

Access Management Recommendations for New Haven, Waltham, & Ferrisburgh

US 7 in New Haven, Waltham, and Ferrisburgh is home to a variety of land uses...residential, industrial, light commercial, conservation, and agriculture. Large areas of open farm and forest land are currently mingled with residential and commercial development. This mixed land use balances business, residential, and corridor transportation needs with maintenance of rural character. Both New Haven and Waltham Town Plans acknowledge the importance of preserving and maintaining this rural sense, while the 2006 Ferrisburgh Town Plan dedicates a section specifically toward carrying it into the future. The Ferrisburgh Plan observes that a person's 'view from the road' is often a dominant factor in establishing their impression of a community: rural, suburban, or urban. While placing value on the rural character of this corridor, the communities also acknowledge its vital role as a transportation, freight, and economic corridor as well.

In 2006, Addison Regional Planning commission undertook a project to study several north/south corridors connecting the northern half of Addison County with Chittenden County. These were US 7 in New Haven, Waltham, and Ferrisburgh; VT 116 in Bristol and Starksboro; and Monkton Road, Bristol Road, and Silver Street in Bristol and Monkton. This particular document addresses the US 7 corridor and its focus is on two perspectives: (1) scenic analysis, and (2) system performance and safety (access management). Work on the view shed was done by the Champlain Greenbelt Alliance, and involved five parts: (1) a visual analysis (done prior to this study), (2) a written analysis describing the corridor in logical pieces, (3) a compilation of the US 7 visual & written analysis, along with some discussion of process, into a booklet entitled: The View of the Road, (4) the development of The Road-Scape Guide, a generic guide outlining the process for other communities wishing to perform and document visual corridor analysis; and (5) a template for a Corridor Scenic Overlay District that could be used in local zoning.

The second part of the study, and the focus of this document, looked at system efficiency and safety. The Vermont Agency of Transportation controls permitting and design on US 7, but good access management on connecting local roads is of great importance to overall system performance. Build-out analysis was done for the communities of New Haven, Waltham, and Ferrisburgh. Even though it is not immediately adjacent to the US 7 corridor, build-out within the study corridor for the Town of Vergennes was also performed, since this has a direct impact on the US 7 corridor. Growth rates in Average Annual Daily Traffic were also reviewed to give some idea of future traffic trends. Finally, basic access management principles are discussed, and local regulations reviewed to see if these principles are in currently place in local zoning regulations. The US 7 corridor is of vital economic importance to both the county and state. Preservation of safety and efficiency is of the utmost importance as population and economic growth continue to result in increased demands on the roadway system. The application of good local zoning in conjunction with sound access management practices will help maintain and protect its rural character, while simultaneously preserving corridor efficiency functionality, and safety.

Existing Conditions along Ferrisburgh-Waltham-New Haven US 7 Corridor:

The US 7 Corridor is a principal arterial highway connecting Addison County with Chittenden County to the north and Rutland County to the south. It also serves as the primary north/south corridor serving the western side of the state. It is designated officially as a principal arterial highway and is, for the most part, generally has an access management ranking of Category 3, with short sections in New Haven and Ferrisburgh in Categories 6 & 2. Access permitting along US 7 is regulated by the State of Vermont Agency of Transportation, not by the municipality.

According to the State of Vermont Access Management Guidelines, access to a Category 3 highway is usually granted to existing abutting properties. However, design standards do tend to be more strict and limiting than exist on local collector roads. For example: left turns may be denied, or drive access may be denied if reasonable alternative access is available to an adjacent local road, or through the addition of a frontage road. Design standards used on Category 3 roads are sufficient to support 35mph to 45mph in urbanized areas, and 50mph in undeveloped or rural areas. The following are general design level recommendations for Category 3 Highways, and are applicable to most of the US 7 Corridor in Ferrisburgh, Waltham, and New Haven:

- Uniform signal spacing (1/4 mile – urban; 1/2 rural)
- Upstream & downstream corner clearance
- Driveway channelization using medians
- Non-traversable medians
- Directional median openings for left turns & U-turns
- Isolated left turn bays
- Paved shoulder by-pass at 3-way intersections
- Left turn bay at median openings
- Indirect left turn and U-turn
- Right turn bays
- Use of alternative access when possible
- Appropriate residential/commercial driveway design
- Varying permit requirements based on use
- Adequate sight distances
- Shared driveways

As stated above, direct access to US 7 is regulated by the Vermont Agency of Transportation according to these guidelines.

Tables 1, 2, & 3 below show available Average Annual Daily traffic (AADT) data at various points along the corridor from 1992 to 2004. This data has been collected by the Vermont Agency of Transportation. According to these numbers, the overall annual traffic growth is +/- 1%. The AADT numbers tend to increase as the count locations approach the population and job centers: Middlebury, Vergennes, and Chittenden County. Table 4 shows available truck traffic data at selected locations in Ferrisburgh and New Haven. Overall truck traffic on the US 7 corridor in 2004 was running +/- 10%.

US 7 AADT in New Haven

Table 1

<i>Location (in the area of)</i>	<i>1992 AADT (where available)</i>	<i>2000 AADT</i>	<i>2002 AADT</i>	<i>2004 AADT</i>	<i>Average 2-year rise: '00 to '04</i>	<i>Average annual % rise: '92 to '04</i>
Middlebury TL		9,700	10,200	10,000	1.6%	---
Dog Team Rd	7,100	7,900	8,100	8,000	0.6%	0.9%
Town Hill Rd		6,800	6,900	6,900	0.7%	--
VT 17	6,200	6,800	6,900	6,900	0.7%	0.8%
Waltham TL	7,700	7,900	7,800	7,900	0.0%	0.2%

US 7 AADT in Waltham

Table 2

Waltham/New Haven TL		7,900	7,800	7,900	0%	--
Waltham/Ferrisburgh TL		7,900	7,800	7,900	0.0%	--

US 7 AADT in Ferrisburgh

Table 3

Waltham TL		7,900	7,800	7,900	0%	--
Lime Kiln Rd		7,900	7,300	7,800	-0.4%	--
VT 22A		7,300	7,000	7,200	-0.6%	
Tupper's Crossing Rd	10,900	11,900	12,600	12,600	2.9%	1.1%
Middle Rd		11,900	12,600	12,600	2.9%	--
Round Barn Rd	9,700	10,900	--	11,500	~2.7%	1.3%
Greenbush Rd		11,800	12,700	12,600	3.4%	--
Stage Rd		10,900	11,300	11,500	2.7%	--
Charlotte TL		10,700	11,100	11,000	1.4%	--

% Truck Traffic in 2004

Table 4:

<i>Town</i>	<i>Location</i>	<i>2004 AADT</i>	<i>% Heavy</i>	<i>% Medium</i>	<i>Total % Trucks</i>
New Haven	Waltham TL	7,900	7.1%	3.6%	10.73%
	Dog Team Rd	8,000	5.6%	3.2%	8.8%
Ferrisburgh	Tupper's Crossing Rd	12,600	4.7%	5.0%	9.7%
	Round Barn Rd	11,500	4.4%	5.4%	9.8%

Current local zoning designations and road frontage requirements along the US 7 corridor is as follows:

- New Haven
 - RA (Rural Agricultural) – 2,5,&10: 600ft

- HC (Highway Commercial) – 200ft
- Interior lot access minimum: 50ft
- Waltham:
 - HC-2.5 (Highway Commercial): 400ft on US 7, 200ft on Plank Rd & TR 5
 - A-10 (Agricultural): 600ft
 - R-2.5 (Residential): 200ft
 - Min. Interior lot Right-of-Way width: 20ft
 - Minor Subdivision Right-of-Way: 50ft
- Ferrisburgh:
 - IND (Industrial)-2: 200ft
 - Rural Residential -2: 200ft
 - HC (Highway Commercial)-2: 200ft
 - CON (CONSERVATION)-25: 500ft
 - RT 7 Rural Agricultural
 - VIL (village)-2: 200ft

Future Conditions:

Build out analysis:

Residential build-out analysis was completed for the towns which lie within the ½ mile corridor of US Route 7 defined as the study area. The Community Build-Out Analysis software uses current municipal zoning, tax parcels and E911 house locations to determine existing development capacity and project full build-out under current development regulations. It is important to note that the maximum build-out potential is calculated for the corridor area in each town. The software has the ability to reduce development potential due to natural constraints, however in this study only property in public ownership or under a conservation easement (where available) was removed from development consideration. Ferrisburgh, Vergennes, Waltham and New Haven all have current zoning regulations however the tax parcel information varied by town. Parcel currency dates were as follows: Ferrisburgh (2005), Vergennes (1998), Waltham (2001) and New Haven (2004). Existing development was determined by 2006 E911 house locations. Existing and potential development was determined for the portion of each town with the study corridor.

Existing curb cuts were mapped in 2006 and potential curbcuts were generated from the potential development using the prototype driveway software. A percent increase was calculated and displayed along the roadway. These values should be considered tentative since the software is very preliminary. Adding new driveway and roads does provide a more realistic depiction of the development.

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New Haven:

US 7 in New Haven: As of Fall of 2006, there are 403 existing dwellings in the town, *and there is potential for an additional 604 additional residences* under current town regulations. Using the ITE trip generation

factor of 10 trips per day for a single family residence, the potential impact of residential full build-out would be an additional 6,040 trips per day. If these trips are evenly distributed across the existing count locations listed above, every trip involved travel on US 7, and no trip was counted at more than one count location, residential development alone could result in an increase of 12% to 15%. This increase could possibly be in the range of 64% to 82% depending on trip origins and destinations. The housing growth rate for the Town of New Haven was 18.8% between 1990 & 2000.

Waltham:

US 7 in Waltham: As of Fall of 2006, there are 42 existing dwellings in the town, *and there is potential for an additional 109 additional residences* under current town regulations. Using the ITE trip generation factor of 10 trips per day for a single family residence, the potential impact of residential full build-out would be an additional 1,090 trips per day. If these trips are evenly distributed across the existing count locations, every trip involved travel on US 7, and no trip was counted at more than one count location, a potential increase of 7.5% would result. This increase could be as high as 13% depending on trip origins and destinations.

Ferrisburgh:

US 7 in Ferrisburgh: As of Fall of 2006, there were 403 existing dwellings in the town, *and there is potential for an additional 604 residences* under current town regulations. Using the ITE trip generation factor of 10 trips per day for a single family residence, the potential impact of residential full build-out would be an additional 6,040 trips per day across the system. If the increase is distributed evenly across each count location, the resulting increase in AADT over current levels would be in the range of 5% to 8%, and possibly as high as 48% to 84% depending on trip origins and destinations.

Vergennes:

Vergennes: As of fall of 2006, there were 252 existing dwellings within the US 7 buffer zone, and there is potential for an additional 213 residences under current town regulations. Using the ITE trip generation factor of 10 trips per day for a single family residence, this could result in as much as a 17% increase in AADT on US 7 in the vicinity of VT 22A.

Other significant locations & factors impacting corridor efficiency and safety:

- Vermont 22A is a designated truck route and sees 400 to 700 trucks per day. Truck traffic on route to Rutland and New York State frequent this route, and US 7 provides access to its northern terminus and via VT 17 in Hew Haven.
- VT 17/US 7 intersection. This is a major east/west route connecting to US 7 at New Haven Junction.
- Little Chicago/Greenbush/Old Hollow Roads are all intersections along US 7 in Ferrisburgh which are seeing increased congestion and accident activity.

Recommendations:

Direct US 7 state-controlled accesses:

According to the State of Vermont Access Management Guidelines, access to a Category 3 highway is usually granted to existing abutting properties. However, design standards do tend to be more strict and limiting than exist on local collector roads. For example: left turns may be denied, or drive access may be denied if reasonable alternative access is available to an adjacent local road, or through the addition of a frontage road. Design standards used on Category 3 roads are sufficient to support 35mph to 45mph in urbanized areas, and 50mph in undeveloped or rural areas. The following are general design level recommendations for Category 3 Highways, and are applicable to most of the US 7 Corridor in Ferrisburgh, Waltham, and New Haven:

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Local access management recommendations in the vicinity of US 7 common to all 3 towns:

- In areas where future development will require roadway upgrades, consider establishing tax districts which will provide resources over time for any necessary upgrades. Upgrades are generally necessitated by the cumulative effects of growth and development...not a single development. These can include both commercial and/or residential properties with rates based on impact.
- Consider the use of one-time impact fees to help subsidize upgrades as a condition of permitting.
- Require that Traffic Impact Studies be done for projects that will be significant trip generators.

Specific Recommendations:

The US 7 Corridor is currently classified as a principal arterial highway. It services not only local traffic, but inter-regional traffic and truck freight movement as well. As stated earlier, access to US 7 is regulated by the state. However, local control of collectors which connect to US 7 are of great importance in maintaining the efficiency & safety of the US 7 corridor and the roads that connect to it. Below are listed a series of access management recommendations that may be applied to local roads in the immediate vicinity of this corridor to help maintain safe and efficient transportation in the vicinity of this important corridor. When applied properly, they provide vehicular traffic and

pedestrians with adequate information and reaction time to access and negotiate the transportation system both safely and efficiently.

Access management recommendations remain basically the same throughout a system, but they do vary in emphasis depending on the level and type of usage for a given section of road. Along US 7, the Vermont Agency of Transportation attempts to maintain safe and efficient traffic flow by implementing access management engineering practices appropriate to category rating of the roadway at any given point. Some of these are outlined above. On US 7 speeds are relatively high, so limiting conflict points (drive accesses, etc), providing adequate drive spacing, and minimizing the number of conflict points in areas of poor visibility is imperative. Below are a series of general and specific recommendations for towns to consider which help to preserve the performance and safety of local roads connecting with the corridor. Below each recommendation is a note indicating whether or not it is currently included in local town plans and regulations. The recommendations are:

- Require that any drive/road access, and ROW easements be designed to AASHTO & Vermont Standards: A-76 (Town Roads) & B-71 (Residential & Commercial Drives).
 - New Haven: *Some local design standards in place and referenced...not based on State of VT A-76 & B-71 and/or AASHTO standards.*
 - Waltham: *Not referenced or mentioned in local reg's'*
 - Ferrisburgh: Streets only. Subdivision reg's specify that all streets shall be in compliance with the Town Highway specifications (or standards)
- Require drive accesses to follow the edge of property lines where possible, and grant the permit with the condition that access may be shared with adjacent property(ies) at a future date. If the shared drive restriction is not possible, maintain a 10' to 20' buffer between the drive and the property line.
 - New Haven: *Currently not in reg's*
 - Waltham: *General text in Town Plan (Town Plan; Sect 8; Town Roads) encouraging the limitation of access points and encouraging clustered development.*
 - Ferrisburgh: Not specifically, but reg's leave the door open. (see sect 6.3 of Zoning Bylaws)
- Grant no more than one access per parcel, and require (where possible) any future subdivision of the parcel share that single access where practicable.
 - Hew Haven: *The Town Plan recommends that only one access be granted per lot.*
 - Waltham: *Currently not in reg's*
 - Ferrisburgh: *Currently not in reg's*
- Require a permit for any upgrade or change in use.
 - New Haven: *Currently in place (See Article VI; Sect. 620)*
 - Waltham: *Currently in place (see sect 620 in the Waltham Zoning Bylaws).*

- Ferrisburgh: *Currently in place (Sect 6.3 of the 1980 Zoning Bylaws)*
- Long drives may drain excessive amounts of stormwater into the town road ditch and culvert system. Consider requiring that any stormwater impact be mitigated on site, or provision be made for improvement of the affected town culverts and ditches sufficient to handle the increased hydraulic flow.
 - New Haven:
 - Stormwater run-off mentioned in subdivision requirements only (Article III; Sect 310; Line 16&17: requires drainage plan.
 - Waltham: *Currently not in reg's*
 - Ferrisburgh:
 - Stormwater run-off mentioned in subdivision requirements only (Article III; Sect 310; Line 16&17: requires drainage plan.
- For subdivision access permits, require a pre/post development hydraulic study to be conducted to establish runoff impact on the town road drainage system.
 - New Haven: *No specific requirements listed, but Article II; Sect 250.5 & 250.6 indicate drainage will be considered and that further information may be required.*
 - Waltham: *Sect. 353 in the Zoning Bylaws states that complete Erosion & Sediment Control Plan details are required as part of a development proposal, and that further information deemed necessary by the Planning Commission must be provided.*
 - Ferrisburgh: In current reg's for subdivisions (Sect 450)
- All accesses must have adequate safe line-of-sight (determined by speed limit) in order to prevent the creation of blind or hidden roads and drives. See Table 5 below for current AASHTO recommended un-signalized intersection & drive access spacing. Also reference the State of Vermont Standard Drawing B-71 for further information. *Note: Where possible, consider establishing minimum rural road frontage consistent with AASHTO design standards. This will support improved safety and efficiency.*
 - Current local regulations:
 - New Haven:
 - Article IV; Sec420 – New Haven Street Standards for Rural Roads: establishes the req'd sight distance (at intersections) at: 200ft on class II roads; and 100ft on class III town roads. *See Table 5 below for recommended minimum site distances.*
 - Waltham: *Currently not in reg's*
 - Ferrisburgh: Streets only. Subdivision reg's specify that all streets shall be in compliance with the Town Highway specifications (or standards)

Table 5 represents un-signalized access spacing standards and corner sight distances, here are the lower limits of the AASHTO stopping sight distances and access spacing. The resultant spacing standards, shown in Table 5, would enable a driver traveling at the design or posted speed to monitor only one driveway at a time and, if necessary, to stop.

Table 5– Un-signalized Access Spacing & corner sight distance

POSTED SPEED or DESIGN SPEED (mph)	UNSIGNALIZED (DRIVE) ACCESS SPACING* (ft)	INTERSECTION CORNER SIGHT DISTANCE** (ft)
20	115	--
25	155	280
30	200	335
35	250	390
40	305	445
45	360	500
50	425	555
55	495	610

(*Spacing shown is based on level terrain: adjustment factors are required for segments with grades)
 Source: Derived from Exhibit 3-1(Pg.112) (Stopping Sight Distance) from AASHTO A Policy on Geometric Design of Highways and Streets, 2001 and the Vermont Agency of Transportation Program Guidelines.

(**these values are less than AASHTO recommendations, but more reflective of actual driver behavior in Vermont. Source: Nov. 2001 Vermont Agency of Transportation Guidelines.

- No access shall be constructed closer than 500 feet from a sharp curve, hill, or blind area (50 mph zone). This minimum corner distance drops to 440 feet at 40 mph, and 330 feet at 30 mph (*the local reg's currently say within 275 feet*).
 - New Haven: *Currently not in reg's*
 - Waltham: *Currently not in reg's*
 - Ferrisburgh: Streets only. Subdivision reg's specify that all streets shall be in compliance with the Town Highway specifications (or standards)
- No access shall be constructed within 100' of a neighboring drive or road unless they directly oppose one another.
 - New Haven: *Currently not in reg's*.
 - Waltham: *Currently not in reg's*.
 - Ferrisburgh: Currently in subdivision regs's: Section 420.3
- Drives should intersect the main line ideally at 90 degrees, but at no less than 60 degrees.
 - New Haven: 90 degree requirement for road intersections only. This does not appear to include drives. (See Section 420.3)
 - Waltham: *Currently not in reg's*.
 - Ferrisburgh: Streets only...no reference to drive intersections. Subdivision reg's specify that all streets shall be in compliance with the Town Highway specifications (or standards)
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- Combine accesses wherever possible through frontage roads and shared drives.
 - New Haven: *Currently not in reg's*
 - Waltham: *Currently not in reg's*
 - Ferrisburgh: *Town plan calls for limiting curb cuts (2006 Town Plan-4.2-I-2) when developing new roads or drives; Support the US 7 Corridor Management Plan by incorporating appropriate access management design provisions into the town plan.*

As a final note, the density and spacing of curb cuts along a roadway can dramatically impact both safety and roadway performance. A look at the accompanying build-out map shows just how many potential conflict points may be added along a corridor. Such things as: proper drive spacing based on speed, symmetrical alignment of opposing drives, shared drives, and the use of frontage roads all act to reduce the number of conflict points along roads as growth occurs. These opportunities should not be lost on any local road, when it is possible to apply them.

Conclusions:

Specific access management guidelines generally could be improved in the zoning reg's of all three towns. Of the three, Ferrisburgh has the most detailed regulations, and this is not surprising since they are immediately adjacent to Chittenden County and currently see some of the development pressures and associated traffic problems. The US 7 intersections at Little Chicago, Greenbush, and Old Hollow Roads are of particular concern to the town, and conflicts in the area of these intersections has significantly increased at these locations over the past few years. Since The Vermont Agency of Transportation controls permitting and roadway design along the US 7 corridor, and not the towns, we did not meet with the local planning commissions to discuss access management in their regulations in regards to US 7. However, this document will be provided to the towns as a guide to help preserve safety and performance on adjacent, locally controlled roadways. Due the significant development that has already occurred along the US 7 corridor, and the quickly diminishing amount of rural open space along the corridor, great emphasis was placed on efforts to identify and document the visual qualities of the roadway, as well as create general text for a Corridor Scenic Overlay District template which might be used to help preserve the remaining resources through local zoning. This tool box is further intended to be used by other communities wishing to preserve visual view-sheds and rural qualities along corridors.