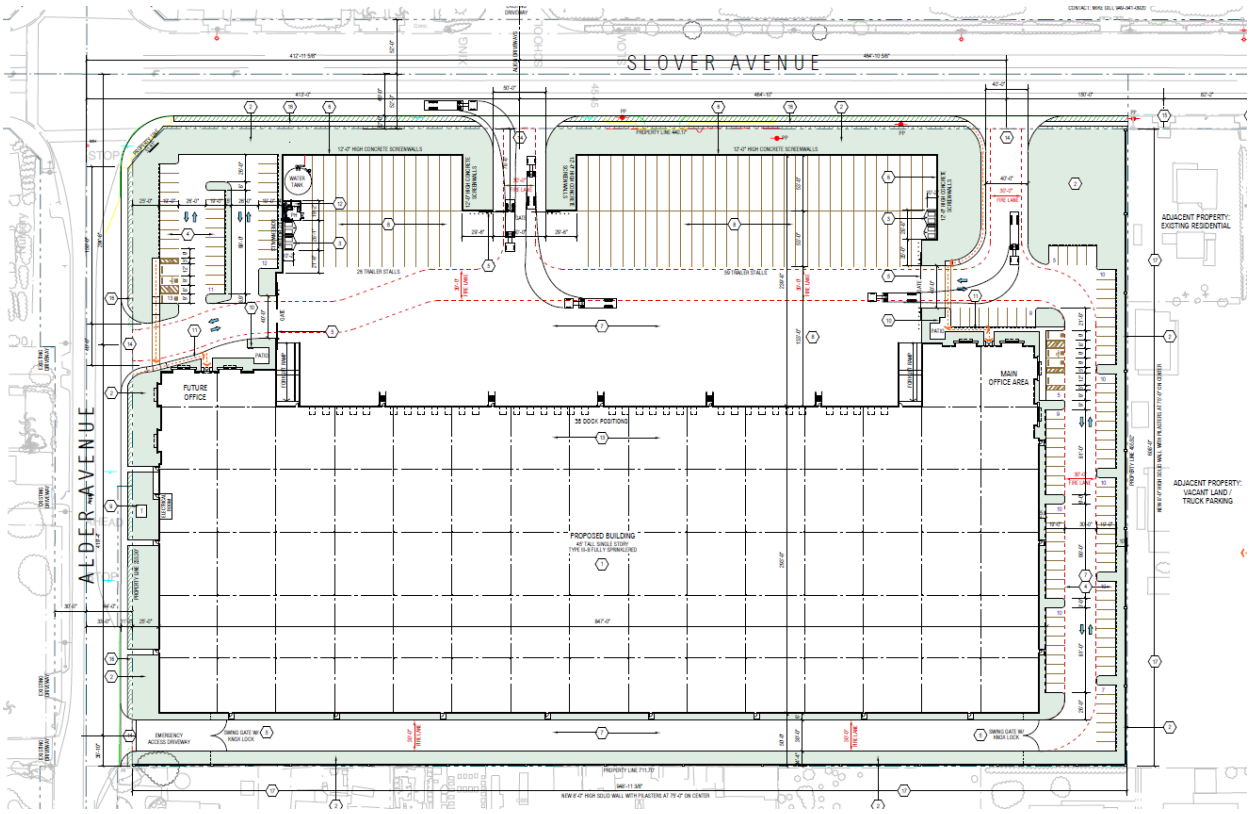


Figure 2: Project Site Plan



Project Trip Generation and Trip Distribution

The project trip generation was prepared using trip rates for High Cube Transload and Short-Term Storage Warehouse from the Institute of Transportation Engineers (ITE) Trip Generation, 11th Edition (2021). The truck percentages were determined using data from the SCAQMD Warehouse Truck Trip Study, July 17, 2017. A Passenger Car Equivalent (PCE) factor was added to the truck trips to account for the larger vehicle size and increased roadway capacity utilized by large trucks. Table 1 presents the trip generation estimate for the proposed project. As shown in Table 1, the project is forecast to generate 531 daily PCE trips including 30 PCE trips during the AM peak hour and 38 PCE trips during the PM peak hour.

The Project Passenger Vehicle Distribution for the project is shown in Figure 3 and the Project Truck Trip Distribution is shown in Figure 4.

Table 1: Project Trip Generation

				AM Peak Hour			PM Peak Hour		
Land Use	**Units**	**Daily**	**In**	**Out**	**Total**	**In**	**Out**	**Total**
Trip Rates								
High Cube Transload and Short-Term Storage Warehouse[1]	TSF	1.40	0.06	0.02	0.08	0.03	0.07	0.10
Total Vehicle Trip Generation								
Slover/Alder Warehouse 259.481	TSF	363	16	5	21	7	19	26
Vehicle Mix[2]	***Percent***							
Passenger Vehicles	69.00%	251	11	3	14	5	13	18
2-Axle Trucks	6.80%	25	1	0	1	0	1	2
3-Axle Trucks	5.50%	20	1	0	1	0	1	1
4+-Axle Trucks	18.70%	68	3	1	4	1	3	5
	100%	363	16	5	21	7	19	26
PCE Trip Generation[3]	***PCE Factor***							
Passenger Vehicles	1.0	251	11	3	14	5	13	18
2-Axle Trucks	1.5	37	2	0	2	1	2	3
3-Axle Trucks	2.0	40	2	1	2	1	2	3
4+-Axle Trucks	3.0	204	9	3	12	4	10	15
Total PCE Trip Generation		531	23	7	30	11	27	38

TSF = Thousand Square Feet

PCE = Passenger Car Equivalent

[1] Trip rates from the Institute of Transportation Engineers, *Trip Generation,11th Edition, 2021*. Land Use Code 154 - High-Cube Transload and Short-Term Storage Warehouse.

[2] Vehicle Mix from the *SCAQMD Warehouse Truck Trip Study* . July 17, 2017.

[3]Passenger Car Equivalent (PCE) factors from San Bernardino County CMP, Appendix B - Guidelines for CMP Traffic Impact Analysis Reports in San Bernardino County, 2016

Figure 3: Project Passenger Vehicle Trip Distribution

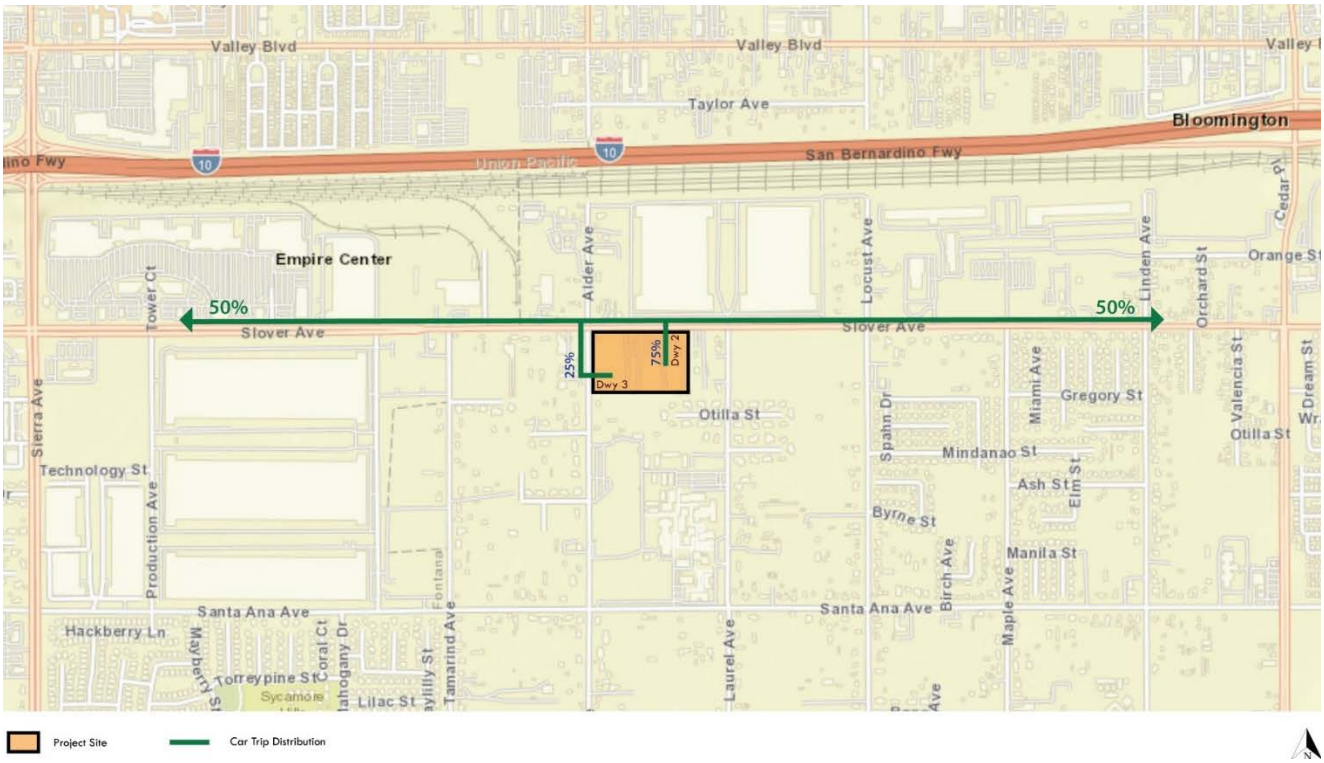
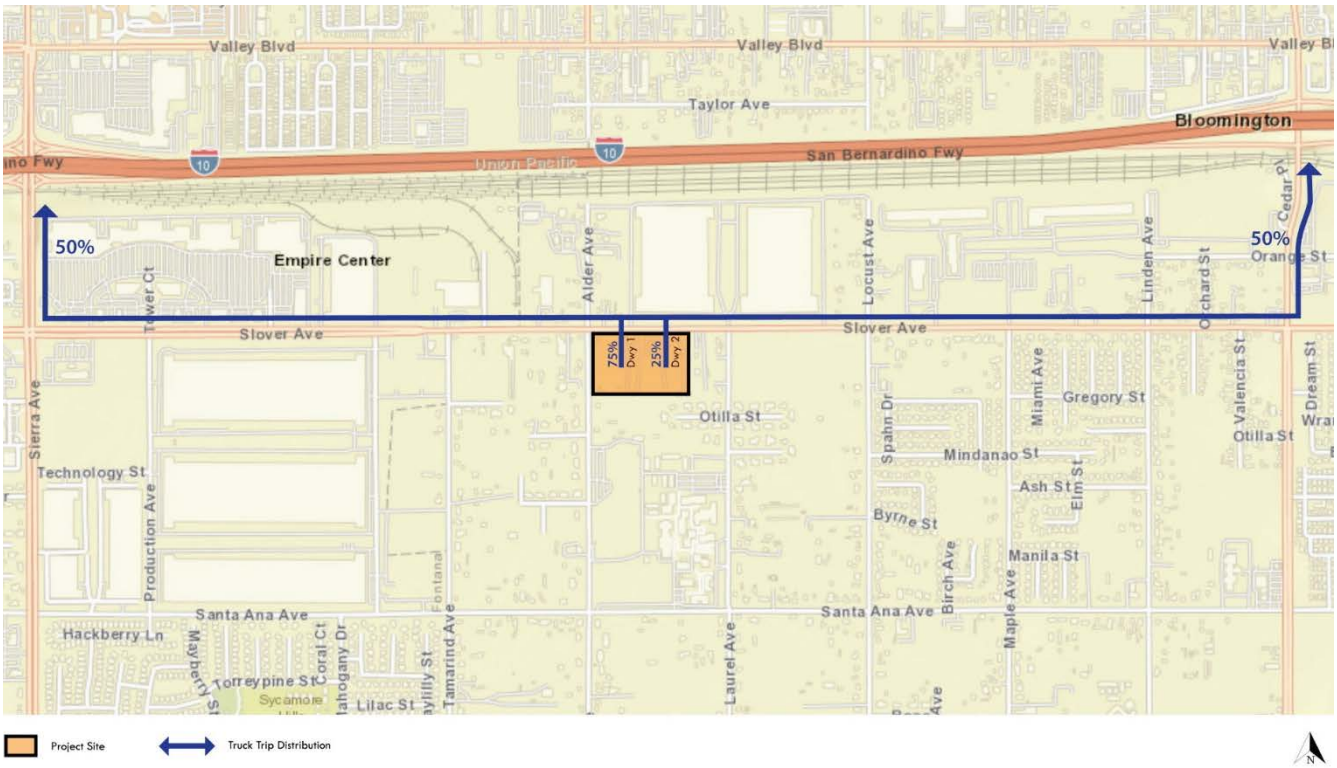


Figure 4: Project Truck Trip Distribution



Safety Assessment

A safety assessment was conducted as the Colton Joint Unified School District expressed concern regarding safety of school students who would travel to and from Bloomington High School. EPD conducted an on-site safety assessment from 7:30 AM to 8:30 AM on February 24th, 2022, to note existing infrastructure deficiencies on the project perimeter. The intersection of Alder Ave/Slover was also assessed carefully as five-year crash data obtained from the University of Berkeley Transportation Injury Mapping System (TIMS) for the years 2015 to 2020 indicate automobile right of way issues for northbound vehicles at the intersection as shown in Table 2 below.

Table 2: TIMS Crash Data for Alder Ave/Slover Ave 2015-2020

Crash Case ID	Date of Accident	Time of Accident	Day	Priamary Violation	Type of Crash	Collision Severity	Direction of Travel of Party at Fault
6834600	1/11/2015	3:30:00 PM	Sunday	Automobile Right of Way	Broadside	Complaint of Pain	North
6893203	3/3/2015	8:55:00 PM	Tuesday	Automobile Right of Way	Broadside	Complaint of Pain	North
90066644	11/15/2015	3:00:00 PM	Sunday	Automobile Right of Way	Broadside	Visible Injury	South
90084646	12/19/2015	7:10:00 PM	Saturday	Traffic Signals and Signs	Broadside	Complaint of Pain	North
90128254	2/25/2016	10:00:00 PM	Thursday	Automobile Right of Way	Broadside	Complaint of Pain	North
90313758	11/2/2016	10:05:00 AM	Wednesday	Unsafe Starting or Backing	Rear End	Complaint of Pain	North
90452538	5/2/2017	9:30:00 AM	Tuesday	Automobile Right of Way	Broadside	Complaint of Pain	North
90677965	3/7/2018	2:30:00 PM	Wednesday	Improper Turning	Sideswipe	Visible Injury	North
90678829	3/3/2018	5:31:00 AM	Saturday	Traffic Signals and Signs	Broadside	Complaint of Pain	South
90928508	2/17/2019	10:17:00 PM	Sunday	Driving Under Influence of Alcohol or Drug	Rear End	Visible Injury	East
90986462	5/7/2019	7:25:00 AM	Tuesday	Automobile Right of Way	Broadside	Visible Injury	North

Existing Infrastructure on Project Perimeter

Pedestrian infrastructure deficiencies were noted during the on-site safety assessment. The existing infrastructure is shown in Figure 5. As shown in Figure 6, a student from Bloomington High was observed to walk NB on Alder Ave on the vehicle right of way as no sidewalks were provided. The student walked to the school bus stop on Slover Ave and waited for the school bus over an unpaved sidewalk till the bus arrived as shown in Figure 7.

Paved sidewalks would be constructed on the west and north perimeter of the project site as a part of the proposed project which would provide high school students a safe space to walk to and from the school bus stop on Slover Ave to Bloomington High.

Figure 5: Existing Pedestrian Infrastructure

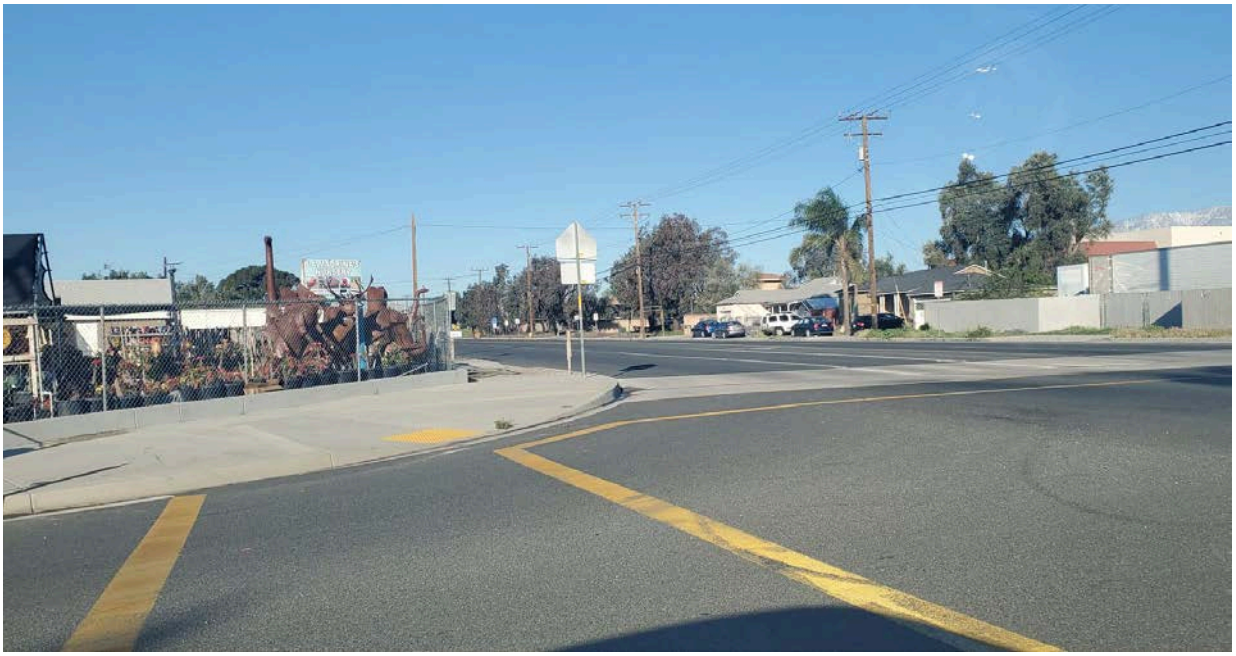
Figure 6: Deficient Pedestrian Infrastructure on NB Alder Ave

Figure 7: Bloomington High Bus Stop on Slover Ave

Alder Avenue and Slover Avenue Intersection Safety

The posted speed limit on Slover Ave is 45 mph. During the on-site safety assessment, it was observed that the nursery located on the southwest corner of the intersection on Alder Ave/Slover Ave blocks the required site distance for 45 mph EBT traffic on Slover Ave for vehicles traveling NBL/NBT/NBR at the intersection due to corner yard art on the property as shown in Figure 8. Truck traffic SB on Alder Ave were observed to wait more than a minute to turn SBL/SBR due to WBT traffic on Slover Ave during the AM peak hour. Vehicles were also observed to queue on NB Alder Ave given the challenge of turning NBL/NBR safely during the AM peak hour.

Figure 8: Insufficient Sight Distance on Slover Ave



Given that the project would add passenger vehicles which would turn NBL/NBR on Alder Ave and truck traffic which would travel EB/WB on Slover Ave, it is recommended a traffic signal be added to the intersection of Alder Ave/Slover Ave to improve intersection safety.

If you have any questions about this information, please feel free to contact me at (412) 636-2713 or at abby@epdsolutions.com.