

Traffic Impact Study

Whetstone Housing

Gunnison County, Colorado

Prepared for:
Hord Coplan Macht

Kimley»Horn

T R A F F I C I M P A C T S T U D Y

Whetstone Housing

Gunnison County, Colorado

Prepared for
Hord Coplan Macht
1800 Wazee Street
Suite 450
Denver, Colorado 80202

Prepared by
Jeffrey R. Planck, P.E.
Kimley-Horn and Associates, Inc.
6200 South Syracuse Way
Suite 300
Greenwood Village, Colorado 80111
(303) 228-2300



November 2023

This document, together with the concepts and designs presented herein, as an instrument of service, is intended only for the specific purpose and client for which it was prepared. Reuse of and improper reliance on this document without written authorization and adaptation by Kimley-Horn and Associates, Inc. shall be without liability to Kimley-Horn and Associates, Inc.

TABLE OF CONTENTS

TABLE OF CONTENTS	i
LIST OF TABLES	ii
LIST OF FIGURES	ii
1.0 EXECUTIVE SUMMARY	1
2.0 INTRODUCTION	3
3.0 EXISTING AND FUTURE CONDITIONS	5
3.1 Existing Study Area	5
3.2 Existing Roadway Network	5
3.3 Existing Traffic Volumes	8
3.4 Unspecified Development Traffic Growth	8
4.0 PROJECT TRAFFIC CHARACTERISTICS	12
4.1 Trip Generation	12
4.2 Trip Distribution	13
4.3 Traffic Assignment	13
4.4 Total (Background Plus Project) Traffic	13
5.0 TRAFFIC OPERATIONS ANALYSIS	18
5.1 Analysis Methodology	18
5.2 Key Intersection Operational Analysis	19
5.3 CDOT Turn Bay Length Analysis	21
5.4 Improvement Summary	22
6.0 CONCLUSIONS AND RECOMMENDATIONS	24

APPENDICES

- Appendix A – Intersection Count Sheets
- Appendix B – Future Traffic Projections
- Appendix C – Trip Generation Worksheets
- Appendix D – Intersection Analysis Worksheets
- Appendix E – Conceptual Site Plan

LIST OF TABLES

Table 1 – Whetstone Housing Traffic Generation.....	13
Table 2 – Level of Service Definitions	18
Table 3 – CR-738 & SH-135 (#1) LOS Results	19
Table 4 – Project Access Level of Service Results.....	20

LIST OF FIGURES

Figure 1 – Vicinity Map.....	4
Figure 2 – Existing Geometry and Control.....	7
Figure 3 – 2023 Existing Traffic Volumes.....	9
Figure 4 – 2025 Background Traffic Volumes.....	10
Figure 5 – 2045 Background Traffic Volumes.....	11
Figure 6 – Project Trip Distribution	14
Figure 7 – Project Traffic Assignment	15
Figure 8 – 2025 Total Traffic Volumes	16
Figure 9 – 2045 Total Traffic Volumes	17
Figure 10 – Recommended Geometry and Control.....	23

1.0 EXECUTIVE SUMMARY

This report has been prepared to document the results of a Traffic Impact Study for Whetstone Housing proposed to be located on the southeast corner of the County Road 738 (CR-738) and State Highway 135 (SH-135) intersection in Gunnison County, Colorado. Whetstone Housing is proposed to include 46 units of single family attached housing and 210 units of affordable housing. Of note, all residential units on this site will be affordable housing. However, ITE does not provide equations for single family affordable housing. Therefore, to provide a conservative analysis, trip generation for single family dwelling units was based on market rate single family attached housing ITE equations. It is expected that Whetstone Housing will be completed in the next several years; therefore, analysis was conducted for the 2025 short-term buildout horizon as well as the 2045 long-term twenty-year planning horizon.

The purpose of this traffic study is to identify project traffic generation characteristics to determine potential project traffic related impacts on the local street system and to develop the necessary mitigation measures required for the identified traffic impacts. The intersection of CR-738 and SH-135 was incorporated into this traffic study in accordance with the Gunnison County and State of Colorado Department of Transportation (CDOT) standards and requirements.

The CR-738 and SH-135 intersection is currently planned to be realigned approximately 125 feet to the southeast along SH-135 and be constructed as a single lane roundabout. This improvement to CR-738 and SH-135 is expected to occur coinciding with completion of the project or soon after. A public street will be constructed as the southwest leg of this roundabout that will provide access to the project. In addition, the proposed right-in/right-out south access along the west side of SH-135 was evaluated.

Regional and primary access to Whetstone Housing will be provided by SH-135. Direct access will be provided by one proposed full movement access and one proposed right-in/right-out access along the west side of SH-135.

The Whetstone Housing development is expected to generate approximately 1,182 weekday daily trips, with 85 of these trips occurring during the morning peak hour and 109 of these trips occurring during the afternoon peak hour.

Based on the analysis presented in this report, Kimley-Horn believes Whetstone Housing will be successfully incorporated into the existing and future roadway network. Analysis of the existing street network, the proposed project development, and expected traffic volumes resulted in the following conclusions and recommendations:

- It is anticipated that the CR-738 and SH-135 intersection will be realigned to the south in the near future and that the west leg of this intersection will provide access to the project from a public street. This intersection is planned as a single lane roundabout coinciding with this realignment and should be completed prior to or coinciding with completion of the project. If the roundabout is slightly delayed, the project access may temporarily operate with stop control for a short period of time. As such, this intersection was also conservatively evaluated as a four legged (instead of two offsetting T-intersections) stop controlled intersection for informational purposes only. With stop-control, the eastbound approach at this intersection is anticipated to operate with long vehicle delays during the morning peak hour with project traffic. With roundabout control, this intersection is anticipated to operate acceptably with LOS B or better throughout the 2045 horizon.
- With completion of the Whetstone Housing project, a right-in/right-out access is proposed along the west side of SH-135 to serve the proposed residential development. It is recommended that a R1-1 "STOP" sign be installed with a R3-2 No Left Turn Sign posted underneath on the exiting eastbound approach of this access.
- The threshold for requiring an access permit along Colorado Department of Transportation (CDOT) roadways occurs when project traffic is anticipated to increase the existing access traffic volumes by more than 20 percent. Based on traffic projections, the addition of project traffic on the west leg of the SH-135 and CR-738 is anticipated to increase existing traffic by more than 20 percent. Therefore, an access permit is anticipated to be needed at this intersection as development occurs. Additionally, an access permit is anticipated to be needed at the proposed SH-135 Right-in/Right-out South Access as this is a new access along a CDOT highway.
- Any onsite or offsite improvements should be incorporated into the Civil Drawings and conform to standards of Gunnison County, CDOT, and the Manual on Uniform Traffic Control Devices (MUTCD) – 2009 Edition.

2.0 INTRODUCTION

Kimley-Horn has prepared this report to document the results of a Traffic Impact Study for Whetstone Housing proposed to be located on the southeast corner of the County Road 738 (CR-738) and State Highway 135 (SH-135) intersection in Gunnison County, Colorado. A vicinity map illustrating the Whetstone Housing development location is shown in **Figure 1**. Whetstone Housing is proposed to include 46 units of single family attached housing and 210 units of affordable housing. Of note, all residential units on this site will be affordable housing. However, ITE does not provide equations for single family affordable housing. Therefore, to provide a conservative analysis, trip generation for single family dwelling units was based on market rate single family attached housing ITE equations. A conceptual site plan is attached in **Appendix E**. It is expected that Whetstone Housing will be completed in the next several years; therefore, analysis was conducted for the 2025 short-term buildout horizon as well as the 2045 long-term twenty-year planning horizon.

The purpose of this traffic study is to identify project traffic generation characteristics to determine potential project traffic related impacts on the local street system and to develop the necessary mitigation measures required for the identified traffic impacts. The intersection of CR-738 and SH-135 was incorporated into this traffic study in accordance with the Gunnison County and State of Colorado Department of Transportation (CDOT) standards and requirements.

The CR-738 and SH-135 intersection is currently planned to be realigned approximately 125 feet to the southeast along SH-135 and be constructed as a single lane roundabout. This improvement to CR-738 and SH-135 is expected to occur coinciding with completion of the project or soon after. A public street will be constructed as the southwest leg of this roundabout that will provide access to the project. In addition, the proposed right-in/right-out south access along the west side of SH-135 was evaluated.

Regional and primary access to Whetstone Housing will be provided by SH-135. Direct access will be provided by one proposed full movement access and one proposed right-in/right-out access along the west side of SH-135.



FIGURE 1
WHETSTONE HOUSING
GUNNISON COUNTY, COLORADO
VICINITY MAP

3.0 EXISTING AND FUTURE CONDITIONS

3.1 Existing Study Area

The existing site is comprised of two single family homes. To the north are single family homes and a golf course. South of the project site are industrial land uses. To the east of the project site is vacant land and single-family homes. West of the project site is mainly vacant land and mountainous terrain.

3.2 Existing Roadway Network

SH-135 extends mainly north/south with one through lane in each direction while having a posted speed limit near the site of 55 miles per hour. The Colorado Department of Transportation classifies SH-135 as R-A: Regional Highway.

CR-738 extends mainly in the east/west direction as a two-lane roadway. It has a posted speed limit of 25 miles per hour.

The unsignalized intersection of CR-738 and SH-135 operates with stop-control on the westbound CR-738 approach and assumed stop-control on the eastbound CR-738 approach as a stop sign is not currently installed on this approach. The northbound approach of this intersection consists of a shared left turn/through lane and a right turn lane while the southbound approach provides a left turn lane and a shared through/right turn lane. The eastbound and westbound approaches provide one shared lane for all movement. An aerial photo of the existing intersection configuration is below (north is up).



CR-738 & SH-135 (#1)

The intersection lane configuration and control for the study area key intersection are shown in **Figure 2**.

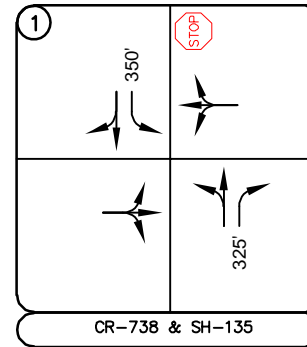


FIGURE 2
WHETSTONE HOUSING
GUNNISON COUNTY, COLORADO
EXISTING GEOMETRY AND CONTROL

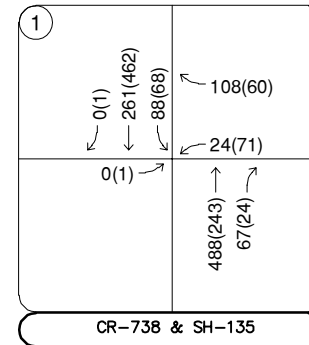
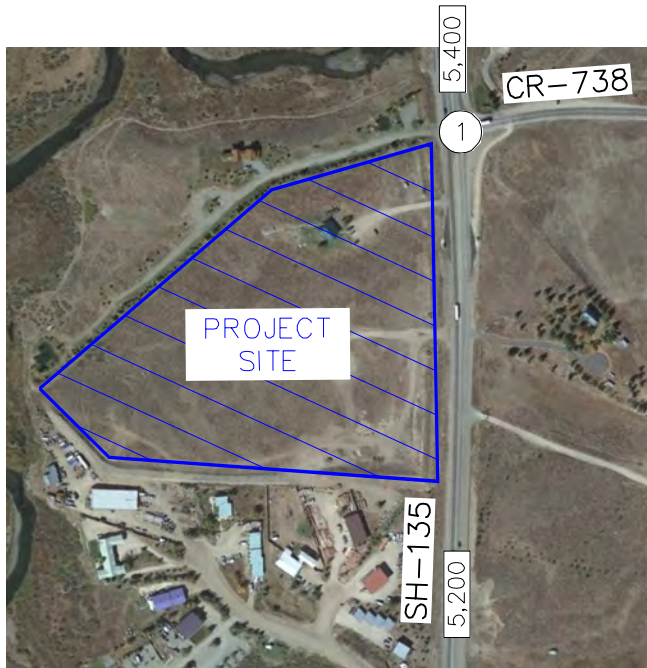
LEGEND	
	Study Area Key Intersection
	Stop Controlled Approach
	Roadway Speed Limit
	100' Turn Lane Length (feet)

3.3 Existing Traffic Volumes

Existing turning movement counts were conducted at the study intersection on Wednesday, September 13, 2023 during the weekday morning and afternoon peak hours. The counts were conducted during the morning and afternoon peak hours of adjacent street traffic in 15-minute intervals from 7:00 AM to 9:00 AM and 4:00 PM to 6:00 PM on this count date. The existing intersection traffic volumes are shown in **Figure 3** with count sheets provided in **Appendix A**.

3.4 Unspecified Development Traffic Growth

According to information provided on the website for the Colorado Department of Transportation (CDOT), the 20-year traffic growth factor along SH-135 is 1.21 in the vicinity of the site. The 20-year growth factor equates to an annual traffic growth rate of 1.0 percent. Traffic information from the CDOT Online Transportation Information System (OTIS) website is included in **Appendix B**. This annual growth rate was used to estimate near-term 2025 and long-term 2045 traffic volume projections at the key intersection. Background traffic volumes for 2025 and 2045 are shown in **Figures 4 and 5**, respectively.



Wednesday, September 13, 2023
 8:00 to 9:00AM (4:00 to 5:00PM)

FIGURE 3
 WHETSTONE HOUSING
 GUNNISON COUNTY, COLORADO
 2023 EXISTING TRAFFIC VOLUMES

LEGEND

① Study Area Key Intersection

XXX(XXX) Weekday AM(PM)
 Peak Hour Traffic Volumes

[XX,X00] Estimated Daily Traffic Volume

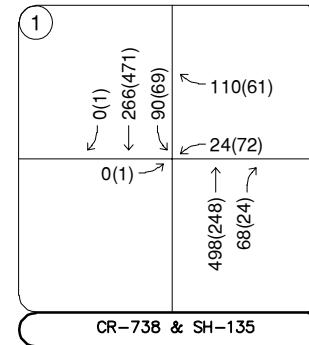


FIGURE 4
 WHETSTONE HOUSING
 GUNNISON COUNTY, COLORADO
 2025 BACKGROUND TRAFFIC VOLUMES

LEGEND	
ⓧ	Study Area Key Intersection
XXX(XXX)	Weekday AM(PM) Peak Hour Traffic Volumes
[XX,X00]	Estimated Daily Traffic Volume

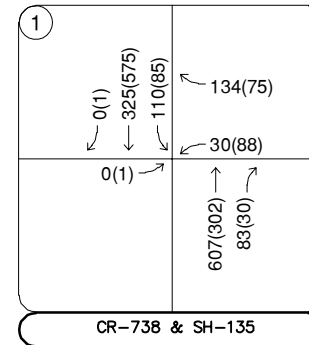


FIGURE 5
 WHETSTONE HOUSING
 GUNNISON COUNTY, COLORADO
 2045 BACKGROUND TRAFFIC VOLUMES

LEGEND	
⊗	Study Area Key Intersection
XXX(XXX)	Weekday AM(PM) Peak Hour Traffic Volumes
[XX,X00]	Estimated Daily Traffic Volume

4.0 PROJECT TRAFFIC CHARACTERISTICS

4.1 Trip Generation

Site-generated traffic estimates are determined through a process known as trip generation. Rates and equations are applied to the proposed land use to estimate traffic generated by the development during a specific time interval. The acknowledged source for trip generation rates is the *Trip Generation Manual*¹ published by the Institute of Transportation Engineers (ITE). ITE has established trip rates in nationwide studies of similar land uses. For this study, Kimley-Horn used the ITE Trip Generation Report fitted curve equations that apply to Single Family Attached Housing (ITE Land Use Code 215) and Affordable Housing (ITE Land Use Code 223) for traffic associated with the development. Of note, all residential units on this site will be affordable housing. However, ITE does not provide equations for single family affordable housing. Therefore, to provide a conservative analysis, trip generation for single family dwelling units was based on market rate single family attached housing ITE equations.

With the Whetstone Housing development being constructed adjacent to an existing Gunnison Valley RTA bus stop, located on the north side of the project site along SH-135, a 10 percent TOD reduction of trips has been applied to the residential uses to account for the development's residents utilizing the free bus.

Taking into account TOD reductions, the Whetstone Housing development is expected to generate approximately 1,182 weekday daily trips, with 85 of these trips occurring during the morning peak hour and 109 of these trips occurring during the afternoon peak hour. Calculations were based on the procedure and information provided in the ITE *Trip Generation Manual, 11th Edition – Volume 1: User's Guide and Handbook*, 2022. **Table 1** summarizes the estimated trip generation for the project. The trip generation worksheets are included in **Appendix C**.

¹ Institute of Transportation Engineers, *Trip Generation Manual*, Eleventh Edition, Washington DC, 2021.

Table 1 – Whetstone Housing Traffic Generation

Land Use and Size	Weekday Vehicle Trips						
	Daily	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
Single Family Attached Housing (ITE 215) – 46 Dwelling Units	302	6	12	18	14	10	24
Affordable Housing (ITE 223) – 210 Dwelling Units	1,012	22	54	76	57	40	97
Total Site Generated Trips	1,314	28	66	94	71	50	121
Total Project Trips after 10% TOD Reduction	1,182	25	60	85	64	45	109

4.2 Trip Distribution

Distribution of site traffic on the street system was based on the area street system characteristics, existing traffic patterns, existing and anticipated surrounding employment, school, and attraction information, and the proposed access system for the project. The directional distribution of traffic is a means to quantify the percentage of site-generated traffic that approaches the site from a given direction and departs the site back to the original source. The project trip distribution for the proposed development is illustrated in **Figure 6**.

4.3 Traffic Assignment

Whetstone Housing traffic assignment was obtained by applying the project trip distribution to the estimated traffic generation of the development shown in **Table 1**. Traffic assignment is shown in **Figure 7**.

4.4 Total (Background Plus Project) Traffic

Site traffic volumes were added to the background volumes to represent estimated traffic conditions for the short-term 2025 buildout horizon and long-term 2045 twenty-year planning horizon. These total traffic volumes for the study area are illustrated for the 2025 and 2045 horizon years in **Figures 8** and **9**, respectively.

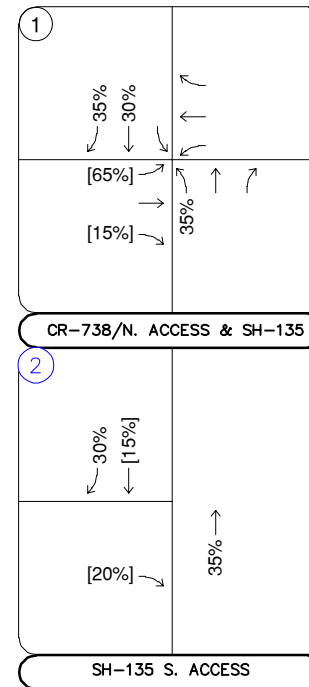
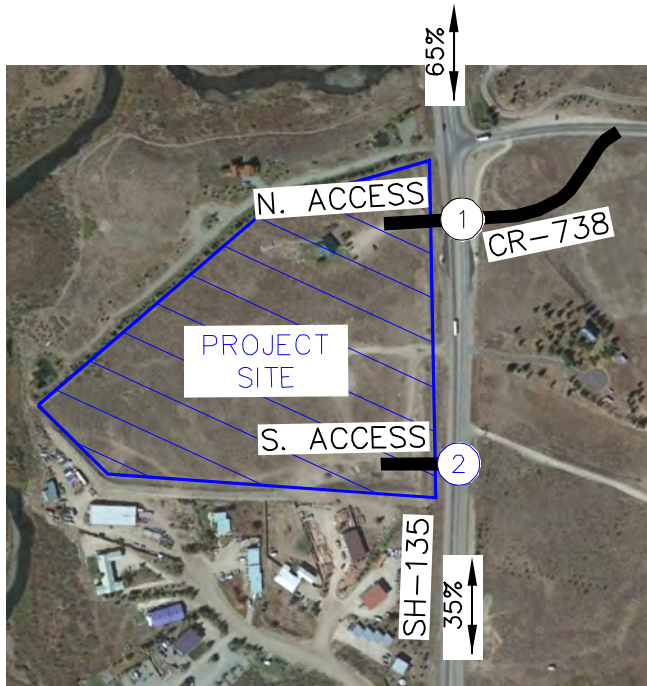
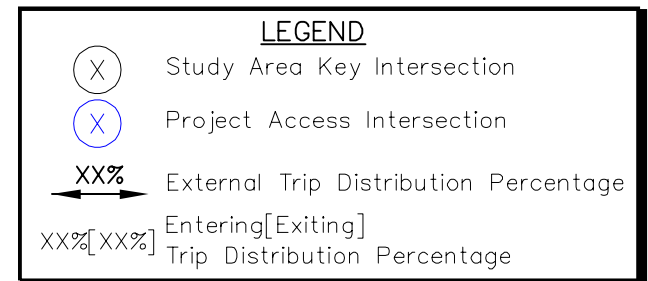


FIGURE 6
WHETSTONE HOUSING
GUNNISON COUNTY, COLORADO
PROJECT TRIP DISTRIBUTION



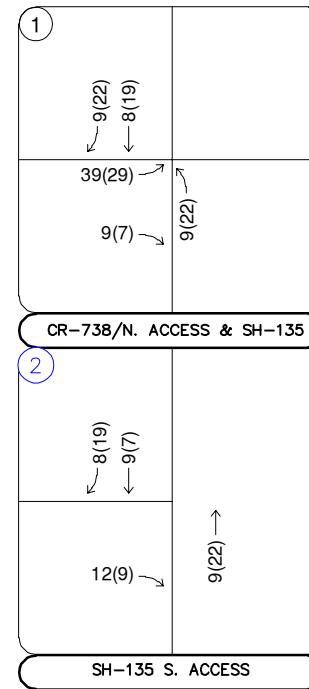
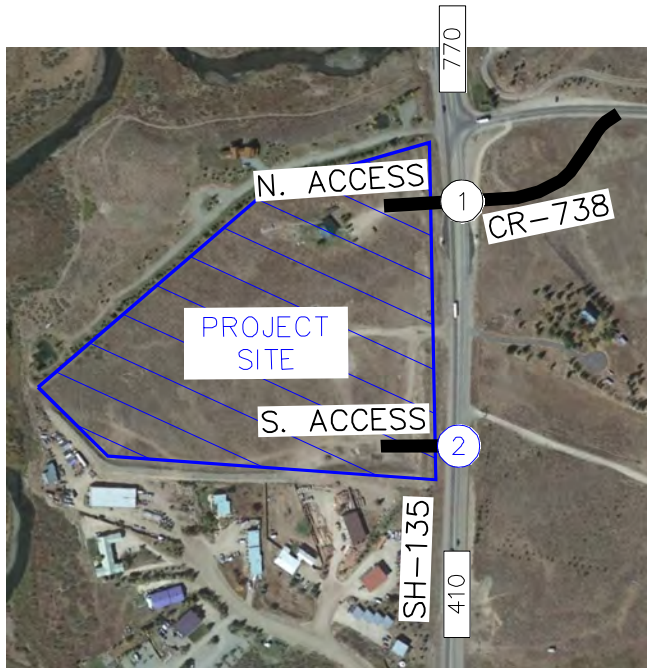


FIGURE 7
 WHETSTONE HOUSING
 GUNNISON COUNTY, COLORADO
 PROJECT TRAFFIC ASSIGNMENT

LEGEND

- X Study Area Key Intersection
- X Project Access Intersection
- XXX(XXX) Weekday AM(PM)
Peak Hour Traffic Volumes
- XX,X00 Estimated Daily Traffic Volume

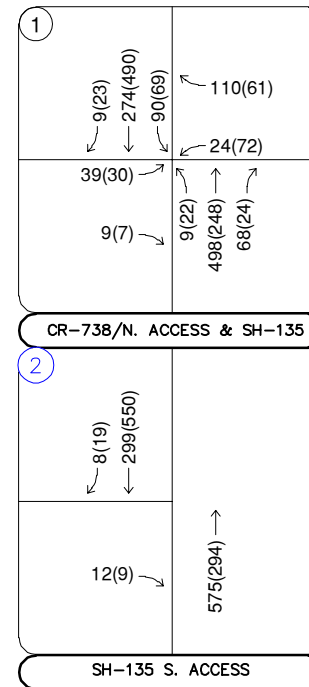
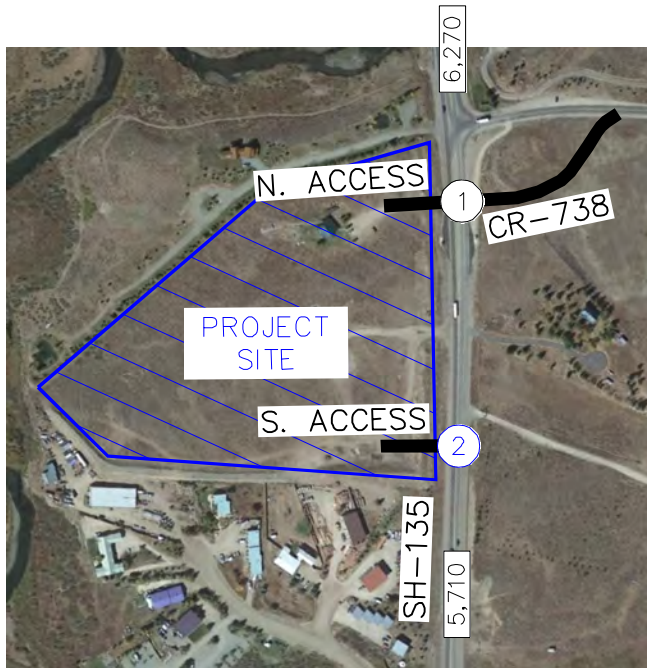


FIGURE 8
 WHETSTONE HOUSING
 GUNNISON COUNTY, COLORADO
 2025 TOTAL TRAFFIC VOLUMES

LEGEND

- X Study Area Key Intersection
- X Project Access Intersection
- XXX(XXX) Weekday AM(PM)
Peak Hour Traffic Volumes
- XX,X00 Estimated Daily Traffic Volume

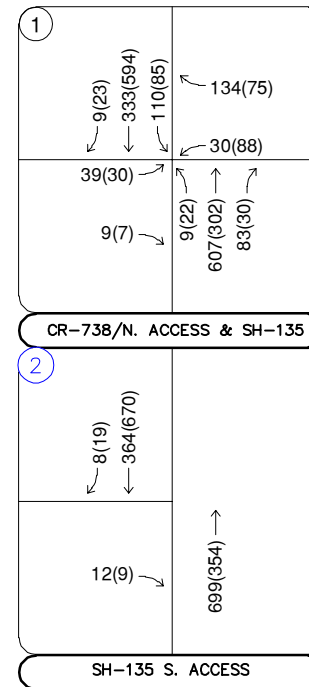
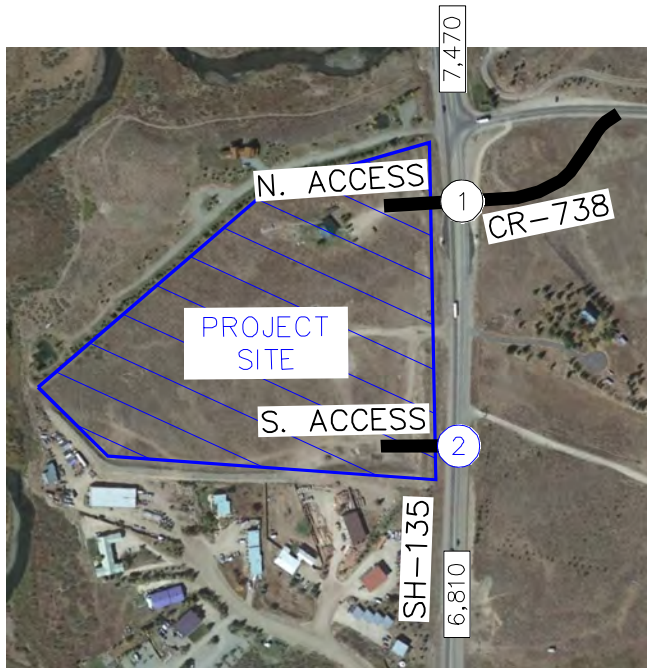


FIGURE 9
WHETSTONE HOUSING
GUNNISON COUNTY, COLORADO
2045 TOTAL TRAFFIC VOLUMES

LEGEND

- X Study Area Key Intersection
- X Project Access Intersection
- XXX(XXX) Weekday AM(PM)
Peak Hour Traffic Volumes
- XX,X00 Estimated Daily Traffic Volume

5.0 TRAFFIC OPERATIONS ANALYSIS

Kimley-Horn's analysis of traffic operations in the site vicinity was conducted to determine potential capacity deficiencies in the 2025 and 2045 development horizons at the identified key intersection. The acknowledged source for determining overall capacity is the *Highway Capacity Manual (HCM)*².

5.1 Analysis Methodology

Capacity analysis results are listed in terms of Level of Service (LOS). LOS is a qualitative term describing operating conditions a driver will experience while traveling on a particular street or highway during a specific time interval. It ranges from A (very little delay) to F (long delays and congestion). For intersections and roadways in this study area, standard traffic engineering practice recommends overall intersection LOS D and movement/approach LOS E as the minimum desirable thresholds for acceptable operations. **Table 2** shows the definition of level of service for signalized and unsignalized intersections.

Table 2 – Level of Service Definitions

Level of Service	Signalized Intersection Average Total Delay (sec/veh)	Unsignalized Intersection Average Total Delay (sec/veh)
A	≤ 10	≤ 10
B	> 10 and ≤ 20	> 10 and ≤ 15
C	> 20 and ≤ 35	> 15 and ≤ 25
D	> 35 and ≤ 55	> 25 and ≤ 35
E	> 55 and ≤ 80	> 35 and ≤ 50
F	> 80	> 50

Definitions provided from the Highway Capacity Manual, Sixth Edition, Transportation Research Board, 2016.

Study area intersections were analyzed based on average total delay analysis for unsignalized intersections. Under the unsignalized analysis, the LOS for a two-way stop-controlled intersection is determined by the computed or measured control delay and is defined for each minor movement. LOS for a two-way stop-controlled intersection is not defined for the intersection as a whole. LOS for roundabout intersections are defined for each approach and for the overall intersection.

² Transportation Research Board, *Highway Capacity Manual*, Sixth Edition, Washington DC, 2016.

5.2 Key Intersection Operational Analysis

Calculations for the operational level of service at the key intersection for the study area are provided in **Appendix D**. The existing year analysis is based on the lane geometry and intersection control shown in **Figure 2**. Existing peak hour factors were utilized in the existing, 2025, and 2045 horizon analysis years. Synchro traffic analysis software was used to analyze the unsignalized key intersections for HCM level of service.

CR-738 & SH-135 (#1)

The unsignalized intersection of CR-738 and SH-135 operates with stop-control on the westbound CR-738 approach and assumed stop-control on the eastbound CR-738 approach as a stop sign is not currently installed on this approach. The intersection movements operate acceptably at LOS C or better during both peak hours under existing conditions. It is anticipated that CR-738 will be realigned to the south in the near future and that the west leg of this intersection will provide access to the project from a public street. This intersection is planned as a single lane roundabout coinciding with this realignment and should be completed prior to or coinciding with completion of the project. If the roundabout is slightly delayed, the project access may temporarily operate with stop control for a short period of time. As such, this intersection was also conservatively evaluated as a four legged (instead of two offsetting T-intersections) stop controlled intersection for informational purposes only. With stop-control, the eastbound approach at this intersection is anticipated to operate at LOS F during the morning peak hour with project traffic. With roundabout control, this intersection is anticipated to operate acceptably with LOS B or better throughout the 2045 horizon. This analysis shows the need for roundabout prior to or soon after project construction. **Table 3** provides the results of the LOS analysis conducted at this intersection.

Table 3 – CR-738 & SH-135 (#1) LOS Results

Scenario	AM Peak Hour		PM Peak Hour	
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
2023 Existing				
Northbound Left	0.0	A	0.0	A
Eastbound Approach	0.0	A	21.7	C
Westbound Approach	23.6	C	20.5	C
Southbound Left	9.6	A	8.0	A
2025 Background				
Northbound Left	0.0	A	0.0	A
Eastbound Approach	0.0	A	22.2	C
Westbound Approach	24.6	C	21.2	C
Southbound Left	9.6	A	8.0	A

Scenario	AM Peak Hour		PM Peak Hour	
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
2025 Background #				
Northbound Left	8.0	A	8.6	A
Eastbound Approach	91.0	F	26.6	D
Westbound Approach	29.6	D	26.4	D
Southbound Left	9.6	A	8.0	A
2025 Background Plus Project ##	9.1	A	7.0	A
2045 Background				
Northbound Left	0.0	A	0.0	A
Eastbound Approach	0.0	A	30.0	D
Westbound Approach	59.6	F	38.1	E
Southbound Left	10.6	B	8.2	A
2045 Background Plus Project ##	13.1	B	8.6	A

= Realigned with eastbound and westbound stop-control and single lane approaches

= Roundabout control with yield control and single lane on all four approaches

Project Accesses

With completion of the Whetstone Housing project, an additional right-in/right-out access is proposed along the west side of SH-135 to serve the residential neighborhood development. It is recommended that a R1-1 “STOP” sign be installed with a R3-2 No Left Turn Sign posted underneath on the exiting eastbound approach of this access. **Table 4** provides the results of the level of service for this project access.

Table 4 – Project Access Level of Service Results

Intersection	2025 Total				2045 Total			
	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
SH-135 S. Access (#2) Eastbound Right	10.2	B	12.4	B	10.7	B	13.8	B

As shown in the table above, the project access intersection along SH-135 is anticipated to have all movements operating with acceptable LOS B during the peak hours in both the buildout year 2025 and the 2045 long-term horizons.

5.3 CDOT Turn Bay Length Analysis

The threshold for requiring an access permit along Colorado Department of Transportation (CDOT) roadways occurs when project traffic is anticipated to increase the existing access traffic volumes by more than 20 percent. Based on traffic projections, the addition of project traffic on the west leg of the SH-135 and CR-738 (#1) is anticipated to increase existing traffic by more than 20 percent. Therefore, an access permit is anticipated to be needed at this intersection as development occurs. Additionally, an access permit is anticipated to be needed at the proposed SH-135 South Access (#2) as this is a new access.

Auxiliary turn lanes along CDOT controlled highways are to be implemented based on volume threshold requirements set forth in the State Highway Access Code. Further, turn lane lengths should be designed based on the State Highway Access Code. SH-135 is categorized as Regional Highway (R-A) and has a posted speed limit of 55 miles per hour adjacent to the site. According to the State Highway Access Code for category Regional Highway (R-A) roadways, the turn lane warrants are as follows:

- A left turn deceleration lane with taper and storage length is required for any access with a projected peak hour left ingress turning volume greater than 10 vehicles per hour (vph). The taper length will be included within the required deceleration length.
- A right turn deceleration lane and taper length is required for any access with a projected peak hour right ingress turning volume greater than 25 vph. The taper length will be included within the required deceleration length.
- A right turn acceleration lane and taper length is required for any access with a projected peak hour right turning volume greater than 50 vph when the posted speed on the highway is greater than 40 mph. The taper length will be included within the required acceleration length.

Based on the 2025 traffic volume projections, turn lane requirements at the project access intersections along SH-135 are as follows:

CR-738 & SH-135 (#1):

- A northbound left turn lane **is** warranted based on projected 2025 background plus project traffic volumes being 22 northbound left turns during the peak hour and the threshold being 10 vph. Based on the 55 mile per hour speed limit, the deceleration length is 380 feet, plus

a 220-foot taper. The storage requirement is 25 feet based on the projected left turning volume. Therefore, to meet CDOT standards the left turn lane should be constructed to 405 feet plus a 220-foot taper. However, this intersection is anticipated to be reconstructed as a roundabout coinciding with or shortly after project construction. Therefore, no interim improvements are recommended at this intersection.

- A southbound right turn lane **is not** warranted based on projected 2025 background plus project traffic volumes being 23 southbound right turns during the peak hour and the threshold being 25 vph.
- A southbound acceleration lane along SH-135 from the CR-738 eastbound right turn **is not** warranted based on projected 2025 background plus project traffic volumes being nine (9) eastbound right turns during the peak hour and the threshold being 50 vph.

SH-135 Right-in/Right-out South Access (#2):

- A southbound right turn lane **is not** warranted based on projected 2025 background plus project traffic volumes being 19 southbound right turns during the peak hour and the threshold being greater than 25 vehicles per hour.
- A southbound acceleration lane along SH-135 from the South Access eastbound right turn **is not** warranted based on projected 2025 background plus project traffic volumes being 12 eastbound right turns during the peak hour and the threshold being 50 vph.

5.4 Improvement Summary

Based on the results of the intersection operational analysis and turn lane evaluation, the key intersection recommended improvements and control are shown in **Figure 10**.

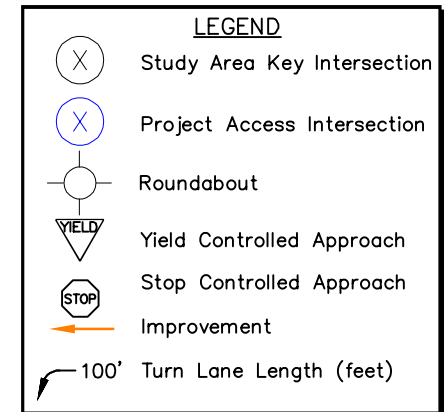
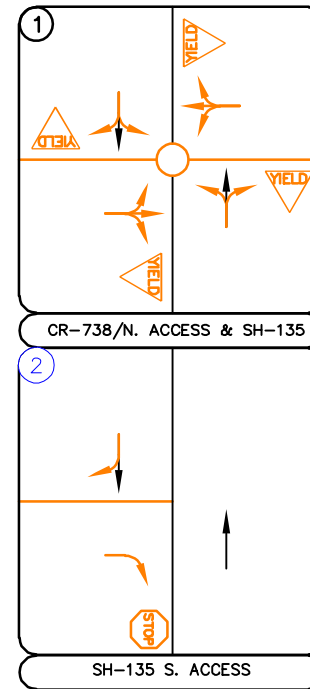
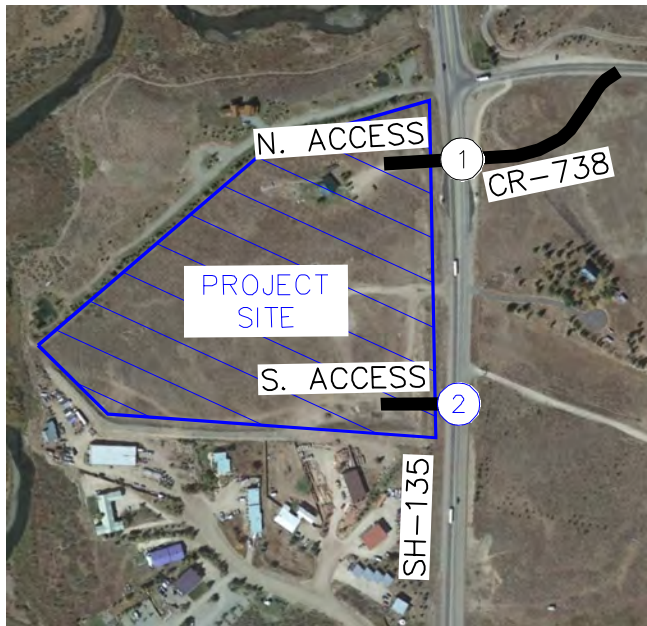


FIGURE 10
 WHETSTONE HOUSING
 GUNNISON COUNTY, COLORADO
 RECOMMENDED GEOMETRY AND CONTROL

6.0 CONCLUSIONS AND RECOMMENDATIONS

Based on the analysis presented in this report, Kimley-Horn believes Whetstone Housing will be successfully incorporated into the existing and future roadway network. Analysis of the existing street network, the proposed project development, and expected traffic volumes resulted in the following conclusions and recommendations:

- It is anticipated that the CR-738 and SH-135 intersection will be realigned to the south in the near future and that the west leg of this intersection will provide access to the project from a public street. This intersection is planned as a single lane roundabout coinciding with this realignment and should be completed prior to or coinciding with completion of the project. If the roundabout is slightly delayed, the project access may temporarily operate with stop control for a short period of time. As such, this intersection was also conservatively evaluated as a four legged (instead of two offsetting T-intersections) stop controlled intersection for informational purposes only. With stop-control, the eastbound approach at this intersection is anticipated to operate with long vehicle delays during the morning peak hour with project traffic. With roundabout control, this intersection is anticipated to operate acceptably with LOS B or better throughout the 2045 horizon.
- With completion of the Whetstone Housing project, a right-in/right-out access is proposed along the west side of SH-135 to serve the proposed residential development. It is recommended that a R1-1 “STOP” sign be installed with a R3-2 No Left Turn Sign posted underneath on the exiting eastbound approach of this access.
- The threshold for requiring an access permit along Colorado Department of Transportation (CDOT) roadways occurs when project traffic is anticipated to increase the existing access traffic volumes by more than 20 percent. Based on traffic projections, the addition of project traffic on the west leg of the SH-135 and CR-738 is anticipated to increase existing traffic by more than 20 percent. Therefore, an access permit is anticipated to be needed at this intersection as development occurs. Additionally, an access permit is anticipated to be needed at the proposed SH-135 Right-in/Right-out South Access as this is a new access along a CDOT highway.
- Any onsite or offsite improvements should be incorporated into the Civil Drawings and conform to standards of Gunnison County, CDOT, and the Manual on Uniform Traffic Control Devices (MUTCD) – 2009 Edition.

APPENDICES

APPENDIX A

Intersection Count Sheets



Gunnison County, CO
 Whetstone Housing
 AM Peak
 SH 135 and CR 738

File Name : SH 135 and CR 738 AM
 Site Code : IPO 650
 Start Date : 9/13/2023
 Page No : 1

Groups Printed- Automobiles - Bicycle and Pedestrian

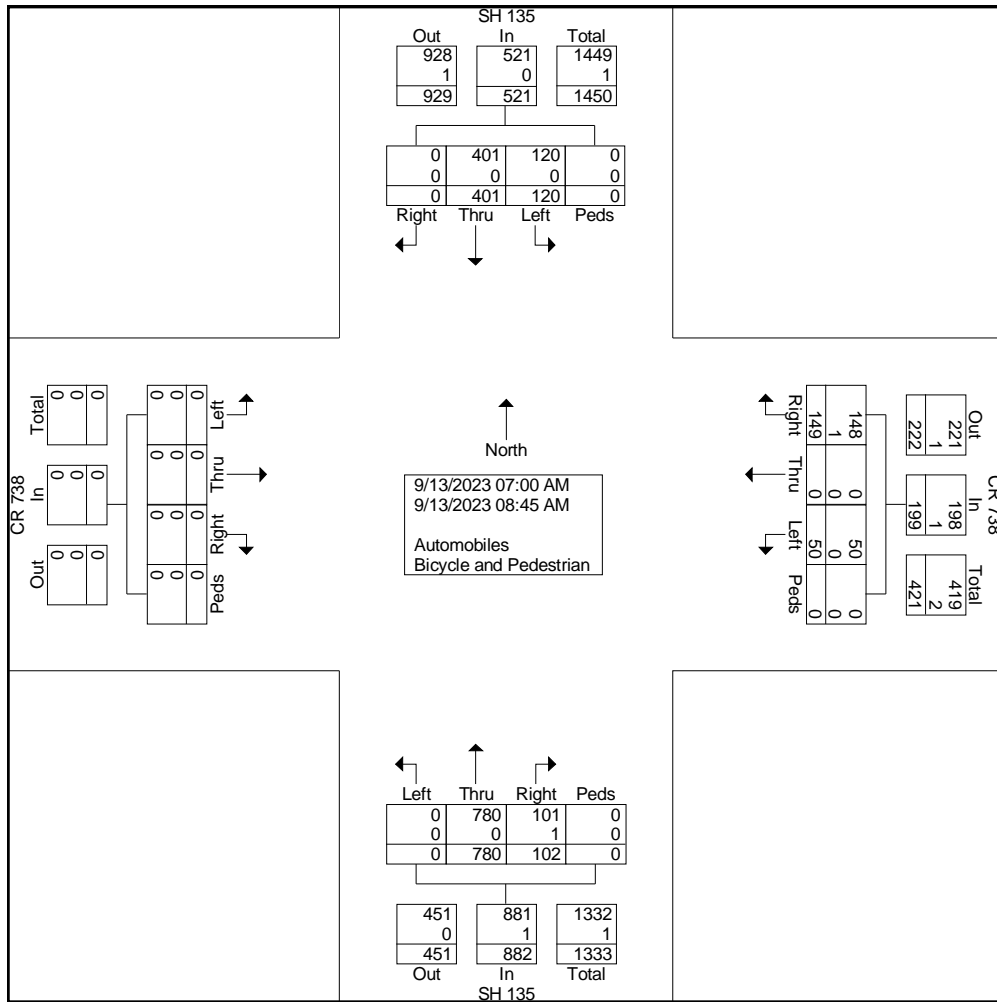
Start Time	CR 738 Eastbound					CR 738 Westbound					SH 135 Northbound					SH 135 Southbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
07:00 AM	0	0	0	0	0	3	0	5	0	8	0	51	2	0	53	10	18	0	0	28	89
07:15 AM	0	0	0	0	0	7	0	8	0	15	0	61	13	0	74	8	36	0	0	44	133
07:30 AM	0	0	0	0	0	12	0	18	0	30	0	70	7	0	77	4	41	0	0	45	152
07:45 AM	0	0	0	0	0	4	0	10	0	14	0	110	13	0	123	10	45	0	0	55	192
Total	0	0	0	0	0	26	0	41	0	67	0	292	35	0	327	32	140	0	0	172	566
08:00 AM	0	0	0	0	0	3	0	39	0	42	0	139	14	0	153	18	50	0	0	68	263
08:15 AM	0	0	0	0	0	10	0	36	0	46	0	152	15	0	167	26	86	0	0	112	325
08:30 AM	0	0	0	0	0	4	0	15	0	19	0	100	17	0	117	26	71	0	0	97	233
08:45 AM	0	0	0	0	0	7	0	18	0	25	0	97	21	0	118	18	54	0	0	72	215
Total	0	0	0	0	0	24	0	108	0	132	0	488	67	0	555	88	261	0	0	349	1036
Grand Total	0	0	0	0	0	50	0	149	0	199	0	780	102	0	882	120	401	0	0	521	1602
Apprch %	0	0	0	0		25.1	0	74.9	0		0	88.4	11.6	0		23	77	0	0		
Total %	0	0	0	0	0	3.1	0	9.3	0	12.4	0	48.7	6.4	0	55.1	7.5	25	0	0	32.5	
Automobiles	0	0	0	0	0	50	0	148	0	198	0	780	101	0	881	120	401	0	0	521	1600
% Automobiles	0	0	0	0	0	100	0	99.3	0	99.5	0	100	99	0	99.9	100	100	0	0	100	99.9
Bicycle and Pedestrian	0	0	0	0	0	0	0	1	0	1	0	0	1	0	1	0	0	0	0	0	2
% Bicycle and Pedestrian	0	0	0	0	0	0	0	0.7	0	0.5	0	0	1	0	0.1	0	0	0	0	0	0.1



Ridgeview Data
Collection

Gunnison County, CO
Whetstone Housing
AM Peak
SH 135 and CR 738

File Name : SH 135 and CR 738 AM
Site Code : IPO 650
Start Date : 9/13/2023
Page No : 2

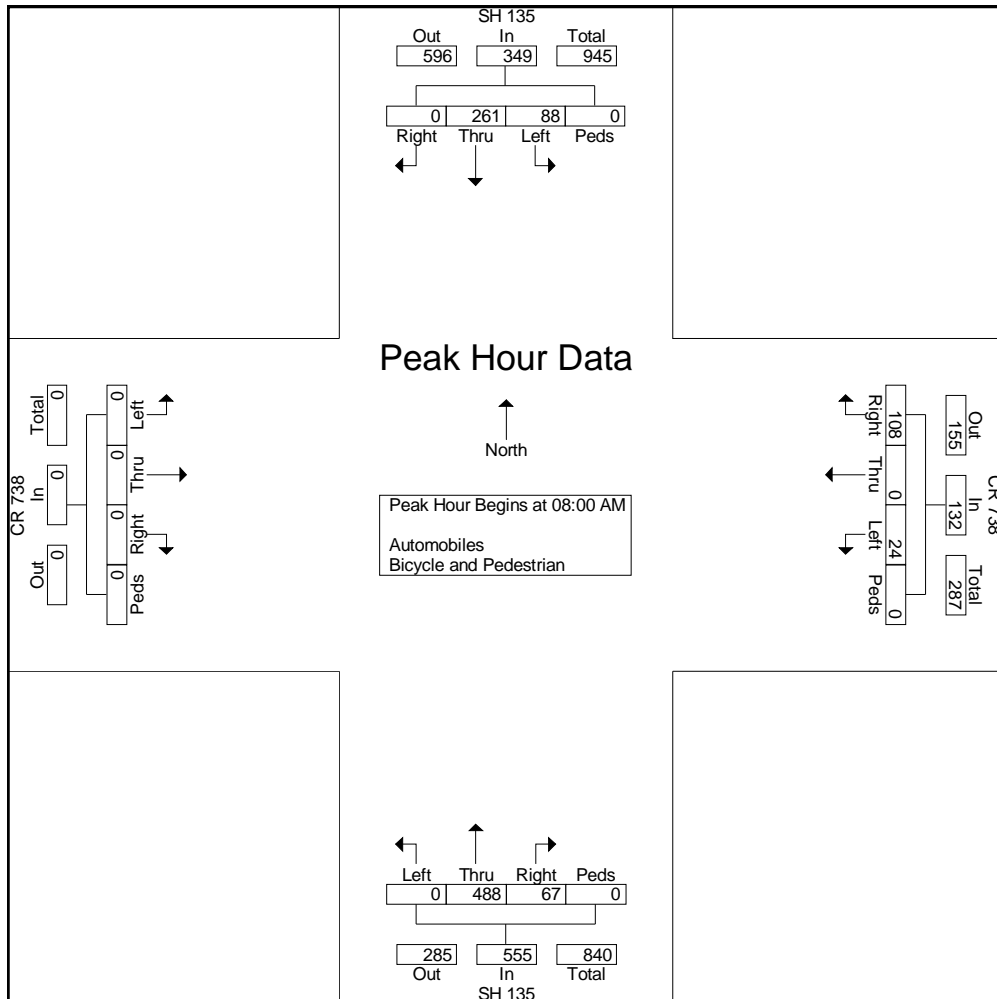




Gunnison County, CO
 Whetstone Housing
 AM Peak
 SH 135 and CR 738

File Name : SH 135 and CR 738 AM
 Site Code : IPO 650
 Start Date : 9/13/2023
 Page No : 3

Start Time	CR 738 Eastbound					CR 738 Westbound					SH 135 Northbound					SH 135 Southbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 08:00 AM																					
08:00 AM	0	0	0	0	0	3	0	39	0	42	0	139	14	0	153	18	50	0	0	68	263
08:15 AM	0	0	0	0	0	10	0	36	0	46	0	152	15	0	167	26	86	0	0	112	325
08:30 AM	0	0	0	0	0	4	0	15	0	19	0	100	17	0	117	26	71	0	0	97	233
08:45 AM	0	0	0	0	0	7	0	18	0	25	0	97	21	0	118	18	54	0	0	72	215
Total Volume	0	0	0	0	0	24	0	108	0	132	0	488	67	0	555	88	261	0	0	349	1036
% App. Total	0	0	0	0	0	18.2	0	81.8	0		0	87.9	12.1	0		25.2	74.8	0	0		
PHF	.000	.000	.000	.000	.000	.600	.000	.692	.000	.717	.000	.803	.798	.000	.831	.846	.759	.000	.000	.779	.797

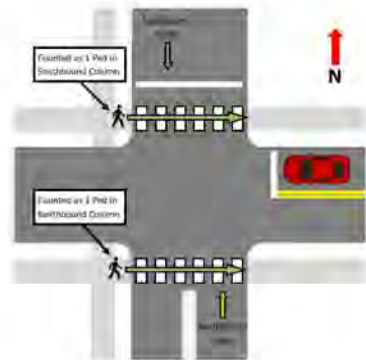


Gunnison County, CO
Whetstone Housing
AM Peak
SH 135 and CR 738

File Name : SH 135 and CR 738 AM
Site Code : IPO 650
Start Date : 9/13/2023
Page No : 4

Image 1

The number of pedestrians shown on this report is representative of the crossing on the approaching leg, i.e. pedestrians crossing the north side of the intersection are counted as pedestrians in the southbound crosswalk, as that is the approaching leg that they are crossing (see figure below). Diagonal crossings are counted on the two legs that will get the pedestrian to the same end point. Diagonals can be counted separately if discussed prior to count.





Gunnison County, CO
 Whetstone Housing
 PM Peak
 SH 135 and CR 738

File Name : SH 135 and CR 738 PM
 Site Code : IPO 650
 Start Date : 9/13/2023
 Page No : 1

Groups Printed- Automobiles - Bicycle and Pedestrian

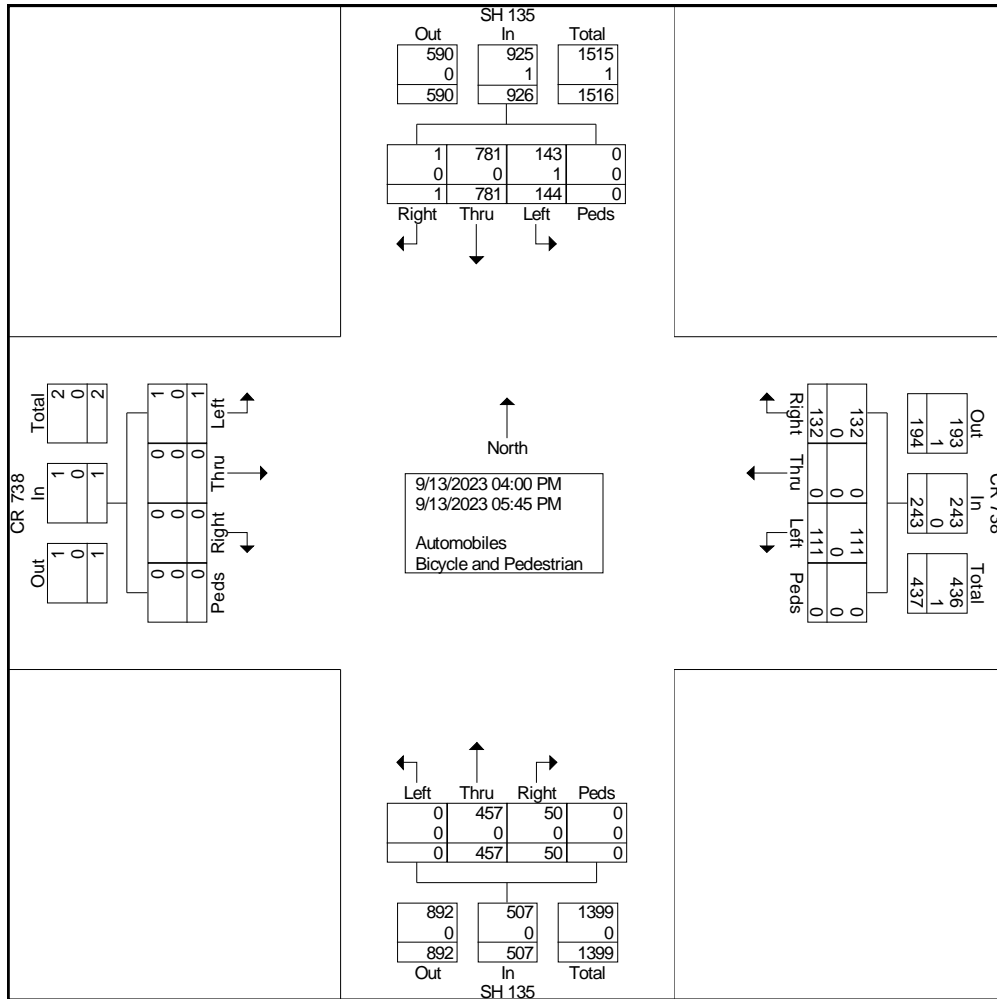
Start Time	CR 738 Eastbound					CR 738 Westbound					SH 135 Northbound					SH 135 Southbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
04:00 PM	1	0	0	0	1	23	0	16	0	39	0	50	3	0	53	17	135	0	0	152	245
04:15 PM	0	0	0	0	0	19	0	18	0	37	0	56	8	0	64	14	115	0	0	129	230
04:30 PM	0	0	0	0	0	13	0	14	0	27	0	73	6	0	79	16	115	1	0	132	238
04:45 PM	0	0	0	0	0	16	0	12	0	28	0	64	7	0	71	21	97	0	0	118	217
Total	1	0	0	0	1	71	0	60	0	131	0	243	24	0	267	68	462	1	0	531	930
05:00 PM	0	0	0	0	0	15	0	21	0	36	0	56	9	0	65	18	103	0	0	121	222
05:15 PM	0	0	0	0	0	10	0	12	0	22	0	54	5	0	59	29	91	0	0	120	201
05:30 PM	0	0	0	0	0	10	0	26	0	36	0	53	7	0	60	15	64	0	0	79	175
05:45 PM	0	0	0	0	0	5	0	13	0	18	0	51	5	0	56	14	61	0	0	75	149
Total	0	0	0	0	0	40	0	72	0	112	0	214	26	0	240	76	319	0	0	395	747
Grand Total	1	0	0	0	1	111	0	132	0	243	0	457	50	0	507	144	781	1	0	926	1677
Apprch %	100	0	0	0		45.7	0	54.3	0		0	90.1	9.9	0		15.6	84.3	0.1	0		
Total %	0.1	0	0	0	0.1	6.6	0	7.9	0	14.5	0	27.3	3	0	30.2	8.6	46.6	0.1	0	55.2	
Automobiles	1	0	0	0	1	111	0	132	0	243	0	457	50	0	507	143	781	1	0	925	1676
% Automobiles	100	0	0	0	100	100	0	100	0	100	0	100	100	0	100	99.3	100	100	0	99.9	99.9
Bicycle and Pedestrian	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
% Bicycle and Pedestrian	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.7	0	0	0	0.1	0.1



Ridgeview Data
Collection

Gunnison County, CO
Whetstone Housing
PM Peak
SH 135 and CR 738

File Name : SH 135 and CR 738 PM
Site Code : IPO 650
Start Date : 9/13/2023
Page No : 2

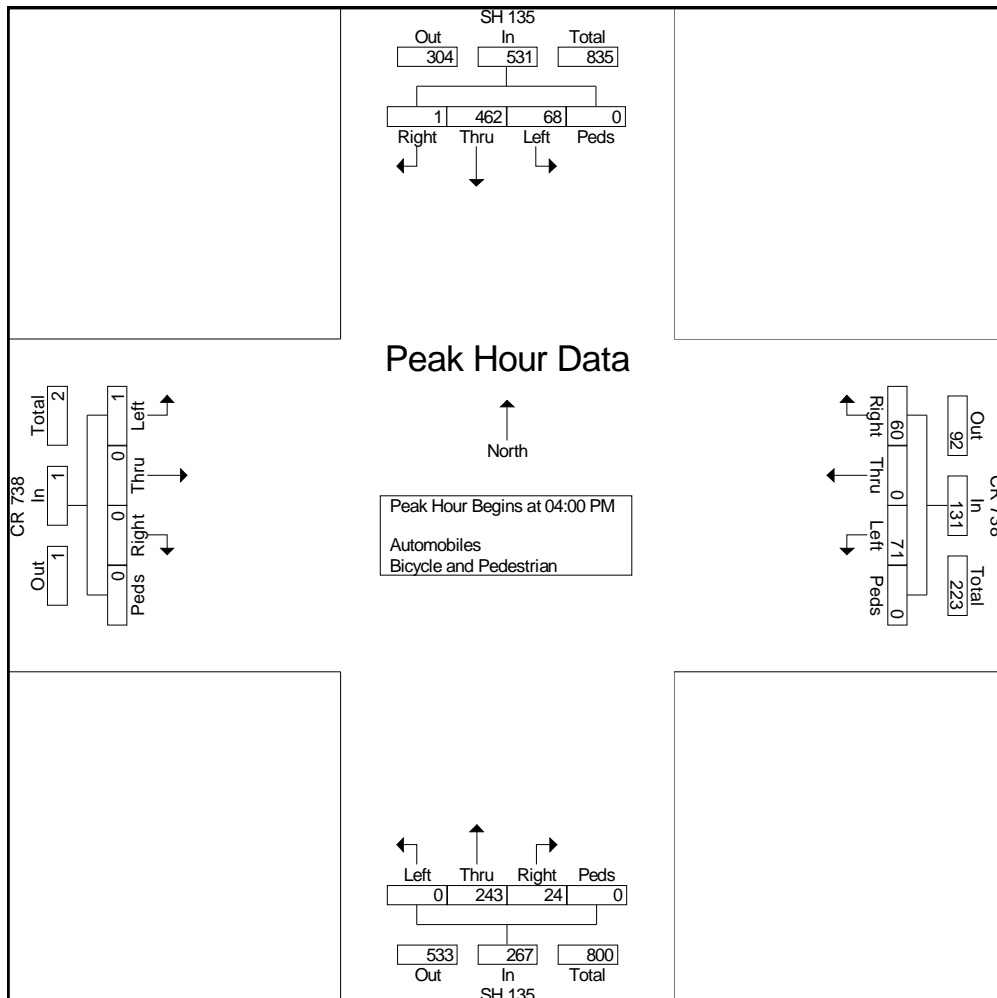




Gunnison County, CO
 Whetstone Housing
 PM Peak
 SH 135 and CR 738

File Name : SH 135 and CR 738 PM
 Site Code : IPO 650
 Start Date : 9/13/2023
 Page No : 3

Start Time	CR 738 Eastbound					CR 738 Westbound					SH 135 Northbound					SH 135 Southbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:00 PM																					
04:00 PM	1	0	0	0	1	23	0	16	0	39	0	50	3	0	53	17	135	0	0	152	245
04:15 PM	0	0	0	0	0	19	0	18	0	37	0	56	8	0	64	14	115	0	0	129	230
04:30 PM	0	0	0	0	0	13	0	14	0	27	0	73	6	0	79	16	115	1	0	132	238
04:45 PM	0	0	0	0	0	16	0	12	0	28	0	64	7	0	71	21	97	0	0	118	217
Total Volume	1	0	0	0	1	71	0	60	0	131	0	243	24	0	267	68	462	1	0	531	930
% App. Total	100	0	0	0		54.2	0	45.8	0		0	91	9	0		12.8	87	0.2	0		
PHF	.250	.000	.000	.000	.250	.772	.000	.833	.000	.840	.000	.832	.750	.000	.845	.810	.856	.250	.000	.873	.949

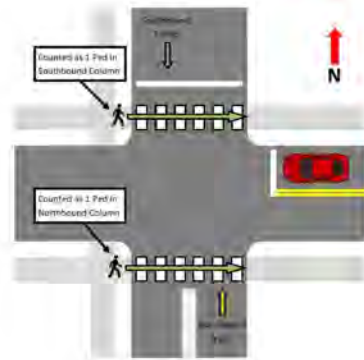


Gunnison County, CO
Whetstone Housing
PM Peak
SH 135 and CR 738

File Name : SH 135 and CR 738 PM
Site Code : IPO 650
Start Date : 9/13/2023
Page No : 4

Image 1

The number of pedestrians shown on this report is representative of the crossing on the approaching leg, i.e. pedestrians crossing the north side of the intersection are counted as pedestrians in the southbound crosswalk, as that is the approaching leg that they are crossing (see figure below). Diagonal crossings are counted on the two legs that will get the pedestrian to the same end point. Diagonals can be counted separately if discussed prior to count.



APPENDIX B

Future Traffic Projections

CDOT OTIS Traffic Projections: Whetstone Housing

ROUTE	REFPT	ENDREFPT	LENGTH	AADT	AADTYR	YR20FACTOR	GROWTH RATE	DHV	LOCATION
135A	20.704	27.176	6.418	7800	2022	1.21	1.0%	15.5	ON SH 135 SE/O RED LADY AVE & 7TH ST CRESTED BUTTE

APPENDIX C

Trip Generation Worksheets

Project Whetstone Housing
 Subject Trip Generation for Single-Family Attached Housing
 Designed by TES Date October 27, 2023 Job No. 096684007
 Checked by _____ Date _____ Sheet No. _____ of _____

TRIP GENERATION MANUAL TECHNIQUES

ITE Trip Generation Manual 11th Edition, Fitted Curve Equations

Land Use Code - Single-Family Attached Housing (215)

Independent Variable - Dwelling Units (X)

X = 46
 T = Average Vehicle Trip Ends

Peak Hour of Adjacent Street Traffic, One Hour Between 7 and 9 a.m. (200 Series Page 239)

(T) = 0.52 (X) - 5.70	Directional Distribution:	31% ent.	69% exit.
(T) = 0.52 * (46) - 5.70	T = 18	Average Vehicle Trip Ends	
	6 entering	12	exiting
	6 + 12 = 18		

Peak Hour of Adjacent Street Traffic, One Hour Between 4 and 6 p.m. (200 Series Page 240)

(T) = 0.60 (X) - 3.93	Directional Distribution:	59% ent.	41% exit.
(T) = 0.60 * (46) - 3.93	T = 24	Average Vehicle Trip Ends	
	14 entering	10	exiting
	14 + 10 = 24		

Weekday (200 Series Page 238)

(T) = 7.62 (X) - 50.48	Directional Distribution:	50% entering, 50% exiting	
(T) = 7.62 * (46) - 50.48	T = 302	Average Vehicle Trip Ends	
	151 entering	151	exiting
	151 + 151 = 302		

Project Whetstone Housing
 Subject Trip Generation for Affordable Housing (Income Limits)
 Designed by TES Date November 01, 2023 Job No. 096684007
 Checked by _____ Sheet No. _____ of _____

TRIP GENERATION MANUAL TECHNIQUES

ITE Trip Generation Manual 11th Edition, Average Rate Equations

Land Use Code - Affordable Housing (Income Limits) (ITE 223)

Independent Variable - Dwelling Units (X)

$X = 210$
 $T = \text{Average Vehicle Trip Ends}$

Peak Hour of Adjacent Street Traffic, One Hour Between 7 and 9 a.m. (Page 342)

Average Weekday	Directional Distribution:	29% ent.	71% exit.
$T = 0.36 (X)$	$T = 76$	Average Vehicle Trip Ends	
$T = 0.36 * 210$	22 entering	54	exiting
	22 + 54 (*)	= 76	

Peak Hour of Adjacent Street Traffic, One Hour Between 4 and 6 p.m. (Page 343)

Average Weekday	Directional Distribution:	59% ent.	41% exit.
$(T) = 0.46 (X)$	$T = 97$	Average Vehicle Trip Ends	
$T = 0.46 * 210$	57 entering	40	exiting
	57 + 40	= 97	

Weekday (Page 341)

Average Weekday	Directional Distribution:	50% ent.	50% exit.
$(T) = 4.81 (X)$	$T = 1012$	Average Vehicle Trip Ends	
$T = 4.81 * 210$	506 entering	506	exiting
	506 + 506	= 1012	

APPENDIX D

Intersection Analysis Worksheets

Intersection												
Int Delay, s/veh	3.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕	↕	↕	↕	
Traffic Vol, veh/h	0	0	0	24	0	108	0	488	67	88	261	0
Future Vol, veh/h	0	0	0	24	0	108	0	488	67	88	261	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	325	350	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	30	0	135	0	610	84	110	326	0

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1266	1240	326	1156	1156	610	326	0	0	694	0	0
Stage 1	546	546	-	610	610	-	-	-	-	-	-	-
Stage 2	720	694	-	546	546	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	146	175	715	174	197	494	1234	-	-	901	-	-
Stage 1	522	518	-	482	485	-	-	-	-	-	-	-
Stage 2	419	444	-	522	518	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	96	154	715	158	173	494	1234	-	-	901	-	-
Mov Cap-2 Maneuver	96	154	-	158	173	-	-	-	-	-	-	-
Stage 1	522	455	-	482	485	-	-	-	-	-	-	-
Stage 2	304	444	-	458	455	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	0		23.6		0		2.4	
HCM LOS	A		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1234	-	-	-	356	901	-
HCM Lane V/C Ratio	-	-	-	-	0.463	0.122	-
HCM Control Delay (s)	0	-	-	0	23.6	9.6	-
HCM Lane LOS	A	-	-	A	C	A	-
HCM 95th %tile Q(veh)	0	-	-	-	2.4	0.4	-

Intersection												
Int Delay, s/veh	3.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕	↕	↕	↕	
Traffic Vol, veh/h	1	0	0	71	0	60	0	243	24	68	462	1
Future Vol, veh/h	1	0	0	71	0	60	0	243	24	68	462	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	325	350	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	0	0	75	0	63	0	256	25	72	486	1

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	931	912	487	887	887	256	487	0	0	281	0	0
Stage 1	631	631	-	256	256	-	-	-	-	-	-	-
Stage 2	300	281	-	631	631	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	247	274	581	265	283	783	1076	-	-	1282	-	-
Stage 1	469	474	-	749	696	-	-	-	-	-	-	-
Stage 2	709	678	-	469	474	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	217	259	581	254	267	783	1076	-	-	1282	-	-
Mov Cap-2 Maneuver	217	259	-	254	267	-	-	-	-	-	-	-
Stage 1	469	447	-	749	696	-	-	-	-	-	-	-
Stage 2	652	678	-	443	447	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	21.7		20.5		0		1	
HCM LOS	C		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1076	-	-	217	368	1282	-
HCM Lane V/C Ratio	-	-	-	0.005	0.375	0.056	-
HCM Control Delay (s)	0	-	-	21.7	20.5	8	-
HCM Lane LOS	A	-	-	C	C	A	-
HCM 95th %tile Q(veh)	0	-	-	0	1.7	0.2	-

Intersection												
Int Delay, s/veh	3.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕	↕	↕	↕	
Traffic Vol, veh/h	0	0	0	24	0	110	0	498	68	90	266	0
Future Vol, veh/h	0	0	0	24	0	110	0	498	68	90	266	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	325	350	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	30	0	138	0	623	85	113	333	0

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1294	1267	333	1182	1182	623	333	0	0	708	0	0
Stage 1	559	559	-	623	623	-	-	-	-	-	-	-
Stage 2	735	708	-	559	559	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	139	169	709	167	190	486	1226	-	-	891	-	-
Stage 1	513	511	-	474	478	-	-	-	-	-	-	-
Stage 2	411	438	-	513	511	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	90	148	709	151	166	486	1226	-	-	891	-	-
Mov Cap-2 Maneuver	90	148	-	151	166	-	-	-	-	-	-	-
Stage 1	513	446	-	474	478	-	-	-	-	-	-	-
Stage 2	295	438	-	448	446	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	0		24.6		0		2.4	
HCM LOS	A		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1226	-	-	-	348	891	-
HCM Lane V/C Ratio	-	-	-	-	0.481	0.126	-
HCM Control Delay (s)	0	-	-	0	24.6	9.6	-
HCM Lane LOS	A	-	-	A	C	A	-
HCM 95th %tile Q(veh)	0	-	-	-	2.5	0.4	-

Intersection												
Int Delay, s/veh	3.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕	↕	↕	↕	
Traffic Vol, veh/h	1	0	0	72	0	61	0	248	24	69	471	1
Future Vol, veh/h	1	0	0	72	0	61	0	248	24	69	471	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	325	350	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	0	0	76	0	64	0	261	25	73	496	1

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	949	929	497	904	904	261	497	0	0	286	0	0
Stage 1	643	643	-	261	261	-	-	-	-	-	-	-
Stage 2	306	286	-	643	643	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	240	268	573	258	277	778	1067	-	-	1276	-	-
Stage 1	462	468	-	744	692	-	-	-	-	-	-	-
Stage 2	704	675	-	462	468	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	210	253	573	247	261	778	1067	-	-	1276	-	-
Mov Cap-2 Maneuver	210	253	-	247	261	-	-	-	-	-	-	-
Stage 1	462	441	-	744	692	-	-	-	-	-	-	-
Stage 2	646	675	-	436	441	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	22.2		21.2		0		1	
HCM LOS	C		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1067	-	-	210	360	1276	-
HCM Lane V/C Ratio	-	-	-	0.005	0.389	0.057	-
HCM Control Delay (s)	0	-	-	22.2	21.2	8	-
HCM Lane LOS	A	-	-	C	C	A	-
HCM 95th %tile Q(veh)	0	-	-	0	1.8	0.2	-

Intersection												
Int Delay, s/veh	8.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	39	0	9	24	0	110	9	498	68	90	274	9
Future Vol, veh/h	39	0	9	24	0	110	9	498	68	90	274	9
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	49	0	11	30	0	138	11	623	85	113	343	11

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1332	1305	349	1268	1268	666	354	0	0	708	0	0
Stage 1	575	575	-	688	688	-	-	-	-	-	-	-
Stage 2	757	730	-	580	580	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	131	160	694	145	168	459	1205	-	-	891	-	-
Stage 1	503	503	-	436	447	-	-	-	-	-	-	-
Stage 2	400	428	-	500	500	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	80	133	694	124	139	459	1205	-	-	891	-	-
Mov Cap-2 Maneuver	80	133	-	124	139	-	-	-	-	-	-	-
Stage 1	495	424	-	429	440	-	-	-	-	-	-	-
Stage 2	276	422	-	414	421	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	91		29.6		0.1		2.3	
HCM LOS	F		D					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1205	-	-	96	309	891	-
HCM Lane V/C Ratio	0.009	-	-	0.625	0.542	0.126	-
HCM Control Delay (s)	8	0	-	91	29.6	9.6	0
HCM Lane LOS	A	A	-	F	D	A	A
HCM 95th %tile Q(veh)	0	-	-	3	3	0.4	-

Intersection												
Int Delay, s/veh	5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	30	0	7	72	0	61	22	248	24	69	490	23
Future Vol, veh/h	30	0	7	72	0	61	22	248	24	69	490	23
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	32	0	7	76	0	64	23	261	25	73	516	24

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1026	1006	528	998	1006	274	540	0	0	286	0	0
Stage 1	674	674	-	320	320	-	-	-	-	-	-	-
Stage 2	352	332	-	678	686	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	213	241	550	223	241	765	1028	-	-	1276	-	-
Stage 1	444	454	-	692	652	-	-	-	-	-	-	-
Stage 2	665	644	-	442	448	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	179	215	550	202	215	765	1028	-	-	1276	-	-
Mov Cap-2 Maneuver	179	215	-	202	215	-	-	-	-	-	-	-
Stage 1	432	417	-	673	634	-	-	-	-	-	-	-
Stage 2	593	627	-	400	411	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	26.6		26.4		0.6		0.9	
HCM LOS	D		D					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1028	-	-	205	305	1276	-
HCM Lane V/C Ratio	0.023	-	-	0.19	0.459	0.057	-
HCM Control Delay (s)	8.6	0	-	26.6	26.4	8	0
HCM Lane LOS	A	A	-	D	D	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0.7	2.3	0.2	-

Intersection				
Intersection Delay, s/veh	9.1			
Intersection LOS	A			
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	60	168	718	465
Demand Flow Rate, veh/h	61	172	732	474
Vehicles Circulating, veh/h	494	695	164	42
Vehicles Exiting, veh/h	22	201	391	825
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	5.1	8.5	11.4	6.1
Approach LOS	A	A	B	A
Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	61	172	732	474
Cap Entry Lane, veh/h	834	679	1167	1322
Entry HV Adj Factor	0.984	0.977	0.980	0.981
Flow Entry, veh/h	60	168	718	465
Cap Entry, veh/h	820	663	1144	1297
V/C Ratio	0.073	0.253	0.627	0.359
Control Delay, s/veh	5.1	8.5	11.4	6.1
LOS	A	A	B	A
95th %tile Queue, veh	0	1	5	2

Intersection				
Intersection Delay, s/veh	7.0			
Intersection LOS	A			
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	39	140	309	613
Demand Flow Rate, veh/h	40	143	315	624
Vehicles Circulating, veh/h	678	322	107	101
Vehicles Exiting, veh/h	47	99	611	364
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	6.0	5.0	5.3	8.4
Approach LOS	A	A	A	A
Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	40	143	315	624
Cap Entry Lane, veh/h	691	994	1237	1245
Entry HV Adj Factor	0.975	0.979	0.980	0.982
Flow Entry, veh/h	39	140	309	613
Cap Entry, veh/h	674	973	1213	1222
V/C Ratio	0.058	0.144	0.255	0.501
Control Delay, s/veh	6.0	5.0	5.3	8.4
LOS	A	A	A	A
95th %tile Queue, veh	0	1	1	3

Intersection												
Int Delay, s/veh	8.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕	↕	↕	↕	
Traffic Vol, veh/h	0	0	0	30	0	134	0	607	83	110	325	0
Future Vol, veh/h	0	0	0	30	0	134	0	607	83	110	325	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	325	350	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	38	0	168	0	759	104	138	406	0

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1577	1545	406	1441	1441	759	406	0	0	863	0	0
Stage 1	682	682	-	759	759	-	-	-	-	-	-	-
Stage 2	895	863	-	682	682	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	89	115	645	110	133	406	1153	-	-	779	-	-
Stage 1	440	450	-	399	415	-	-	-	-	-	-	-
Stage 2	335	372	-	440	450	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	45	95	645	95	109	406	1153	-	-	779	-	-
Mov Cap-2 Maneuver	45	95	-	95	109	-	-	-	-	-	-	-
Stage 1	440	370	-	399	415	-	-	-	-	-	-	-
Stage 2	197	372	-	362	370	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	0		59.6		0		2.7	
HCM LOS	A		F					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1153	-	-	-	254	779	-
HCM Lane V/C Ratio	-	-	-	-	0.807	0.177	-
HCM Control Delay (s)	0	-	-	0	59.6	10.6	-
HCM Lane LOS	A	-	-	A	F	B	-
HCM 95th %tile Q(veh)	0	-	-	-	6.2	0.6	-

Intersection												
Int Delay, s/veh	6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕	↕	↕	↕	
Traffic Vol, veh/h	1	0	0	88	0	75	0	302	30	85	575	1
Future Vol, veh/h	1	0	0	88	0	75	0	302	30	85	575	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	325	350	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	0	0	93	0	79	0	318	32	89	605	1

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1158	1134	606	1102	1102	318	606	0	0	350	0	0
Stage 1	784	784	-	318	318	-	-	-	-	-	-	-
Stage 2	374	350	-	784	784	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	173	203	497	189	212	723	972	-	-	1209	-	-
Stage 1	386	404	-	693	654	-	-	-	-	-	-	-
Stage 2	647	633	-	386	404	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	145	188	497	178	196	723	972	-	-	1209	-	-
Mov Cap-2 Maneuver	145	188	-	178	196	-	-	-	-	-	-	-
Stage 1	386	374	-	693	654	-	-	-	-	-	-	-
Stage 2	576	633	-	358	374	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	30	38.1	0	1.1
HCM LOS	D	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	972	-	-	145	273	1209	-
HCM Lane V/C Ratio	-	-	-	0.007	0.628	0.074	-
HCM Control Delay (s)	0	-	-	30	38.1	8.2	-
HCM Lane LOS	A	-	-	D	E	A	-
HCM 95th %tile Q(veh)	0	-	-	0	3.9	0.2	-

Intersection				
Intersection Delay, s/veh	13.1			
Intersection LOS	B			
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	60	206	874	565
Demand Flow Rate, veh/h	61	210	891	576
Vehicles Circulating, veh/h	604	835	191	50
Vehicles Exiting, veh/h	22	247	474	995
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	5.8	11.4	17.8	7.2
Approach LOS	A	B	C	A
Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	61	210	891	576
Cap Entry Lane, veh/h	745	589	1136	1311
Entry HV Adj Factor	0.984	0.981	0.981	0.980
Flow Entry, veh/h	60	206	874	565
Cap Entry, veh/h	733	578	1114	1285
V/C Ratio	0.082	0.357	0.785	0.439
Control Delay, s/veh	5.8	11.4	17.8	7.2
LOS	A	B	C	A
95th %tile Queue, veh	0	2	9	2

Intersection				
Intersection Delay, s/veh	8.6			
Intersection LOS	A			
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	39	172	373	738
Demand Flow Rate, veh/h	40	176	380	753
Vehicles Circulating, veh/h	823	380	124	118
Vehicles Exiting, veh/h	47	124	739	438
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	7.0	5.8	5.9	10.8
Approach LOS	A	A	A	B
Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	40	176	380	753
Cap Entry Lane, veh/h	596	937	1216	1223
Entry HV Adj Factor	0.975	0.977	0.981	0.981
Flow Entry, veh/h	39	172	373	738
Cap Entry, veh/h	581	915	1192	1200
V/C Ratio	0.067	0.188	0.313	0.616
Control Delay, s/veh	7.0	5.8	5.9	10.8
LOS	A	A	A	B
95th %tile Queue, veh	0	1	1	4

Intersection						
Int Delay, s/veh	0.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↑	↘	
Traffic Vol, veh/h	0	12	0	575	299	8
Future Vol, veh/h	0	12	0	575	299	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	13	0	625	325	9

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	-	330	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	6.22	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	3.318	-
Pot Cap-1 Maneuver	0	712	0
Stage 1	0	-	0
Stage 2	0	-	0
Platoon blocked, %			
Mov Cap-1 Maneuver	-	712	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.2	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT EBLn1	SBT	SBR
Capacity (veh/h)	-	712	-
HCM Lane V/C Ratio	-	0.018	-
HCM Control Delay (s)	-	10.2	-
HCM Lane LOS	-	B	-
HCM 95th %tile Q(veh)	-	0.1	-

Intersection						
Int Delay, s/veh	0.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↑	↘	
Traffic Vol, veh/h	0	9	0	294	550	19
Future Vol, veh/h	0	9	0	294	550	19
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	10	0	320	598	21

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	-	609	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	6.22	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	3.318	-
Pot Cap-1 Maneuver	0	495	0
Stage 1	0	-	0
Stage 2	0	-	0
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	495	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.4	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT EBLn1	SBT	SBR
Capacity (veh/h)	-	495	-
HCM Lane V/C Ratio	-	0.02	-
HCM Control Delay (s)	-	12.4	-
HCM Lane LOS	-	B	-
HCM 95th %tile Q(veh)	-	0.1	-

Intersection						
Int Delay, s/veh	0.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↑	↘	
Traffic Vol, veh/h	0	12	0	699	364	8
Future Vol, veh/h	0	12	0	699	364	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	13	0	760	396	9

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	-	401	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	6.22	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	3.318	-
Pot Cap-1 Maneuver	0	649	0
Stage 1	0	-	0
Stage 2	0	-	0
Platoon blocked, %			
Mov Cap-1 Maneuver	-	649	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.7	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	649	-	-
HCM Lane V/C Ratio	-	0.02	-	-
HCM Control Delay (s)	-	10.7	-	-
HCM Lane LOS	-	B	-	-
HCM 95th %tile Q(veh)	-	0.1	-	-

Intersection						
Int Delay, s/veh	0.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↑	↘	
Traffic Vol, veh/h	0	9	0	354	670	19
Future Vol, veh/h	0	9	0	354	670	19
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	10	0	385	728	21

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	-	739	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	6.22	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	3.318	-
Pot Cap-1 Maneuver	0	417	0
Stage 1	0	-	0
Stage 2	0	-	0
Platoon blocked, %			
Mov Cap-1 Maneuver	-	417	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13.8	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT EBLn1	SBT	SBR
Capacity (veh/h)	-	417	-
HCM Lane V/C Ratio	-	0.023	-
HCM Control Delay (s)	-	13.8	-
HCM Lane LOS	-	B	-
HCM 95th %tile Q(veh)	-	0.1	-

APPENDIX E

Conceptual Site Plan

CONCEPTUAL DEVELOPMENT PLAN NOTES

STRUCTURES

- 1** SINGLE FAMILY - (3 BED)
- 2** DUPLEX - (3 BED)
- 3** TRIPLEX - TWO STORIES - TWO TOWNHOUSES - (3 BED) w/ ONE FLAT - (1 BED) - OVER ENCLOSED GARAGES
- 4** APARTMENTS - TWO STORIES - EIGHT WALKUP FLATS - (2 BED)
- 5** APARTMENTS - TWO STORIES - FOURTEEN WALKUP FLATS - (2 BED)
- 6** ALLEY FLAT - TWO STORIES - (1 BED) - OVER ENCLOSED GARAGE
- 7** LIVE/WORK TOWNHOUSE - TWO STORIES - THREE UNITS (3 BED) - w/ CLOSED GARAGE
- 8** TRIPLEX - TWO STORIES - THREE TOWNHOUSES - (2 BED)
- 9** APARTMENTS - TWO STORIES - TWENTY UNITS - (1 BED, 2 BED)
- 10** APARTMENTS - THREE STORIES - THIRTY-THREE UNITS - (1 BED, 2 BED)
- 11** APARTMENTS - TWO STORIES - FOURTEEN UNITS - (1 BED, 2 BED)
- 12** APARTMENTS - TWO/THREE STORIES - THIRTY SIX UNITS - (1 BED, 2 BED, 3 BED)

AMENITIES

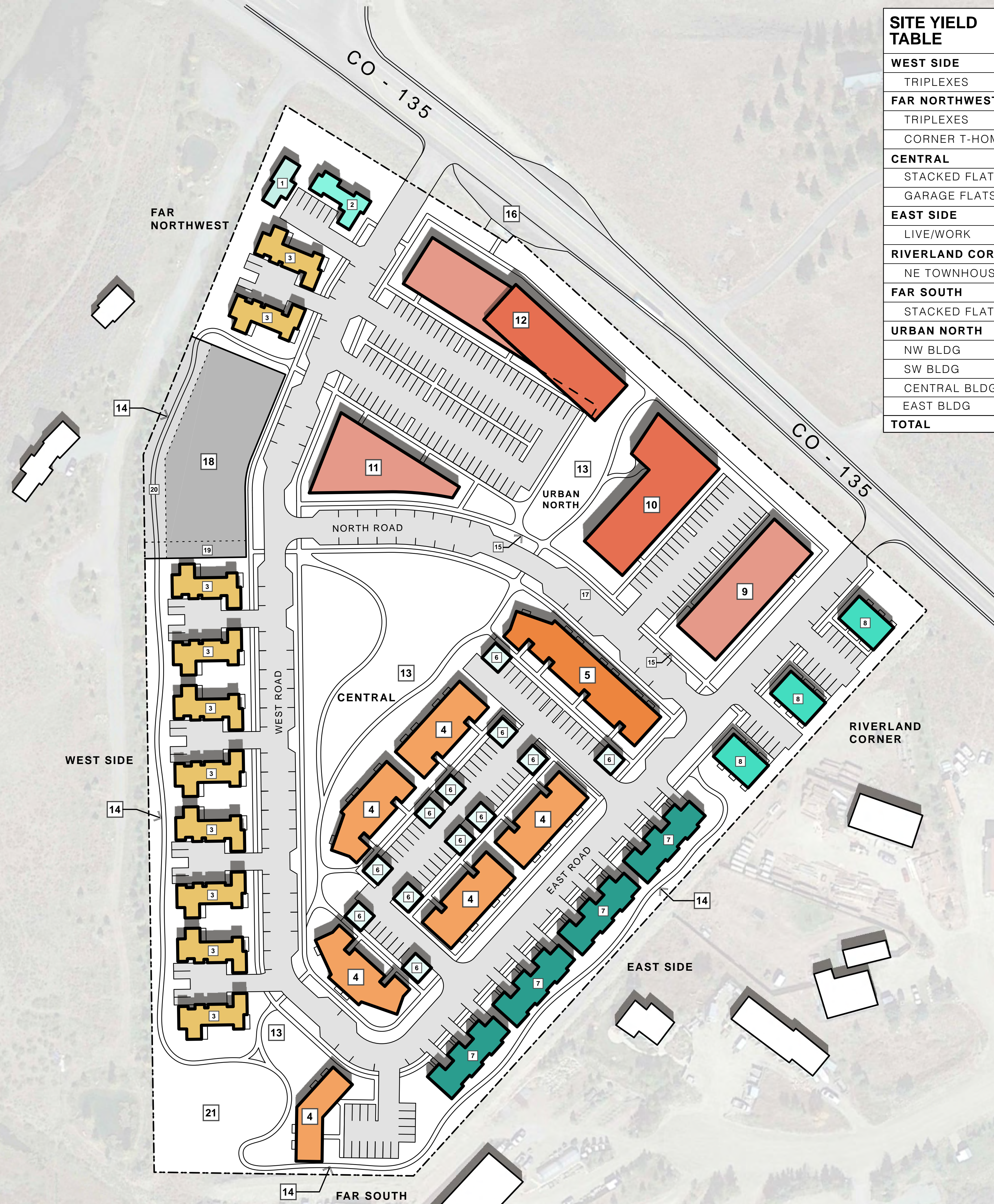
- 13** CENTRAL GREENWAY/PARK
- 14** BOUNDARY TRAIL
- 15** BOUNDARY LINK

TRANSIT / MULTI-MODAL

- 16** BUS STOP
- 17** SCHOOL BUS PICKUP/DROP OFF

OTHER

- 18** GERS PARCEL
- 19** CONNECTION TO COLVIN PROPERTY
- 20** BOUNDARY TRAIL EASEMENT
- 21** STORM WATER DETENTION



SITE YIELD TABLE	ONE BED	TWO BED	THREE BED	TOTAL UNITS
WEST SIDE				
TRIPLEXES	8		16	24
FAR NORTHWEST				
TRIPLEXES	2		4	6
CORNER T-HOME			3	3
CENTRAL				
STACKED FLATS		54		54
GARAGE FLATS	12			12
EAST SIDE				
LIVE/WORK		12		12
RIVERLAND CORNER				
NE TOWNHOUSES		9		9
FAR SOUTH				
STACKED FLATS		8		8
URBAN NORTH				
NW BLDG	7	26	3	36
SW BLDG	6	8		14
CENTRAL BLDG	15	18		33
EAST BLDG	8	12		20
TOTAL	58	147	26	231



ivD LLC
1910 7th Street, Third Floor
Boulder, Colorado 80302
720.301.0500
jv@ydesousa.com

All contents of this document expresses design intent only. Final engineering and fabrication shall remain the responsibility of the contractor or fabricator. All ideas, designs, arrangements and plans indicated or presented by these drawings are the property of the Architect, and were created for use in connection with the specified project.



WHETSTONE
 TBD, CO - 135
 Crested Butte, Colorado 80305

issue date:
Sketch Plan Site Diagrams
08/26/22

revisions:

drawing title

CONCEPTUAL
DEVELOPMENT
PLAN

drawing scale 1/64" = 1'-0"

drawing number

MAP 1