

DRAFT

Traffic Study for Marcotte Property in Sturgis, SD

Prepared for:
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I hereby certify that this report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of South Dakota.

Edward F. Terhaar
South Dakota Registration #9849

DATE: August 31, 2020

1.0 Executive Summary

The purpose of this Traffic Study is to evaluate the impacts of the proposed new residential development located on the Marcotte property in Sturgis, SD. The project site is located on the west side of Elk Road in the southwest portion of the city. The proposed project location is currently vacant land.

This study examined weekday traffic impacts of the proposed development at the following locations:

- Proposed development access points on Elk Road
- Dolan Creek Road east of I-90
- Otter Road east of Racoon Drive

The proposed project will involve the construction of 94 new single family homes. As shown in the site plan, access is provided at two locations on Elk Road.

The project is expected to be completed by the end of 2025.

The conclusions drawn from the information and analyses presented in this report are as follows:

- The proposed development is expected to generate 70 net trips during the a.m. peak hour, 93 net trips during the p.m. peak hour, and 887 net trips daily.
- During the a.m. peak hour, the proposed project adds one vehicle every 1 minute and 46 seconds to Elk Road north and south of the access points. During the p.m. peak hour, the proposed project adds one vehicle one vehicle every 1 minute and 18 seconds to Elk Road north and south of the access points. The expected amount of traffic during the peak hours will result in minimal impacts to traffic operations on Elk Road.
- On a daily basis, the forecasted volumes on Dolan Creek Road and Otter Road are well below the total capacity of either roadway. The expected amount of traffic added on a daily basis will result in minimal impacts to traffic operations on these roadways.
- The proposed project includes both sidewalks and paths to accommodate pedestrian and bicycle traffic. Connections are proposed to the existing trail system near the site. Proposed park land and open space are included in the project. Overall, the proposed project are expected to adequately accommodate pedestrian and bicycle traffic.

2.0 Purpose and Background

The purpose of this Traffic Study is to evaluate the impacts of the proposed new residential development located on the Marcotte property in Sturgis, SD. The project site is located on the west side of Elk Road in the southwest portion of the city. The proposed project location is currently vacant land. The project location is shown in **Figure 1**.

This study examined weekday traffic impacts of the proposed development at the following locations:

- Proposed development access points on Elk Road
- Dolan Creek Road east of I-90
- Otter Road east of Racoon Drive

Proposed Development Characteristics

The proposed project will involve the construction of 94 new single family homes. As shown in the site plan, access is provided at two locations on Elk Road.

The project is expected to be completed by the end of 2025. The current site plan is shown in **Figure 2**.



PROJECT LOCATION

APPROXIMATE SCALE



**TRAFFIC STUDY
FOR MARCOTTE
PROPERTY
IN STURGIS, SD**

**FIGURE 1
PROJECT LOCATION**



FIGURE 2
SITE PLAN

TRAFFIC STUDY
FOR MARCOTTE
PROPERTY
IN STURGIS, SD



3.0 Existing Conditions

The site currently consists of vacant land. Near the site location, Elk Road is a two-lane local roadway that provides north and south connections to the surrounding roadway system. Dolan Creek Road and Otter Road are two lane roadways that connect the project area to other areas of the city. Existing conditions near the proposed project location are shown in **Figure 3**.

Traffic Volume Data

Daily traffic volumes on Dolan Creek Road and Otter Road were obtained from City staff. Traffic volume data for Elk Road is not available. The volumes are presented later in this report.



FIGURE 3
EXISTING CONDITIONS

TRAFFIC STUDY
FOR MARCOTTE
PROPERTY
IN STURGIS, SD



4.0 Traffic Forecasts

Traffic Forecast Scenarios

To adequately address the impacts of the proposed project, forecasts and analyses were completed for the year 2026. Specifically, weekday a.m. and p.m. peak hour and daily traffic forecasts were completed for the following scenarios:

- *2020 Existing.* Existing volumes were determined through data provided by City staff. The existing volume information includes trips generated by the uses near the project site.
- *2026 No-Build.* Existing volumes at the subject intersections were increased by 1.0 percent per year to determine 2026 No-Build volumes. The 1.0 percent per year growth rate was calculated based on both recent growth experienced near the site and projected growth in the area.
- *2026 Build.* Trips generated by the proposed development were added to the 2026 No-Build volumes to determine 2026 Build volumes.

Trip Generation for Proposed Project

Weekday a.m. and p.m. peak hour trip generation for the proposed development were calculated based on data presented in the tenth edition of Trip Generation, published by the Institute of Transportation Engineers (ITE). The resultant trip generation estimates are shown in **Table 4-1**.

**Table 4-1
Trip Generation for Proposed Project**

Land Use	Size	Weekday AM Peak Hour			Weekday PM Peak Hour			Weekday Daily
		In	Out	Total	In	Out	Total	Total
Single Family	94 DU	17	53	70	59	34	93	887

DU=dwelling unit

As shown, the project adds 70 net trips during the a.m. peak hour, 93 net trips during the p.m. peak hour, and 887 net trips daily.

Trip Distribution Percentages

Trip distribution percentages for the subject development trips were established based on the nearby roadway network, existing and expected future traffic patterns, and location of the subject development in relation to major attractions and population concentrations.

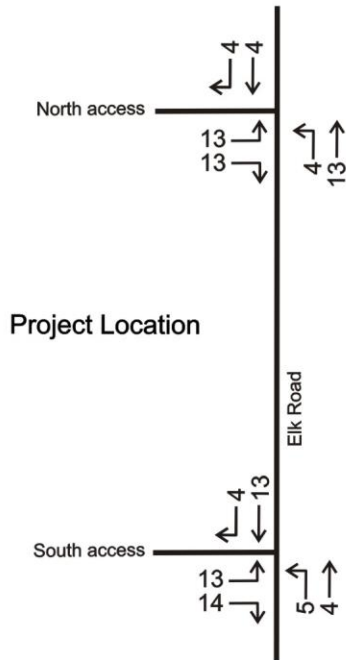
The distribution percentages for trips generated by the proposed development are as follows:

- 50 percent to/from the north on Elk Road
- 50 percent to/from the south on Elk Road

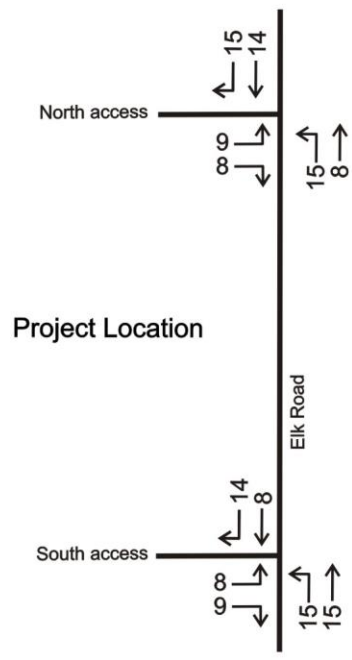
Traffic Volumes

Development trips were assigned to the surrounding roadway network using the preceding trip distribution percentages. Traffic volumes were established for all the forecasting scenarios described earlier during for the weekday a.m. and p.m. peak hours and weekday daily period. The resultant development trips at each access point are presented in **Figure 4**. The daily traffic volumes on Dolan Creek Road and Otter Road are show in **Figure 5**.

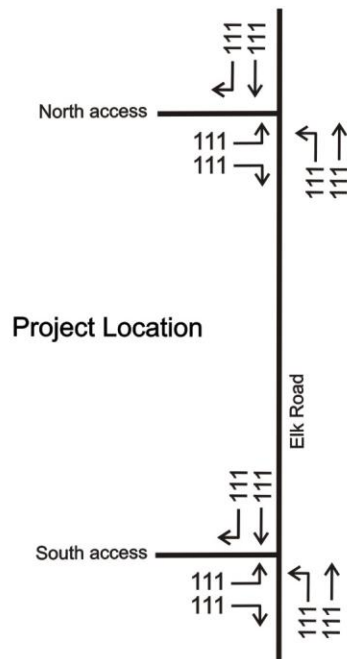
A.M. PEAK HOUR



P.M. PEAK HOUR



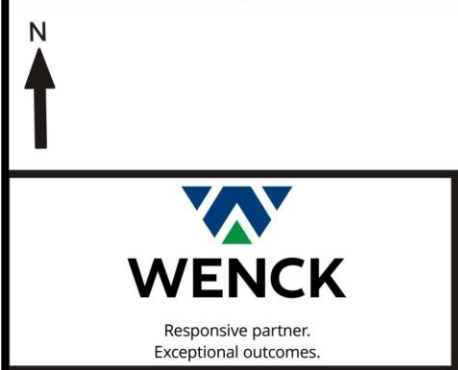
DAILY (24 HOUR)



TRAFFIC STUDY
FOR MARCOTTE
PROPERTY
IN STURGIS, SD

FIGURE 4

**WEEKDAY A.M. AND P.M.
PEAK HOUR AND DAILY
DEVELOPMENT TRIPS**



TRAFFIC STUDY
FOR MARCOTTE
PROPERTY
IN STURGIS, SD

FIGURE 5
**WEEKDAY DAILY
TRAFFIC VOLUMES**

5.0 Traffic Analysis

Peak Hour Volumes on Elk Road

During the a.m. peak hour, the forecast is 34 vehicles to the north on Elk Road and 34 vehicles to the south on Elk Road. On average, these volumes equate to one vehicle every 1 minute and 46 seconds at each location.

During the p.m. peak hour, the forecast is 46 vehicles to the north on Elk Road and 46 vehicles to the south on Elk Road. On average, these volumes equate to one vehicle every 1 minute and 18 seconds at each location.

The expected amount of traffic during the peak hours will result in minimal impacts to traffic operations on Elk Road.

Daily Volume Impacts

The only daily volume information near the site is located on Dolan Creek Road and Otter Road. Daily volume information for Elk Road is not available.

As shown in Figure 5, the 2020 daily volume on Dolan Creek Road is 2,825 vehicles per day. The volume increases to 2,999 vehicles per day under the 2026 No Build scenario and 3,443 vehicles per day under the 2026 Build scenario.

The 2020 daily volume on Otter Road is 1,232 vehicles per day. The volume increases to 1,308 vehicles per day under the 2026 No Build scenario and 1,752 vehicles per day under the 2026 Build scenario.

Two lane urban streets have a total capacity of 8,000 to 10,000 vehicles per day. The forecasted volumes on both roadways are below these levels. The expected amount of traffic added on a daily basis will result in minimal impacts to traffic operations on these roadways.

Overall Traffic Impact

Trips generated by the proposed development are expected to have minimal impact on traffic operations on the surrounding street system. Peak hour and daily traffic volumes are within acceptable levels for the surrounding street system.

Bicycle and Pedestrian Facilities

Under existing conditions, sidewalk is provided on portions of the streets located east of the project site. The Sturgis Bike Path is located east of the site along Racoon Road and Otter Road. Bicycles are allowed on all the surrounding streets.

The proposed project includes both sidewalks and paths to accommodate pedestrian and bicycle traffic. Connections are proposed to the existing trail system near the site. Proposed park land and open space are included in the project. Overall, the proposed project is expected to adequately accommodate pedestrian and bicycle traffic.

6.0 Conclusions and Recommendations

The conclusions drawn from the information and analyses presented in this report are as follows:

- The proposed development is expected to generate 70 net trips during the a.m. peak hour, 93 net trips during the p.m. peak hour, and 887 net trips daily.
- During the a.m. peak hour, the proposed project adds one vehicle every 1 minute and 46 seconds to Elk Road north and south of the access points. During the p.m. peak hour, the proposed project adds one vehicle one vehicle every 1 minute and 18 seconds to Elk Road north and south of the access points. The expected amount of traffic during the peak hours will result in minimal impacts to traffic operations on Elk Road.
- On a daily basis, the forecasted volumes on Dolan Creek Road and Otter Road are well below the total capacity of either roadway. The expected amount of traffic added on a daily basis will result in minimal impacts to traffic operations on these roadways.
- The proposed project includes both sidewalks and paths to accommodate pedestrian and bicycle traffic. Connections are proposed to the existing trail system near the site. Proposed park land and open space are included in the project. Overall, the proposed project are expected to adequately accommodate pedestrian and bicycle traffic.