



This report documents the engineering and traffic investigation required by Vermont Statutes Annotated (23 V.S.A. § 1007. Local speed limits) for a municipal legislative body to establish a safe and reasonable speed limit for their local traffic ordinance.

Road Name (Town Highway Number):	River Road (TH-1)
Study Location Description / Length:	River Road between Thundering Brook Road and the Thundering Brook Fall Trail parking lot.
ATR ID# and Set-up Location:	The 2022 RRPC ATR location on River Road was set up about 400' north of Thundering Brook Road. The 2021 VTrans ATR location (R307) was set up between Archie Baker Road and Wolf Hill Road.
Recommended Speed Limit:	25 mph
Present Posted Speed Limit:	25 mph
Evaluation By:	DA
ATR Count Date:	Speed data: May 27 - June 2, 2022 / Volume data: 2018-22
Final Report Document Date:	September 19, 2023

1. 85th Percentile Speed (mph):
2. 10 mph Pace Speed (mph):
3. Average (Mean) Speed (mph):
4. Speed Limit Range:
5. Test Car speed (mph):
6. Safe speed at curves and intersections:
7. Safety problem related to speed:
8. Average Annual Daily Traffic (vehicles per day):
9. Class of Roadway:
10. (a) Road Surface: / (b) Road Width:
11. (a) Shoulder Surface: / (b) Shoulder Width:
12. Parking:
13. Pedestrians/Bicycles:
14. Adjacent Land Use:

28.5 mph
20-29 mph : 70.8% in Pace
23.8 mph
20-25.5 mph
35 mph
N/A
VTrans Crash Listings document 4 crashes as Property Damage Only (PDO) between May 2017 to May 2023 along the entirety of River Road from end to end.
189 AADT (2018 VTrans Actual count) 303 AADT (2022 RRPC count – VTrans seasonally adjusted)
State Class II - Town Highway Functional Class (07) - Local Road
Gravel = 24' 0" Total Width Northbound: 12' 0" / Southbound: 12' 0"
Grass & Gravel Northbound = 0' 0" / Southbound = 5' 0"
None
Formal Bicycle Route
Rural Residential



This report summarizes speed data for *85th Percentile, 10 MPH Pace, Average Speed, and Speed Limit Range* that was calculated from traffic data collected by the Rutland Regional Planning Commission (RRPC) during the seven-day count period from Friday May 27 through Thursday June 2, 2022. The data included within this report is what the Vermont Local Roads Program's 2016 "*Setting Speed Limits- A Guide for Vermont Towns*" advises municipalities to collect to help determine their traffic ordinance for town highways.

The recommended maximum speed limit of **25 mph** is safe and reasonable for both directions considering the roadway geometrics and the rural and residential nature of abutting land use. The **25 mph** recommendation is within 5 mph of the captured 85th percentile speed, which is preferred in setting speed limits (see further details in the definition below).



Northbound view of River Road, about 400 ft. north of Thundering Brook Road shown here with an Automatic Traffic Recorder with its tubes installed across the road surface, May 2022.



Glossary:

10 mph Pace Speed (or "Pace Speed"): The 10 mph range in which the highest percentage of vehicles are traveling,

85th Percentile Speed: The maximum speed at which 85% of all vehicles are travelling (i.e. the speed at or below which 85% of the sample of vehicles surveyed have been observed). According to the Federal Highway Administration – 2009 Manual of Uniform Traffic Control Devices (MUTCD), the speed limit should be within five (5) miles per hours (mph) plus or minus that of the 85th percentile speed, which is the primary indicator for the “natural” speed of the roadway (please see definition below for further details). Other roadway characteristics, such as geometric alignment (e.g. curves and dips); bicycle, pedestrian, and transit activity; parking patterns; the surrounding land use; vehicle crash history; and injuries and fatalities are also factors to consider in the endeavor to set a safe speed limit.

Annual Average Daily Traffic: A statistical indicator for roadway counts (i.e. traffic volume), known as the 'Annual Average Daily Traffic', or AADT, has been developed to represent the average amount of vehicular traffic in both directions of travel, passing on a given point of road, over a 24-hour period, on a typical day (i.e. seasonally adjusted) of a specified year.

ATR (Automatic Traffic Recorder): A pneumatic triggered device utilizing rubber tubes installed upon a roadway to record vehicle counts, classifications, and speed data. ATRs are the tool used to capture Total Vehicle volume (used to calculate AADT), truck & bus data, 85th percentile speed, 10 MPH pace speed, Average speed data, et al.

Average Speed: The statistic used to describe the typical (average or mean) value for a group of values that is calculated by dividing the sum of the observed values by the number of observed values.

Class of Roadway: State classification of roadways used to identify the functional purpose and funding levels, pursuant to 19 VSA § 302. Classification of town highways.

FAS (Federal-Aid System): An identifying number for roads designated upon the Federal-Aid System.

Functional Classification: A Federal Highway Administration (FHWA) road classification hierarchy that designates the function that any roadway services traffic through whether an interstate, freeway, arterial, collection, local road, or highway network within either rural or urbanized areas.

Line of Sight (i.e. Sight Distance, Sight Line): The length of unobstructed visibility upon a roadway. Sufficient line of sight allows for enough driver reaction time and vehicle movement to avoid potential collisions.

Milemarker (MM): A milemarker (i.e. milepost or milepoint) is a reflective green paddle sign placed alongside highways indicating total mileage from an original control point. For Interstates, the zero milemarker originates at the southernmost, or the westernmost end of the route. However, for other



types of routes, the location of the zero milemarker is placed at each municipal boundary. The Vermont Agency of Transportation (VTrans) manages their milemarkers from South to North, or West to East, depending on the direction of travel of a particular route.

Safe Speed at Curves and Intersections: A method for the determination of the safest speed for curves, nearby intersections, or other potential hazards within the traffic study area along the roadway. An advisory speed for a location may be ascertained either by utilizing a slope meter (i.e. ballbank indicator) or by observation utilizing an automobile. The method is discussed in the 2016 edition of the Vermont Local Roads Program's "*Setting Speed Limits- A Guide for Vermont Towns*".

Speed Limit Range: An indicator of speed ranging from the lowest number of 10 mph Pace Speed to a high number that is the lowest value of either: 1. the 85th percentile speed, or 2. the highest value of the 10 mph Pace Speed. This high value is then subtracted by 3.

Test Car Speed: A qualitative measure determined by the person conducting the speed limit engineering study by driving the road for a few passes and using their "gut" to determine what "feels" to be a reasonable speed.

Traffic Calming: The use of educational programs, enforcement, engineering, the installation of painted lines (e.g. fog lines, dynamic segmentation, etc.), and signage intended to change the behavior of drivers, reduce crash/injury rates, and increase safety.



This report documents the engineering and traffic investigation required by Vermont Statutes Annotated (23 V.S.A. § 1007. Local speed limits) for a municipal legislative body to establish a safe and reasonable speed limit for their local traffic ordinance.

Road Name (Town Highway Number):	Killington Road (TH-2)
Study Location Description / Length:	Killington Road (SkiAccessRd) between US 4 and Innsbrook Lane
ATR ID# and Set-up Location:	(R054) VTrans CTC counter location, just south of Nanak Way (private road). The northbound (NB) direction comprises two vehicular travel lanes, where the southbound (SB) direction comprises a single traveling lane.
Recommended Speed Limit:	30 mph
Present Posted Speed Limit:	35 mph
Evaluation By:	DA
ATR Count Date:	<u>Speed data: July 25-30, 2017</u> / <u>Volume data: 2021</u>
Final Report Document Date:	June 13, 2022

1. 85th Percentile Speed (mph): **43.23 mph**
2. 10 mph Pace Speed (mph):
3. Average (Mean) Speed (mph):
4. Speed Limit Range:
5. Test Car speed (mph):
6. Safe speed at curves and intersections:
7. Safety problem related to speed:
8. Average Annual Daily Traffic (vehicles per day):
9. Class of Roadway:
10. (a) Road Surface: / (b) Road Width:
11. (a) Shoulder Surface: / (b) Shoulder Width:
12. Parking:
13. Pedestrians/Bicycles:
14. Adjacent Land Use:

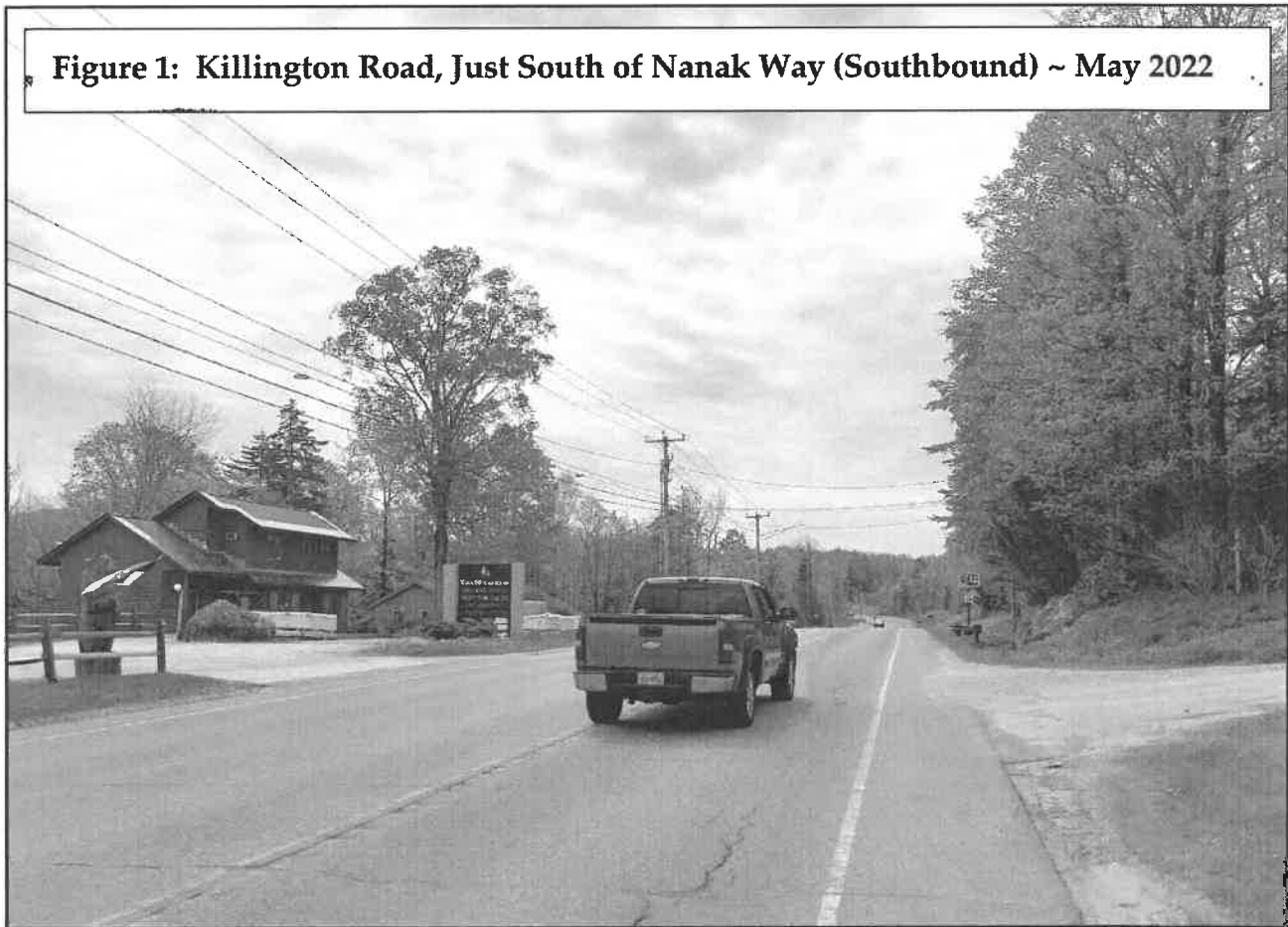
Low = SB: 39 mph / NB: 41 mph (Fri 28 Jul 2017) High = SB: 42 mph / NB: 44 mph (Sun 30 Jul 2017)
Low = 30-40 mph : SB: 72.7% in Pace / NB: 69.3% in Pace High = 35-45 mph : SB: 70.2% in Pace / NB: 73.0% in Pace
36.7 mph
Low: 30-36 mph / High: 35-39 mph
40 mph
N/A
The VTrans <i>High Crash Location Report</i> (HCL) for 2012-2016 includes two locations along Killington Road between Milemarkers 0 - 0.8 totaling 14 crashes with 3 injuries and 0 fatalities. Additionally, VTrans Crash Listings document 38 crashes with 5 reported injuries between May 2017 to May 2022 on FAS 0159 between Milemarkers 0 - 2.58.
4582 AADT (2021 count)
State Class II - Town Highway Functional Class (05) - Major Collector
Asphalt = 44' 0" Total width (5'0" Bike Lanes) Southbound: 1 Lane = 12' 0" Northbound: 2 x Lanes = 11' 0" each
Grass & Gravel Southbound = 4' 0" / Northbound = 4' 0"
None
Formal Bicycle Route
Commercial, Residential



This report summarizes speed data for *85th Percentile*, *10 MPH Pace*, and *Speed Limit Range*; each indicating a 'Low' value (for the 24-hour count period of Friday July 28, 2017) and a 'High' value (for the 24-hour count period of Sunday July 30, 2017) captured by the Vermont Agency of Transportation (VTrans) in 2017. The data included within this report is what the Vermont Local Roads Program's 2016 "*Setting Speed Limits- A Guide for Vermont Towns*" advises to be collected to help municipalities determine their traffic ordinance for their town highways.

The recommended maximum speed limit of **30 mph** is safe and reasonable for both directions considering the roadway geometrics and the commercial and residential nature of the abutting land use. The **30 mph** recommendation is lower than the 85th percentile speed, which is generally preferred in setting speed limits (see further details in the definition below). However, taking into further consideration other factors, such as vehicle crash history, the establishment of a **30 mph** speed limit is reasonable. The Town may need to employ additional traffic calming measures and/or greater enforcement to ensure compliance with the proposed reduction of the speed limit.

Figure 1: Killington Road, Just South of Nanak Way (Southbound) ~ May 2022



Southbound view of Killington Road, just south of Nanak Way with a Radar Speed Feedback Sign installed (right).



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Speed Limit Range: An indicator of speed ranging from the lowest number of 10 mph Pace Speed to a high number that is the lowest value of either: 1. the 85th percentile speed, or 2. the highest value of the 10 mph Pace Speed. This high value is then subtracted by 3.

Stopping Sight Distance (SSD): The minimum distance a driver can see ahead in tandem with how long it takes for her/him to stop the vehicle. According to the AASHTO "Green Book", this distance comprises two components; 1. Perception-Reaction Time, which covers the distance a vehicle travels from the moment the driver sees an object necessitating a stop, to the instant the brakes are applied, and 2. Braking Distance, which is the distance a vehicle travels during the braking maneuver.

Test Car Speed: A qualitative measure determined by the person conducting the speed limit engineering study by driving the road for a few passes and using their "gut" to determine what "feels" to be a reasonable speed.

Traffic Calming: The use of educational programs, enforcement, and engineering to change the behavior of drivers, reduce crash/injury rates, and increase safety.