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Vision That Moves Your Community

Draft

**A Traffic Impact
Analysis for the
RAILEX Development
at the Southwest
Corner of Schuster
Road and Browning
Road**

In the City of Delano

January 04, 2008

Pleasanton
Fresno
Sacramento
Santa Rosa



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This Traffic Impact Analysis Report has been prepared under the direction of a licensed Traffic Engineer. The licensed Traffic Engineer attests to the technical information contained therein, and has judged the qualifications of any technical specialists providing engineering data, on which recommendations, conclusions and decisions are based.

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Introduction and Summary

Introduction

This report describes TJKM's traffic impact analysis for the proposed RAILEX Development project to be located at the southwest corner of Schuster Road and Browning Road in the City of Delano. Figure 1 shows the location of the proposed project site relative to the surrounding roadway network.

The project proposes the construction of a refrigerated truck to rail transfer facility of approximately 200,000 square feet on a site of approximately 60 acres. The property will have the ability to expand to 300,000 square feet consistent with City of Delano General Plan. The site plan of the proposed project is illustrated on Figure 2.

The purpose of this traffic impact analysis is to evaluate the potential traffic impacts, identify short-term and long-term roadway and circulation needs, determine potential mitigation measures and identify any critical traffic issues that should be addressed in the on-going planning process. The scope of work was prepared via consultation with the City of Delano and Caltrans traffic planning staff.

Summary

The potential impacts of the proposed project were evaluated in accordance with the standards set forth by the level of service policies of the City of Delano or Caltrans as appropriate.

Existing Traffic Conditions

- Under this scenario all study intersections and segments operate at or better than the City of Delano LOS C threshold.

Existing Plus Project Traffic Conditions

- The proposed project is estimated to generate a maximum of 886 daily trips, 66 a.m. and 55 p.m. peak hours trips.
- Due to anticipated capacity constraints at the interchange of SR 99/Woollomes Avenue and the lack of a grade separation between Woollomes Avenue and the Union Pacific Railroad it is recommended that all of the project's truck traffic arriving or leaving between the hours of 6:00 a.m. and 7:00 p.m. utilize the SR 99/Pond Road interchange. This should serve as a transportation demand mitigation measure for the project.
- To improve queuing and traffic safety it is recommended that a 150 feet northbound left turn lane with an appropriate bay taper be designed and constructed at the intersection of Browning Avenue/Main Project Driveway.

Near Term (Existing Plus Approved and Pipeline Projects Plus Project) Traffic Conditions

- Of the Near Term Projects, the Delano Market Place project accounts for 75.1 percent of the daily, 70.8 percent of the a.m. and 69.7 percent of the p.m. peak hours of the near term project's traffic. Therefore one can deduce that the mitigation measures presented in this scenario for the intersections of SR 99 SB Ramps/Woollomes Avenue and SR 99 NB Ramps/Woollomes Avenue will not be necessary until completion of the Delano Market Place project.

- To improve the LOS at the intersections projected to fall below LOS C it is recommended that the interim interchange improvements as presented in the Delano Market Place traffic study be implemented. It should be noted that these mitigations are conceptual and the final design would be determined by the ongoing PSR being prepared by Peters Engineering Group on behalf of the Delano Market Place Project.
 - The intersection of SR 99 SB Ramps / Woollomes Avenue
 - be signalized with protected left turn phasing in all directions
 - a WB left turn lane with a storage capacity 200 feet be added
 - a SB left turn lane with a storage capacity of 300 feet be added
 - an EB right turn lane with a storage capacity of 250 feet be added
 - The intersection of SR 99 NB Ramps / Woollomes Avenue/High Street
 - Combine the two intersections into one intersection as recommended in the Delano Market Place traffic study.
 - be signalized with protected left turn phasing in all directions
 - an EB left turn lane with a storage capacity 275 feet be added
 - a WB right turn lane with a storage capacity of 250 feet be added
 - a NB left turn lane with a storage capacity of 225 feet be added
 - a NB right turn lane with a storage capacity of 200 feet be added

With the above-recommended improvements all intersections are projected to improve from an unacceptable LOS to LOS C or better during both the a.m. and p.m. peak hours.

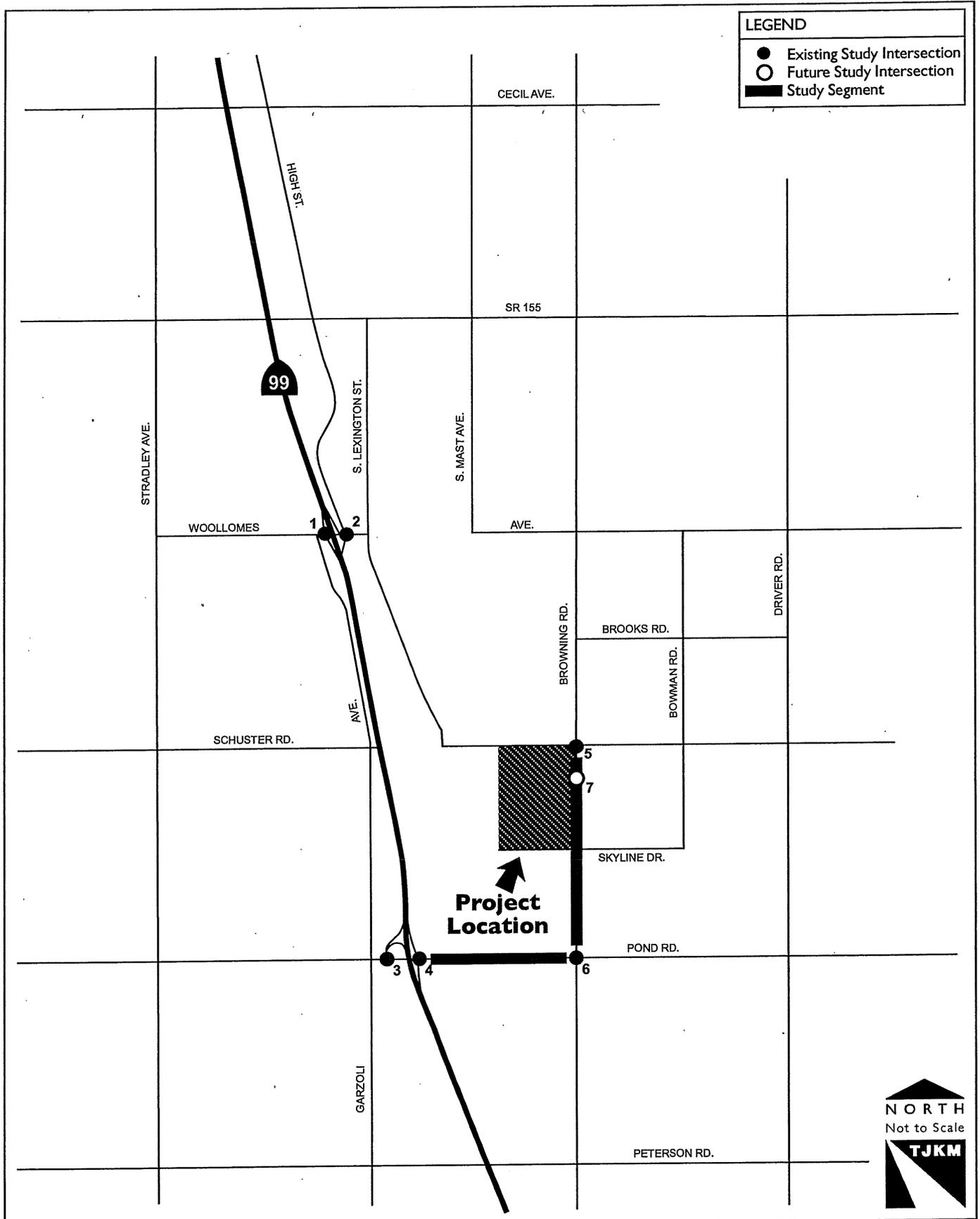
Cumulative Year 2030 Plus Project Traffic Conditions

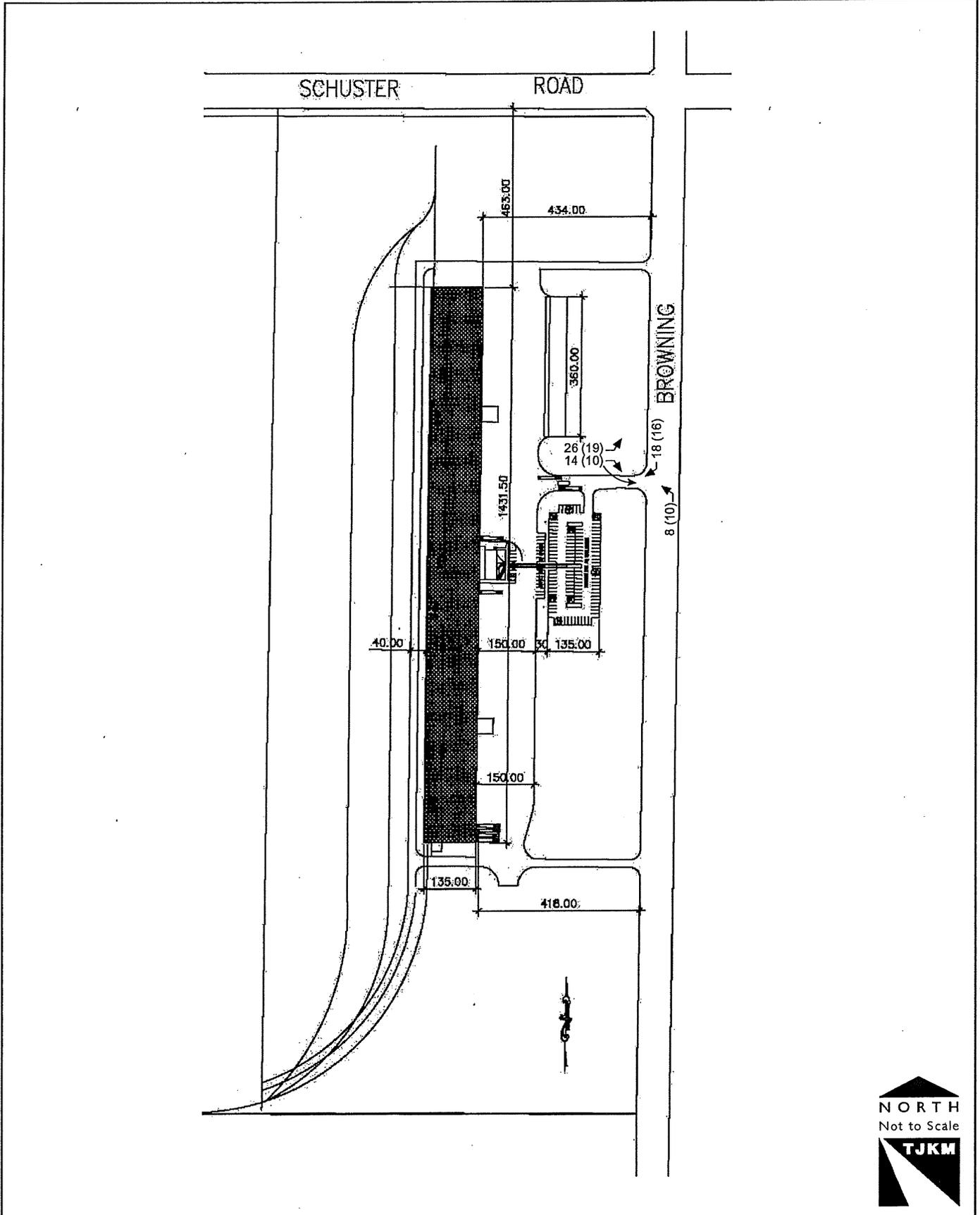
- Under this scenario, with the assumed lane geometrics all of the study segments are projected to operate at or better than the City of Delano LOS C threshold.
- To improve the LOS and/or to improve queuing, various improvements are necessary at the intersections of SR 99 SB ramps at Woolomes Avenue, SR 99 NB off-ramp at Woolomes Avenue/High Street, SR 99 SB ramps at Pond Road, SR 99 NB ramps at Pond Road, Schuster Road at Browning Road, Pond Avenue at Browning Road and Browning Avenue at Main Truck Access Driveway. Some of the recommendations are necessary to improve the projected LOS while others are required to reduce the excessive queues that would result without mitigation measures taken into account. These improvements range from signalization, the addition of lanes, increasing the existing or planned storage capacity of left or right turn lanes. The combination of these recommendations would enable traffic in the vicinity of the project to flow as smoothly as feasible possible given existing constraints. These recommendations are explained in detail in the report and in the conclusions and recommendations at the end of the report.

- Since no opening day mitigations are required at any of the study intersections or segments, payment of the City of Delano traffic impact fee should be considered the project's proportionate share of the mitigation measures presented under the Cumulative Year 2030 scenario.
- Based on the Synchro output files it is recommended that the storage capacity presented in Table VII be considered under Year 2030 buildout of the City's circulation network.

City of Delano – RAILEX Truck to Rail Transfer Project
Vicinity Map

Figure
1





Existing Conditions and Study Methodology

Roadway Network

The project site and surrounding study area are illustrated in Figure I. Important roadways adjacent to the project site are discussed below:

Lexington Street is an existing two-lane divided street in the vicinity to the proposed project. In this area, Lexington Street extends northerly from Schuster Avenue. Lexington Street is classified as a four lane divided collector.

State Route 99 (SR 99) is an existing six-lane divided freeway, which runs in a north-south direction through the City of Delano. SR 99 services major north-south movement through the City and connects Delano with other major communities in the Central Valley area. SR 99 can be accessed by the project's traffic via the Pond Road interchange and the Woollomes Avenue interchange.

Browning Road is an existing north-south two-lane undivided roadway facility adjacent to the proposed project. Browning Road extends north and south through the City of Delano. The City of Delano designates Browning Road as a four lane divided arterial.

High Street is an existing north-south two-lane undivided in the vicinity to the proposed project. High Street extends northerly from the SR 99 NB off-ramp to Woollomes Avenue into downtown Delano. The City of Delano designates High Street as a four lane undivided arterial.

Woollomes Avenue is an existing east-west two-lane divided facility in the vicinity to the proposed project. In the vicinity of the project, Woollomes Avenue extends westerly from Lexington Street. The City of Delano designates Woollomes Avenue as a four to six lane undivided arterial.

Schuster Avenue is an existing east-west four-lane divided facility adjacent to the proposed project. In the vicinity of the project, Schuster Avenue extends easterly from Lexington Street. The City of Delano designates Schuster Avenue as a four lane divided arterial.

Pond Road is an existing east-west two-lane undivided facility in the vicinity to the proposed project. Pond Road extends east and west through the City of Delano southern sphere and serves as a connection to SR 99. The City of Delano designates Pond Road as a four lane divided arterial.

Level of Service Analysis Methodology

Level of Service is a qualitative index of the performance of an element of the transportation system. Level of Service (LOS) is a rating scale running from A to F, with A indicating no congestion of any kind, and F indicating unacceptable congestion and delays. LOS in this study describes the operating conditions for unsignalized and signalized intersections.

The *2000 Highway Capacity Manual* is the standard reference published by the Transportation Research Board, and contains the specific criteria and methods to be used in assessing LOS. HCS 2000 and Synchro software were used to define LOS in this study. Details regarding these calculations are in Appendix A.

Criteria of Significance

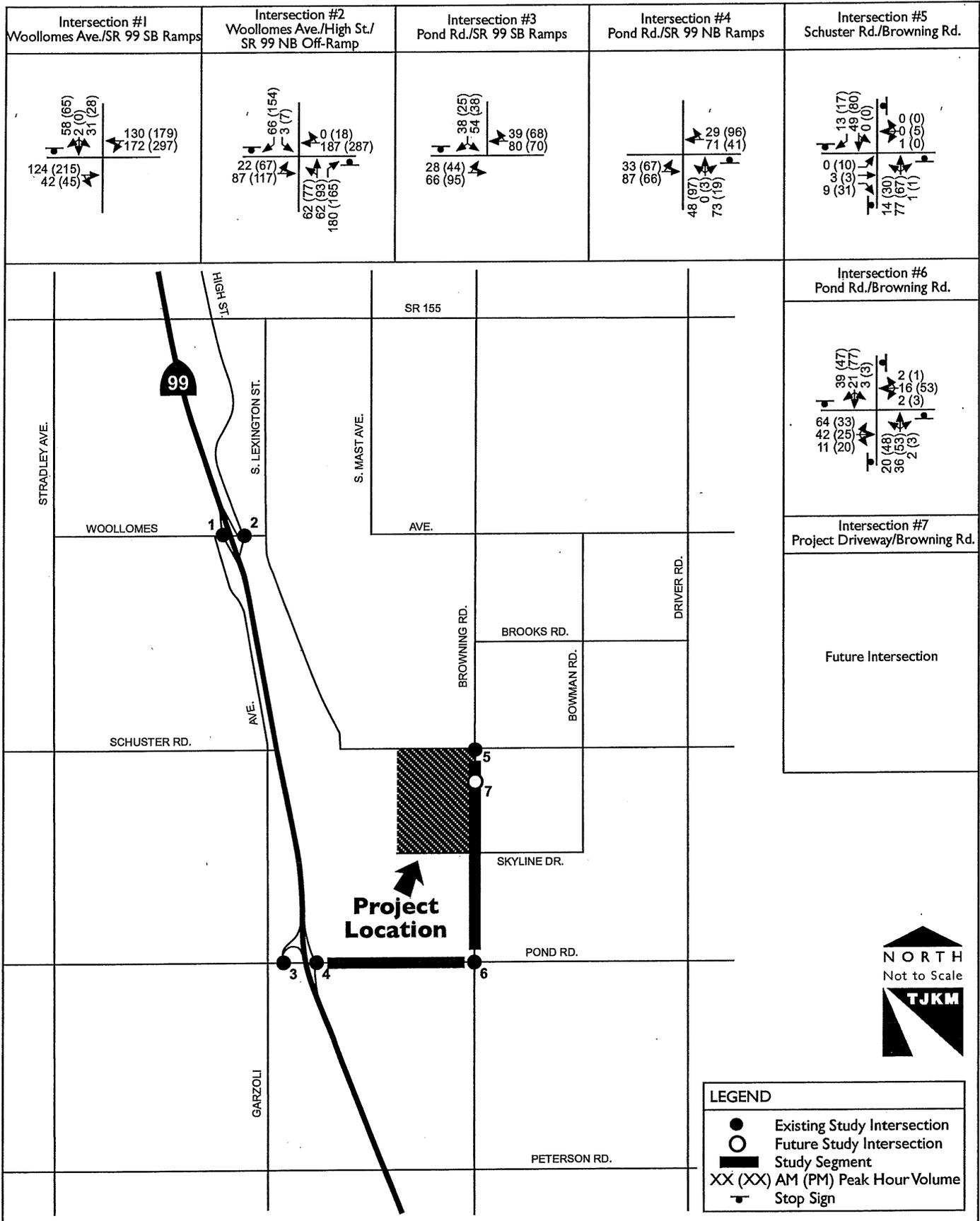
The City of Delano 2005 General Plan has set its level of service standard at LOS "C" with exceptions at freeway interchanges and other high volume locations, where LOS "D" is used. Similarly the LOS criteria for Caltrans, is also LOS C. Pursuant to the City of Delano General Plan the LOS criteria for Browning Avenue in the vicinity of the project was established at LOS "D". At the intersections of SR 99/Woolomes Avenue LOS "D" is used to evaluate the potential significance of level of service impacts based on consultation with the City of Delano staff.

Traffic Volumes, Intersection Geometrics, and Traffic Control

The existing daily volume, a.m. and p.m. peak hour turning movement counts were conducted at the study intersections within the past two months. The existing turning movement volumes, lane geometry and intersection controls are illustrated in Figure 3.

City of Delano – RAILEX Truck to Rail Transfer Project Existing Volumes, Intersection Geometrics, and Traffic Controls

Figure
3



Study Intersection and Scenarios

The study focused on evaluating traffic conditions at the existing and future study intersections and segments that may potentially be impacted by the proposed project. The study intersections and study segments are shown in Figure 3.

Intersections:

1. SR 99 SB ramps at Woolomes Avenue
2. SR 99 NB off-ramp at Woolomes Avenue/High Street
3. SR 99 SB ramps at Pond Road
4. SR 99 NB ramps at Pond Road
5. Schuster Road at Browning Road
6. Pond Avenue at Browning Road
7. Browning Avenue at Main Truck Access Driveway (future intersection)

Segments

1. Browning Road between Schuster Road and Pond Road
2. Pond Road between SR 99 NB Ramps and Browning Road

The following four scenarios are addressed in this study:

- *Existing Traffic Conditions* – This scenario evaluates existing traffic volumes and roadway conditions based on traffic counts and field surveys.
- *Existing Plus Project Traffic Conditions* – This scenario evaluates total traffic volumes and roadway conditions based on the project traffic being added to the previous scenario.
- *Near Term Year 2015 (Existing Plus Approved and Pipeline Projects Plus Project Traffic Conditions)* – This scenario expands the traffic volumes in the previous scenario by adding the Approved & Pipeline Projects' related trips.
- *Cumulative Year 2030 Plus Project Conditions* – This scenario evaluates total traffic volumes and roadway conditions based on the year 2030 with the proposed project. The Cumulative Year 2030 plus Project traffic volumes were obtained from the Council of Kern County Governments (Kern COG) traffic model runs (Base Year 2008 and the Cumulative Year 2030) and existing traffic counts. Under this scenario the increment method as recommended by the Model Steering Committee was utilized to determine the Cumulative Year 2030 traffic volumes. Additionally, at locations where the model projected little to no growth in traffic a minimum of a four percent per year growth rate was utilized in an effort to analyze a worse case scenario.

Transit

The City of Delano is served by a number of public transit programs. Currently the City of Delano does not operate any fixed-route bus service within a one mile radius of the project site. However, the city provides a demand/response dial-a-ride service to persons who are physically challenged or age 60 and older. Delano Transit Center located at 11th Avenue and Glenwood Street, adjacent to downtown Delano, serves as a hub for local and regional transit services. Kern Regional Transit operates the North Kern Express seven times daily Monday through Friday (three times daily on weekends) connecting communities between Delano and Bakersfield. Tulare County Area Transit (TCAT) operates its South County Route connecting the City of Delano with the Cities of Richgrove, Earlimart, Pixley and the City of Tulare. TCAT operates its South County Route three times a day Monday through Friday.

Bikeways

Currently bike lanes do not exist near the proposed project, nor does the City of Delano have any designated bicycle routes. A 1980 Draft Bicycle Plan was not formally adopted by the City. Even with the elimination of curbside parking and major street widening, the installation of bike lanes along Shuster Road cannot be feasibly achieved due to the inadequate street width and the proximity of existing buildings.

Results of Existing Level of Service Analysis

Table I summarizes the levels of service at the study intersections while Table II summarizes the levels of service at the study segments under the existing conditions scenario. Based on an the classification count conducted for Pond Road east of SR 99 the existing truck Percentage was observed to be 16 percent. As a result a 16 percent truck factor was used for the majority of the study intersections and segments except that the intersections of SR 99 ramps a truck factor of 10 percent was utilized. The area in the vicinity of Pond Road is currently agricultural and explains why the truck percentage is high on Pond Road. These truck percentage factors will be utilized in all subsequent scenarios in an effort to provide a conservative analysis of the study intersections and segments. Levels of service worksheets for the existing traffic conditions are provided in Appendix C. Under this scenario all study intersections and the study segments operate at or better than the City of Delano LOS C threshold.

Traffic Signal Warrants

Rural or Urban peak hour traffic signal warrants as appropriate were prepared for the unsignalized study intersections for the Existing Conditions scenario. Existing speed limits were utilized to determine if urban or rural warrants should be used. The effects of right turning traffic from the minor approach onto the major approach were taken into account using engineering judgment pursuant to California MUTCD guidelines for the preparation of signal warrants. These warrants are found in Appendix G. Under this scenario and with the existing intersection geometrics, none of the study intersections satisfy peak hour signal warrants.

Table I: Existing Intersection Level of Service Results

ID	Intersection	Scenario Description	Intersection Control	A.M. Peak Hour		P.M. Peak Hour	
				Average Delay (sec/veh)	LOS	Average Delay (sec/veh)	LOS
1	SR 99 SB ramps at Woolomes Avenue	Existing Conditions	One-way Stop	13.9	B	18.3	C
2	SR 99 NB off-ramp at Woolomes Avenue/High Street	Existing Conditions	Two-way Stop	10.5	B	18.2	C
3	SR 99 SB ramps at Pond Road	Existing Conditions	One-way Stop	10.4	B	11.0	B
4	SR 99 NB ramps at Pond Road	Existing Conditions	One-way Stop	10.5	B	12.8	B
5	Schuster Road at Browning Road	Existing Conditions	All-way Stop	7.9	A	8.1	A
6	Pond Avenue at Browning Road	Existing Conditions	All-way Stop	8.5	A	8.9	A
7	Browning Road at Main Truck Access Driveway	Existing Conditions	Future Intersection	n/a	n/a	n/a	n/a

Notes: LOS = Level of Service of worse movement on stop controlled intersections and average delay on signalized intersections

Table II: Existing Segment Level of Service Results

ID	Limits	Scenario Description	Lanes	24-hr Volume	LOS	A.M. Peak Hour Volume	LOS	P.M. Peak Hour Volume	LOS
Browning Road	Schuster to Pond	Existing	2	1,938	A	133	A	218	A
Pond Road	SR 99 NB Ramps to Browning	Existing	2	2,353	A	193	A	260	A

Notes: LOS = Level of Service or Arterial per the Florida LOS Tables

Impacts of Proposed Project

Proposed Project Description

The project proposes the construction of a refrigerated truck to rail transfer facility of approximately 200,000 square feet on a site of approximately 60 acres. The property will have the ability to expand to 300,000 square feet. Figure 1 shows the location of the proposed project site relative to the surrounding roadway network. The project is consistent with the planned land uses of the City of Delano General Plan. The proposed site plan and the project driveway trips are illustrated on Figure 2.

Anticipated Employment

Based on communication with the project developer this project is anticipated to generate a maximum of 210 employees in three shifts. The employment data for the project is as follows:

Employment: A maximum of 210 warehousing employees are anticipated upon complete buildout of the project. Of the 210 employees, 100 employees will be on the main shift between 6 A.M. to 2 p.m., 65 employees on the second shift between 2 p.m. to 10 p.m. and 45 employees on the third and final shift between 10 p.m. to 6 a.m.

Trip Generation

The trip rates are obtained from the standard reference *Trip Generation*, 7th Edition, published by the Institute of Transportation Engineers (ITE). Table III summarizes the trip generation estimation for the proposed project. The trip generation table for the proposed project and such is based on the number of employees, the start and end of the work shifts and information provided within the *Trip Generation Manual*. As noted above the maximum number of employees will be spread over three shifts and none of the shift starting or ending times overlap with the typical AM or PM peak hours of the adjacent streets. For this reason the total number of employees and anticipated total number of trucks was utilized to determine the daily trip generation for the project whereas the trip generation for the AM and PM peak hours was determined by the maximum number of employees during the main shift (100 employees). The proposed project is estimated to generate a maximum of 886 daily trips, 66 a.m. and 55 p.m. peak hours trips.

Table III: Proposed Project Trip Generation

Land Use (ITE CODE)	Size	Unit	Daily		A.M. Peak Hour					P.M. Peak Hour				
			Rate	Total	Trip Rate	In:Out %	In	Out	Total	Trip Rate	In:Out %	In	Out	Total
Truck Terminal (030)	100	Main Shift Employees	4.22	886	0.66	40:60	26	40	66	0.55	47:53	26	29	55
	210	Total Employees												
Total New Project Trips				886			26	40	66			26	29	55

Access to the Project

Access to and from the project site will be via one main commercial driveway along the west side of Browning Road at a point approximately 1,000 feet south of Shuster Avenue. As illustrated in the site plan two additional access points with limited use will be available but will generally be limited in use. Truck traffic destined to the project from SR 99 has potential routes. Truck traffic from the south along SR 99 could exit SR 99 at Pond Road, then travel eastbound along Pond Road approximately 0.75 miles to its intersection with Browning Road; then travel northbound along Browning Road approximately 0.9 miles to the main project entrance. Truck traffic from the north along SR 99 could exit SR 99 at Woollomes Avenue, then travel eastbound along Woollomes approximately 0.20 miles to its intersection with Lexington Street; then travel southbound along Lexington Street approximately 1.1 miles to its intersection with Schuster Road, then travel eastbound along Schuster Road approximately 0.6 miles to its intersection with Browning Road, then travel south along Browning Road approximately 0.2 miles to the main project entrance.

These two truck routes would provide for the shortest travel distance to and from the project site; however, due to anticipated capacity constraints at the interchange of SR 99/Woollomes Avenue and the lack of a grade separation between Woollomes and the Union Pacific Railroad it is recommended that all of the project's truck traffic arriving or leaving between the hours of 6:00 a.m. and 7:00 p.m. utilize the SR 99/Pond Road interchange. This should serve as a transportation demand mitigation measure for the project. It should be noted that while RAILEX may request that all truck traffic follow the above recommended transportation routes some truck drivers may not do so since doing so would require that they travel an additional 1.7 miles each way. For this reason TJKM has assumed that some truck traffic would utilize the Woollomes interchange during the peak hours.

Trip Distribution

The trip distribution assumptions were developed based on existing travel patterns, the Kern Council of Governments traffic model run, communication with City of Delano staff, knowledge of the study area and the City of Delano General Plan Circulation Element. Project trips were assigned to the study intersection based on these assumptions. Figure 4 illustrates the Project Only trip assignment to the study intersections.

Existing Plus Project Conditions

The Existing Plus Project turning movement volumes, intersection geometrics and traffic controls are illustrated in Figure 5. The study intersection levels of service calculation results are contained in Appendix D. Table IV summarizes the levels of service at the study intersections while Table V summarizes the levels of service for the study segments under all study scenarios. Under this scenario, all study intersections and segments are projected to operate at or better than the City of Delano LOS C threshold. While the LOS at all study intersection and segments are satisfactory it is recommended that a 150 foot northbound left turn lane with an appropriate bay taper be designed and constructed at the intersection of Browning Avenue/Main Project Driveway. This northbound left turn lane will not only improve the LOS at the project driveway but would also improve queuing and traffic safety.

Traffic Signal Warrants

Rural or Urban peak hour traffic signal warrants as appropriate were prepared for the unsignalized study intersections for the Existing Plus Project Conditions scenario. These warrants are found in Appendix G. The effects of right turning traffic from the minor approach onto the major approach were taken into account using engineering judgment pursuant to the California MUTCD guidelines for the preparation of signal warrants. Under this scenario and with the existing intersection geometrics, none of the study intersections are projected to satisfy peak hour signal warrants.

City of Delano – RAILEX Truck to Rail Transfer Project Project Only - Trip Assignment

Figure
4

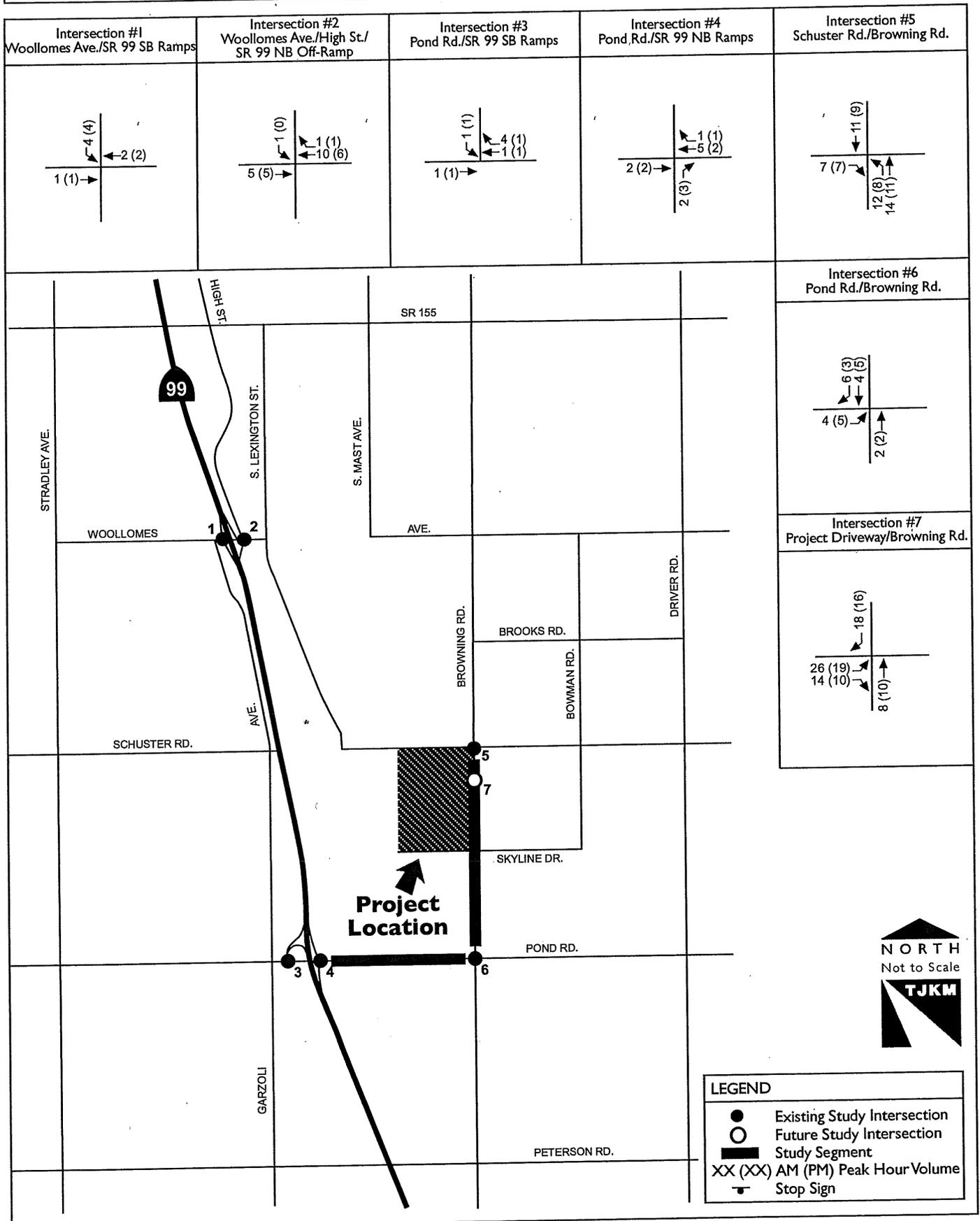


Table IV: Summary of Intersection Level of Service Analysis

ID	Intersection	Scenario Description	Intersection Control	A.M. Peak Hour		P.M. Peak Hour	
				Average Delay (sec/veh)	LOS	Average Delay (sec/veh)	LOS
1	SR 99 SB ramps at Woolomes Avenue	Existing Conditions	One-way Stop	13.9	B	18.3	C
		Existing Plus Project	One-way Stop	14.4	B	19.6	C
		Near Term Year 2015 Plus Project	One-way Stop	77.1	F	>80.0	F
		Mitigated Near Term Year 2015 Plus Project	Signalized	10.0	A	16.0	B
		Cumulative Year 2030	Signalized	39.5	D	>120.0	F
		Mitigated Cumulative Year 2030	Signalized	10.9	B	19.5	B
2	SR 99 NB off-ramp at Woolomes Avenue/High Street	Existing Conditions	Two-way Stop	10.5	B	18.2	C
		Existing Plus Project	Two-way Stop	10.7	B	18.7	C
		Near Term Plus Project	Two-way Stop	>80.0	F	unstable	F
		Mitigated Near Term Plus Project	Signalized	20.2	C	34.7	C
		Cumulative Year 2030	Signalized	89.3	F	>120.0	F
		Mitigated Cumulative Year 2030	Signalized	13.4	B	22.2	C
3	SR 99 SB ramps at Pond Road	Existing Conditions	One-way Stop	10.4	B	11.0	B
		Existing Plus Project	One-way Stop	10.5	B	11.1	B
		Near Term Plus Project	One-way Stop	11.4	B	12.7	B
		Cumulative Year 2030	One-way Stop	32.7	D	>80.0	F
		Mitigated Cumulative Year 2030	Signalized	10.4	B	11.9	B
4	SR 99 NB ramps at Pond Road	Existing Conditions	One-way Stop	10.5	B	11.0	B
		Existing Plus Project	One-way Stop	10.6	B	12.9	B
		Near Term Plus Project	One-way Stop	11.5	B	14.7	B
		Cumulative Year 2030	One-way Stop	68.4	F	>80.0	F
		Mitigated Cumulative Year 2030	Signalized	12.1	B	20.1	C
5	Schuster Road at Browning Road	Existing Conditions	All-way Stop	7.9	A	8.2	A
		Existing Plus Project	All-way Stop	8.1	A	8.2	A
		Near Term Plus Project	All-way Stop	8.2	A	8.3	A
		Cumulative Year 2030	All-way Stop	69.9	F	>80.0	F
		Mitigated Cumulative Year 2030	Signalized	10.5	B	28.3	C

Table IV Continued On Next Page

Table V: Summary of Intersection Level of Service Analysis

6	Pond Avenue at Browning Road	Existing Conditions	All-way Stop	8.5	A	8.1	A
		Existing Plus Project	All-way Stop	8.5	A	9.0	A
		Near Term Plus Project	All-way Stop	8.7	A	9.3	A
		Cumulative Year 2030	All-way Stop	>80.0	F	>80.0	F
		Mitigated Cumulative Year 2030	Signalized	24.0	C	34.2	C
7	Browning Road at Main Truck Access Driveway	Existing Conditions	Does not exist	n/a	n/a	n/a	n/a
		Existing Plus Project	One-way Stop	9.9	A	10.3	B
		Near Term Plus Project	One-way Stop	10.0	A	10.4	B
		Cumulative Year 2030	One-way Stop	29.9	D	72.7	F
		Mitigated Cumulative Year 2030	One-way Stop	16.1	C	21.5	C

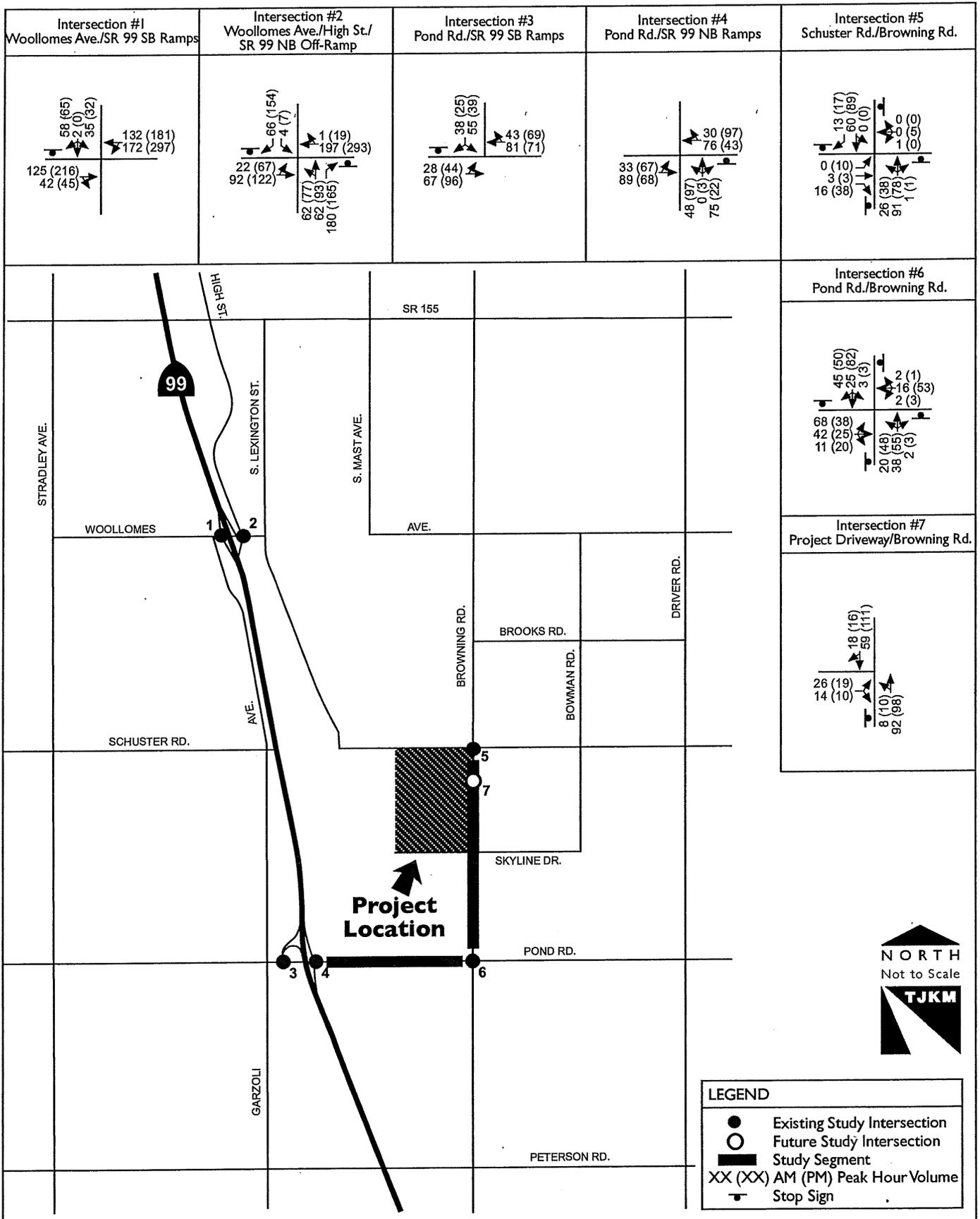
Notes: LOS = Level of Service of worse movement on stop controlled intersections and average delay on signalized intersections

Table VI: Summary of Segment Level of Service Results

ID	Limits	Scenario Description	Lanes	24-hr Volume	LOS	A.M. Peak Hour Volume	LOS	P.M. Peak Hour Volume	LOS
Browning Road	Schuster to Pond	Existing	2	1,938	A	133	A	218	A
		Existing + Project	2	2,529	A	177	A	252	A
		Near Term Year 2015	2	2,643	A	185	A	264	A
		Cumulative Year 2030	4	18,086	B	1,266	B	1,798	B
Pond Road	SR 99 NB Ramps to Browning	Existing	2	2,353	A	193	A	260	A
		Existing + Project	2	2,900	A	203	A	268	A
		Near Term Year 2015	2	3,314	A	232	A	309	A
		Cumulative Year 2030	4	8,643	A	605	A	753	A

Notes: LOS = Level of Service for Arterial per the Florida LOS Tables

Existing Plus Project - Traffic Volumes, Intersection Geometrics, and Traffic Controls 5



Impacts of Approved Projects

Description of Approved and Pipeline Projects

Approved and Pipeline Projects consist of developments that are either under construction, built but not fully occupied, are not built but have final site development review (SDR) approval, or those of which the City has knowledge. Table VI below provides the approved projects' trip generation rates for daily, a.m. and p.m. peak hours.

City of Delano staff was consulted regarding Approved and/or Pipeline Projects that could potentially impact the study intersections and segments. Subsequently, it was agreed by City of Delano staff that nine projects were approved, near approval, or in pipeline status within the proximity of the project site. It should be noted that of the Near Term Projects, the Delano Market Place project accounts for 75.1 percent of the daily, 70.8 percent of the a.m. and 69.7 percent of the p.m. peak hour of the total near term project's traffic. Therefore one can deduce that the mitigation measures presented in this scenario for the intersections of SR 99 SB Ramps/Woollomes Avenue and SR 99 NB Ramps/Woollomes Avenue will not be necessary until completion of the Delano Market Place project. Figure 6 illustrates the location of the approved, near approval, and pipeline projects and their combined trip assignment to the study intersections. On November 11, 2007 a reconnaissance of the surrounding area confirmed that these projects were the only projects that could potentially impact the study intersections and segments analyzed in the Near Term Plus Project traffic conditions scenario.

Table VII: Approved and Pipeline Projects Trip Generation

App Proj's Location	Project		ITE Code	Units	Daily Total	A.M. Peak Hour		P.M. Peak Hour	
						In	Out	In	Out
A	Shopping Center -Vineyard Plaza		820	58,342 ksf	2,506	37	24	106	114
B	Tract 6326		210	137 homes	1,312	26	78	88	52
C	Tract 6327		210	128 homes	1,226	25	73	82	48
D	Delano Marketplace Pad 4	Part 1	934	3,176 ksf	1,576	87	83	58	53
		Part 2	814	4,005 ksf	210	7	9	14	18
		Part 3	932	3,176 ksf	404	20	18	22	14
E	Tract 6470		210	165 homes	1,580	31	93	105	62
F	Industrial Park		110	17.65 acre	916	111	23	29	100
G	Belmont Meadows Apartments		221	70 units	462	7	26	27	15
H	Residential Development		210	84 homes	804	16	47	54	31
I	Delano Marketplace	Free-Standing Discount Superstore	813	228,751 ksf	11,257	215	207	434	452
		Home Improvement Superstore	862	172,463 ksf	5,140	112	96	199	224
		Shopping Center	820	35,944 ksf	1,544	23	15	65	71
		Fast Food With Drive Through	934	8,100 ksf	4,019	220	211	146	135
		Gasoline/Service Station	944	14 fueling positions	2,360	85	85	98	98
Totals					35,316	1,022	1,088	1,527	1,487

Note: The locations of the approved projects are shown in Figure 6. Obtained from the Delano Marketplace TIS prepared by Peters Engineering Group dated March 2007

As shown in Table VI above the total trip generation for the Approved and Pipeline Projects is 35,316 daily trips, 2,110 a.m. peak hour trips and 3,014 p.m. peak hour trips.

Near Term (Existing Plus Approved and Pipeline Projects Plus Project) Conditions

The Near Term Plus Approved and Pipeline Projects Plus Project turning movement volumes, and assumed intersection geometrics and traffic controls are illustrated in Figure 7. The study intersection levels of service calculation results are contained in Appendix E. Table IV summarizes the levels of service at the study intersections while Table V summarizes the levels of service for the study segments under all study scenarios respectively. Under this scenario two of the seven study intersections are projected to exceed the LOS C threshold. As stated previously, the mitigation measures presented below for the intersections of SR 99 SB Ramps/Woollomes Avenue and SR 99 NB Ramps/Woollomes Avenue will not be necessary until the completion of the Delano Market Place project. To improve the LOS at the intersections projected to fall below LOS C it is recommended that:

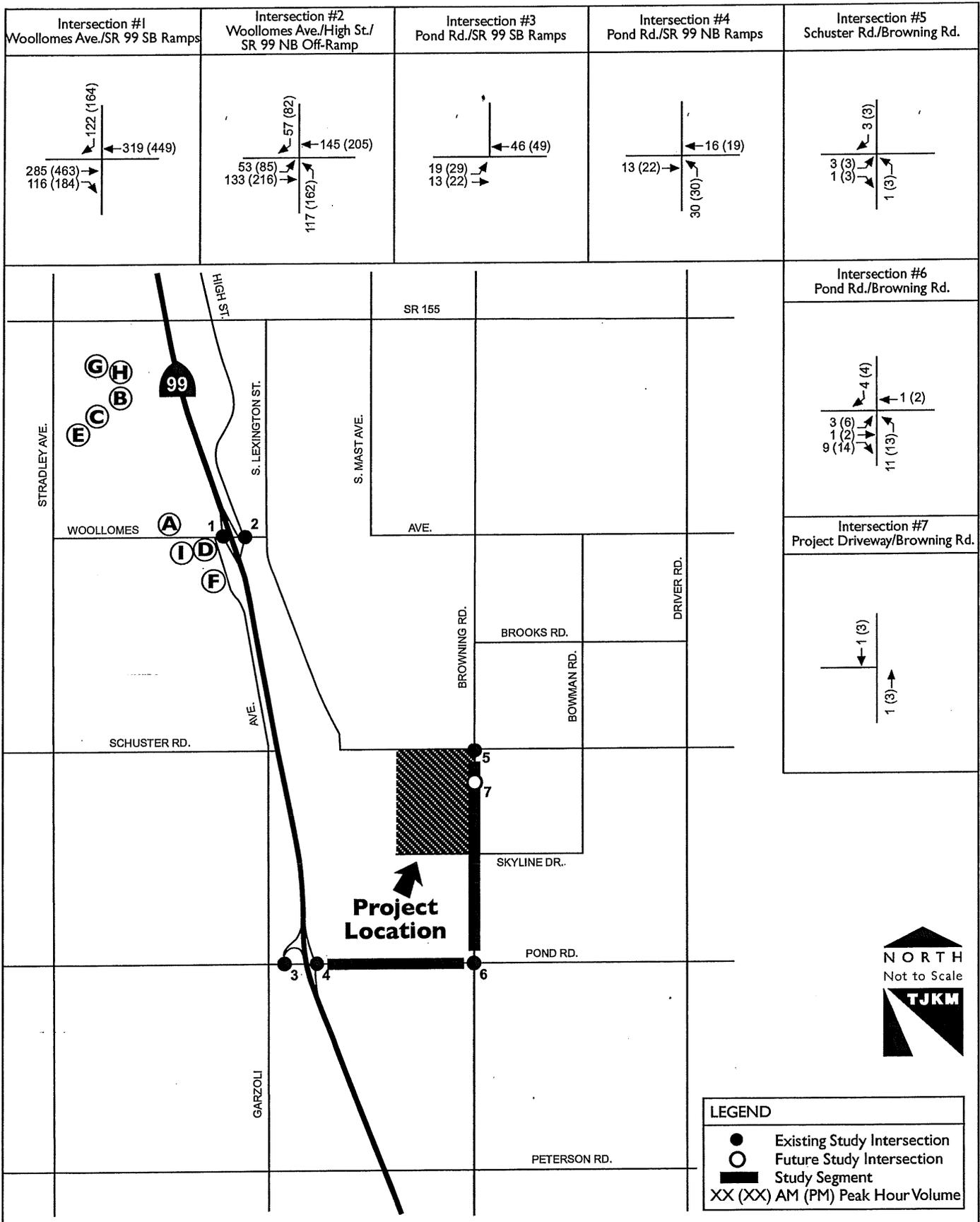
- The interim interchange improvements as presented in the Delano Market Place traffic are implemented. It should be noted that these mitigations are conceptual and the final design would be determined by the ongoing PSR being prepared by Peters Engineering Group on behalf of the Delano Market Place Project.
- The intersection of SR 99 SB Ramps / Woollomes Avenue
 - be signalized with protected left turn phasing in all directions
 - a WB left turn lane with a storage capacity 200 feet be added
 - a SB left turn lane with a storage capacity of 75 feet be added
 - an EB right turn lane with a storage capacity of 250 feet be added
- The intersection of SR 99 NB Ramps / Woollomes Avenue/High Street
 - Combine the two intersections into one intersection as recommended in the Delano Market Place traffic study.
 - be signalized with protected left turn phasing in all directions
 - an EB left turn lane with a storage capacity 275 feet be added
 - a WB right turn lane with a storage capacity of 250 feet be added
 - a NB left turn lane with a storage capacity of 225 feet be added
 - a NB right turn lane with a storage capacity of 225 feet be added

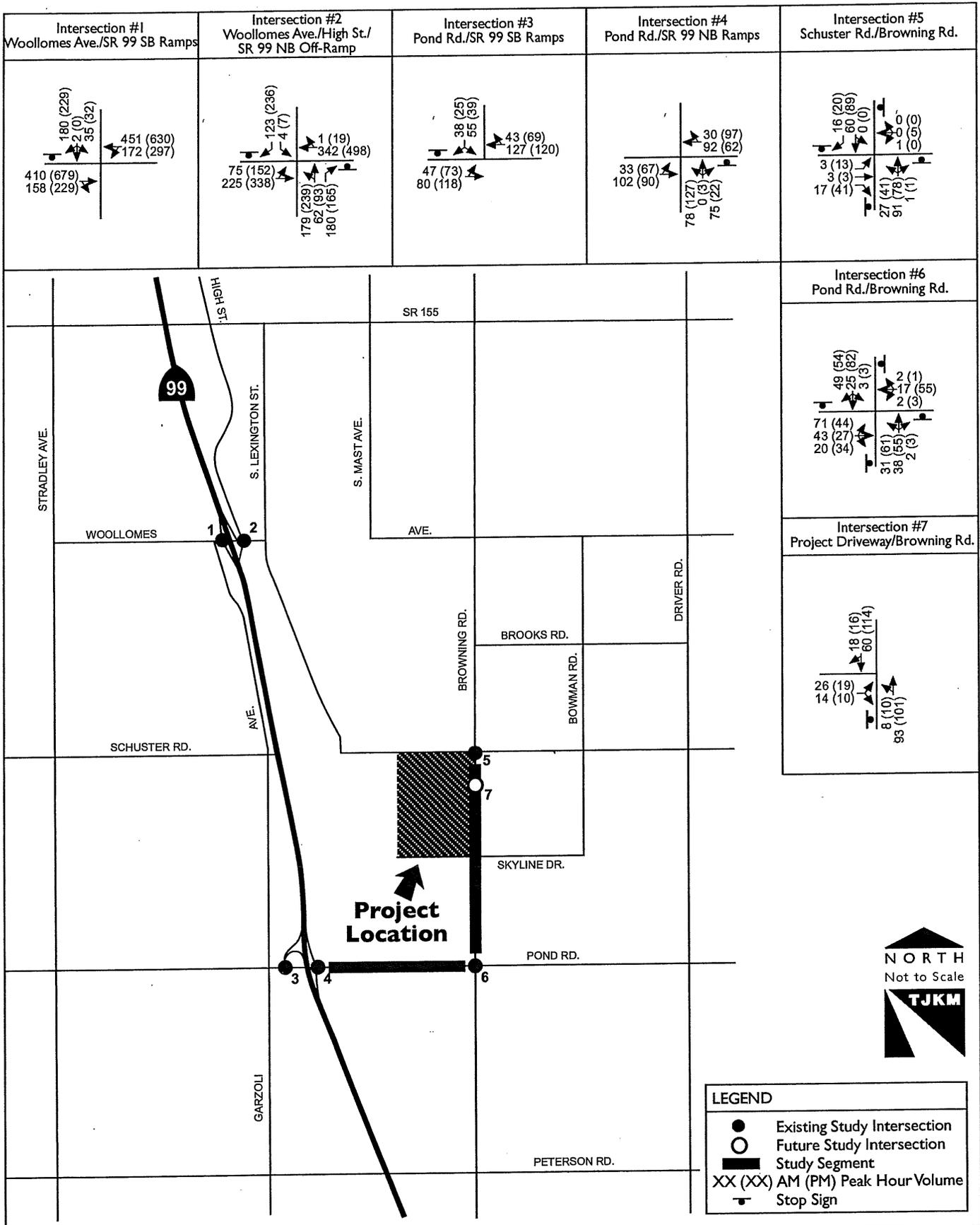
Traffic Signal Warrants

Rural or urban peak hour traffic signal warrants as appropriate were prepared for the unsignalized study intersections for the Near Term (Existing Plus Approved and Pipeline Projects Plus Project) Traffic Conditions scenario. These warrants are found in Appendix G. Under this scenario and with the assumed intersection geometrics the intersections of SR 99 SB Ramps/Woollomes Avenue and SR 99 NB Ramps/Woollomes Avenue are projected to satisfy peak hour signal warrants during the p.m. peak hour only; however, the addition of approach lanes by themselves will not improve the condition to LOS C or better during the p.m. peak hour. Therefore, signalization of these intersections is recommended under this scenario.

City of Delano – RAILEX Truck to Rail Transfer Project Approved & Pipeline Project Locations and Trip Assignment

Figure
6





Cumulative Year 2030 Plus Project Conditions

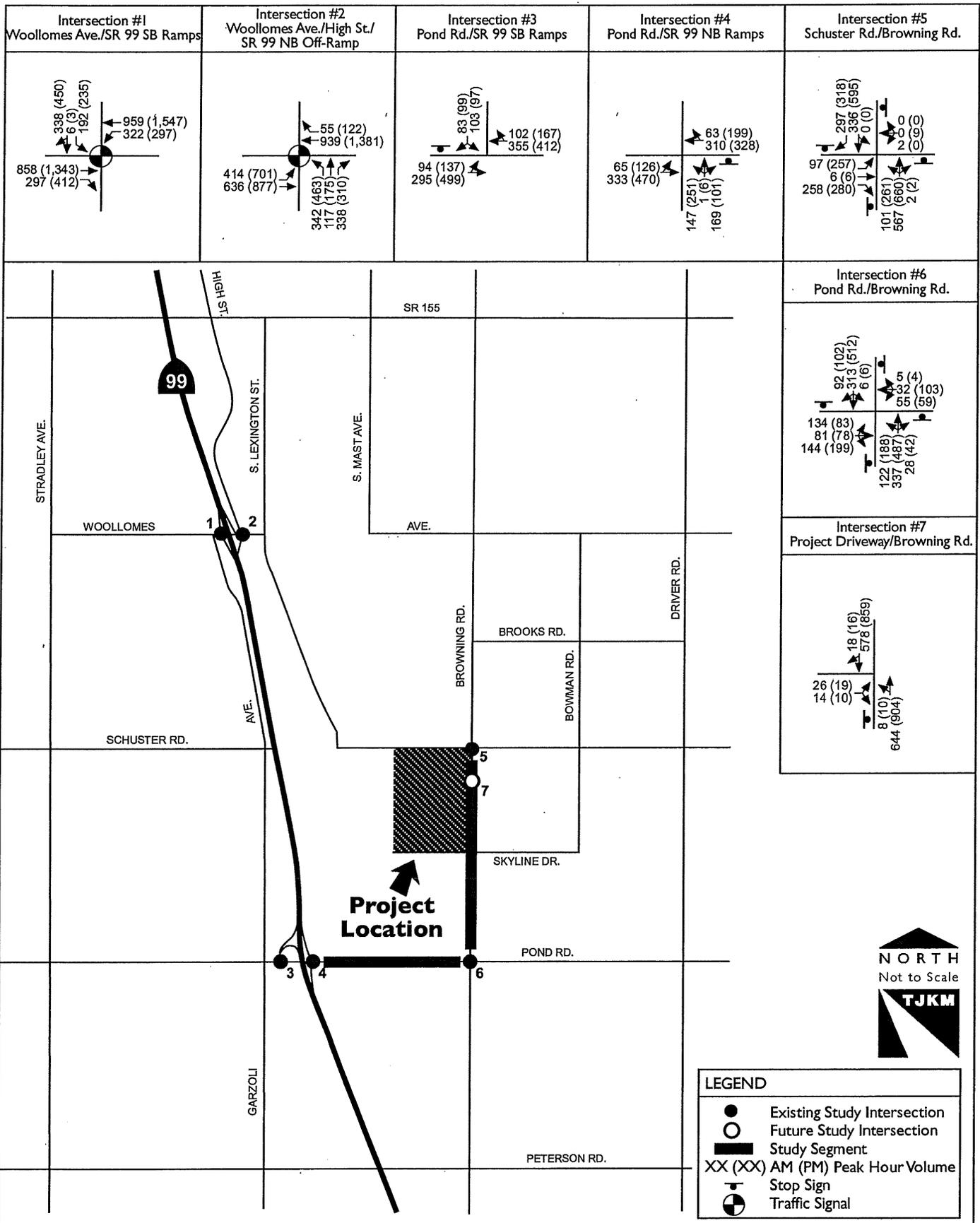
The Cumulative Year 2030 Plus Project total turning movement volumes, geometrics, and traffic controls are illustrated in Figure 8. The study intersection levels of service calculation results are contained in Appendix F. Table IV summarizes the levels of service at the study intersections while Table V summarizes the levels of service for the study segments under all study scenarios respectively. This scenario assumes that the mitigation measures presented in the previous scenario have been implemented. The assumed intersection geometrics and traffic controls are illustrated in Figure 8. Under this scenario, all of the study intersections are projected to exceed the LOS C threshold.

To improve the LOS at the intersections projected to fall below LOS C the following measures are recommended:

- At the intersection of SR 99 SB Ramps/Woollomes Avenue:
 - add a second WB left turn lane with a storage capacity of 150 feet per lane;
 - add a second EB thru lane;
 - add a second WB thru lane;
 - increase the SB left turn lane storage capacity from 75 feet to 250 feet;
 - add a SB right turn lane with a storage capacity of 250 feet.
- At the intersection of SR 99 NB Ramps/Woollomes Avenue/High Street:
 - add a second EB left turn lane with a storage capacity of 250 feet per lane;
 - add a second EB thru lane;
 - add a second NB left turn lane with a storage capacity of 150 feet per lane;
 - add two additional WB thru lanes for a total of three thru lanes, of which the inside lane will be the easterly extension of the second WB dual left turn lane at the intersection of SR 99 SB Ramps/Woollomes Avenue;
 - increase the WB right turn lane with a storage capacity from 250 feet to 875 feet.
 - increase the NB right turn lane with a storage capacity from 225 feet to 275 feet.
- At the intersection of Schuster Road/Browning Road:
 - signalize the intersection with protected left turn phasing in all directions;
 - convert the existing SB right turn lane to a combination thru-right;
 - add a SB left turn lane with a storage capacity of 75 feet
 - add a NB left turn lane with a storage capacity of 225 feet;
 - add a second NB thru lane;
 - add a WB Left turn lane with an initial storage capacity of 75 feet;
 - increase the storage capacity of the EB left turn lane from 150 feet to 250 feet.

- At the intersection of SR 99 SB Ramps/Pond Road:
 - signalize the intersection with protected left turn phasing in all directions;
 - add an EB left turn lane with a storage capacity of 150 feet;
 - add a SB right turn lane with a storage capacity of 125 feet.
- At the intersection of 99 NB Ramps/Pond Road:
 - signalize the intersection with protected left turn phasing in all directions;
 - add a NB left turn lane with a storage capacity of 175 feet;
 - add an EB left turn lane with a storage capacity of 150 feet;
- At the intersection of Pond Road/Browning Road:
 - signalize the intersection with protected left turn phasing in all directions;
 - add an EB left turn lane with a storage capacity of 175 feet;
 - add a WB left turn lane with a storage capacity of 125 feet;
 - add a NB left turn lane with a storage capacity of 225 feet;
 - add a SB left turn lane with a storage capacity of 150 feet;
 - add a SB right turn lane with a storage capacity of 150 feet.
- At the intersection of Project Driveway/Browning Road:
 - add a second SB thru lane;
 - add a second NB thru lane.

With the above-recommended improvements all of the study intersections are projected to improve from an unacceptable condition to LOS C or better during both the a.m. and p.m. peak hours. Since no opening day mitigations are required at any of the study intersections or segments, payment of the City of Delano traffic impact fee should be considered the project's proportionate share of the mitigation measures presented under the Cumulative Year 2030 scenario.



Queuing Analysis

Table VII provides a queue length summary for the approach lanes at the study intersections for the Existing, Existing Plus Project, Near Term Plus Project and the Cumulative Year 2030 Plus Project scenarios.

Table VIII: Queuing Analysis

Intersection	Existing Queue Storage Length (ft)		Required Storage Length							
			Existing		Existing Plus Project		Near Term Plus Project		Cumulative Year 2030 Plus Project	
			A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.
SR 99 SB ramps at Woolomes Avenue	EB Right	0	-	-	-	-	100	200	125	175
	WB Dual-Left	0	-	-	-	-	-	-	150	150
	SB Left	0	-	-	-	-	75	75	150	250
	SB Right	0	-	-	-	-	-	-	100	250
SR 99 NB off-ramp at Woolomes Avenue/High Street	EB Dual-Left	0	-	-	-	-	-	-	150	250
	WB Right	0	-	-	-	-	25	675	25	875
	NB Dual-Left	0	-	-	-	-	-	-	125	150
	NB Right	25	75	75	75	75	75	100	150	275
SR 99 SB ramps at Pond Road	EB Left	0	-	-	-	-	-	-	125	150
	WB Thru-Right	0	-	-	-	-	-	-	225	350
	SB Left	0	-	-	-	-	-	-	175	125
	SB Right	0	-	-	-	-	-	-	125	75
SR 99 NB ramps at Pond Road	EB Left	0	-	-	-	-	-	-	100	150
	WB Thru-Right	0	-	-	-	-	-	-	175	300
	NB Left	0	-	-	-	-	-	-	175	175
	NB Thru-Right	0	-	-	-	-	-	-	100	100
Schuster Road at Browning Road	EB Left	150	0	25	0	25	25	50	100	250
	EB Right	1000	0	0	0	0	0	0	25	25
	WB Left	0	-	-	-	-	-	-	25	0
	WB Thru-Right	0	-	-	-	-	-	-	0	50
	NB Left	0	-	-	-	-	-	-	125	225
	NB Thru-Right	0	-	-	-	-	-	-	75	150
	SB Left	0	-	-	-	-	-	-	0	0
	SB Thru-Right	0	-	-	-	-	-	-	50	300
Pond Avenue at Browning Road	EB Left	0	-	-	-	-	-	-	175	125
	EB Thru-Right	0	-	-	-	-	-	-	150	275
	WB Left	0	-	-	-	-	-	-	75	125
	WB Thru-Right	0	-	-	-	-	-	-	75	150
	NB Left	0	-	-	-	-	-	-	150	225
	NB Thru-Right	0	-	-	-	-	-	-	225	425
	SB Left	0	-	-	-	-	-	-	25	150
	SB Right	0	-	-	-	-	-	-	125	150
Browning Road at Main Truck Access	EB Left-Right	0	-	-	-	-	75	75	75	75
	NB Left	0	-	-	-	-	-	-	25	50
	SB Thru-Right	0	-	-	-	-	0	0	0	0

Queuing analysis was completed using Synchro output information. Synchro provides both 50th and 95th percentile maximum queue lengths in feet. According to the Synchro manual, "the 50th percentile maximum queue is the maximum back of queue on a typical cycle and the 95th percentile queue is the maximum back of queue with 95th percentile volumes." The queues shown on Table VII are the 95th percentile maximum queue lengths for the respective lane movements.

Conclusions and Recommendations

Conclusions and recommendations regarding the proposed Railex Development project at the southwest corner of Schuster Road / Browning Road are provided below for each of the study scenarios:

Existing Conditions

- Under this scenario all study intersections and segments operate at or better than the City of Delano LOS C threshold.

Existing Plus Project Traffic Conditions

- The proposed project is estimated to generate a maximum of 886 daily trips, 66 a.m. and 55 p.m. peak hours trips.
- Due to anticipated capacity constraints at the interchange of SR 99/Woollomes Avenue and the lack of a grade separation between Woollomes Avenue and the Union Pacific Railroad it is recommended that all of the project's truck traffic arriving or leaving between the hours of 6:00 a.m. and 7:00 p.m. utilize the SR 99/Pond Road interchange. This should serve as a transportation demand mitigation measure for the project.
- To improve queuing and traffic safety it is recommended that a 150 feet northbound left turn lane with an appropriate bay taper be designed and constructed at the intersection of Browning Avenue/Main Project Driveway.

Near Term (Existing Plus Approved and Pipeline Projects Plus Project) Traffic Conditions

- Of the Near Term Projects, the Delano Market Place project accounts for 75.1 percent of the daily, 70.8 percent of the a.m. and 69.7 percent of the p.m. peak hour traffic of the near term project. Therefore one can deduce that the mitigation measures presented in this scenario for the intersections of SR 99 SB Ramps/Woollomes Avenue and SR 99 NB Ramps/Woollomes Avenue will not be necessary until completion of the Delano Market Place project.
- To improve the LOS at the intersections projected to fall below LOS C it is recommended that the interim interchange improvements as presented in the Delano Market Place traffic study be implemented. It should be noted that these mitigations are conceptual and the final design would be determined by the ongoing PSR being prepared by Peters Engineering Group on behalf of the Delano Market Place Project.
 - The intersection of SR 99 SB Ramps / Woollomes Avenue
 - be signalized with protected left turn phasing in all directions
 - a WB left turn lane with a storage capacity 200 feet be added
 - a SB left turn lane with a storage capacity of 300 feet be added
 - an EB right turn lane with a storage capacity of 250 feet be added

- The intersection of SR 99 NB Ramps / Woollomes Avenue/High Street
 - Combine the two intersections into one intersection as recommended in the Delano Market Place traffic study.
 - be signalized with protected left turn phasing in all directions
 - a EB left turn lane with a storage capacity 275 feet be added
 - a WB right turn lane with a storage capacity of 250 feet be added
 - a NB left turn lane with a storage capacity of 225 feet be added
 - a NB right turn lane with a storage capacity of 200 feet be added

With the above-recommended improvements all intersections are projected to improve from an unacceptable LOS to LOS C or better during both the a.m. and p.m. peak hours.

Cumulative Year 2030 Plus Project Traffic Conditions

To improve the LOS at the intersections projected to fall below LOS C the following measures are recommended:

- At the intersection of SR 99 SB Ramps/Woollomes Avenue:
 - add a second WB left turn lane with a storage capacity of 150 feet per lane;
 - add a second EB thru lane;
 - add a second WB thru lane;
 - increase the SB left turn lane storage capacity from 75 feet to 250 feet;
 - add a SB right turn lane with a storage capacity of 250 feet.
- At the intersection of SR 99 NB Ramps/Woollomes Avenue/High Street:
 - add a second EB left turn lane with a storage capacity of 250 feet per lane;
 - add a second EB thru lane;
 - add a second NB left turn lane with a storage capacity of 150 feet per lane;
 - add two additional WB thru lanes for a total of three thru lanes, of which the inside lane will be the easterly extension of the second WB dual left turn lane at the intersection of SR 99 SB Ramps/Woollomes Avenue;
 - increase the WB right turn lane with a storage capacity from 250 feet to 875 feet.
 - increase the NB right turn lane with a storage capacity from 225 feet to 275 feet.

- At the intersection of Schuster Road/Browning Road:
 - signalize the intersection with protected left turn phasing in all directions;
 - convert the existing SB right turn lane to a combination thru-right;
 - add a SB left turn lane with a storage capacity of 75 feet
 - add a NB left turn lane with a storage capacity of 225 feet;
 - add a second NB thru lane;
 - add a WB Left turn lane with an initial storage capacity of 75 feet;
 - increase the storage capacity of the EB left turn lane from 150 feet to 250 feet.
- At the intersection of SR 99 SB Ramps/Pond Road:
 - signalize the intersection with protected left turn phasing in all directions;
 - add an EB left turn lane with a storage capacity of 150 feet;
 - add a SB right turn lane with a storage capacity of 125 feet.
- At the intersection of 99 NB Ramps/Pond Road:
 - signalize the intersection with protected left turn phasing in all directions;
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- At the intersection of Pond Road/Browning Road:
 - signalize the intersection with protected left turn phasing in all directions;
 - add an EB left turn lane with a storage capacity of 175 feet;
 - add a WB left turn lane with a storage capacity of 125 feet;
 - add a NB left turn lane with a storage capacity of 225 feet;
 - add a SB left turn lane with a storage capacity of 150 feet;
 - add a SB right turn lane with a storage capacity of 150 feet.
- At the intersection of Project Driveway/Browning Road:
 - add a second SB thru lane;
 - add a second NB thru lane.

Since no opening day mitigations are required at any of the study intersections or segments, payment of the City of Delano traffic impact fee should be considered the project's proportionate share of the mitigation measures presented under the Cumulative Year 2030 scenario.

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