



October 8, 2021

Town of Rhinebeck Planning Board
80 East Market Street
Rhinebeck, NY 12572

Attn: Michael Trimble, Chairman

RE: Response to Comments on *Rock Ledge Traffic Impact Analysis Addendum #2*, Town of Rhinebeck, Dutchess County, New York; CM Project No. 114-053

Dear Chairman Trimble and Planning Board Members:

Creighton Manning Engineering, LLP (CM) is in receipt of the comments submitted by CPL dated June 7, 2021 regarding the Addendum #2 of the traffic assessment for the subject project. This Addendum was issued to analyze the traffic impact of the *Rock Ledge* site as if it were a typical 36-unit residential condominium project, after having been originally proposed and analyzed for 28 multifamily recreational condominium units as well as a 12-room Country Inn, and then for 36 multifamily recreational condominium units without the Country Inn.

After reviewing the traffic related comments, we offer the following responses.

Comment #13 – Addendum #2 does not provide an updated site plan.

Response – An updated site plan is attached.

Comment #13.1 – Provide a description of what will be done on each lot.

Response – Subdivision Lot 1 and 2 will consist of a total of eight (8) residential “Adaptive Reuse” units within the historic Manor House (Lot 1) and the historic Stone Barn (Lot 2). Lot 1 also includes the historic Stone Cottage building which will also be adaptively repurposed as a security gatehouse. Subdivision Lot 3 will consist of twenty-eight (28) clustered Multifamily Residences in seven (7) buildings (four (4) units each). Lot 3 also includes HOA facilities and supporting infrastructure, as well as the Adaptive Reuse of the historic Carriage House building for a HOA recreational facility in accordance with Zoning §125-68B. A substantial portion of Lot 3 will remain undisturbed and wooded. Lot 3 also includes the existing Wastewater Treatment Plant and former (non-historic) dormitory building which will be repurposed as a HOA maintenance facility, equipment and supplies storage, and owner storage.

Comment #13.2 – Provide an explanation of what will be done with the existing buildings on the property (Manor House, Chapel, Gatehouse).

Response – The site’s historic buildings will each be restored and adaptively repurposed – see response to Comment #13.1.

Comment #14 – Traffic Volume figures are not provided for the Addendum #2. Please provide.

Response – Traffic volume figures for the Addendum #2 are included under Attachment B.

Comment #15 – Synchro Analysis reports are not provided for Addendum #2. Please provide.

Response – Synchro analysis reports for the Addendum #2 are included under Attachment C.

In addition to the above comments, CM is also in receipt of comments submitted by David Weiner dated June 30, 2021. After reviewing these comments, we offer the following responses.

Comment #1 – The developer’s traffic study must be rejected because it is based on outdated data gathered six years ago in 2015. Since the data was gathered there has been:

- a. A significant increase in residency, traffic and speeding noted by voters due to the pandemic; and*
- b. An increase in delivery vehicles who tend to exceed the speed limit and cause a hazard to other users of the road including pedestrians and bicyclists.*

Response – Automatic Traffic Recorders (ATRs) were installed by CM on Primrose Hill Road, approximately 250 feet east of Haggerty Hill Road, and on Ackert Hook Road, approximately 350 feet north of Springwood Drive, from July 20, 2021 through July 28, 2021. These locations match two of the locations previously studied in 2015. Table 1 summarizes the volume and speed data collected from these ATRs, and also shows how this data compares to the data collected in 2015. The 2021 traffic volume and speed data is included under Attachment D.

Table A – ATR Data Summary

Location (posted speed limit)	Traffic Volume (vehicles)		Travel Speed (mph)*	
	2021 Daily	2015 Daily	2021 85 th Percentile	2015 85 th Percentile
1. Primrose Hill Rd (40-mph) 250 feet east of Haggerty Hill Road	370	390	45 (43.4)	40 (39.8)
2. Ackert Hook Rd (35-mph) 350 feet north of Springwood Drive	190	215	35 (36.6)	40 (41.6)

*Design speed rounded to nearest 5 mph per section 2.6.1 of the NYS Highway Design Manual. (actual raw data)

Review of the data shows that the daily traffic volumes on the study area roadways have decreased by approximately 10%. Table 1 also indicates that the 85th-percentile speeds have increased by approximately 5 mph on Primrose Hill Road and decreased by approximately 5 mph on Ackert Hook Road. The reduced traffic volumes on both roadways as well as the higher prevailing speeds on Primrose Hill Road are consistent with general changes in traffic patterns since the COVID-19 pandemic began, according to research conducted by the National Highway Traffic Safety Administration (*Update to Special Reports on Traffic Safety During the COVID-19 Public Health Emergency: Third Quarter Data*). The reported increase in local delivery vehicles is also a national trend due to online purchases. The higher prevailing speeds on Primrose Hill Road, however, do not appear to be consistent throughout the study area, as indicated by the lower prevailing speeds on Ackert Hook Road. Prevailing speeds on the study area roadways that exceed the posted speed limit are an existing condition that is not caused by the project, and are the responsibility of local law enforcement.

Comment #2 – The developer’s traffic study has failed to account for other actual and anticipated development as called for by the Comprehensive Plan.

Response – We are aware of no other specific developments that will significantly affect traffic in the area,

nor affect the conclusions of the traffic analyses.

Comment #3 – The baseline speeding and accident record noted in the developer’s traffic study conflicts with maintaining the rural character of the area and the town Comprehensive Plan. (See Table 1 below for details.)

- a. In five of eight sessions, the developer’s traffic study found an eye popping 15% of drivers exceeding the speed limit by almost 6 to over 13 mph!*
- b. Maximum observed speeds in the study exceeded 50 mph with three above 70 mph!*
- c. A significant proportion of the accidents reported in the study involved a wall or animal, highlighting the rural and winding nature of the local roads.*

Table 1: Developer’s Traffic Study 2015

Location	Speed Limit	Observed Speed		
		Maximum	Mean	85th Percentile
Ackert Hook Rd. South of Springwood 1	35	55.2	35.6	40.9
Ackert Hook Rd South of Springwood 2	35	55.2	35.7	40.9
Primrose Hill Rd. North of Springwood 1	40	73.3	55.7	49.4
Primrose Hill Rd. North of Springwood 2	40	73.3	47.4	53.3
Ackert Hook Rd South of Primrose Hill 1	35	49.1	26.2	31.5
Ackert Hook Rd South of Primrose Hill Rd 2	35	53.6	27.3	32.2
Primrose Hill Rd East of Haggerty Hill	40	54.0	35.0	40.7
Primrose Hill Rd. West of Haggerty Hill R.	35	99.2	42.6	58.4

Response – The speeds and crash data presented in the traffic study are the existing characteristics of the “rural” roads, not conditions created by the proposed development. The industry standard for determining the operating speed of a roadway is by calculating the 85th-percentile speed of traffic on a given roadway. The 85th percentile speed is the speed at or below which 85 percent of the vehicles are traveling and reflects the comfort of most drivers. It is not uncommon for the 85th-percentile speed to exceed the posted speed limit of a roadway, which is an enforcement issue.

Comment #4 – The developer’s study applied a road environmental standard that would consider it acceptable if traffic increased by double to five times. This standard is wholly inconsistent and totally in conflict with the rural nature of the local roads and the town Comprehensive Plan. (See Table 2 below.)

Table 2: Developer's Environmental Rating Standard for Acceptable

	Minimum Acceptable Vehicles per Day Developer's Study	Maximum Acceptable Vehicles per Day Developer's Study	2015 Observed Developer's Study	Implied Minimum Acceptable % Increase	Implied Maximum Acceptable % Increase
Haggerty Hill Rd West of Primrose	600	1200	410	146%	293%
Primrose Hill Rd East of Haggerty Hill Rd.	600	1200	565	106%	212%
Ackert Hook Rd South of Primrose Hill Rd	600	1200	225	267%	533%
Primrose Hill Red East of Ackert Hook Rd.	600	1200	625	96%	192%
Ackert Hook Rd North of Springwood	600	1200	525	114%	229%

Response – There is no definitive statement in the Comprehensive Plan about specific traffic volume thresholds. In addition to the environmental rating thresholds cited in the above table, the document entitled *Guidelines for Geometric Design of Low-Volume Roads (2019)*, published by the American Association of State Highway Transportation Officials (AASHTO), was reviewed to help provide context for this comment. According to the AASHTO Guide, roadways are classified as Low Volume roads if they carry less than 2,000 vehicles per day (vpd). All of the local roads studied as part of the Rock Ledge project have volumes less than 2,000 vpd and are considered low volume rural roads, and will continue to be low volume rural roads after full build out of the development.

Comment #5 – The developer's traffic study's suggestion that signs be posted encouraging drivers to share the road with bicycles and admonishing pedestrians to walk against traffic as required by law demonstrates a total lack of appreciation for the narrow winding nature of the local roads, which is required by the town Comprehensive Plan.

- a. *There are locations along the local roads that lack shoulders on one or both sides of the road, and often located at curves or on hills. (See Table 3 for details regarding Ackert Hook Rd. and Haggerty Hill Rd.)*
- b. *There is virtually no shoulder along Ackert Hook Rd or Haggerty Hill Rd. adequate for a bicycle, stroller or baby carriage.*
- c. *Other local roads have similar problems.*
- d. *Traffic signs will not ameliorate the current and anticipated traffic problems.*
 - (1) *Walking against traffic as suggested by the developer's traffic study is hazardous at many locations.*
 - (2) *The developer's traffic speed study demonstrates a significant ignoring of traffic signs by drivers.*
 - (3) *Traffic signs do not correct the basic lack of shoulders or presence of hills and curves.*

Table 3 Selected Road Shoulder Conditions				
Location / Address	Curve	Hill	No Shoulder One side	No Shoulder Both Sides
Ackert Hook Rd				
9			X	
45	X	X	X	
59	X	X		X
88	X		X	
212	X	X		
236	X	X	X	
244	X	X		X
218	X	X	X	
328	X	X	X	
373 to 399	X		X	
399 to Springwood	X	X		X
467	X			X
505 to Extension	X	X	X	
Haggerty Hill Rd				
1	X	X		
7	X	X	X	
21	X	X	X	
29	X	X		
37	X	X		X
Cricket Ln Intersection				
41	X	X		X
42	X	X	X	

Response – The Town Comprehensive Plan indicates the importance of maintaining the rural character of local roads. Further, the AASHTO Low Volume Road Guide cited in the previous response recognizes that reconstruction of low-volume roads to make marginal or incremental improvements is not cost-effective except in unusual cases where site-specific crash patterns are identified. A review of the crash data in the original traffic study shows no site-specific crash patterns on the local roads studied. Examples of specific statements in the AASHTO guide include:

- Section 4.2.2 *“The cross-section widths of existing roads need not be modified except in those cases where there is evidence of a site-specific crash pattern.”*
- Section 4.5.2 *“Because sight distance improvements are unlikely to be cost-effective under most circumstances, the existing sight distance on low-volume roads may be allowed to remain in place unless there is evidence of a site-specific crash pattern attributable to inadequate sight distance.”*
- Section 4.7.2 *“Roadside clear zone and traffic barriers are not generally provided, except in situations where a site-specific crash pattern is present.”*

Traffic signs including those identified in the original traffic study for consideration by the Town are the appropriate traffic control measure on the low volume roads studied adjacent to the project.

We trust the above responses adequately address the comments received to date. If you have any additional comments, please feel free to reach out to me at 518-689-1837 or msargent@cmellp.com.

Please call our office if you have any questions regarding the above responses.

Respectfully submitted,
Creighton Manning Engineering, LLP



Dan Karkotsky, PE
Project Engineer



Mark A. Sargent, PE
Project Manager

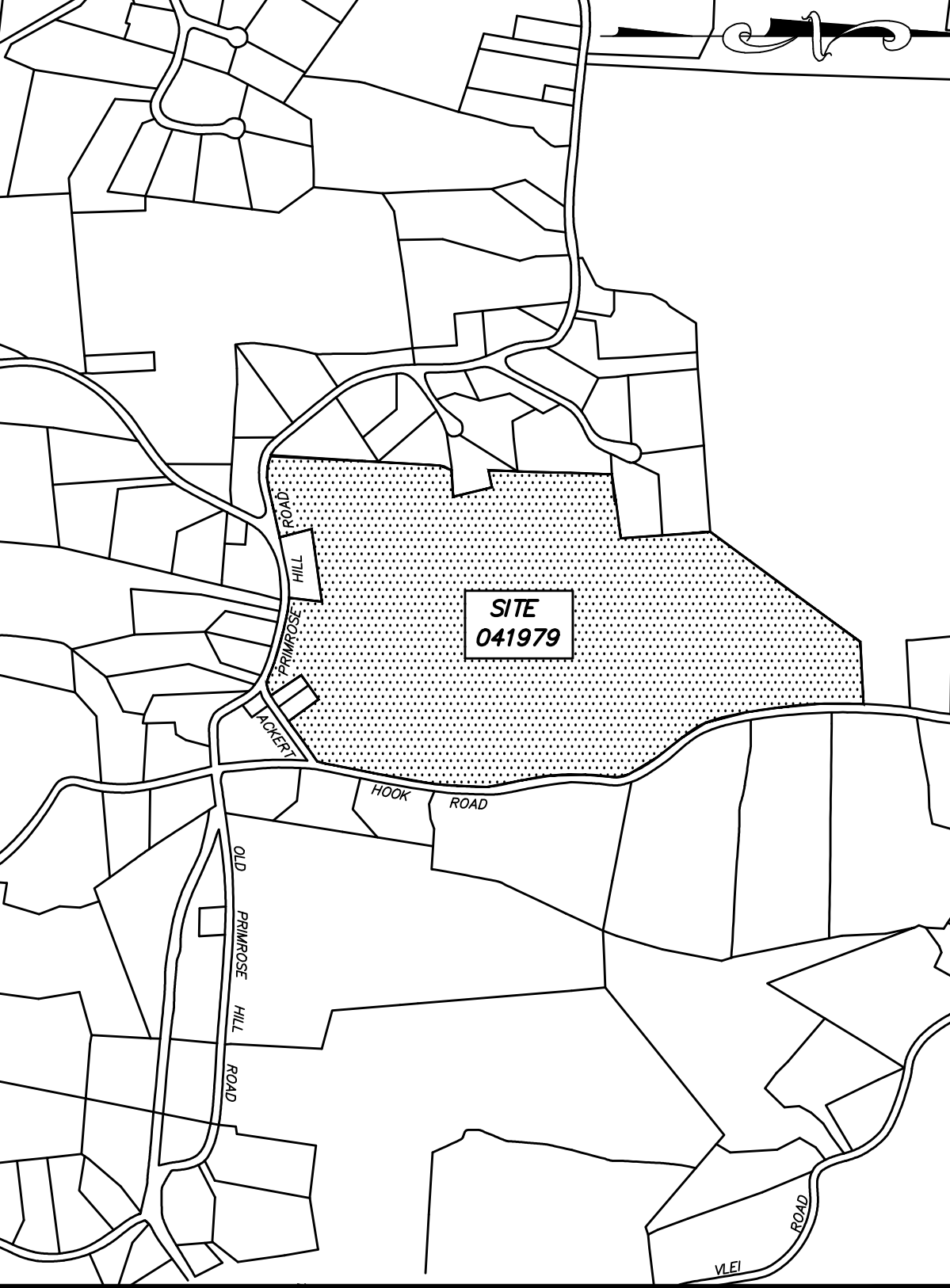
Attachments

C: Matthew Rudikoff – MDRA
Raymond Jurkowski, PE – CPL

N:\Projects\2014\114-053 Rock Ledge\documents\114053_Response to Comments_20211008.docx

Attachment A
Site Plan

Rock Ledge
Town of Rhinebeck, New York



PLAN NOTES

1) THE BOUNDARY AND TOPOGRAPHIC INFORMATION SHOWN ON THIS PLAN IS BASED ON FIELD SURVEY PERFORMED BY MARK R. GRAMINSKI P.E., L.S., INC. THE TOPOGRAPHIC INFORMATION PREPARED BY GOLDEN AERIAL SURVEY. THE ELEVATION DATUM IS NAVD 88. THE WETLAND PLANS WERE FIELD LOCATED USING LEICA GPS SURVEY EQUIPMENT CORRELATED TO THE NAD83 COGS NETWORK.

2) **SITE DATA TAX PARCEL NUMBER 135089-6268-00-041979**
PARCEL AREA = 135,824 AC
PARCEL ZONING - R05

PROPOSED LOT AREA SUMMARY

LOT No.	DESCRIPTION	ACREAGE
1	ADAPTIVE REUSE LOT	5.265
2	ADAPTIVE REUSE LOT	5.069
3	CONDOMINIUM LOT	125.490

3) **PROPOSED CONDOMINIUM UNIT SUMMARY**

ADAPTIVE REUSE BUILDING	LOT No.	No. OF UNITS
MANOR HOUSE	1	4
STONE BARN	2	4

NEW CONSTRUCTION UNIT NUMBER	LOT No.	No. OF UNITS
1	3	4
2	3	4
3	3	4
4	3	4
5	3	4
6	3	4
7	3	4
8	3	4
TOTAL		32

AREA AND BULK REGULATIONS TABLE - EXISTING and PROPOSED COMPARISON

ZONING DISTRICT: RESIDENTIAL COUNTRYSIDE (RCS)

USE: ADAPTIVE REUSE (MULTI-FAMILY) and MULTI-FAMILY (NEW CONSTRUCTION)

ITEM	REQUIRED	EXISTING	VARIANCE	PROPOSED LOT 1	VARIANCE	PROPOSED LOT 2	VARIANCE	PROPOSED LOT 3	VARIANCE
MAXIMUM DENSITY	1 D.U. / 5 ACRE	135,824 ACRES	CONFORMING	5.265	CONFORMING	5.069	CONFORMING	125.490	CONFORMING
MINIMUM BUILDING SETBACKS	FRONT	100 FEET	MIN. 1037 FEET	CONFORMING	216 FEET	CONFORMING	183 FEET	CONFORMING	160 FEET
	SIDE	50 FEET	MIN. 859 FEET	CONFORMING	50 FEET	CONFORMING	50 FEET	CONFORMING	50 FEET
	REAR	50 FEET	MIN. 542 FEET	CONFORMING	50 FEET	CONFORMING	50 FEET	CONFORMING	404 FEET
MAXIMUM BUILDING HEIGHT	35 FEET	LESS THAN 35 FEET	CONFORMING	LESS THAN 35 FEET	CONFORMING	LESS THAN 35 FEET	CONFORMING	LESS THAN 35 FEET	CONFORMING
	7 %	0.6 %	CONFORMING	3.71 %	CONFORMING	4.05 %	CONFORMING	1.10 %	CONFORMING
	2.9 %	2.9 %	CONFORMING	24.28 %	CONFORMING	11.57 %	CONFORMING	5.06 %	CONFORMING
MAXIMUM LOT COVERAGE	400 FEET	> 400 FEET	CONFORMING	400 FEET	CONFORMING	488 FEET	CONFORMING	> 400 FEET	CONFORMING
MINIMUM LOT WIDTH	240 FEET	> 240 FEET	CONFORMING	242 FEET	CONFORMING	654 FEET	CONFORMING	> 240 FEET	CONFORMING
MINIMUM FRONTAGE	240 FEET	> 240 FEET	CONFORMING	242 FEET	CONFORMING	654 FEET	CONFORMING	> 240 FEET	CONFORMING
MINIMUM OPEN SPACE	75 %	87.1 %	CONFORMING	73.72 %	CONFORMING	88.43 %	CONFORMING	94.94 %	CONFORMING
MINIMUM PARKING SETBACKS	FRONT	25 FEET	MIN. 287 FEET	CONFORMING	MIN. 238 FEET	CONFORMING	MIN. 267 FEET	CONFORMING	MIN. 221 FEET
	SIDE	5 FEET	MIN. 1300 FEET	CONFORMING	MIN. 5 FEET	CONFORMING	MIN. 5 FEET	CONFORMING	MIN. 29 FEET
	REAR	5 FEET	MIN. 780 FEET	CONFORMING	MIN. 205 FEET	CONFORMING	MIN. 8 FEET	CONFORMING	MIN. 435 FEET

- PROPOSED USE NOTES**
- FORMER DORMITORY BUILDING:
 - HOA - owner storage
 - HOA maintenance workshop, equipment and supplies storage
 - FORMER DORMITORY BUILDING OUTSIDE AREA:
 - HOA Garden
 - STONE COTTAGE:
 - Security Gate House
 - STONE BARN:
 - Adaptive Reuse Dwellings - 4 UNITS
 - EXISTING WASTEWATER TREATMENT PLANT:
 - Exterior aesthetic treatment
 - Sound attenuation treatment
 - MANOR HOUSE:
 - Adaptive Reuse Dwellings - 4 UNITS
 - FORMER INFIRMARY BUILDING:
 - Temporary construction office and then demolition
 - CARRIAGE HOUSE HOA RECREATION FACILITY:
 - Gym/Exercise rooms
 - Pool and pool area
 - FORMER MAINTENANCE STRUCTURES:
 - Temporary construction uses and then demolition
 - WATER STORAGE TANK:
 - To remain

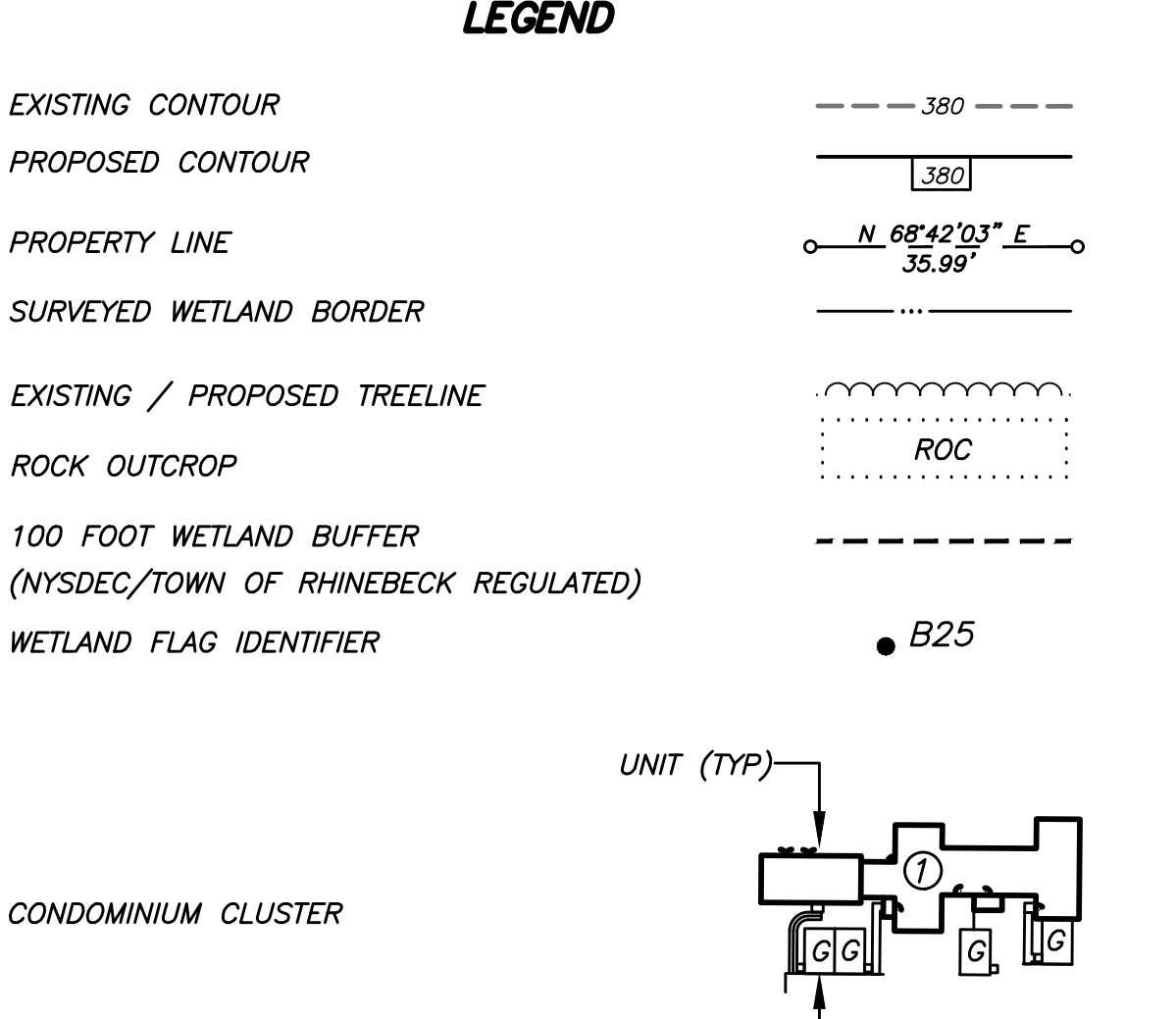
PROJECT DRAWING SUMMARY

SHEET No. of 11	TITLE
SHEET 1 of 11	SITE PLAN
SHEET 2 of 11	SUBDIVISION PLAT
SHEET 3 of 11	SITE GRADING PLAN 1
SHEET 4 of 11	SITE GRADING PLAN 2
SHEET 5 of 11	SITE UTILITIES PLAN 1
SHEET 6 of 11	SITE UTILITIES PLAN 2
SHEET 7 of 11	SITE UTILITIES PLAN 3
SHEET 8 of 11	ROAD PROFILES
SHEET 9 of 11	EROSION and SEDIMENT CONTROL PLAN 1
SHEET 10 of 11	EROSION and SEDIMENT CONTROL PLAN 2
SHEET 11 of 11	DETAILS SHEET



WETLAND SUMMARY

WETLAND ID	TYPE	AREA (ACRES)
WETLAND A	1/0 RHINEBECK	1.082
WETLAND B	1/0 RHINEBECK	0.690
WETLAND C	1/0 RHINEBECK	0.812
WETLAND D	1/0 RHINEBECK	0.482
WETLAND E	1/0 RHINEBECK	2.904
WETLAND F	1/0 RHINEBECK	14.705
WETLAND G	1/0 RHINEBECK	0.138
WETLAND H	1/0 RHINEBECK	0.834



PREPARED BY:
 MARK R. GRAMINSKI P.E. L.S., P.C.
 CONSULTING ENGINEER & LAND SURVEYOR
 13 ELM STREET
 RED HOOK, NEW YORK 12571
 (845) 728-2342
 FILE: 1402

LANDS N/F
 PETER S. HAMMOND
 Tax ID No. 135089-6268-00-135802

LANDS N/F
 DOUGLAS W. WESTCOTT
 Tax ID No. 135089-6268-00-140649

LANDS N/F
 BRENDAN F. COFFEY
 Tax ID No. 135089-6268-00-150685

LANDS N/F
 JOHN M. HUGHES
 Tax ID No. 135089-6268-00-166958

LANDS N/F
 IRENE DISCHE
 Tax ID No. 135089-6268-00-180689

LANDS N/F
 ALEXANDER CARPET CO., INC.
 Tax ID No. 135089-6268-00-180139

LANDS N/F
 GARY LACHMUND
 Tax ID No. 135089-6189-00-820205

LANDS N/F
 R. BRIAN MCAULIFFE, TRUSTEE
 Tax ID No. 135089-6189-00-947045

LANDS N/F
 CHRISTOPHER S. KAPPELLER
 Tax ID No. 135089-6189-00-942074

LANDS N/F
 MICHEL G. COUTURIER
 Tax ID No. 135089-6189-00-892895

LANDS N/F
 RICHARD E. STONE
 Tax ID No. 135089-6189-00-896944

LANDS N/F
 JAMES SURICO
 Tax ID No. 135089-6189-00-913903

LANDS N/F
 GREGORY C. ROBINSON
 Tax ID No. 135089-6189-00-926935

LANDS N/F
 ROBERT C. STRICKSTEIN
 Tax ID No. 135089-6189-00-912963

LANDS N/F
 JOHN FRANCO
 Tax ID No. 135089-6268-00-986790

LANDS N/F
 TAX SALE W-REM 2011
 Tax ID No. 135089-6268-00-028681

LANDS N/F
 NAMIKO LINK
 Tax ID No. 135089-6268-00-021748

LANDS N/F
 JENNY F. LIND
 Tax ID No. 135089-6268-00-034788

LANDS N/F
 HOMER K. STALEY JR
 Tax ID No. 135089-6268-00-049784

LANDS N/F
 JAMES F. MILLER
 Tax ID No. 135089-6268-00-042732

LANDS N/F
 KOSOFSKY
 Tax ID No. 135089-6268-00-087739

LANDS N/F
 WILLIAM WILEY
 Tax ID No. 135089-6268-00-083793

LANDS N/F
 LIDA A. TRAYER
 Tax ID No. 135089-6268-00-104794

LANDS N/F
 LEZ. WHIBEE
 Tax ID No. 135089-6268-00-078115

LANDS N/F
 ROBERT MARX
 Tax ID No. 135089-6268-00-082821

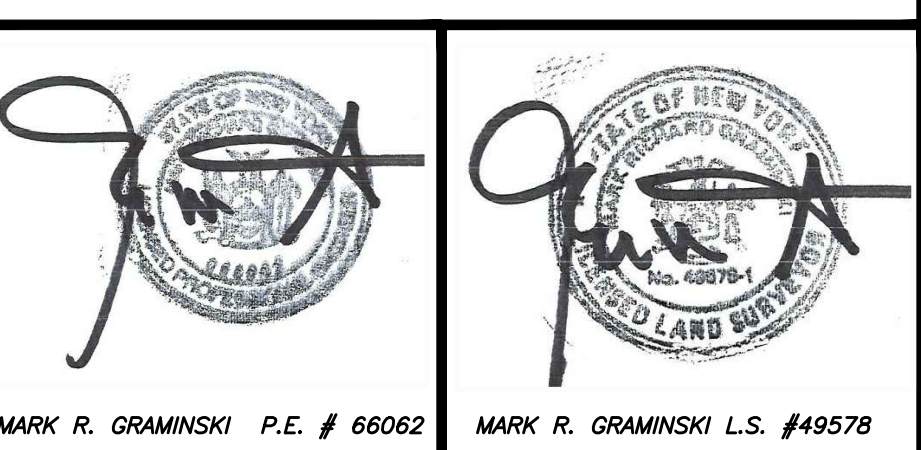
TOWN OF RHINEBECK PLANNING BOARD
 APPROVED BY RESOLUTION OF THE PLANNING BOARD OF THE TOWN OF RHINEBECK, NEW YORK ON THE ____ DAY OF ____ 2019

SUBJECT TO ALL REQUIREMENTS AND CONDITIONS OF SAID RESOLUTION, ANY CHANGE, ERASURE, MODIFICATION OR REVISION OF THIS PLAT, AS APPROVED, SHALL VOID THIS APPROVAL.

SIGNED THIS ____ DAY OF ____ 2019

BY: _____
 CHAIRPERSON

SHEET 1 of 11
 SITE PLAN
 CONDOMINIUM PARCEL and HISTORIC ADAPTIVE REUSE PARCELS
 ROCKLEDGE CONDOMINIUMS
 PREPARED FOR
HUDSON VALLEY RHINEBECK LLC
 TOWN OF RHINEBECK
 SCALE 1"=100'
 DUTCHESS COUNTY, NEW YORK
 NOVEMBER 16, 2019



No.	DATE	DESCRIPTION

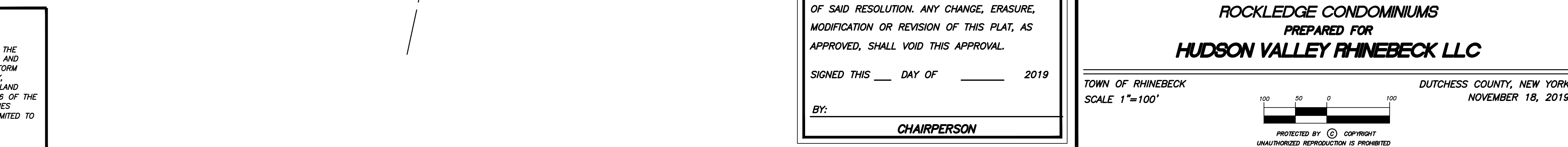
AGRICULTURAL DISTRICT NOTE

THE UNDERSIGNED OWNERS OF THE PROPERTY HEREON STATE THAT THEY ARE FAMILIAR WITH THIS MAP, ITS CONTENTS AND ITS LEGENDS, AND HEREBY CONSENT TO ALL SAID TERMS AND CONDITIONS AS STATED HEREON AND TO THE FILING OF THIS MAP WITH THE DUTCHESS CO. CLERK.

SIGNED THIS 18th DAY OF NOVEMBER 2019

HUDSON VALLEY RHINEBECK LLC (MARK R. GRAMINSKI - AUTHORIZED AGENT)

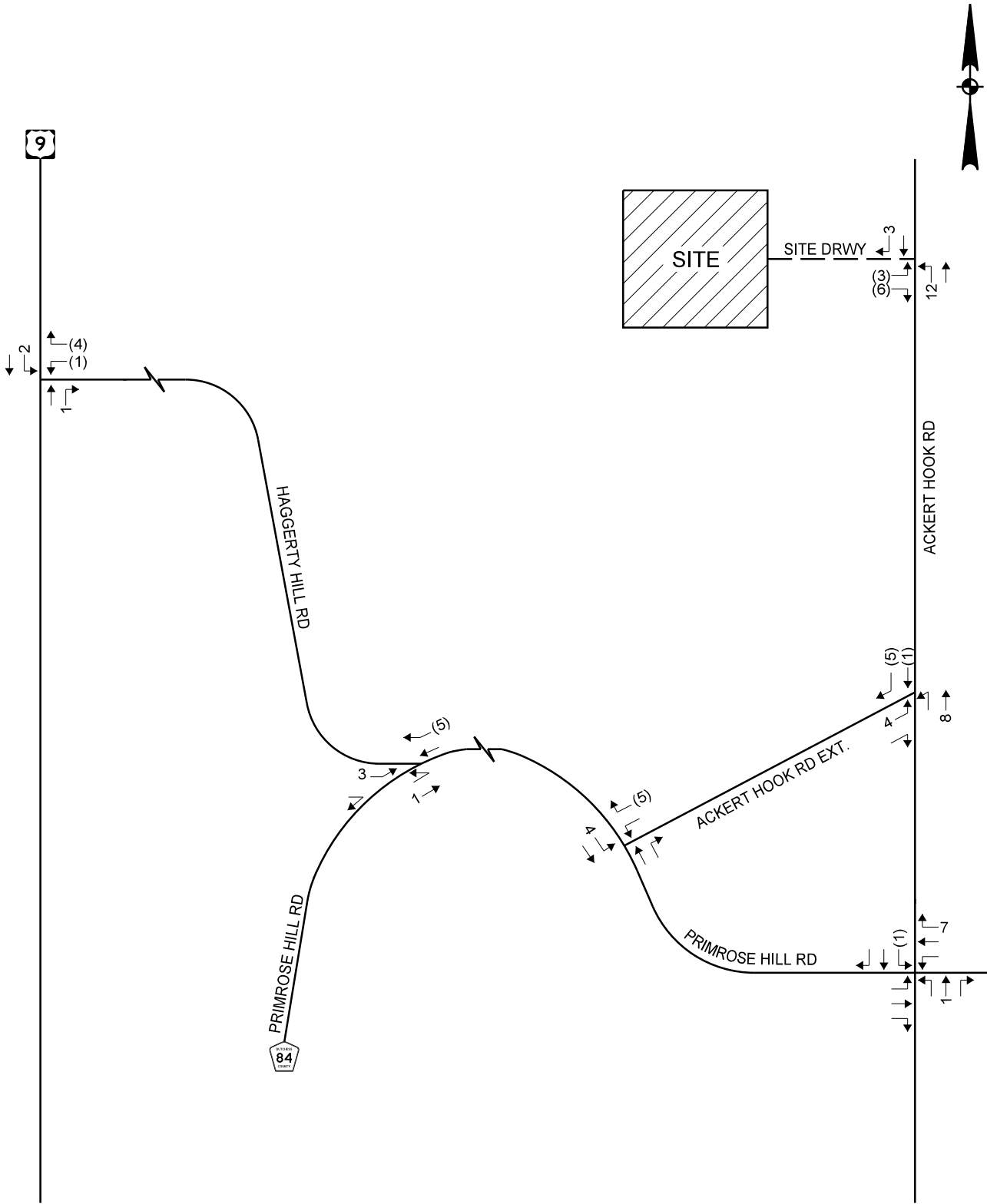
IT IS THE POLICY OF THE TOWN OF RHINEBECK TO CONSERVE, PROTECT AND ENCOURAGE THE DEVELOPMENT AND IMPROVEMENT OF AGRICULTURAL LAND FOR THE PRODUCTION OF FOOD AND OTHER PRODUCTS AND ALSO FOR ITS NATURAL ECOLOGICAL VALUE. THIS NOTICE IS TO INFORM THE PROSPECTIVE GRANTEE THAT THE PROPERTY HE IS ABOUT TO ACQUIRE LIES PARTIALLY WHOLLY OR WITHIN FIVE HUNDRED (500) FEET OF EITHER AN AGRICULTURAL DISTRICT OR LAND FOR WHICH AN INDIVIDUAL COMMITMENT HAS BEEN RECEIVED PURSUANT TO S 305 OR 306 OF THE AGRICULTURE AND MARKETS LAW OF THE STATE OF NEW YORK AND THAT FARMING ACTIVITIES MAY OCCUR ON SUCH PROPERTIES. SUCH FARMING ACTIVITIES MAY INCLUDE BUT NOT BE LIMITED TO ACTIVITIES THAT CAUSE NOISE, MUST AND ODORS.



Attachment B
Traffic Volume Figures

Rock Ledge
Town of Rhinebeck, New York

N:\Projects\2014\114-053_Rock_Ledge\cadd\ dgn\114-053_fig_3a.dgn



LEGEND:
ENTERING (EXITING)

TRIP ASSIGNMENT - ADDENDUM #2

ROCK LEDGE
TOWN OF RHINEBECK, NEW YORK

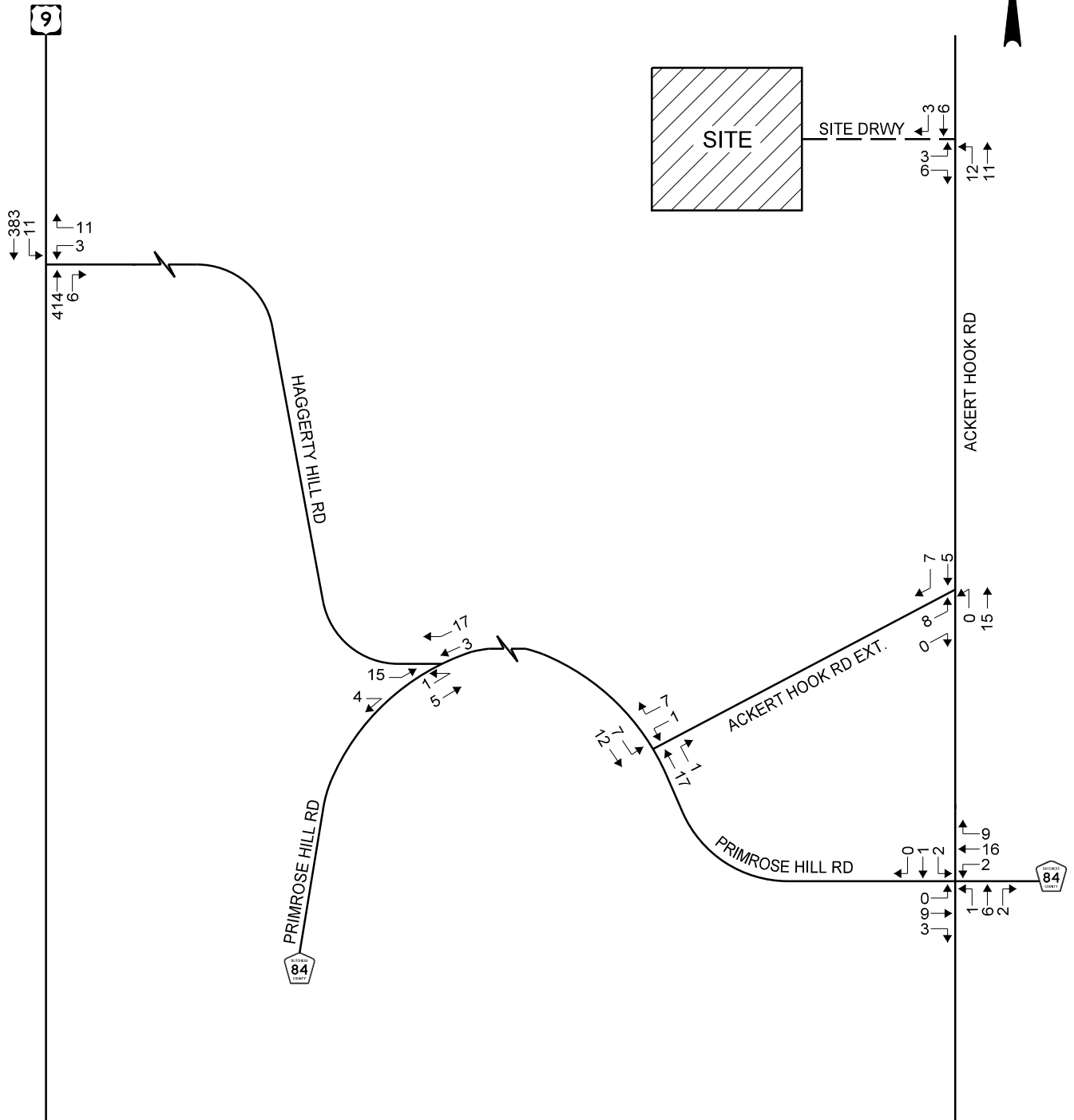


PROJECT: 114-053

DATE: 08/2021

FIGURE: 3A

N:\Projects\2014\114-053 Rock Ledge\cadd\dgm\114-053_fig_1.trcf_4A.dgn



BUILD - ADDENDUM #2
FRIDAY PM PEAK HOUR TRAFFIC VOLUMES

ROCK LEDGE
TOWN OF RHINEBECK, NEW YORK



PROJECT: 114-053

DATE: 08/2021

FIGURE: 4A

Attachment C
Level of Service Analysis

Rock Ledge
Town of Rhinebeck, New York

LOS Definitions

The following is an excerpt from the Highway Capacity Manual, 6th Edition (HCM).

Level of Service for Signalized Intersections

Level of Service (LOS) can be characterized for the entire intersection, each intersection approach, and each lane group. Control delay alone is used to characterize LOS for the entire intersection or an approach. Control delay *and* volume-to-capacity (v/c) ratio are used to characterize LOS for a lane group. Delay quantifies the increase in travel time due to traffic signal control. It is also a surrogate measure of driver discomfort and fuel consumption. The v/c ratio quantifies the degree to which a phase's capacity is utilized by a lane group. The following paragraphs describe each LOS.

LOS A describes operations with a control delay of 10 s/veh or less and a v/c ratio no greater than 1.0. This level is typically assigned when the v/c ratio is low and either progression is exceptionally favorable or the cycle length is very short. If it is due to favorable progression, most vehicles arrive during the green indication and travel through the intersection without stopping.

LOS B describes operations with control delay between 10 and 20 s/veh and a v/c ratio no greater than 1.0. This level is typically assigned when the v/c ratio is low and either progression is highly favorable or the cycle length is short. More vehicles stop than with LOS A.

LOS C describes operations with control delay between 20 and 35 s/veh and a v/c ratio no greater than 1.0. This level is typically assigned when progression is favorable or the cycle length is moderate. Individual *cycle failures* (i.e., one or more queued vehicles are not able to depart as a result of insufficient capacity during the cycle) may begin to appear at this level. The number of vehicles stopping is significant, although many vehicles still pass through the intersection without stopping.

LOS D describes operations with control delay between 35 and 55 s/veh and a v/c ratio no greater than 1.0. This level is typically assigned when the v/c ratio is high and either progression is ineffective or the cycle length is long. Many vehicles stop and individual cycle failures are noticeable.

LOS E describes operations with control delay between 55 and 80 s/veh and a v/c ratio no greater than 1.0. This level is typically assigned when the v/c ratio is high, progression is unfavorable, and the cycle length is long. Individual cycle failures are frequent.

LOS F describes operations with control delay exceeding 80 s/veh or a v/c ratio greater than 1.0. This level is typically assigned when the v/c ratio is very high, progression is very poor, and the cycle length is long. Most cycles fail to clear the queue.

A lane group can incur a delay less than 80 s/veh when the v/c ratio exceeds 1.0. This condition typically occurs when the cycle length is short, the signal progression is favorable, or both. As a result, both the delay and v/c ratio are considered when lane group LOS is established. A ratio of 1.0 or more indicates that cycle capacity is fully utilized and represents failure from a capacity perspective (just as delay in excess of 80 s/veh represents failure from a delay perspective).

Average control delay and queue length at roundabout controlled intersections are calculated using SIDRA Intersection. The physical geometry such as entry lane width and approach flare, and traffic volume at the roundabout are factors that influence the intersection's performance. The average delay reported using SIDRA Intersection is based on the signalized HCM Method of Delay for Level-of-Service.

Level of Service Criteria for Unsignalized Intersections

Level of service (LOS) for Two-Way Stop-Controlled (TWSC) intersections is determined by the computed or measured control delay. For motor vehicles, LOS is determined for each minor-street movement (or shared movement) as well as major-street left turns by using criteria given in Exhibit 20-2. LOS is not defined for the intersection as a whole or for major-street approaches for three primary reasons: (a) major-street through vehicles are assumed to experience zero delay; (b) the disproportionate number of major-street through vehicles at a typical TWSC intersection skews the weighted average of all movements, resulting in a very low overall average delay for all vehicles; and (c) the resulting low delay can mask important LOS deficiencies for minor movements. LOS F is assigned to the movement if the volume-to-capacity (v/c) ratio for the movement exceeds 1.0, regardless of the control delay.

The LOS criteria for TWSC intersections are somewhat different from the criteria used in Chapter 18 for signalized intersections, primarily because user perceptions differ among transportation facility types. The expectation is that a signalized intersection is designed to carry higher traffic volumes and will present greater delay than an unsignalized intersection. Unsignalized intersections are also associated with more uncertainty for users, as delays are less predictable than they are at signals, which can reduce users' delay tolerance.

The LOS criteria for All-Way Stop-Controlled (AWSC) intersections are given in Exhibit 21-8. LOS F is assigned if the v/c ratio of a lane exceeds 1.0, regardless of the control delay. For assessment of LOS at the approach and intersection levels, LOS is based solely on control delay.

**Exhibits 20-2/21-8:
Level-of-Service Criteria for Stop Controlled Intersections**

Control Delay (s/veh)	LOS by Volume-to-Capacity Ratio	
	v/c ≤ 1.0	v/c ≥ 1.0
10.0	A	F
>10.0 and ≤ 15.0	B	F
>15.0 and ≤ 25.0	C	F
>25.0 and ≤ 35.0	D	F
>35.0 and ≤ 50.0	E	F
>50.0	F	F

Intersection

Int Delay, s/veh	2.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	1	9	3	2	16	9	1	6	2	2	1	0
Future Vol, veh/h	1	9	3	2	16	9	1	6	2	2	1	0
Conflicting Peds, #/hr	0	0	1	1	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	75	75	75	75	75	75	75	75	75	75	75
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	1	12	4	3	21	12	1	8	3	3	1	0










Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	33	0	0	17	0	0	51	56	15	55	52	27
Stage 1	-	-	-	-	-	-	17	17	-	33	33	-
Stage 2	-	-	-	-	-	-	34	39	-	22	19	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1592	-	-	1613	-	-	953	839	1070	948	843	1054
Stage 1	-	-	-	-	-	-	1008	885	-	988	872	-
Stage 2	-	-	-	-	-	-	987	866	-	1002	884	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1592	-	-	1612	-	-	949	836	1069	937	840	1054
Mov Cap-2 Maneuver	-	-	-	-	-	-	949	836	-	937	840	-
Stage 1	-	-	-	-	-	-	1006	883	-	987	870	-
Stage 2	-	-	-	-	-	-	984	864	-	989	882	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.6			0.5			9.1			9		
HCM LOS							A			A		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	891	1592	-	-	1612	-	-	902
HCM Lane V/C Ratio	0.013	0.001	-	-	0.002	-	-	0.004
HCM Control Delay (s)	9.1	7.3	0	-	7.2	0	-	9
HCM Lane LOS	A	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0

HCM Unsignalized Intersection Capacity Analysis
114-053 Rock Ledge

2: Ackert Hook Rd & Ackert Hook Ext
Build - Updated Friday PM Peak

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	8	0	1	15	5	7
Future Volume (Veh/h)	8	0	1	15	5	7
Sign Control	Yield			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.71	0.71	0.71	0.71	0.71	0.71
Hourly flow rate (vph)	11	0	1	21	7	10
Pedestrians				2		
Lane Width (ft)				9.0		
Walking Speed (ft/s)				4.0		
Percent Blockage				0		
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	35	14	17			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	35	14	17			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	99	100	100			
cM capacity (veh/h)	982	1070	1613			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	11	22	17			
Volume Left	11	1	0			
Volume Right	0	0	10			
cSH	982	1613	1700			
Volume to Capacity	0.01	0.00	0.01			
Queue Length 95th (ft)	1	0	0			
Control Delay (s)	8.7	0.3	0.0			
Lane LOS	A	A				
Approach Delay (s)	8.7	0.3	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay			2.1			
Intersection Capacity Utilization			14.0%	ICU Level of Service		A
Analysis Period (min)			15			

Intersection

Int Delay, s/veh 2.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	
Traffic Vol, veh/h	7	12	17	1	1	7
Future Vol, veh/h	7	12	17	1	1	7
Conflicting Peds, #/hr	1	0	0	1	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	69	69	69	69	69	69
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	10	17	25	1	1	10

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	27	0	64
Stage 1	-	-	27
Stage 2	-	-	37
Critical Hdwy	4.1	-	6.2
Critical Hdwy Stg 1	-	-	5.4
Critical Hdwy Stg 2	-	-	5.4
Follow-up Hdwy	2.2	-	3.3
Pot Cap-1 Maneuver	1600	-	1054
Stage 1	-	-	1001
Stage 2	-	-	991
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1599	-	1053
Mov Cap-2 Maneuver	-	-	939
Stage 1	-	-	994
Stage 2	-	-	990

Approach	EB	WB	SB
HCM Control Delay, s	2.7	0	8.5
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1599	-	-	-	1037
HCM Lane V/C Ratio	0.006	-	-	-	0.011
HCM Control Delay (s)	7.3	0	-	-	8.5
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0

Intersection

Int Delay, s/veh 3.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↑	
Traffic Vol, veh/h	0	5	3	17	15	0
Future Vol, veh/h	0	5	3	17	15	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	25	8	0	0	0
Mvmt Flow	0	6	3	19	17	0

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	-	0	0 19
Stage 1	-	-	- 13
Stage 2	-	-	- 6
Critical Hdwy	-	-	- 6.4
Critical Hdwy Stg 1	-	-	- 5.4
Critical Hdwy Stg 2	-	-	- 5.4
Follow-up Hdwy	-	-	- 3.5
Pot Cap-1 Maneuver	0	-	- 1004 0
Stage 1	0	-	- 1015 0
Stage 2	0	-	- 1022 0
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	- 1004 -
Mov Cap-2 Maneuver	-	-	- 1004 -
Stage 1	-	-	- 1015 -
Stage 2	-	-	- 1022 -

Approach	EB	WB	SB
HCM Control Delay, s	0	0	8.6
HCM LOS			A

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	1004
HCM Lane V/C Ratio	-	-	-	0.017
HCM Control Delay (s)	-	-	-	8.6
HCM Lane LOS	-	-	-	A
HCM 95th %tile Q(veh)	-	-	-	0.1

Intersection

Int Delay, s/veh 3.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑			↑
Traffic Vol, veh/h	1	5	3	0	0	4
Future Vol, veh/h	1	5	3	0	0	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	25	0	0	0	0
Mvmt Flow	1	6	3	0	0	4










Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	3	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.1	-	6.2
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.2	-	3.3
Pot Cap-1 Maneuver	1632	-	1087
Stage 1	-	-	0
Stage 2	-	-	0
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1632	-	1087
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	1.2	0	8.3
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	SBLn1
Capacity (veh/h)	1632	-	-	1087
HCM Lane V/C Ratio	0.001	-	-	0.004
HCM Control Delay (s)	7.2	0	-	8.3
HCM Lane LOS	A	A	-	A
HCM 95th %tile Q(veh)	0	-	-	0

HCM Unsignalized Intersection Capacity Analysis
 114-053 Rock Ledge

43: Haggerty Hill Rd
 Build - Updated Friday PM Peak

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	1	0	0	17	15	4
Future Volume (Veh/h)	1	0	0	17	15	4
Sign Control	Yield			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	1	0	0	19	17	4
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	38	19	21			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	38	19	21			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	979	1065	1608			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	1	19	21			
Volume Left	1	0	0			
Volume Right	0	0	4			
cSH	979	1700	1700			
Volume to Capacity	0.00	0.01	0.01			
Queue Length 95th (ft)	0	0	0			
Control Delay (s)	8.7	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	8.7	0.0	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utilization			13.3%	ICU Level of Service		A
Analysis Period (min)			15			

Intersection

Int Delay, s/veh	0.3					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	3	11	414	6	11	383
Future Vol, veh/h	3	11	414	6	11	383
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	96	96	96	96	96	96
Heavy Vehicles, %	0	0	1	0	0	1
Mvmt Flow	3	11	431	6	11	399

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	656	219	0	0	437
Stage 1	434	-	-	-	-
Stage 2	222	-	-	-	-
Critical Hdwy	6.8	6.9	-	-	4.1
Critical Hdwy Stg 1	5.8	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2
Pot Cap-1 Maneuver	403	791	-	-	1134
Stage 1	627	-	-	-	-
Stage 2	800	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	398	791	-	-	1134
Mov Cap-2 Maneuver	398	-	-	-	-
Stage 1	619	-	-	-	-
Stage 2	800	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.6	0	0.2
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	653	1134
HCM Lane V/C Ratio	-	-	0.022	0.01
HCM Control Delay (s)	-	-	10.6	8.2
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	0.1	0

Intersection

Int Delay, s/veh	4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	3	6	12	11	6	3
Future Vol, veh/h	3	6	12	11	6	3
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	75	75	75	75	75	75
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	4	8	16	15	8	4

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	57	10	12	0	0
Stage 1	10	-	-	-	-
Stage 2	47	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-
Pot Cap-1 Maneuver	955	1077	1620	-	-
Stage 1	1018	-	-	-	-
Stage 2	981	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	945	1077	1620	-	-
Mov Cap-2 Maneuver	945	-	-	-	-
Stage 1	1008	-	-	-	-
Stage 2	981	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.5	3.8	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1620	-	1029	-	-
HCM Lane V/C Ratio	0.01	-	0.012	-	-
HCM Control Delay (s)	7.2	0	8.5	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Attachment D
Traffic Volume and Speed Data

Rock Ledge
Town of Rhinebeck, New York

MetroCount Traffic Executive Weekly Vehicle Counts (Virtual Week)

VirtWeeklyVehicle-83 -- English (ENU)

Datasets:

Site: [114-053] 250' East of Haggerty Hill Rd
Attribute: Primrose Hill Rd
Direction: 8 - East bound A>B, West bound B>A. **Lane:** 1
Survey Duration: 8:21 Tuesday, July 20, 2021 => 12:13 Wednesday, July 28, 2021,
Zone:
File: 114-053 0 2021-07-28 1214.EC1 (Plus)
Identifier: S1328N62 MC56-L5 [MC55] (c)Microcom 19Oct04
Algorithm: Factory default axle (v5.08)
Data type: Axle sensors - Paired (Class/Speed/Count)

Profile:

Filter time: 15:00 Tuesday, July 20, 2021 => 10:00 Wednesday, July 28, 2021 (7.79167)
Included classes: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13
Speed range: 5 - 100 mph.
Direction: East, West (bound), P = East, Lane = 0-16
Separation: Headway > 0 sec, Span 0 - 300 ft
Name: Default Profile
Scheme: Vehicle classification (Scheme F3)
Units: Non metric (ft, mi, ft/s, mph, lb, ton)
In profile: Vehicles = 2698 / 2711 (99.52%)

Weekly Vehicle Counts (Virtual Week)**VirtWeeklyVehicle-83**

Site: 114-053.1.2EW
Description: 250' East of Haggerty Hill Rd
Filter time: 15:00 Tuesday, July 20, 2021 => 10:00 Wednesday, July 28, 2021
Scheme: Vehicle classification (Scheme F3)
Filter: Cls(1-13) Dir(EW) Sp(5,100) Headway(>0) Span(0 - 300) Lane(0-16)

Hour	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Averages	
								1 - 5	1 - 7
0000-0100	0.0	1.0	1.5	1.0	6.0	1.0	1.0	1.8	1.6
0100-0200	3.0	0.0	0.5	0.0	0.0	2.0	0.0	0.7	0.8
0200-0300	1.0	2.0	0.0	0.0	0.0	0.0	1.0	0.5	0.5
0300-0400	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.2	0.1
0400-0500	0.0	0.0	1.0	1.0	1.0	0.0	0.0	0.7	0.5
0500-0600	1.0	1.0	2.5	3.0	0.0	3.0	5.0	1.7	2.3
0600-0700	6.0	6.0	8.0	8.0	6.0	2.0	1.0	7.0	5.6
0700-0800	19.0	26.0	24.5	27.0	25.0	6.0	5.0	24.3	19.6
0800-0900	33.0	38.0	26.0	24.0	27.0	23.0	9.0	29.0	25.8
0900-1000	22.0	24.0	30.5	19.0	31.0	23.0	20.0	26.2	25.0
1000-1100	20.0	26.0	26.0	15.0	21.0	28.0	18.0	21.6	22.0
1100-1200	24.0	20.0	34.0	35.0	34.0	33.0	27.0	29.4	29.6
1200-1300	35.0	23.0	30.0	25.0	32.0	22.0	29.0	29.0	28.0
1300-1400	16.0	32.0	19.0	28.0	27.0	32.0	24.0	24.4	25.4
1400-1500	30.0	24.0	33.0	29.0	32.0	23.0	27.0	29.6	28.3
1500-1600	37.0	30.0	42.0	25.0	41.0	38.0	25.0	34.2	33.5
1600-1700	30.0	31.5	19.0	23.0	33.0	29.0	20.0	28.0	27.1
1700-1800	15.0	19.5	27.0	28.0	30.0	22.0	19.0	23.2	22.5
1800-1900	25.0	18.0	21.0	19.0	20.0	18.0	10.0	20.2	18.6
1900-2000	22.0	16.0	14.0	19.0	5.0	20.0	11.0	15.3	15.4
2000-2100	10.0	7.0	12.0	13.0	14.0	11.0	8.0	10.5	10.3
2100-2200	2.0	5.5	5.0	7.0	8.0	9.0	5.0	5.5	5.9
2200-2300	5.0	3.5	3.0	6.0	7.0	2.0	4.0	4.7	4.3
2300-2400	1.0	1.0	2.0	0.0	1.0	4.0	1.0	1.0	1.4
Totals									
0700-1900	306.0	312.0	332.0	297.0	353.0	297.0	233.0	319.0	305.4
0600-2200	346.0	346.5	371.0	344.0	386.0	339.0	258.0	357.3	342.5
0600-0000	352.0	351.0	376.0	350.0	394.0	345.0	263.0	363.0	348.2
0000-0000	357.0	355.0	381.5	356.0	401.0	351.0	270.0	368.5	353.9
AM Peak	0800	0800	1100	1100	1100	1100	1100		
	33.0	38.0	34.0	35.0	34.0	33.0	27.0		
PM Peak	1500	1300	1500	1400	1500	1500	1200		
	37.0	32.0	42.0	29.0	41.0	38.0	29.0		

* - No data.

MetroCount Traffic Executive Speed Statistics

SpeedStat-86 -- English (ENU)

Datasets:

Site: [114-053] 250' East of Haggerty Hill Rd
Attribute: Primrose Hill Rd
Direction: 8 - East bound A>B, West bound B>A. **Lane:** 1
Survey Duration: 8:21 Tuesday, July 20, 2021 => 12:13 Wednesday, July 28, 2021,
Zone:
File: 114-053 0 2021-07-28 1214.EC1 (Plus)
Identifier: S1328N62 MC56-L5 [MC55] (c)Microcom 19Oct04
Algorithm: Factory default axle (v5.08)
Data type: Axle sensors - Paired (Class/Speed/Count)

Profile:

Filter time: 15:00 Tuesday, July 20, 2021 => 10:00 Wednesday, July 28, 2021 (7.79167)
Included classes: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13
Speed range: 5 - 100 mph.
Direction: East, West (bound), P = East, Lane = 0-16
Separation: Headway > 0 sec, Span 0 - 300 ft
Name: Default Profile
Scheme: Vehicle classification (Scheme F3)
Units: Non metric (ft, mi, ft/s, mph, lb, ton)
In profile: Vehicles = 2698 / 2711 (99.52%)

Speed Statistics

SpeedStat-86

Site: 114-053.1.2EW
Description: 250' East of Haggerty Hill Rd
Filter time: 15:00 Tuesday, July 20, 2021 => 10:00 Wednesday, July 28, 2021
Scheme: Vehicle classification (Scheme F3)
Filter: Cls(1-13) Dir(EW) Sp(5,100) Headway(>0) Span(0 - 300) Lane(0-16)

Vehicles = 2698

Posted speed limit = 40 mph, Exceeding = 878 (32.54%), Mean Exceeding = 44.16 mph

Maximum = 74.8 mph, Minimum = 10.4 mph, Mean = 37.5 mph

85% Speed = 43.40 mph, 95% Speed = 47.53 mph, Median = 37.69 mph

10 mph Pace = 33 - 43, Number in Pace = 1718 (63.68%)

Variance = 42.80, Standard Deviation = 6.54 mph

Speed Bins (Partial days)

Speed	Bin	Below	Above	Energy	vMult	n * vMult
0 - 5	0 0.000%	0 0.000%	2698 100.0%	0.00	0.00	0.00
5 - 10	0 0.000%	0 0.000%	2698 100.0%	0.00	0.00	0.00
10 - 15	14 0.519%	14 0.519%	2684 99.48%	0.00	0.00	0.00
15 - 20	36 1.334%	50 1.853%	2648 98.15%	0.00	0.00	0.00
20 - 25	47 1.742%	97 3.595%	2601 96.40%	0.00	0.00	0.00
25 - 30	165 6.116%	262 9.711%	2436 90.29%	0.00	0.00	0.00
30 - 35	584 21.65%	846 31.36%	1852 68.64%	0.00	0.00	0.00
35 - 40	974 36.10%	1820 67.46%	878 32.54%	0.00	0.00	0.00
40 - 45	610 22.61%	2430 90.07%	268 9.933%	0.00	0.00	0.00
45 - 50	198 7.339%	2628 97.41%	70 2.595%	0.00	0.00	0.00
50 - 55	53 1.964%	2681 99.37%	17 0.630%	0.00	0.00	0.00
55 - 60	12 0.445%	2693 99.81%	5 0.185%	0.00	0.00	0.00
60 - 65	2 0.074%	2695 99.89%	3 0.111%	0.00	0.00	0.00
65 - 70	2 0.074%	2697 100.0%	1 0.037%	0.00	0.00	0.00
70 - 75	1 0.037%	2698 100.0%	0 0.000%	0.00	0.00	0.00
75 - 80	0 0.000%	2698 100.0%	0 0.000%	0.00	0.00	0.00
80 - 85	0 0.000%	2698 100.0%	0 0.000%	0.00	0.00	0.00
85 - 90	0 0.000%	2698 100.0%	0 0.000%	0.00	0.00	0.00
90 - 95	0 0.000%	2698 100.0%	0 0.000%	0.00	0.00	0.00
95 - 100	0 0.000%	2698 100.0%	0 0.000%	0.00	0.00	0.00

Total Speed Rating = 0.00

Total Moving Energy (Estimated) = 0.00

Speed limit fields (Partial days)

Limit	Below	Above
0 40 (PSL)	1820 67.5%	878 32.5%

MetroCount Traffic Executive Weekly Vehicle Counts (Virtual Week)

VirtWeeklyVehicle-94 -- English (ENU)

Datasets:

Site: [114-053] 350' North of Springwood Dr
Attribute: Ackert Hook Rd
Direction: 7 - North bound A>B, South bound B>A. **Lane:** 1
Survey Duration: 8:24 Tuesday, July 20, 2021 => 12:15 Wednesday, July 28, 2021,
Zone:
File: 114-053 0 2021-07-28 1215.EC1 (Plus)
Identifier: FZ12WDHB MC56-L5 [MC55] (c)Microcom 19Oct04
Algorithm: Factory default axle (v5.08)
Data type: Axle sensors - Paired (Class/Speed/Count)

Profile:

Filter time: 15:00 Tuesday, July 20, 2021 => 10:00 Wednesday, July 28, 2021 (7.79167)
Included classes: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13
Speed range: 5 - 100 mph.
Direction: North, South (bound), P = North, Lane = 0-16
Separation: Headway > 0 sec, Span 0 - 300 ft
Name: Default Profile
Scheme: Vehicle classification (Scheme F3)
Units: Non metric (ft, mi, ft/s, mph, lb, ton)
In profile: Vehicles = 1338 / 1349 (99.18%)

Weekly Vehicle Counts (Virtual Week)

VirtWeeklyVehicle-94

Site: 114-053.1.2NS
Description: 350' North of Springwood Dr
Filter time: 15:00 Tuesday, July 20, 2021 => 10:00 Wednesday, July 28, 2021
Scheme: Vehicle classification (Scheme F3)
Filter: Cls(1-13) Dir(NS) Sp(5,100) Headway(>0) Span(0 - 300) Lane(0-16)

Hour	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Averages		
								1 - 5	1 - 7	
0000-0100	0.0	0.0	0.5	0.0	4.0	1.0	2.0	0.8	1.0	
0100-0200	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.2	0.3	
0200-0300	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	
0300-0400	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
0400-0500	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
0500-0600	0.0	1.0	0.5	0.0	1.0	1.0	2.0	0.5	0.8	
0600-0700	3.0	1.0	3.0	4.0	3.0	5.0	1.0	2.8	2.9	
0700-0800	17.0	9.0	5.0	9.0	7.0	2.0	3.0	8.7	7.1	
0800-0900	33.0	13.0	14.5	14.0	13.0	9.0	0.0	17.0	13.9	
0900-1000	12.0	10.0	11.5	12.0	18.0	8.0	7.0	12.5	11.3	
1000-1100	6.0	16.0	11.0	6.0	9.0	14.0	10.0	9.6	10.3	
1100-1200	8.0	11.0	10.0	10.0	19.0	12.0	6.0	11.6	10.9	
1200-1300	17.0	12.0	13.0	8.0	27.0	12.0	7.0	15.4	13.7	
1300-1400	9.0	7.0	16.0	14.0	13.0	10.0	11.0	11.8	11.4	
1400-1500	9.0	13.0	13.0	12.0	33.0	21.0	10.0	16.0	15.9	
1500-1600	21.0	21.0	16.0	8.0	13.0	17.0	10.0	16.7	15.9	
1600-1700	24.0	18.5	11.0	18.0	20.0	12.0	4.0	18.3	15.8	
1700-1800	13.0	14.5	13.0	17.0	17.0	9.0	8.0	14.8	13.3	
1800-1900	11.0	12.0	5.0	11.0	11.0	6.0	8.0	10.3	9.5	
1900-2000	7.0	7.0	10.0	11.0	6.0	7.0	3.0	8.0	7.3	
2000-2100	6.0	4.0	8.0	7.0	7.0	9.0	6.0	6.0	6.4	
2100-2200	9.0	5.0	3.0	4.0	4.0	2.0	1.0	5.0	4.1	
2200-2300	5.0	1.0	3.0	2.0	1.0	4.0	3.0	2.2	2.5	
2300-2400	1.0	1.0	1.0	0.0	0.0	3.0	0.0	0.7	0.9	
Totals										
0700-1900	180.0	157.0	139.0	139.0	200.0	132.0	84.0	162.7	148.8	
0600-2200	205.0	174.0	163.0	165.0	220.0	155.0	95.0	184.6	169.4	
0600-0000	211.0	176.0	167.0	167.0	221.0	162.0	98.0	187.4	172.8	
0000-0000	212.0	179.0	168.0	167.0	226.0	164.0	103.0	189.2	175.0	
AM Peak	0800	1000	0800	0800	1100	1000	1000			
	33.0	16.0	14.5	14.0	19.0	14.0	10.0			
PM Peak	1600	1500	1500	1600	1400	1400	1300			
	24.0	21.0	16.0	18.0	33.0	21.0	11.0			

* - No data.

MetroCount Traffic Executive Speed Statistics

SpeedStat-97 -- English (ENU)

Datasets:

Site: [114-053] 350' North of Springwood Dr
Attribute: Ackert Hook Rd
Direction: 7 - North bound A>B, South bound B>A. **Lane:** 1
Survey Duration: 8:24 Tuesday, July 20, 2021 => 12:15 Wednesday, July 28, 2021,
Zone:
File: 114-053 0 2021-07-28 1215.EC1 (Plus)
Identifier: FZ12WDHB MC56-L5 [MC55] (c)Microcom 19Oct04
Algorithm: Factory default axle (v5.08)
Data type: Axle sensors - Paired (Class/Speed/Count)

Profile:

Filter time: 15:00 Tuesday, July 20, 2021 => 10:00 Wednesday, July 28, 2021 (7.79167)
Included classes: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13
Speed range: 5 - 100 mph.
Direction: North, South (bound), P = North, Lane = 0-16
Separation: Headway > 0 sec, Span 0 - 300 ft
Name: Default Profile
Scheme: Vehicle classification (Scheme F3)
Units: Non metric (ft, mi, ft/s, mph, lb, ton)
In profile: Vehicles = 1338 / 1349 (99.18%)

Speed Statistics

SpeedStat-97

Site: 114-053.1.2NS
Description: 350' North of Springwood Dr
Filter time: 15:00 Tuesday, July 20, 2021 => 10:00 Wednesday, July 28, 2021
Scheme: Vehicle classification (Scheme F3)
Filter: Cls(1-13) Dir(NS) Sp(5,100) Headway(>0) Span(0 - 300) Lane(0-16)

Vehicles = 1338

Posted speed limit = 35 mph, Exceeding = 307 (22.94%), Mean Exceeding = 38.19 mph

Maximum = 49.4 mph, Minimum = 5.3 mph, Mean = 30.6 mph

85% Speed = 36.57 mph, 95% Speed = 39.71 mph, Median = 31.09 mph

10 mph Pace = 26 - 36, Number in Pace = 846 (63.23%)

Variance = 39.74, Standard Deviation = 6.30 mph

Speed Bins (Partial days)

Speed	Bin	Below	Above	Energy	vMult	n * vMult
0 - 5	0 0.000%	0 0.000%	1338 100.0%	0.00	0.00	0.00
5 - 10	12 0.897%	12 0.897%	1326 99.10%	0.00	0.00	0.00
10 - 15	20 1.495%	32 2.392%	1306 97.61%	0.00	0.00	0.00
15 - 20	40 2.990%	72 5.381%	1266 94.62%	0.00	0.00	0.00
20 - 25	139 10.39%	211 15.77%	1127 84.23%	0.00	0.00	0.00
25 - 30	354 26.46%	565 42.23%	773 57.77%	0.00	0.00	0.00
30 - 35	466 34.83%	1031 77.06%	307 22.94%	0.00	0.00	0.00
35 - 40	245 18.31%	1276 95.37%	62 4.634%	0.00	0.00	0.00
40 - 45	54 4.036%	1330 99.40%	8 0.598%	0.00	0.00	0.00
45 - 50	8 0.598%	1338 100.0%	0 0.000%	0.00	0.00	0.00
50 - 55	0 0.000%	1338 100.0%	0 0.000%	0.00	0.00	0.00
55 - 60	0 0.000%	1338 100.0%	0 0.000%	0.00	0.00	0.00
60 - 65	0 0.000%	1338 100.0%	0 0.000%	0.00	0.00	0.00
65 - 70	0 0.000%	1338 100.0%	0 0.000%	0.00	0.00	0.00
70 - 75	0 0.000%	1338 100.0%	0 0.000%	0.00	0.00	0.00
75 - 80	0 0.000%	1338 100.0%	0 0.000%	0.00	0.00	0.00
80 - 85	0 0.000%	1338 100.0%	0 0.000%	0.00	0.00	0.00
85 - 90	0 0.000%	1338 100.0%	0 0.000%	0.00	0.00	0.00
90 - 95	0 0.000%	1338 100.0%	0 0.000%	0.00	0.00	0.00
95 - 100	0 0.000%	1338 100.0%	0 0.000%	0.00	0.00	0.00

Total Speed Rating = 0.00

Total Moving Energy (Estimated) = 0.00

Speed limit fields (Partial days)

Limit	Below	Above
0 35 (PSL)	1031 77.1%	307 22.9%