

Appendix 7:
Access Management Analysis

Access Management Analysis

Introduction

“Access management” describes the systematic control of the location, spacing, design and operations of all access points to a roadway including driveways, medians, and intersections¹. Well-coordinated access management is essential to extending the life of public infrastructure, increasing highway safety, reducing congestion, and preserving and improving the built environment. All users of a roadway, from pedestrians and cyclists to motorists and the freight industry, benefit from effective access management. In addition, the issues caused by a lack of well-coordinated access management can be expensive and difficult to solve and can adversely impact local homes and businesses.

As part of this study, SWRPC staff conducted an analysis of access management along the NH 10 corridor in Swanzey by identifying suspected nonconformities with current state and local access management regulations and inventorying access management features on the roadway itself. This analysis aims to provide insight into where attention and effort should be directed by local officials in coordination with the NH Department of Transportation (NHDOT) to improve access management when opportunities arise, such as in the case of properties changing their use. Effective access management will require local and state coordination and should include the careful management of both the transportation system as well as abutting land uses to the highway. Where NHDOT has authority over extensive portions of the transportation system, local government has regulatory authority over land use and the ability to implement a community vision for future land use. Strong partnership between the two is key to maximizing the efficiency and effectiveness of an access management program.

Methodology

SWRPC staff utilized data from the NH Department of Transportation (NHDOT), the Town of Swanzey, and NH GRANIT to conduct an analysis of access management features and potential nonconformities along the NH 10 corridor in Swanzey. Analysis of aerial imagery and digitization via the use of ArcGIS Online was the primary method used to analyze current conditions along the Corridor. Suspected corner clearance and driveway width violations are identified through the use of the measuring tool in ArcGIS Online in combination with 2015 areal imagery. Other nonconformities, such as miscellaneous objects in the right of way and nonpermitted access points, are identified through visual review of aerial imagery. On-road access management features are digitized also using 2015 imagery, and cross referenced with the most recent Google Maps imagery for the NH 10 corridor.

¹ Transportation Research Board, *Access Management Manual*, 2003

Driveway Permitting Process

As established by NH RSA 236:13 and adopted through NHDOT policy in March of 2000, NH DOT has a well-defined driveway permitting process for state-owned roads. According to the policy, landowners must first apply for a permit for the construction or alteration (including change of use) of a driveway, entrance, exit, or approach that will access any state-maintained highway. In the study area, NH DOT owns and maintains NH 10, Sawyers Crossing Road, and the southern portion of Westport Crossing Road.

Driveway applications that are proposed on any of the three state-owned roads within the study area are reviewed by the NH DOT District 4 office. All landowners wishing to construct a driveway accessing a state-maintained highway are required to complete a driveway permit application and submit it to the district engineer, which includes information about the proposed driveway, the landowner, and parcel history. For driveways that serve a higher number of trips per day, defined by NH DOT as major entrances, there is a much more involved application process which may require site plans, traffic studies, traffic control studies, or information depending on the complexity of existing conditions and the anticipated traffic to be generated. The table below summarizes some of the main design requirements established by NH DOT's driveway policy.

*Table 1: NH DOT Driveway Permit Design Standards**

	NH DOT Jurisdiction Design Standards	Citation	Exceptions granted
1	No more than one access point if less than 400 feet all season sight distance both directions	Policy 8 (a)	No
2	If frontage on highway is 500 feet or less, no more than 2 access points	Policy 8 (b)	No
3	No more than 3 access points for frontage exceeding 500 feet	Policy 8 (c)	Yes, Policy 8 (d)
4	No parking, loading, vending or servicing vehicles on highway or ROW	Policy 9 (a)	No
5	Miscellaneous items not permitted on, over or under state highway or ROW	Policy 9 (b)	No
6	Access to highway from parcel other than permitted driveway is prohibited	Policy 9(c)	No
7	Except Major entrance exceptions, maximum width of driveway 50 feet wide	Policy 10 (a)	Yes, Policy 10 (b)
8	In rural areas, 200 feet corner clearance. In urban areas, 100 feet corner clearance.	Policy 10 (c)	Yes, Policy 10 (c)
9	Intersection of driveway to highway no less than 60 degrees unless "right turn only"	Policy 10 (d)	No
10	Radius may not extend beyond applicant's frontage without permission of abutter	Policy 10 (e)	No
11	5% slope for car length and vehicle storage incline or decline (20'-25' in length)	Policy 10 (f)	No
12	Maximum grade for major driveway is 8%, Maximum for driveway 15%, algebraic difference between any 2 grades shall not exceed 10%	Policy 10 (g)	Yes, Policy 10 (g)
13	Gradual slopes on side of driveway	Policy 10 (h)	No

*This Table is meant to summarize design standard components of the NH DOT Driveway permit. Please consult NH DOT policy for more detail.

The Town of Swanzey also has their own well-established driveway permitting process² for landowners wishing to construct, relocate or alter (including change of use) any driveway with access to Town managed roads. The Swanzey Public Works Director approves and issues all driveway permits, and driveway permits are required for the building permits of new structures. There are two sets of driveway regulations which govern the driveway permitting and design regulations in Swanzey. Driveway regulations apply to 1- and 2-family dwellings as well as non-commercial properties. Access management regulations apply to multi-family dwellings and commercial uses. As with the NH DOT policy, each set of driveway and access management regulations for Town-owned highways in Swanzey has its own design requirements.

Frontage & Access Points

For the purpose of this analysis, staff looked at the frontage of properties along NH 10 and the number of access points to each property. The total number of access points attributed to a parcel did not include suspected nonpermitted access points. Properties of concern identified in this analysis include parcels with under 500 feet of NH 10 frontage and more than 2 access points as well as parcels with over 500 feet of NH 10 frontage and 3 or more access points. These metrics are derived from NHDOT’s driveway policies, particularly Policy 8 (b) and (c). As of this analysis, there are two properties with more than 2 access points and under 500 feet of frontage along NH 10, and no properties with 4 or more access points and over 500 feet of NH 10 frontage.

Table 2: Properties with potential frontage violations

Parcel Address	Parcel Map Number	Type of Violation	Parcel Land Use
765 West Swanzey Road	72-98-1	Under 500 ft., 3 or more access points	Commercial/Industrial
919 West Swanzey Road	71-11	Under 500 ft., 3 or more access points	Commercial/Industrial

Corner Clearance

An important focus of this analysis was documenting driveways that do not conform with either NHDOT or the Town of Swanzey’s corner clearance policies. Corner clearance is defined as the distance between a driveway or access to a right-of-way and the nearest corner of an intersecting street. Inadequate corner clearances can result in problems with traffic operations, safety, and capacity. In the study area, the most likely consequence of corner clearance violations are conflicting and confusing turns at intersections.³ It is important to note that the second highest category of locatable crashes in the study area are “at intersection” or “along road at driveway access”.

For driveways along NH 10 and other state-owned roads in the study area, the rural standard of 200 feet between the driveway and intersecting road set forth in Policy 10 (c) was utilized to define corner clearance violations. Corner clearance violations for driveways located within the study area with access to Town-owned roads are defined by the commercial and residential driveway guidelines adopted by the Swanzey

² Swanzey’s driveway guidelines are administered by their Planning Board, and derives its authority from RSA 674:35 and RSA 236:13

³ Transportation Research Board, *Access Management Manual*, 2003

Planning Board. For residential driveways, the guidelines dictate a minimum spacing of 100 feet from an intersecting road which was adopted for this analysis. For commercial driveways, generally the guidelines dictated a minimum required distance of 150 feet from intersecting roads. Only corner clearance violations that involved the intersecting road of NH 10 or other state-owned roads are recorded.

Overall, corner clearance violations represented the most common form of nonconformity in driveways within the study area. From our analysis, there are 19 properties within the study area that directly border either NH 10 or another state-owned road that have an access point which does not conform with either state or local regulations. Primarily, the properties that have corner clearance nonconformities are commercial or industrial land uses near intersections. However, for access points subject to NHDOT policies it is important to note that exceptions can be made for driveways which do not meet the standard corner clearance requirements.

Table 3: Parcels with suspected corner clearance nonconformities

Parcel Address	Parcel Map Number	Intersection Requiring Clearance	Parcel Land Use	Governing Design Guidelines
189 West Swanzey Road	52-1	West Swanzey Road/Base Hill Road & West Swanzey Road/Whittmore Farm Road	Commercial/Industrial	NHDOT
599 Sawyers Crossing Road	55-2	West Swanzey Road/Sawyers Crossing Road	Commercial/Industrial	NHDOT
3 Forest Avenue	56-8	West Swanzey Road/Forest Avenue	Single Family/Duplex	Town of Swanzey
90 North Winchester Street	57-39	West Swanzey Road/North Winchester Street	Commercial/Industrial	Town of Swanzey
647 West Swanzey Road	73-26	West Swanzey Road/California Street	Commercial/Industrial	NHDOT
665 West Swanzey Road	73-13-1	West Swanzey Road/California Road	Commercial/Industrial	NHDOT
704 West Swanzey Road	72-85	West Swanzey Road/West Street	Commercial/Industrial	NHDOT
705 West Swanzey Road	72-99	West Swanzey Road/West Street	Single Family/Duplex	NHDOT
735 West Swanzey Road	72-98-2	West Swanzey Road/Perry Lane	Commercial/Industrial	Town of Swanzey
27 Cobble Hill Road	72-55	West Swanzey Road/Cobble Hill Road	Single Family/Duplex	NHDOT & Town of Swanzey (Two Access Points)
787 West Swanzey Road	72-93	West Swanzey Road/Cobble Hill Road	Commercial/Industrial	NHDOT
147 South Winchester Street	72-50	West Swanzey Road/South Winchester Street	Commercial/Industrial	Town of Swanzey
150 South Winchester Street	72-49	West Swanzey Road/South Winchester Street	Other Multifamily	Town of Swanzey
832 West Swanzey Road	71-4	West Swanzey Road/South Winchester Street	Single Family/Duplex	NHDOT
836 West Swanzey Road	71-4-1	West Swanzey Road/South Winchester Street	Other Multifamily	NHDOT
919 West Swanzey Road	71-11	West Swanzey Road/Anthony Lane	Commercial/Industrial	NHDOT
968 West Swanzey Road	70-34	West Swanzey Road/Westport Village Road	Commercial/Industrial	NHDOT
23 Kempton Road	70-29-2	West Swanzey Road/Kempton Road	Commercial/Industrial	Town of Swanzey
1026 West Swanzey Road	70-23	West Swanzey Road/Kempton Road	Single Family/Duplex	NHDOT & Town of Swanzey (Two Access Points)

Driveway Width

NH DOT Driveway policies lists that apart from exceptions made with major entrances, the maximum width of driveways is 50 feet. Because of this, our analysis flagged any driveway greater than 50 feet as an area of concern. Excessive driveway width is the second most common form of nonconformity for properties along NH 10 in the study area, with a total of 9 properties identified. The majority of these properties are commercial or industrial in nature, and many of the driveways in violation of the 50 foot standard are unpaved.

Table 4: Parcels with suspected driveway width infractions

Parcel Address	Parcel Map Number	Paved/Unpaved Access	Parcel Land Use
133 West Swanzey Road	52-26	Paved	Commercial/Industrial
608 West Swanzey Road	57-2	Unpaved	Commercial Industrial
617 West Swanzey Road	73-29	Unpaved	Single Family/Duplex
627 West Swanzey Road	73-28	Unpaved	Commercial/Industrial
765 West Swanzey Road	72-98-1	Paved	Commercial Industrial
898 West Swanzey Road	71-9	Unpaved	Single Family/Duplex
919 West Swanzey Road	71-11	Paved	Commercial/Industrial
968 West Swanzey Road	70-34	Paved	Commercial/Industrial
972 West Swanzey Road	70-33	Paved	Commercial/Industrial

Non-Permitted Access

For the purpose of this study, non-permitted access points are defined by NHDOT driveway design policy 9(c), “Access to the state highway from the parcel other than by a permitted driveway(s) shall be prohibited”. Although SWRPC is not aware of a complete dataset of permitted driveways, efforts are made during the review of aerial imagery in the study area to identify potential non-permitted access points. Properties with access points that appear to be nonpermitted are labeled as “suspect”. In total, seven properties along the corridor are identified as having potentially non-permitted access. Generally, driveways are identified as potentially non-permitted if they are not the primary access to the parcel, are unpaved, appeared to have intermittent or infrequent use, or appeared to violate other design standards such as slope, grade, corner clearance, or degree of intersection with the highway. Of properties identified as suspect for non-permitted access, 6 of the 7 are residential in nature and one is commercial or industrial in

nature. Non permitted access points compromise the system of access management along NH 10, and can cause safety issues as well as disruptions in service, greater delays, and lowered capacity.

Table 5: Parcels with suspected non-permitted access

Parcel Address	Parcel Map Number	Parcel Land Use
529 West Swanzey Road	56-10	Single Family/Duplex
888 West Swanzey Road	71-8	Single Family/Duplex
920 West Swanzey Road	71-10	Commercial/Industrial
1026 West Swanzey Road	70-23	Single Family/Duplex
1035 West Swanzey Road	70-24	Single Family/Duplex
59 Westport Village Road	88-14-2	Single Family/Duplex
102 Westport Village Road	88-30	Single Family/Duplex

Miscellaneous Objects & Loading Infractions

Two other categories of nonconformity include miscellaneous objects in the right of way and nonpermitted loading in the right of way. Miscellaneous objects violations are defined by design guideline 5 of NH DOT's driveway policy, and loading infractions are defined in design guideline 4 of the policy. Both are difficult to discern without a site visit, but using aerial imagery, eight properties are identified as being suspect for miscellaneous objects nonconformities and three are found to be suspect for loading nonconformities. The majority of properties with suspected miscellaneous objects are commercial or industrial in nature.

Table 6: Parcels with suspected miscellaneous objects in the NH 10 right-of-way

Parcel Address	Parcel Map Number	Parcel Land Use
10 West Swanzey Road	38-2	Other Multifamily
189 West Swanzey Road	52-1	Commercial/Industrial
487 West Swanzey Road	55-5	Single Family/Duplex
608 West Swanzey Road	57-2	Commercial/Industrial
627 West Swanzey Road	73-28	Commercial/Industrial
639 West Swanzey Road	73-26-1	Commercial/Industrial
- West Swanzey Road	72-98	Commercial/Industrial
876 West Swanzey Road	71-7	Commercial/Industrial

Table 7: Parcels with suspected vehicles parking, loading, vending or servicing in the NH 10 right-of-way

Parcel Address	Parcel Map Number	Parcel Land Use
529 West Swanzey Road	56-10	Single Family/Duplex
617 West Swanzey Road	73-29	Single Family/Duplex
59 Westport Village Road	88-14-2	Single Family/Duplex

On-Road Access Management Features

Critical to understanding potential access management issues along the Corridor is gauging the current conditions of on-road access management features along NH 10. In this analysis, on-road access management features include left-hand turn lanes, right-hand turn lanes, flush or painted medians, stop signs, and two-way left turn lanes. Out of any of the features above, two-way left turn lanes comprise the predominate form of on-road access management in the Corridor. There is approximately one half-mile of two-way left turn lanes on NH 10 in the study area. This represents approximately 9% of the total length of NH 10 through Swanzey. Two-way left turning lanes provide safety benefits through a reduction in crashes, increased capacity, and reduced delays. However, they also create the potential for overlapping left turn movements, can encourage strip commercial development, and provide minimal safety benefits to pedestrians and bicycles with the exception of reducing left-turn conflicts. Left- and right-hand turn lanes are present at the intersections of Base Hill Road, Ash Hill Road, North Winchester Street, and California Street. Two-way left turn lanes provide storage for turning vehicles in the stretch of NH 10 in the vicinity of Gomarlo's Shop and Save Supermarket, Perry Lane and West Street. Multiple turn lanes provide access to Market Basket at 11 West Swanzey Road, and a left-hand turn lane provides storage for vehicles turning into the Tire Warehouse at 1050 West Swanzey Road. The turn lanes serving the Ash Hill Road and Base Hill Road intersections are by far the longest along the corridor, at 300 and 400 feet respectively, while the turn lanes at the intersections of North Winchester Street and California Street are relatively short at approximately 100 feet each. A comprehensive map series of the on-road access management features can be found in Appendix A.

Appendix A: On-Road Access Management Features & Nonconformities Map Series

Note: Map series begins at the Keene town line and ends at the Winchester town line.



NH 10 Access Management Features

	Turn Lanes		Nonconforming Parcels
	Two Way Left Turn Lane		Width
	Flush Median		Width

0 500 US Feet

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Appendix A: On-Road Access Management Features & Nonconformities Map Series



NH 10 Access Management Features



0 500 US Feet

Turn Lanes

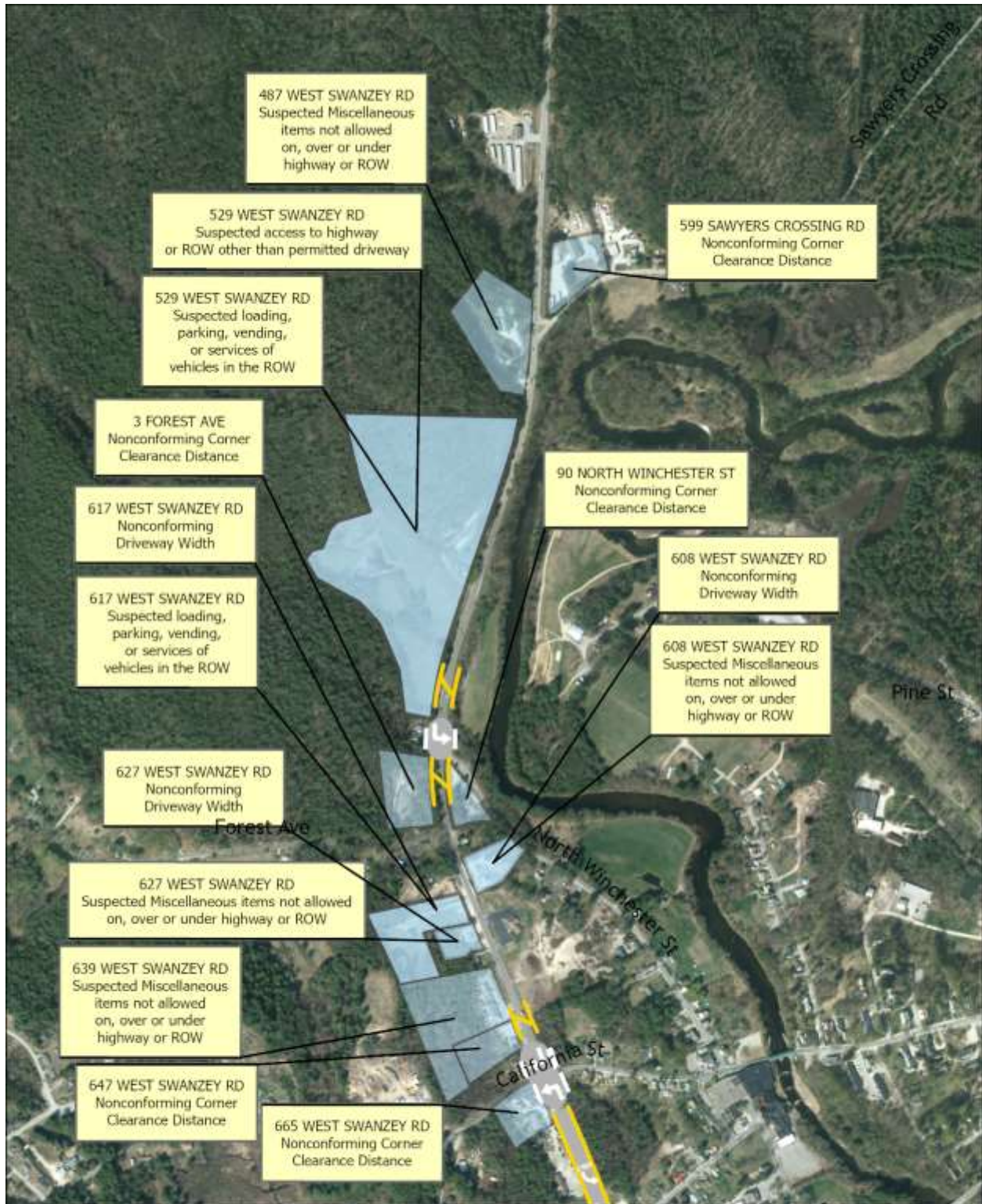
Nonconforming Parcels

Two Way Left Turn Lane

Width

Flush Median

Width



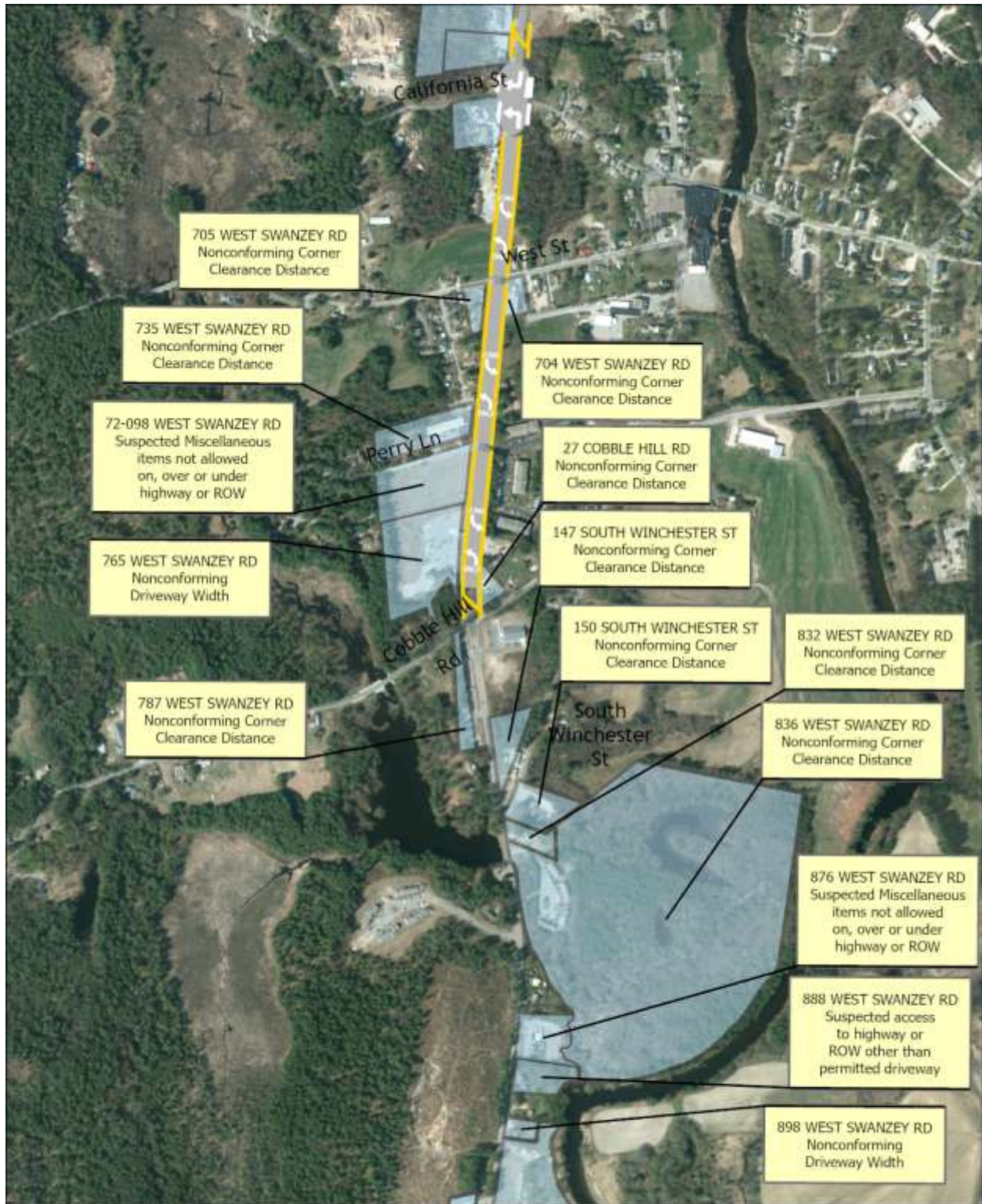
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NH 10 Access Management Features

-  Turn Lanes
-  Two Way Left Turn Lane
-  Flush Median
-  Nonconforming Parcels Width
-  Width
-  Width

Appendix A: On-Road Access Management Features & Nonconformities Map Series

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0 500 US Feet

NH 10 Access Management Features

-  Turn Lanes
-  Two Way Left Turn Lane
-  Flush Median
-  Nonconforming Parcels
- Width**
-  Width



Appendix A: On-Road Access Management Features & Nonconformities Map Series