



DAVID EVANS
AND ASSOCIATES INC.

Memorandum

DATE: September 5, 2013

TO: Jana Hanson
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City of Mount Vernon

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Planning & Development Services
Skagit County

FROM: Anthony Wilen, P.E., LEED AP
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SUBJECT: TRIP GENERATION RATE ANALYSIS

PROJECT: Skagit County Jail EIS

PROJECT NO.: COMV0000-0011

COPIES: File
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Introduction

Skagit County has proposed the construction of a new jail facility at one of either two locations within the city of Mount Vernon, Washington. The proposed facility will house 400 beds; administrative offices; staff areas; and spaces for education, community transition, and job training. However, this study is based on a total of 800 new beds, which is the anticipated full build-out of the Skagit County Jail facility.

Trip Generation Rate Analysis

Average weekday, AM peak hour, and PM peak hour trip generation rates are needed for the proposed Skagit County Jail concurrency analysis. The Institute of Transportation Engineers (ITE) *Trip Generation Manual, 9th Edition* (2012), the national standard for trip generation rates, only has two (2) studies for the land use code (LUC) "Prison." Although present, this data is not adequate to properly determine trip rates for the Skagit County Jail trip generation. The ITE manual does identify that local data can and shall be used when adequate data is not provided. Per the ITE rules and methodologies, a jail facility (similar to the proposed Skagit County Jail facility) was to be surveyed for trip generation. The representative site chosen to study was the South Correctional Entity (SCORE) jail facility, which is similar in size and structure for total number of inmates housed (i.e., capacity), programming, activities, and staffing to the full-build out of the Skagit County Jail facility. The SCORE jail facility is located in Des Moines, Washington and the counts were taken on Tuesday and Wednesday, August 27 and 28, 2013.



The trip generation rate analysis was conducted using the ITE methodology over two consecutive days and was used to determine the average weekday, AM peak hour, and PM peak hour trip generation rates. David Evans and Associates, Inc. worked with the SCORE Jail Director, Penny Bartley, on specific details regarding the SCORE facility capacity and occupancy. SCORE has a total capacity of 830 beds and an average August 2013 bed occupancy of 476. “Beds” is an ITE trip generation metric used to normalize the data between two different locations, with similar features, such as the comparison of the SCORE jail facility to that of the proposed Skagit County jail facility. Since the SCORE facility was not operating at full capacity, it is assumed that the direct trip generation rates from the data are not equivalent to the 830 total capacity. The trip generation rate is based on the current average occupancy of 476 beds.

ITE recommends that two sites be surveyed as part of a trip generation rate analysis. However, the SCORE facility offers similar capacity, administration, on-site services, and programs when compared to the Skagit County Jail facility. The SCORE facility trip generation rate was also compared to the ITE rate and another independent study, as discussed below.

Below are the results of the SCORE facility trip generation rate calculations:

Time Period	SCORE-Generated Trips Calculation	SCORE Facility Trip Generation Rates
Daily (ADT)	618 Generated Trips/476 Beds	1.30 Trips/Bed
AM Peak Hour	29 Generated Trips/476 Beds	0.06 Trips/Bed
PM Peak Hour	43 Generated Trips/476 Beds	0.09 Trips/Bed

Other sources of data were used as a comparison to the SCORE jail facility trip generation identified above. Below is a comparison table of the SCORE jail facility trip generation, ITE Prison land use trip generation, and data from the article “*Trip Generation Rates of Correctional Facilities*” published by the Journal of Urban Planning and Development (JUPD) in March of 2000. All of the comparisons are made using the trip generator metric of “trips per bed.”

Time Period	SCORE Facility Trip Generation Rates	ITE Prison LUC Rates	JUPD Rates (for Regional Jails)
Daily (ADT)	1.30	N/A	1.38
AM Peak Hour	0.06	0.10	0.14
PM Peak Hour	0.09	0.05	0.10

In the above table, the ITE Prison LUC rates are based on two (2) separate count studies with an average number of 347 beds. The studies were conducted in 1990 and 1996. The JUPD article is based on the study of five (5) regional jails and one (1) federal correctional facility in West Virginia with the synthesis of data from the 1997 version of the ITE Trip Generation Manual. Each of these sites had a total number of beds ranging from 230 to 400.

It is to be noted that jails are inherently different than prisons in their operations. Jails are general used to detain people convicted of a misdemeanor crime or those awaiting court/trial hearings. Inmates are most often transported to the facility by a local police or sheriff’s department. Prisons are primarily used



to house long-term inmates convicted of felonies, and require varied levels of security for different inmates (based on crimes).

The rates summarized above all provide similar anticipated trip generation, however the ITE Prison land use rates do not identify the type of facilities studied (jails or prisons) and are averaged into one rate. The average daily traffic (ADT) rate identified in the SCORE jail facility study matches closely with the rate listed in the article in the JUPD. Generally, the ADT and PM peak hour rates are similar to those of ITE and the JUPD article.

Conclusion

The trip generation rates obtained from the SCORE facility traffic counts are very similar to those of the JUPD study for ADT and PM peak hour traffic. They are higher than the ITE PM peak rate for prisons.

The City of Mount Vernon measures transportation concurrency based upon PM peak hour trips, as the PM peak hour is the most congested period of the day. The SCORE PM peak rate is conservative when compared to the ITE PM rates and is consistent with the JUPD study peak rate.

Based on this study, David Evans and Associates, Inc. will use the SCORE facility observed trip generation rates for the Skagit County Jail facility trip generation and concurrency analysis.

Enclosures: Trip Generation Data

Location: 18th Ave S N/O SCORE 18th Ave S N/O SCORE 18th Ave S N/O SCORE
 Count Date: Tuesday, 8/27/13 Wednesday, 8/28/13 2-Day Average
 Site Code: 01 01 01

Time	NB	SB	NB	SB	NB	SB
12:00 AM	0	1	1	2	1	2
12:15 AM	3	2	2	3	3	3
12:30 AM	1	0	2	0	2	0
12:45 AM	1	0	0	0	1	0
1:00 AM	0	1	0	1	0	1
1:15 AM	0	1	1	1	1	1
1:30 AM	1	0	0	0	1	0
1:45 AM	2	1	1	0	2	1
2:00 AM	1	0	0	0	1	0
2:15 AM	0	0	0	1	0	1
2:30 AM	0	0	2	1	1	1
2:45 AM	0	0	1	0	1	0
3:00 AM	0	0	0	1	0	1
3:15 AM	0	0	1	1	1	1
3:30 AM	0	0	0	2	0	1
3:45 AM	1	1	1	0	1	1
4:00 AM	1	1	2	0	2	1
4:15 AM	0	0	0	1	0	1
4:30 AM	0	2	1	0	1	1
4:45 AM	1	2	0	2	1	2
5:00 AM	0	1	2	2	1	2
5:15 AM	1	4	0	2	1	3
5:30 AM	0	5	0	6	0	6
5:45 AM	0	3	2	2	1	3
6:00 AM	2	5	1	6	2	6
6:15 AM	0	10	0	9	0	10
6:30 AM	8	0	9	1	9	1
6:45 AM	4	2	3	4	4	3
7:00 AM	2	1	1	1	2	1
7:15 AM	3	8	2	9	3	9
7:30 AM	1	3	0	3	1	3
7:45 AM	1	5	0	5	1	5
8:00 AM	0	6	2	5	1	6
8:15 AM	2	2	0	5	1	4
8:30 AM	3	4	1	1	2	3
8:45 AM	1	7	1	14	1	11
9:00 AM	2	4	1	1	2	3
9:15 AM	2	1	5	5	4	3
9:30 AM	1	4	2	6	2	5
9:45 AM	4	5	4	2	4	4
10:00 AM	3	4	5	1	4	3
10:15 AM	1	6	5	1	3	4
10:30 AM	1	4	6	4	4	4
10:45 AM	4	2	3	3	4	3
11:00 AM	5	3	2	5	4	4
11:15 AM	3	2	3	4	3	3
11:30 AM	8	3	7	4	8	4
11:45 AM	5	4	3	2	4	3
12:00 PM	7	8	5	3	6	6
12:15 PM	6	1	2	3	4	2
12:30 PM	4	4	2	9	3	7
12:45 PM	2	9	7	7	5	8
1:00 PM	6	3	11	2	9	3
1:15 PM	3	5	4	6	4	6
1:30 PM	2	4	3	4	3	4
1:45 PM	2	12	5	6	4	9
2:00 PM	8	3	6	10	7	7
2:15 PM	3	4	5	5	4	5

AM Peak Hour Totals	
NB (OUT)	SB (IN)
6	23
20.7%	79.3%

Location: 18th Ave S N/O SCORE 18th Ave S N/O SCORE 18th Ave S N/O SCORE
 Count Date: Tuesday, 8/27/13 Wednesday, 8/28/13 2-Day Average
 Site Code: 01 01 01

Time	18th Ave S N/O SCORE Tuesday, 8/27/13 01		18th Ave S N/O SCORE Wednesday, 8/28/13 01		18th Ave S N/O SCORE 2-Day Average 01			
	NB	SB	NB	SB	NB	SB		
2:30 PM	7	8	8	6	8	7		
2:45 PM	3	4	7	5	5	5		
3:00 PM	10	3	7	7	9	5		
3:15 PM	5	5	9	3	7	4		
3:30 PM	6	1	5	4	6	3		
3:45 PM	4	4	5	4	5	4		
4:00 PM	7	2	12	3	10	3	PM Peak Hour Totals NB (OUT) SB (IN) 29 14 67.4% 32.6%	
4:15 PM	7	3	4	3	6	3		
4:30 PM	8	4	3	4	6	4		
4:45 PM	10	2	3	5	7	4		
5:00 PM	1	2	5	4	3	3		
5:15 PM	2	2	5	1	4	2		
5:30 PM	2	4	1	1	2	3		
5:45 PM	6	7	4	10	5	9		
6:00 PM	3	2	4	5	4	4		
6:15 PM	4	5	1	3	3	4		
6:30 PM	12	2	12	2	12	2		
6:45 PM	6	6	8	2	7	4		
7:00 PM	2	2	4	3	3	3		
7:15 PM	0	0	1	2	1	1		
7:30 PM	4	6	2	1	3	4		
7:45 PM	4	4	4	1	4	3		
8:00 PM	3	3	3	5	3	4		
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8:30 PM	4	4	6	2	5	3		
8:45 PM	6	0	1	1	4	1		
9:00 PM	5	3	1	0	3	2		
9:15 PM	2	3	2	1	2	2		
9:30 PM	5	1	3	1	4	1		
9:45 PM	2	2	0	1	1	2		
10:00 PM	2	1	1	3	2	2		
10:15 PM	2	0	1	0	2	0		
10:30 PM	1	4	0	3	1	4		
10:45 PM	1	1	4	3	3	2		
11:00 PM	4	1	3	4	4	3		
11:15 PM	1	0	1	1	1	1		
11:30 PM	1	1	3	0	2	1		
11:45 PM	2	0	2	0	2	0		
Daily Total	282	277	284	290	309	309	618	
Percent	50.4%	49.6%	49.5%	50.5%	50.0%	50.0%		