

TRAFFIC IMPACT ANALYSIS ADDENDUM

IMPERIAL CENTER

Imperial County, California

March 28, 2005

Revised March 21, 2006

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1.0 INTRODUCTION

Linscott, Law & Greenspan Engineers (LLG) has been retained to prepare this traffic study addendum to update the traffic impact analysis conducted by Dahl Robbins and Associates (DRA) in January 2002. The proposed Imperial Center project is located in Imperial County, on the northeast corner of SR 111 and Heber Road. The DRA study is included in *Appendix A*. The proposed project consists of a 611,000 square foot retail complex, 110,000 square feet of plaza / auction / exhibit space as well as a 37,000 square foot gas station and convenience store, and a hotel. Proposed access to / from the site is via SR 111 to Yourman Road and Abatti Road. The project site is currently farmland. The project area and the site location map can be found in the DRA study. The site plan is shown in *Figure 1-1*.

2.0 EXISTING CONDITIONS

2.1 Study Area

The existing street descriptions and detailed discussion of the site location can be found in the DRA study (*Appendix A*). **Figure 2-1** in this addendum illustrates the existing conditions, including lane geometry and control types, for the key intersections in the study area.

2.2 Existing Traffic Volumes

The majority of the existing traffic volumes for this addendum were commissioned by LLG in March 2005 and thus are an update of the existing counts used in the Dahl, Robbins & Associates study. The 2005 intersection counts accompany DRA report in *Appendix A*. The existing traffic volumes for the intersections of SR 111 / McCabe Road, SR 111 / Jasper Road, and Yourman Road / Jasper Road are, however, taken from the DRA study. These counts were commissioned in 2002 and an 8% growth factor was applied to the volumes. Currently, the McCabe and Jasper Road intersections with SR 111 have been partially closed and therefore, it was not possible to conduct 2005 counts. According to CALTRANS, these intersections will be re-opened once traffic signals have been installed. The Yourman Road / Jasper Road intersection is directly affected by the SR 111 / Jasper Road intersection closure. Traffic on the west leg of the Yourman Road / Jasper Road intersection is not permitted from the SR 111 / Jasper Road intersection. **Figure 2-2** depicts the existing baseline volumes.

3.0 TRIP GENERATION, DISTRIBUTION & ASSIGNMENT

3.1 Trip Generation

The *ITE Trip Generation Manual* (7th Edition) was used to determine the traffic generated for the project. Project trips were calculated using the fitted curve equations and the assigned rates for each of the time periods analyzed. **Appendix B** contains copies of the ITE Trip Generation Equations. **Table 3-1** shows the trip generation estimates for the project.

It is necessary to highlight two aspects of the trip generation table for greater clarity.

- 1.) Four components of the proposed project (wholesale outlet, food court, multiplex cinema, independent pads) are grouped together for the purposes of calculating the trip generation. These components, totaling 611,000 square feet operate as a shopping center in that customers make one trip to complete several tasks in several stores in the same location rather than making several trips to different locations to complete the same tasks. The individual components of the shopping center are shown in the table for informational purposes.
- 2.) The plaza / auction / exhibit space is not included in the shopping center calculations because this use is not expected to generate traffic consistently or regularly. The space is intended for special events that are assumed to occur primarily on weekends; on most days, this space would not generate any traffic.

The proposed project is calculated to generate 26,370 ADT, with 433 inbound and 310 outbound trips during the AM peak hour, and 1,175 inbound and 1,251 outbound trips during the PM peak hour.

TABLE 3-1
PROJECT TRIP GENERATION SUMMARY

Land Use	Size	Daily Trip Ends		AM Peak Hour Trips				PM Peak Hour Trips			
		Rate	ADT	Rate	In:Out Split	Volume		Rate	In:Out Split	Volume	
						In	Out			In	Out
Convenience Market with a Filling Station	37,000 sf	162.78 ^a	2,930	10.06 ^a	50:50	91	91	13.38 ^a	50:50	120	120
Hotel with Restaurant	200 Rooms	8.17 ^b	1,420	0.56 ^c	61:39	59	38	0.59 ^d	53:47	63	56
Shopping Center:	611, 000 sf	^e	22,020	^f	61:39	283	181	^g	48:52	992	1,075
Wholesale Outlet	460,000 sf	—	16,520	—	61:39	212	136	—	48:52	744	806
Food Court	13,000 sf	—	440	—	61:39	6	4	—	48:52	20	22
Multiplex Cinema	83,000 sf	—	3,080	—	61:39	40	25	—	48:52	139	150
Independent Pads	55,000 sf	—	1,980	—	61:39	25	16	—	48:52	89	97
Plaza / Auction Court ^h	95,000 sf	—	—	—	—	—	—	—	—	—	—
Information / Exhibit / Auction Center ^h	15,000 sf	—	—	—	—	—	—	—	—	—	—
Totals:		—	26,370	—	—	433	310	—	—	1,175	1,251

General Notes:

Source: ITE Trip Generation Manual, 7th Edition.
Average Daily Trips (ADT) rounded to nearest 10.

Footnotes:

- a. Rate is a trip-end per fueling position. Rate used because an equation is not available. Eighteen fueling positions are assumed for trip generation calculation purposes.
- b. Rate is a trip-end per room (200 rooms assumed) and includes the hotel restaurant traffic. ITE Equation: $T=8.95(x) - 373.16$, x – number of rooms.
- c. ITE Equation: $\ln(T) = 1.24(x) - 2.00$
- d. Rate used because an equation is not available.
- e. Rate is a trip-end per thousand square feet. ITE Equation: $\ln(T) = 0.65 \ln(x) + 5.83$, x – 1,000 square feet gross leasable space
- f. ITE Equation: $\ln(T) = 0.60 \ln(x) + 2.29$
- g. ITE Equation: $\ln(T) = 0.66 \ln(x) + 3.40$
- h. Given that the plaza / auction / exhibit space will not be used on a daily or consistent basis, and considering that the space is intended primarily for special events, these uses were assumed not to contribute to the trip generation of the site.

3.2 Trip Distribution & Assignment

The project traffic was distributed and assigned to the street system based on the project’s access, its proximity to State Highways and arterials, the locations of potential retail and business zones, and the project’s proximity to the U.S. / Mexico International Border. The DRA study project trip distribution was also considered in the update of this distribution.

Figure 3-1 shows the regional trip distribution in the project area, and **Figure 3-2** shows the project traffic volumes. **Figure 3-3** combines the existing + project traffic volumes.

4.0 NEAR-TERM CUMULATIVE PROJECTS

There are other planned projects in the adjacent area, which will add traffic to the roadways surrounding the project. Based on a review of other approved or nearly approved near-term projects in the area, it was determined that 32 specific cumulative development projects in the vicinity of the study area should be included in the near-term analysis. The following is a brief description of these near-term cumulative projects.

4.1 Description of Projects

Linda Vista Mixed Use The proposed project consists of developing 182 single-family dwelling units along with a 6-acre commercial lot. The project site is currently undeveloped agricultural land. Based on the trip generation calculations, the total project is calculated to generate 7,175 ADT, with 109 inbound and 143 outbound trips during the AM peak hour, and 349 inbound and 327 outbound trips during the PM peak hour. The traffic study for this project was prepared by Linscott, Law & Greenspan, Engineers (LLG) (August 2004).

Desert Village Mixed Use The proposed project consists of developing 95 single-family residential homes along with 260 apartment units and 7.3 acres of commercial space. The project site is currently undeveloped agricultural land. Based on the trip generation calculations, the total project is calculated to generate 8,740 ADT, with 129 inbound and 202 outbound trips during the AM peak hour, and 431 inbound and 387 outbound trips during the PM peak hour. The traffic study for this project was prepared by LLG (February 2005).

Countryside Estates The proposed project consists of developing a 152-unit residential subdivision on 39.80 acres. The project site is currently undeveloped agricultural land. Based on the trip generation calculations, the total project is calculated to generate 1,530 ADT, with 29 inbound and 87 outbound trips during the AM peak hour, and 98 inbound and 58 outbound trips during the PM peak hour. The traffic study for this project was prepared by LLG (November 2004).

Venezia Planned Community The proposed project consists of developing approximately 250 single-family units and 135,100 square feet of commercial space. The project is located southeast of SR 98, east of Bowker Road and south of the All American Canal. The traffic study for this project was prepared by LLG (March 2005).

The McCabe Ranch is a proposed 428-unit detached home development located south of I-8 Freeway and west of Dogwood Road. The project is calculated to generate 3,550 ADT. Trip generation, distribution, and assignment data were obtained from a traffic study prepared by LLG (July 2002).

The Correll Road Elementary School is a proposed 600 student K-6 grade school. The school is proposed to be located north of Correll Road, east of Dogwood Road and south of McCabe Road. The project traffic was manually calculated using *ITE Trip Generation Handbook, 6th Ed.* The project is calculated to generate 620 ADT, with 105 inbound and 75 outbound trips during the AM peak hour, and 75 inbound and 85 outbound trips during the PM peak hour.

The Imperial Valley Mall (Phase I and II) development proposes the construction of a 1,460,000 square-foot regional indoor shopping center mall with a small amount of residential units. The site is to be located on approximately 160 acres of existing farmland. The project proposes to be developed in two phases. The total project is calculated to generate 47,300 ADT. Trip generation, distribution, and assignment data were obtained from a traffic study prepared by LLG (April 17, 2003).

The Calexico International Center (Phase I) proposes the development of a hotel, restaurant, Gasoline Station / Food Mart and RV Park. The project is located at the southwest corner of the Jasper Road / Scaroni Road intersection in the City of Calexico. The project is calculated to generate 5,130 ADT, with 45 inbound and 39 outbound trips during the AM peak hour, and 225 inbound and 195 outbound trips during the PM peak hour. Trip generation, distribution, and assignment data were obtained from a traffic study prepared by LLG (April, 2000).

The Calexico Wal-Mart project proposes to redevelop the existing Wal-Mart site to provide a 203,007 square-foot “Super” Wal-Mart, as well as retail, restaurant (fast-food) and gasoline sale uses on several adjacent out-parcels. The site is located on the east side of Yourman Road, north of Cole Road in the City of Calexico. The net (or new) project traffic is calculated by subtracting the existing site traffic from the proposed project traffic. The net project generates 1,960 ADT, with 2 inbound and 78 outbound trips during the AM peak hour, and 59 inbound and 98 outbound trips during the PM peak hour. Trip generation, distribution, and assignment data were obtained from a traffic study prepared by LLG (September 24, 2003).

Buena Vista Park is a proposed 465-unit detached home development located south of I-8 Freeway and west of Clark Road. The project is calculated to generate 4,450 ADT. Trip generation, distribution, and assignment data were obtained from a traffic study prepared by LLG (April, 2001).

Desert Estates / Wildflower / Santa Rosa is a proposed 325-unit detached home development bound to the north by Main Street, to the south by Ross Avenue, the west by Austin Road / Central Main Canal and the east by the Lotus Drain. The project is calculated to generate about 3,110 average daily trips (1,555 inbound / 1,555 outbound) with 60 inbound trips and 180 outbound trips during the AM peak hour and 210 inbound/115 outbound trips during the PM peak hour. This project has been approved by the City of El Centro. Trip generation, distribution, and assignment data were obtained from a traffic study prepared by LLG (June, 2000).

Heber Meadows proposes development of a single-family residential subdivision consisting of 219 dwelling units. In addition to the single-family residential subdivision, the project proposes to construct a 336-unit apartment complex directly north of the single-family residential subdivision. The site is located on the southwest corner of the future Correll Road / Pitzer Road intersection. It is calculated that the proposed project will generate 6,370 ADT, with 87 inbound and 304 outbound trips during the AM peak hour, and 325 inbound and 175 outbound trips during the PM peak hour. Trip generation, distribution, and assignment data were obtained from a traffic study prepared by LLG (October, 2003).

Countryside is a proposed 330-unit detached home development located south of I-8 Freeway and east of SR 86. The project will generate 3,300 ADT, with 53 inbound and 211 outbound trips during the AM peak hour, and 231 inbound and 99 outbound trips during the PM peak hour.

The Imperial Valley Commons project consists of a Conditional Use Permit to allow development of a commercial retail center. The proposed project consists of the development of approximately 700,000 square feet of commercial retail space divided into individual retail stores varying in size from approximately 4,000 square feet to approximately 196,000 square feet. An application for the project has been submitted to the City of El Centro and an EIR is currently being prepared.

Anderson/Waterford is a proposed project involving a 1300-acre mixed-use development located south of I-8 to McCabe Road and from Alder Canal/Heber Drain east to Highway 111. The initial phases of the multi-year buildout project in this report includes the near-term analysis.

Imperial Plaza consists of the proposed development of 31.88 acres into 341,516 square feet of General Commercial development. The project site is located 330 feet east of Imperial Avenue (SR 86), between the Central Drain and North 12th Street (extended). It is calculated that the proposed project will generate a total of 15,088 ADT primary trips, with 677 inbound/733 outbound trips during the PM peak hour. An application for this project has been submitted to the City and a Mitigated Negative Declaration (MND) is currently out for public review.

Rosswood is a proposed project developing 40 acres into 152 single-family units, south of Ross Road, about ½ mile east of Dogwood. The project requires an annexation and Change of Zone.

Willowbend is a 38.46-acre project proposing 122 single-family units and a park, north of McCabe Road, east of 8th Street and west of Highway 86.

Citrus Grove is a proposed project involving the residential development of approximately 50 acres of land east of SR 86 and north of McCabe Road.

Wake Avenue Auto Park is an approved commercial development project covering 34.62 net acres consisting of an auto dealership, strip commercial, and an apartment complex. The site is located on the east side of Clark Road, just south of I-8, in Imperial County. It is calculated that this approved project will generate 11,040 ADT, with 215 inbound and 227 outbound trips during the AM peak hour, and 505 inbound and 435 outbound trips during the PM peak hour.

Farmer Estates is a proposed 190-unit detached residential development located south of I-8 Freeway and east of La Brucherie Ave. Based on discussions with the Farmer Estates staff, the project is currently in its final phase of construction. Therefore, the trip generation was calculated based on 89 dwelling units. It is calculated that the proposed project will generate 934 ADT, with 18 inbound and 61 outbound trips during the AM peak hour, and 61 inbound and 36 outbound trips during the PM peak hour.

Lotus Ranch is a proposed development involving 616 single-family homes and a 600-student elementary school. The site is located south of Interstate 8 (I-8) along the west side of La Brucherie Road in the County of Imperial. The project site is proposed for annexation by the City of El Centro. The total project is calculated to generate 5,830 ADT, with 163 inbound and 366 outbound trips during the AM peak hour, and 369 inbound and 236 outbound trips during the PM peak hour.

Miller Burson is a proposed project involving 599 residential units and a park site, north of I-8, south of Ross Road, and east of Austin Road. The project requires an Annexation and Change of Zone.

Lerno-Verhaegen (Las Aldeas) Specific Plan is a proposed mixed-use development of approximately 2,708 dwelling units. The project consists of 680 acres on the west side of the City of El Centro. The project includes a zone change, Tentative Map, an amendment of the City's General Plan and an annexation. The total project is calculated to generate 41,553 ADT, 2,860 AM peak hour trips, and 4,227 PM peak hour trips. Trip generation/distribution/assignment data were obtained from a traffic study currently being prepared by LLG.

Kline Property is a proposed project involving 447 single-family units and a school on 10.14 acres, park on 9.23 acres. The project site is bounded on the east by Fourth St (SR86), south by McCabe Road, north by a fallow agricultural field and west by Date Drain No. 3 D and Clark Road.

Las Ventanas Development is a proposed project involving 879 single-family lots, 454 multi-family units, a 6.3 acres school area, and 28.6 acres of retail/commercial area. The project site is located in Calexico.

Los Lagos Development is a proposed project involving 1,109 single-family lots, 776 multi-family units, a 6.3 acres school area, and 24.0 acres of retail/commercial area. The project site is located in Calexico.

Rancho Diamante Development is a proposed project involving 2,560 single-family lots, 1,729 multi-family units, a 62.6 acres school area, and 22.0 acres of retail/commercial area. The project site is located in Calexico.

Estrella is a proposed project involving subdivision of existing farmland into single-family units and multi family attached units with developments of school and park. The project site is bounded on the east by Meadow Road between Jasper Road and Meadow Road and southeast corner of the Alder Canal and Central Main Canal and north by a Jasper Road.

Courtyard Villas is a proposed project involving 54 single-family units and a park on 21.5 acres, east of Austin Road and south of Orange Avenue.

El Centro Wal-Mart is an approved project to develop a retail supercenter consisting of approximately 203,007 square feet and is bounded by Waterman Avenue to the east, La Brucherie Road to the west, and Bradshaw Road to the south. There is also 47,000 square feet of outparcel

buildings that will consist of 3,500 square feet fast food restaurant and 43,500 square feet general office.

The Plaza at Imperial is a proposed project involving 350,102 square feet of commercial / retail space divided into individual retail stores varying in size. The project is located in the southeastern portion of the City of El Centro south of Interstate 8 (I-8), north of Danenberg Drive, and east of Dogwood Avenue.

Figure 4-1 depicts the total cumulative project traffic volumes in the area. *Figure 4-2* shows the existing + project + cumulative project traffic volumes for the vicinity.

5.0 ANALYSIS OF NEAR-TERM SCENARIOS

Appendix C contains the intersection level of service analysis worksheets as well as those for the Intersection Lane Volumes (ILV) analysis. *Appendix D* contains the data and calculation sheets for the freeway mainline analysis.

5.1 Existing

5.1.1 Intersection Operations

Table 5-1 shows that all of the existing intersections operate at a level of service (LOS) D or better except for the following:

- Jasper Road / SR 111 (minor street left turns at LOS F in the PM)

5.1.2 ILV Operations

Table 5-2 shows that the operating capacity of the SR 86 / SR 111 intersection under existing conditions is under capacity in the AM peak hour and near capacity in the PM peak hour.

5.1.3 Freeway Mainline Operations

Freeway LOS analysis is based on procedures developed by CALTRANS District 11 and based on methods described in the Highway Capacity Manual. The procedure involves comparing the peak hour volume of the mainline segment to the theoretical capacity of the roadway (V/C). Directional and truck factors are also used to calculate the future freeway volumes. V/C ratios are then compared to V/C thresholds to determine the LOS of each segment.

Table 5-3 shows the existing freeway mainline operations within the project area. Under existing conditions, freeway operations for the two key mainline segments are calculated to operate at LOS A and B in the AM and PM peak hours.

5.2 Existing + Project

5.2.1 Intersection Operations

With the addition of the project traffic, all of the intersections in *Table 5-1* operate at a LOS D or better except for the following, which are newly or further adversely affected by the project:

- Heber Road / Dogwood Road (LOS F in the PM peak hour)
- Heber Road / SR 111 (LOS F in the PM peak hour)
- Heber Road / Yourman Road (west) (LOS F in the PM peak hour)
- Heber Road / Yourman Road (east) (LOS F in the PM peak hour)
- Jasper Road / SR 111 (LOS F in the AM and PM peak hours)

5.2.2 ILV Operations

Table 5-2 shows that the operating capacity of the SR 86 / SR 111 intersection under existing + project conditions is over capacity in both the AM and PM peak hours.

5.2.3 Freeway Mainline Operations

Table 5-3 comprises the existing + project mainline operations along with the change calculated between the existing and the existing + project scenarios. Again, the segments operate at LOS B or better in the AM and PM.

5.3 Existing + Project + Cumulative Projects

5.3.1 Intersection Operations

All of the intersections listed under the Existing + Project + Cumulative Projects column in Table 5-1 operate at a LOS D or better except for the following:

- McCabe Road / SR 111 (LOS F in the AM and PM peak hours)
- McCabe Road / Bowker Road (LOS F in the AM and PM peak hours)
- Heber Road / Dogwood Road (LOS F in the AM and PM peak hours)
- Heber Road / SR 111 (LOS F in the AM and PM peak hours)
- Heber Road / Yourman Road (west) (LOS F in the PM peak hour)
- Heber Road / Yourman Road (east) (LOS F in the AM and PM peak hours)
- Heber Road / Bowker Road (LOS F in the PM peak hour)
- Jasper Road / SR 111 (LOS F in the AM and PM peak hours)

5.3.2 ILV Operations

Table 5-2 shows that the operating capacity of the SR 86 / SR 111 intersection under existing + project + cumulative projects conditions is over capacity in both the AM and PM peak hours.

5.3.3 Freeway Mainline Operations

Table 5-3 shows the existing + project + cumulative project mainline operations both operate at LOS C or better in the AM and PM. There are no significant impacts at either of the two freeway mainline segments.

**TABLE 5-1
NEAR-TERM INTERSECTION OPERATIONS**

Intersection	Control Type	Peak Hour	Existing		Existing + Project		Δ^c	Existing + Project + Cumulative Projects	
			Delay ^a	LOS ^b	Delay	LOS		Delay	LOS
McCabe Road / SR 111	Signal ^d	AM	14.5	B	15.6	B	1.1	>100.0	F
		PM	19.0	B	33.9	C	14.9	>100.0	F
McCabe Road / Bowker Road	TWSC ^e	AM	9.9	A	10.2	B	0.3	>100.0	F
		PM	10.4	B	11.9	B	1.5	>100.0	F
Heber Road (SR 86) / Dogwood Road	AWSC ^f	AM	11.0	B	14.1	B	3.1	>100.0	F
		PM	20.0	C	91.7	F	>2.0	>100.0	F
Heber Road / SR 111	Signal	AM	21.1	C	51.8	D	>2.0	>100.0	F
		PM	28.3	C	>100.0	F	>2.0	>100.0	F
Heber Road / Yourman Road (west) ^f	TWSC	AM	11.2	B	19.3	C	8.1	24.4	C
		PM	11.6	B	>100.0	F	>2.0	>100.0	F
Heber Road / Yourman Road (east) ^f	TWSC	AM	–	–	27.2	D	–	>100.0	F
		PM	–	–	>100.0	F	–	>100.0	F
Heber Road / Bowker Road	TWSC	AM	11.1	B	12.8	B	1.7	15.9	C
		PM	11.5	B	24.7	C	13.2	>100.0	F
Jasper Road / SR 111	TWSC	AM	30.4	D	63.9	F	>2.0	>100.0	F
		PM	>100.0	F	>100.0	F	>2.0	>100.0	F
Jasper Road / Yourman Road	TWSC	AM	9.2	A	9.7	A	0.5	10.4	B
		PM	9.8	A	12.1	B	2.3	18.4	C
Jasper Road / Bowker Road	TWSC	AM	9.2	A	9.8	A	0.6	10.4	B
		PM	9.9	A	11.9	B	2.0	13.3	B

General Notes:

Bold and shading indicate significant impacts.

Footnotes:

- a. Average delay expressed in seconds per vehicle.
- b. Level of Service.
- c. Increase in delay due to the project.
- d. McCabe Road / SR 111 is assumed to be signalized as this improvement is a condition of the Imperial Valley Mall project.
- e. TWSC – Two-Way Stop Controlled intersection. Minor street approach delay is reported.
- f. Heber Road / Yourman Road becomes two intersections (east and west) with the construction of the project.

SIGNALIZED		UNSIGNALIZED	
DELAY/LOS THRESHOLDS		DELAY/LOS THRESHOLDS	
Delay	LOS	Delay	LOS
0.0 < 10.0	A	0.0 < 10.0	A
10.1 to 20.0	B	10.1 to 15.0	B
20.1 to 35.0	C	15.1 to 25.0	C
35.1 to 55.0	D	25.1 to 35.0	D
55.1 to 80.0	E	35.1 to 50.0	E
> 80.1	F	> 50.1	F

TABLE 5-2
SIGNALIZED INTERSECTION OPERATIONS
ILV METHODOLOGY

Intersection	Peak Hour	Existing		Existing + Project		Existing + Project + Cumulative Projects		Existing + Project + Cumulative Projects with Mitigation	
		ILV	Capacity	ILV	Capacity	ILV	Capacity	ILV	Capacity
SR 86 / SR 111	AM	1,110	Under	1,507	Over	2,385	Over	1,494	Near
	PM	1,350	Near	2,617	Over	4,568	Over	2,743	Over

STATUS

ILV / Hour	Capacity
< 1,200	UNDER
>1,200 but ≤ 1,500	NEAR
> 1,500	OVER

TABLE 5-3
NEAR - TERM FREEWAY MAINLINE OPERATIONS
INTERSTATE 8

Freeway Segment	Dir.	Number of Lanes ^a	Hourly Capacity ^a	ADT ^b	Peak Hour Volume ^{c,d,e}		V/C ^f		LOS ^g	
					AM	PM	AM	PM	AM	PM
Existing										
Dogwood Road to SR 111	EB	2M	4,400	34,500	1,174	1,413	0.267	0.321	A	A
	WB	2M	4,400		1,564	2,154	0.355	0.490	A	B
SR 111 to Bowker Road	EB	2M	4,400	14,600	568	684	0.129	0.155	A	A
	WB	2M	4,400		756	1,042	0.172	0.237	A	A
Existing + Project										
Dogwood Road to SR 111	EB	2M	4,400	34,500	1,174	1,413	0.267	0.321	A	A
	WB	2M	4,400		1,564	2,154	0.355	0.490	A	B
SR 111 to Bowker Road	EB	2M	4,400	14,600	568	684	0.129	0.155	A	A
	WB	2M	4,400		756	1,042	0.172	0.237	A	A
Existing + Project + Cumulative Projects										
Dogwood Road to SR 111	EB	2M	4,400	34,500	1,595	2,243	0.362	0.510	A	B
	WB	2M	4,400		1,916	3,042	0.435	0.691	B	C
SR 111 to Bowker Road	EB	2M	4,400	14,600	664	929	0.151	0.211	A	A
	WB	2M	4,400		864	1,276	0.196	0.290	A	A

Footnotes:

- a. Capacity calculated at 2,200 vehicles per hour per lane (M: Mainline)
- b. Existing ADT Volumes from CALTRANS (*Appendix D*)
- c. Peak Hour Volume = ((ADT)(K)(D)/Truck Factor)
- d. Peak Hour Percentage (K) and Direction Split (D) from CALTRANS "2003 Traffic Volumes", May 2004 (*Appendix D*)
- e. Truck Factor from "2002 Annual Average Daily Truck Traffic on the California State Highway System", February 2004 (*Appendix D*)
- f. V/C = ((ADT)(K)(D)/Truck Factor/Capacity)
- g. Level of Service

FREEWAY	
V/C / LOS THRESHOLDS	
V/C	LOS
< 0.41	A
0.62	B
0.80	C
0.92	D
1.00	E
1.25	F(0)
1.35	F(1)
1.45	F(2)
> 1.46	F(3)

6.0 YEAR 2025 ANALYSIS

The Year 2025 intersection volumes were calculated by using the relationship between the existing average daily traffic (ADT) volumes and the Year 2025 ADT volumes, and applying that relationship to the existing peak hour turning movement volumes. The 2025 ADT volumes were obtained from the Imperial County Travel Model (ICTM), maintained by CALTRANS. These volumes can be found in *Appendix E* along with the Year 2025 intersection analysis reports.

Specific improvements were assumed for the intersections studied in the Year 2025 analysis, for example dual left-turn lanes, signalization, and right-turn overlap phases. *Figure 6-1* shows the traffic volumes for the Year 2025.

The intersection operations calculated for the Year 2025 are calculated to operate at LOS D or better, as shown in *Table 6-1*, except for the following:

- McCabe Road / SR 111 (LOS F in the AM and PM peak hours)
- Heber Road / SR 111 (LOS F in the AM and PM peak hours)
- Jasper Road / SR 111 (LOS F in the AM and PM peak hours)

SR 111 was assumed to be a 6-lane highway in this analysis, however, due to the exceptionally high volumes on SR 111, the analysis shows that a grade-separated facility would be necessary to accommodate the forecast traffic volumes.

**TABLE 6-1
YEAR 2025 INTERSECTION OPERATIONS**

Intersection	Control Type	Peak Hour	Year 2025 ^a	
			Delay ^b	LOS ^c
McCabe Road / SR 111	Signal	AM	>100.0	F
		PM	>100.0	F
McCabe Road / Bowker Road	Signal	AM	31.1	C
		PM	31.6	C
Heber Road (SR 86) / Dogwood Road	Signal	AM	31.9	C
		PM	49.0	D
Heber Road / SR 111	Signal	AM	>100.0	F
		PM	>100.0	F
Heber Road / Yourman Road (west)	TWSC ^d	AM	11.2	B
		PM	19.8	C
Heber Road / Yourman Road (east)	Signal	AM	17.1	B
		PM	19.4	B
Heber Road / Bowker Road	Signal	AM	32.6	C
		PM	36.9	D
Jasper Road / SR 111	Signal	AM	>100.0	F
		PM	>100.0	F
Jasper Road / Bowker Road	Signal	AM	32.6	C
		PM	52.2	D

Footnotes:

- a. For the Year 2025 analysis, SR 111 was assumed to have three through lanes in each direction.
- b. Average delay expressed in seconds per vehicle.
- c. Level of Service.
- d. TWSC—Two-Way Stop Controlled intersection. Minor street left turn delay is reported.

SIGNALIZED		UNSIGNALIZED	
DELAY/LOS THRESHOLDS		DELAY/LOS THRESHOLDS	
Delay	LOS	Delay	LOS
0.0 < 10.0	A	0.0 < 10.0	A
10.1 to 20.0	B	10.1 to 15.0	B
20.1 to 35.0	C	15.1 to 25.0	C
35.1 to 55.0	D	25.1 to 35.0	D
55.1 to 80.0	E	35.1 to 50.0	E
> 80.1	F	> 50.1	F

7.0 SIGNIFICANCE OF IMPACTS AND MITIGATION MEASURES

7.1 Significance of Impacts

The following locations were determined to be *directly* or *cumulatively* impacted by the project, based on the results of *Table 5-1*.

7.1.1 *Direct Impacts*

1. Heber Road (SR 86) / SR 111
2. Heber Road / Yourman Road (west)
3. Heber Road / Yourman Road (east)
4. Heber Road (SR 86) / Dogwood Road
5. SR 111 / Jasper Road

7.1.2 *Cumulative Impacts*

6. SR 111 / McCabe Road
7. Heber Road / Bowker Road
8. McCabe Road / Bowker Road

7.2 Mitigation Measures

The numbering of the following mitigation measures matches the significance of impacts numbering. *Table 7-1* shows the existing + project intersection operations without and with the following mitigations.

1. Heber Road (SR 86) / SR 111 intersection:

Widen and improve the Heber Road / SR 111 intersection to provide the following lane geometry.

Westbound: 2 left turn lanes
2 through lanes
1 right turn lane (with overlap phase)

Northbound: 2 left turn lanes
2 through lanes
1 right turn lane (with overlap phase)

Eastbound: 2 left turn lanes
2 through lanes
1 right turn lane (with overlap phase)

Southbound: 2 left turn lanes
2 through lanes
1 right turn lane (with overlap phase)

In addition, while the above geometry mitigates all project impacts but not all cumulative impacts, it is also recommended that the project contribute a fair share towards the planned widening of SR 111 to 6 lanes.

2. Heber Road / Yourman Road (west) intersection:

Prohibit left turns to / from Yourman Road on to Heber Road. Provide an additional through lane in both the eastbound and westbound directions on Heber Road. A plan should be put into place in the future to realign Yourman Road south of Heber Road so that it is aligned opposite the planned realigned Yourman Road north of Heber Road.

3. Heber Road / Yourman Road (east) intersection:

Signalize and widen the Heber Road / Yourman Road (east) realigned intersection to provide the following lane geometry:

Westbound: 1 right turn lane (with overlap phase)
2 through lanes

Eastbound: 2 left turn lanes
2 through lanes

Southbound: 2 left turn lanes
1 right turn lane (with overlap phase)

The southbound approach should be designed such that dedicated northbound and southbound through lanes could be provided once Yourman Road south of Heber Road is realigned opposite Yourman Road north of Heber Road.

4. Heber Road (SR 86) / Dogwood Road intersection:

Signalize the Dogwood Road / SR 86 intersection and provide dedicated left-turn lanes at all of the approaches. Dual southbound left-turn lanes and a dedicated westbound right-turn lane with an overlap phase should be provided. The Imperial Valley Mall is also conditioned to improve this intersection.

5. SR 111 / Jasper Road intersection:

Contribute a fair share towards the signalization, and the associated geometric improvements, of the SR 111 / Jasper Road intersection. A fair share contribution is recommended and several other projects are also conditioned to improve this intersection.

6. SR 111 / McCabe Road intersection:

Contribute a fair share towards the signalization, and the associated geometric improvements, of the SR 111 / McCabe Road intersection. Dedicated left-turn, through and right-turn lanes should be provided on the westbound approach. The Imperial Valley Mall project is also conditioned to improve this intersection.

In addition, while the above geometry mitigates all project impacts but not all cumulative impacts, it is also recommended that the project contribute a fair share towards the planned widening of SR 111 to 6 lanes.

7. Heber Road / Bowker Road intersection:

Contribute a fair share towards the future signalization of the intersection, and the associated geometric improvements.

8. McCabe Road / Bowker Road intersection:

Contribute a fair share towards the future signalization of the intersection, and the associated geometric improvements.

9. In addition, several other access-related improvements are recommended:

- Provide clear signing that indicates that access to SR111 is available via Abatti Road to Yourman Road to McCabe Road. It is important to have a viable access point to the project other than the Heber Road / Yourman Road intersection.
- Construct Yourman Road as a 4-lane Major Collector (84 feet of right-of-way (ROW)) between Heber Road and Abatti Road.
- Construct Abatti Road along the project frontage to 4-lane Major Collector standards.
- Construct Heber Road along the project frontage to 6-lane Prime Arterial standards (126 feet of ROW).

The intersection analysis reports for the mitigated intersection operations listed below are attached in ***Appendix F***.

**TABLE 7-1
MITIGATED INTERSECTION OPERATIONS**

Intersection	Control Type	Peak Hour	Existing + Project		Existing + Project With Mitigation	
			Delay ^a	LOS ^b	Delay	LOS
Heber Road (SR 86) / Dogwood Road	Signal	AM	21.5	C	19.3	B
		PM	>100.0	F	23.2	C
Heber Road / SR 111	Signal	AM	52.6	D	25.7	C
		PM	>100.0	F	43.0	D
Heber Road / Yourman Road (west)	TWSC ^c	AM	19.3	C	15.7	C
		PM	>100.0	F	17.3	C
Heber Road / Yourman Road (east)	Signal	AM	22.7	C	16.2	B
		PM	>100.0	F	18.2	B
Jasper Road / SR 111	Signal	AM	59.6	F	14.6	B
		PM	>100.0	F	19.8	B

Footnotes:

- a. Average delay expressed in seconds per vehicle.
- b. Level of Service.
- c. TWSC – Two-Way Stop Controlled intersection.
Minor street approach delay is reported.

SIGNALIZED		UNSIGNALIZED	
DELAY/LOS THRESHOLDS		DELAY/LOS THRESHOLDS	
Delay	LOS	Delay	LOS
0.0 < 10.0	A	0.0 < 10.0	A
10.1 to 20.0	B	10.1 to 15.0	B
20.1 to 35.0	C	15.1 to 25.0	C
35.1 to 55.0	D	25.1 to 35.0	D
55.1 to 80.0	E	35.1 to 50.0	E
> 80.1	F	> 50.1	F