

# City of Claremont Truck Route Plan

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Prepared by the  
Upper Valley Lake Sunapee  
Regional Planning Commission





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## 1.0 Introduction

The City of Claremont, population 13,355, is located in central New Hampshire along the Connecticut River adjacent to the New Hampshire/Vermont border. Formerly a prominent manufacturing center, the loss of its industrial base has necessitated the undertaking of a comprehensive economic development program. Over the past 15 years, the city's award-winning economic development initiatives have resulted in the commissioning of the Claremont Development Authority, the construction of a state-of-the-art business park, the attraction of numerous businesses to Claremont, and the creation of hundreds of new jobs. Together with this growth there has been a dynamic shift in land use and development patterns.

The City of Claremont's re-emergence as a regional economic hub has resulted in significant impacts to the city's transportation system, namely increasing heavy vehicle traffic in the city center.



*Opera House Square as viewed from Main Street. Turning radii, on-street parking, and pedestrian conflicts make truck traffic undesirable*

Recent industrial development has occurred away from the downtown area, along NH Route 12A and the Connecticut River. The heavy vehicle traffic generated from industrial development along NH 12A is being funneled into the city center by the city's state numbered route transportation system, which was designed to serve the downtown area and mills along the Sugar River. Increasing truck traffic also results from the city's central location within northern New England, changes in the types of industry, and overall traffic growth. Also, the city's proximity to Interstates 89 and 91 has resulted in heavy vehicle traffic passing through Claremont's center that originates from and is destined for Vermont, the Central and Seacoast regions of New Hampshire, and the greater Atlantic Seaboard.

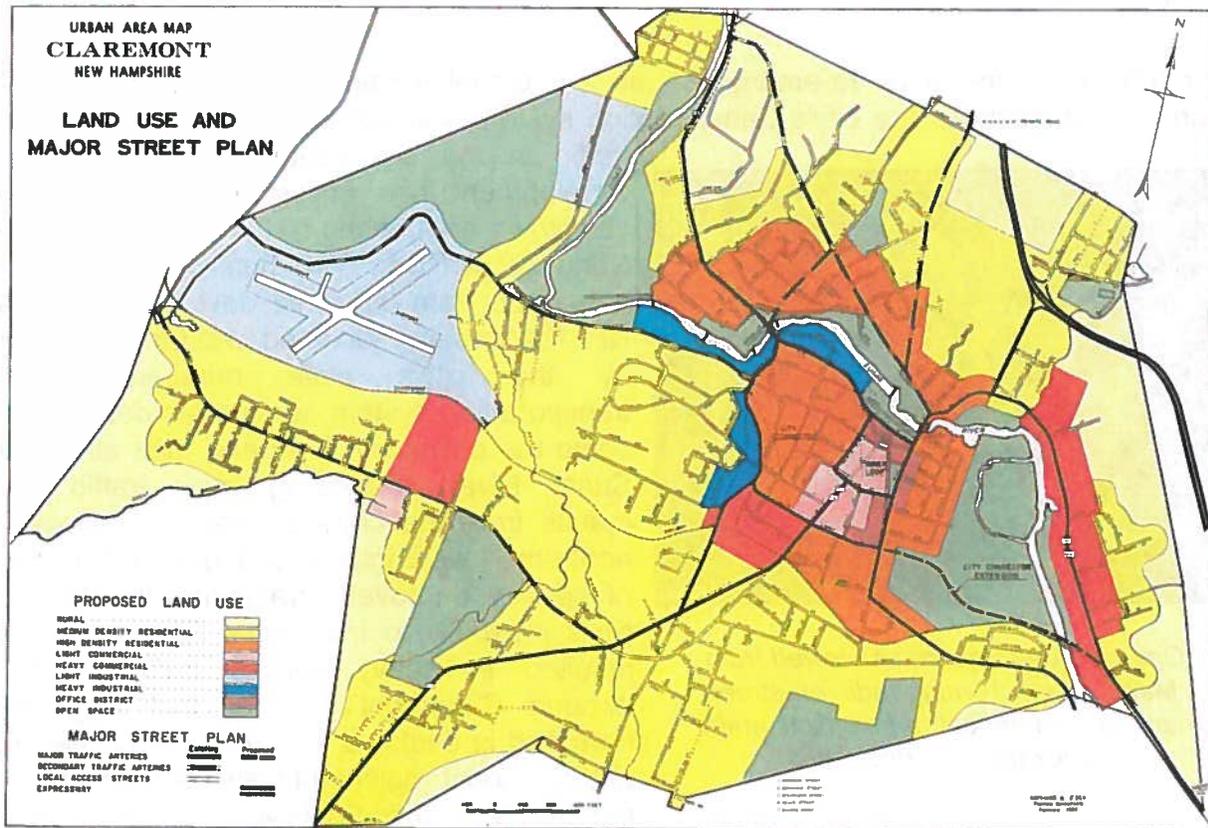
The City of Claremont seeks to proactively address congestion, air quality, and safety concerns, as well as reduce undue strain on the roadway infrastructure in the city center by developing and adopting, by ordinance, a Truck Route Plan for the city. The Upper Valley Lake Sunapee Regional Planning Commission provided technical assistance in creating this plan, which identifies a number of distinct truck route options where investments may be made to facilitate safe, efficient truck operations. The goal is to identify practical truck route options that complement the city's economic development efforts, minimize the need for costly infrastructure improvements, and satisfying the need for increased public safety and environmental preservation.

Truck routes, while challenging to locate, are necessary for economic vitality.

## 2.0 History of Truck Route Planning

The city has been planning traffic circulation and truck routes for more than 40 years. In 1964 the city completed a Master Plan which identified several conceptual ideas to address traffic circulation and downtown development. These concepts included a loop street design to facilitate traffic movement away from Opera House Square; an expressway concept, and bridge over the Sugar River that would connect Washington and Summer Streets (See Map 2-1). Downtown redevelopment became the focus of city planning in 1973 when a downtown redevelopment plan was completed.

**Map 2-1: City of Claremont Land Use Plan 1964**



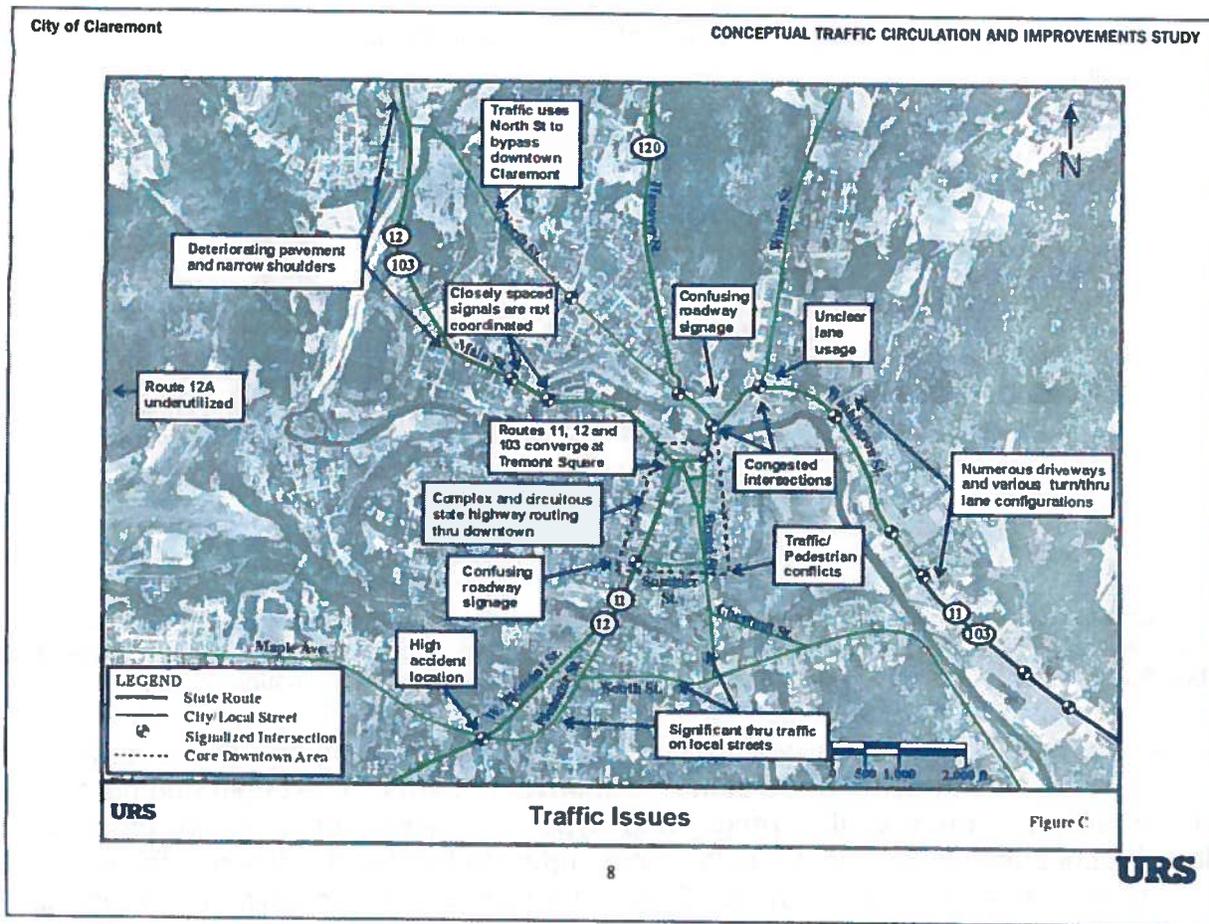
That plan identified traffic within Opera House Square as an impediment to redevelopment and identified the best use of that area as “people oriented.” At that time, truck travel through the city followed Pleasant, Summer, and Broad Streets. The alteration of this truck route to include South Street in place of Summer Street was considered in 1986 in order to accommodate truck traffic from the south to the east. At the time it was recommended that the city not take action on the alteration of the route due to the relatively low volume of truck traffic and the potential impacts to the character of the residential neighborhood on South Street. Since that time, the city’s codified truck route has been eliminated and trucks are permitted to choose their own routes with the exception of Summer Street, which is now prohibited for truck use.

## 2.1 Existing Conditions

The downtown core of the city is situated at the hub of major north-south and east-west arterials connecting to Interstate 91 to the west in Weathersfield, Vermont and Interstate 89 to the east in Newport. Consequently, the city's downtown must not only accommodate vehicle traffic volumes destined for the downtown but also accommodate substantial numbers of through traffic. This convergence of heavy traffic volumes sometimes seems to be fundamentally in conflict with the relatively dense collection of buildings in the historic Central Business District. Much of this area, including Claremont City Hall, is listed on the National Register of Historic Places.

The convergence of Routes 11, 12, and 103 causes traffic along these routes to maneuver through the downtown to reach destinations to the north and south. The Alignment of these routes is also circuitous and confusing to motorists. The state route numbering system is opposite the national norm (e.g. east-west routes end in an even number) and safety and capacity issues have been identified at several key intersections e.g. Drapers Corners and North and Main Streets (See Map 2-2). In 2002, a traffic and circulation study identified road system deficiencies city-wide.

**Map 2-2: Traffic Circulation Issues Identified by URS**



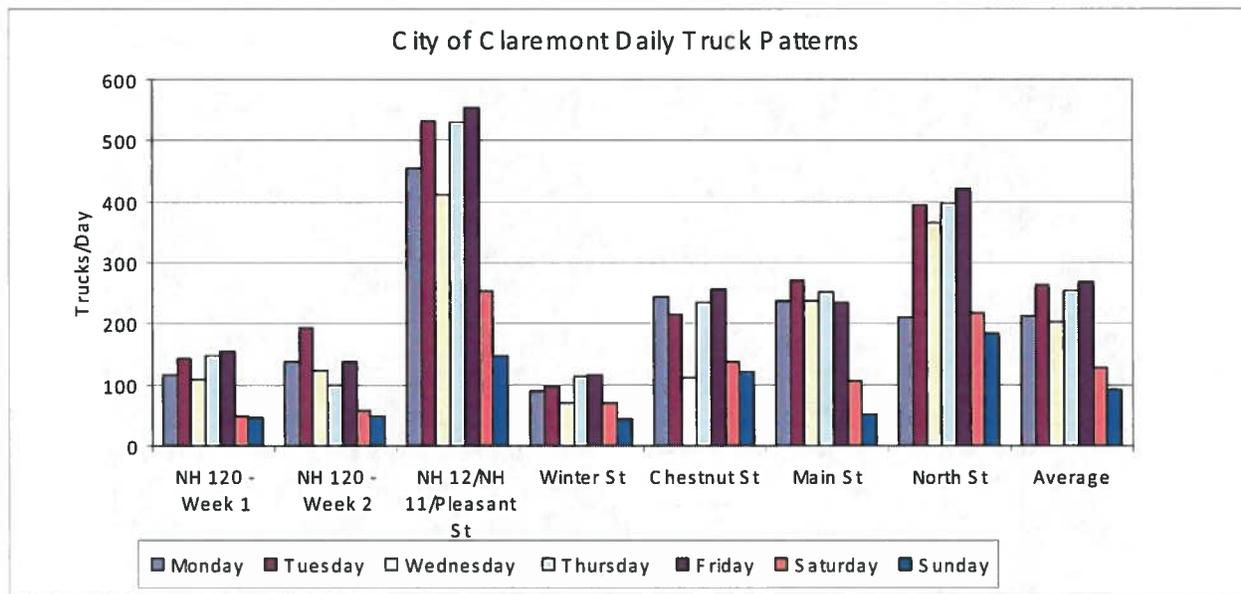
## 2.2 Vehicle Classification Counts

As part of this Truck Route Plan information was gathered to supplement existing data and help determine the nature of truck travel within the city. This included gathering vehicle classification counts at key locations. These 24-hour automatic traffic counts identify different vehicle classes like private cars, smaller trucks and larger trucks.

Figure 2-1 shows truck volumes for all of the city major highways with the exception of Washington Street, which has been omitted due to missing data points. Overall, truck traffic is between 3 to 6 percent of total traffic volumes. The summary data indicate that the highest truck traffic volumes are found on Washington Street, Main Street/North Street, and Charlestown Road (NH Route 12). The partial data that was gathered along Washington Street indicates that the truck volumes are approximately 600 to 700 trucks per day and approximately 200 trucks per day over the weekend.

The classification counts indicate that Tuesday, Thursday and Friday have the highest volumes of truck traffic, which are relatively steady from 9 AM to 4 PM. Truck traffic is significantly lower on the weekends.

**Figure 2-1: City of Claremont Truck Volumes on Major Routes**



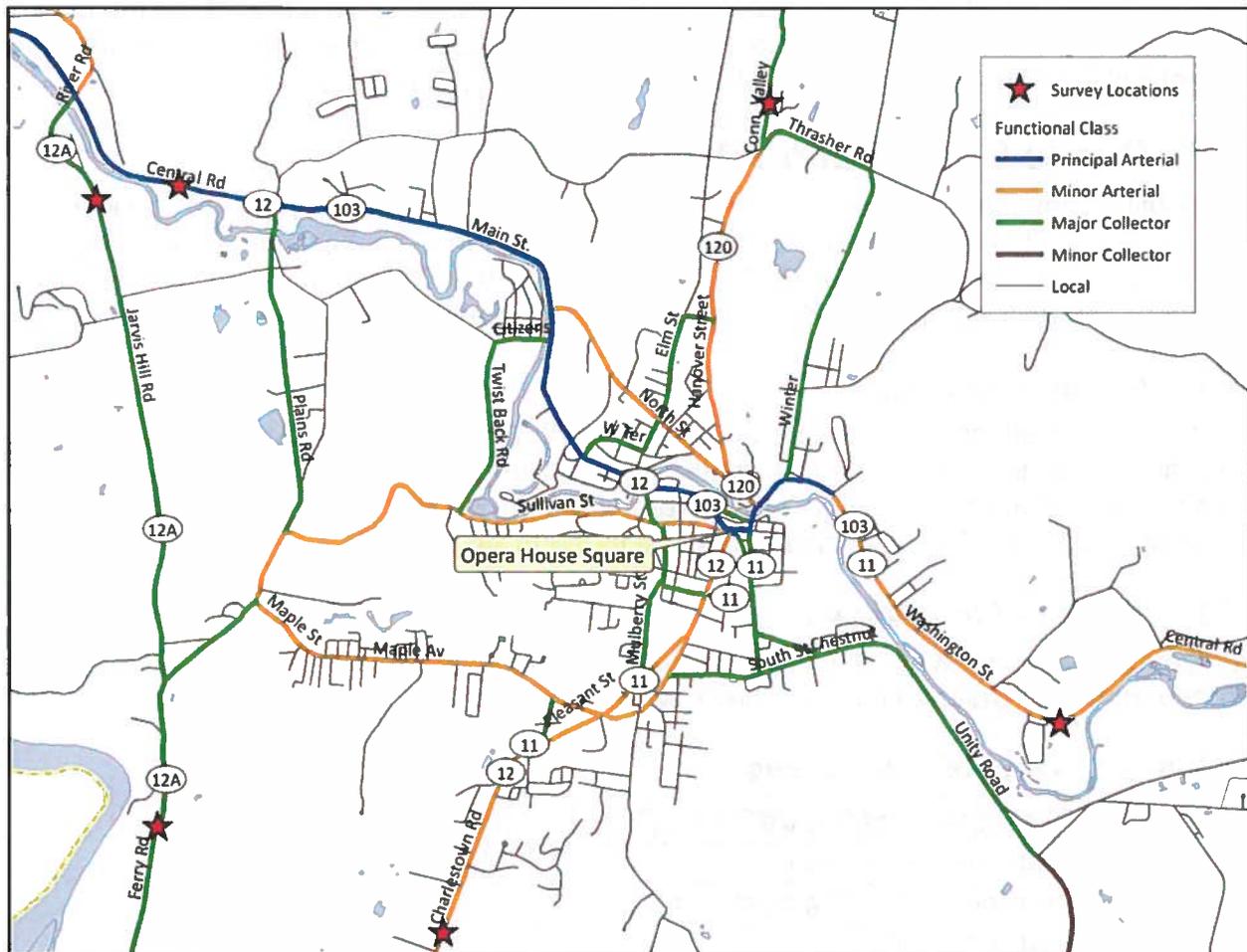
Note: Due to missing data Washington Street truck volumes are not depicted in Figure 2-1. Washington Street Average 600-700 trucks per/day during the week and about 200/day during the weekends. Classification counts include vehicle types not surveyed in the Origin and Destination Survey.

Gathering data about truck volumes aided in the development of an origin and destination survey to better understand truck travel patterns. The origin and destination survey scope narrowed the range and type of trucks surveyed to those truck classifications the city believed has the most impact to local and state-maintained roads. The survey focused on heavy trucks, Class VI trucks and larger, which represent about two-thirds of those trucks recorded in the above classification count.

## 2.3 Origin and Destination Survey

With the assistance of Resource Systems Group, Inc., an Origin and Destination (O-D) Survey was conducted on four weekdays in May and June, 2009. The survey was administered with the assistance of the Claremont Police Department and designed to obtain information about truck route patterns through the city. A copy of the full report may be found in Appendix E. The survey was administered to outbound trucks (exiting Claremont) from 11:00 AM to 2:00 PM that were FHWA Class VI or larger. The survey sampling times matched the peak truck volume hours according to the automatic vehicle classification counts. The survey sampling locations were selected to cover all of the primary vehicle routes into and out of the city, and are depicted in Map 2-3.

**Map 2-3: Truck Route Survey Sampling Locations**



The truck route survey consisted of eight questions designed to obtain information about truck route patterns through the city. A sample size of 205 trucks was surveyed, most from Main, Charlestown, and Washington Streets.

## **2.4 Truck Travel Patterns**

The O-D Survey data allowed for detailed insight that heavy truck (class VI and greater) trips are regional in nature and originate from, and are destined for, locations to the south and east. Many respondents identified southern New Hampshire, Vermont, and Massachusetts as destinations.

More than half of surveyed trucks spend less than one hour in the city. Most of the truck traffic makes one stop and about 40 percent are pass-through trips. Stops within the city are geographically scattered with most occurring in the south and east quadrants. Survey responses indicate that 37% of trucks travel through Opera House Square.

Entry and exit location are a statistical valid determinant of the corresponding points of exit or entry. In other words, the travel corridor choice to reach a destination will determine the route used to leave the city. Half of those trucks that enter from Main Street will leave using the same route (See Appendix E, Figure 23).

## **3.0 Public Consultation Process**

A public consultation process was implemented to gather input on truck route alternatives. This process included three components: public meetings, targeted interviews, and presentations to City Council and the Planning Board. A staff-level advisory committee helped guide the process and provided input.

### **3.1 Public Meetings**

Two public meetings were held, one on July 28, 2009 and another on August 25, 2009. The first meeting was focused on gathering input from the general public on the route alternatives; the final meeting was a presentation of the alternatives compared to screening criteria. More information may be found in Appendix B.

### **3.2 Targeted Interviews**

Targeted interviews were held with stakeholders involved in the trucking industry and transportation of freight. Nine interviews were conducted.

**Table 3-2: Targeted Interviews**

<b>Targeted Interviews</b>
Advance Recycling
Preferred Building Systems
Structal Bridge
St. Pierre
APC Paper
Jewel Trucking
Master Plan Transportation Committee
Emergency services
NHDOT

### 3.3 City Advisory Committee

Staff-based advisory committee assisted the Commission staff in the development of the Truck Route Plan.

**Table 3-3: City Truck Route Advisory Committee**

Name	City Department/Title
Bruce Temple	City of Claremont- Public Works Director
Kurt Beek	City of Claremont- Project Manager
Nancy Merrill	City of Claremont- Business Development Coordinator
Alex Scott	City of Claremont- Police Chief
Peter Chase	City of Claremont- Fire Chief
Edward Tinker	City of Claremont- Director of Planning and Development
Jane Taylor	City of Claremont- City Solicitor
Guy Santagate	City of Claremont- City Manager
William Rose	New Hampshire Department of Transportation

## 4.0 Truck Routes- Nature of the Problem

### 4.1 Route Determination

In order to determine truck route alternatives, the nature of the problem needed to be identified. Working with the Project Advisory Committee, Commission staff completed an exercise to decide upon a truck route network that was appropriate given the objective of removing trucks from Opera House Square and utilizing appropriate routes throughout the city. This exercise included asking the Advisory Committee two questions: 1) where is truck traffic appropriate, and 2) where is truck traffic inappropriate? A map was used to document the results and produce a proposed truck network.



*The intersection of Mulberry Street, Sullivan Street and Union Street has an awkward alignment that confuses motorists.*

The Committee determined by consensus critical cultural and natural features that affect vehicular traffic flow through the city. A number of infrastructure-related challenges were identified that act as an impediment to a connected and efficient truck route system. Infrastructure challenges include limited number of Sugar River bridge crossings, insufficient turning radii, inadequate road base construction, poor sight distances and steep grades. These conditions occur throughout the road network. Any selected truck route will encounter infrastructure deficiencies and would likely require investment. Map 4-1 summarizes deficiencies in the road network that affect truck travel.

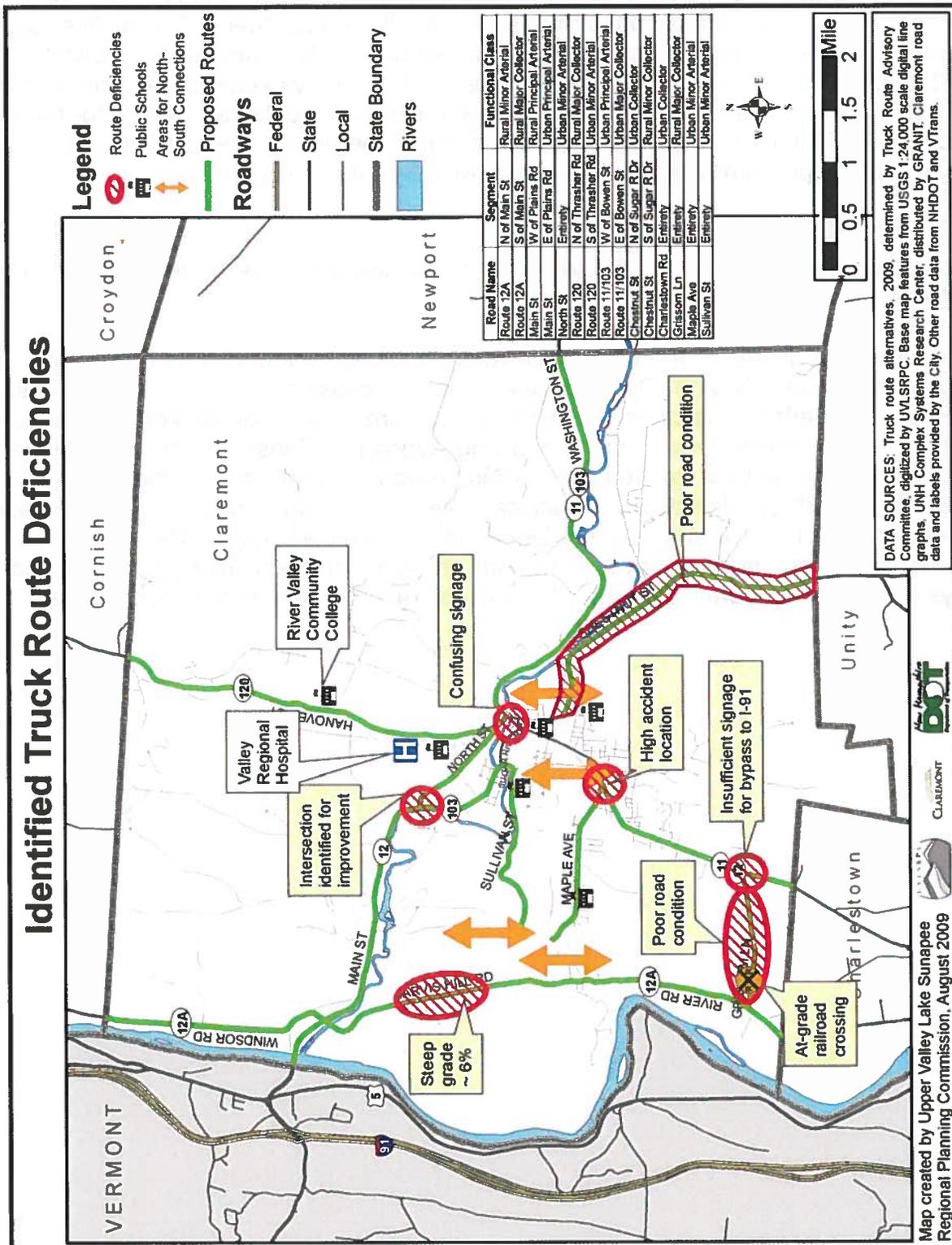
The existing route signage and roadway layout often results in truckers who are unfamiliar with the city passing through Opera House Square. This situation occurs regardless of whether or not the route is well suited for the truck size or type of freight carried. Evidence from the targeted interviews suggests that knowledgeable truckers will avoid Opera House Square in most circumstances. Truckers familiar with the city are likely to decide on travel routes through the city based on the size of their load, travel times, and the time of day. This sometimes results in freight traveling on a route that has insufficient geometry or load capacity to accommodate the vehicle.



*Maneuvering the turning radii at the corner of Main and Union Street is challenging but workable for most trucks*

Truck operations in and around the city's historic district also present challenges. The built environment of the historic mill development was designed to receive freight by railroad. For example, APC Paper is located along the old railroad spine. Truck traffic serving these land uses in a relatively dense urban landscape can be especially challenging. Another example is North Street, which is currently used as an informal bypass for trucks. Summer and South Streets are also used to access Broad Street in effort to avoid Opera House Square. The Pleasant, South, and Broad Street route are the most popular way to maneuver through the city, but include its own set of challenges.

Map 4-1: Truck Route Deficiencies Map



## **4.2 Obstacles to Truck Travel**

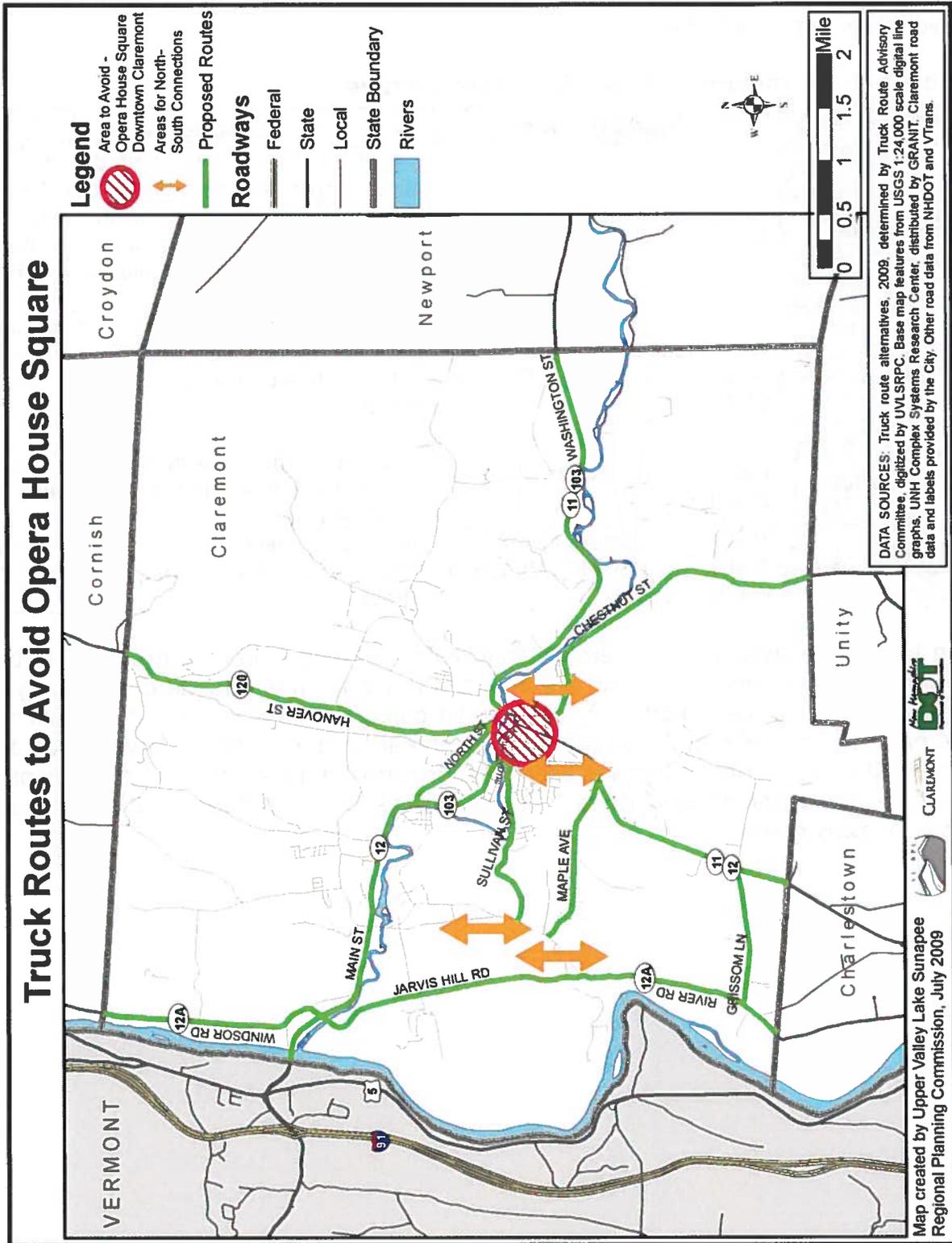
Map 4-2 provides evidence that the principal constraints to developing a travel route are the goal to avoid the Opera House Square and the limited number of Sugar River bridge crossings. The challenge is utilizing the existing infrastructure to facilitate the predominant truck travel patterns, as revealed in the surveys summarized earlier in this report. At present alternative route options are potentially problematic routes for truckers who are chiefly concerned with limiting travel time. The truck route network options that follow in this report represent an attempt to overcome these obstacles.

## **4.3 Problem Statement**

The development of a Truck Route Plan and designated truck routes in the city will address the following need:

“The circuitous design of the city’s state route highway system directs truck traffic into downtown Claremont and Opera House Square, causing conflicts between heavy vehicles and pedestrians/cyclists. Existing routes are difficult for truckers to maneuver due to tight turning radii and confusing signage. These conditions cause a disproportionate impact to roadways and historic structures in the city center, discourage further downtown business investment, and hinder the continued development of a vibrant, pedestrian-friendly downtown core. The challenge in determining alternatives to traveling through the core of the community lies in finding ways to link the northern half of the city’s transportation system to the southern half.”

Map 4-2: Problem Statement Map



## 5.0 Truck Route Alternatives

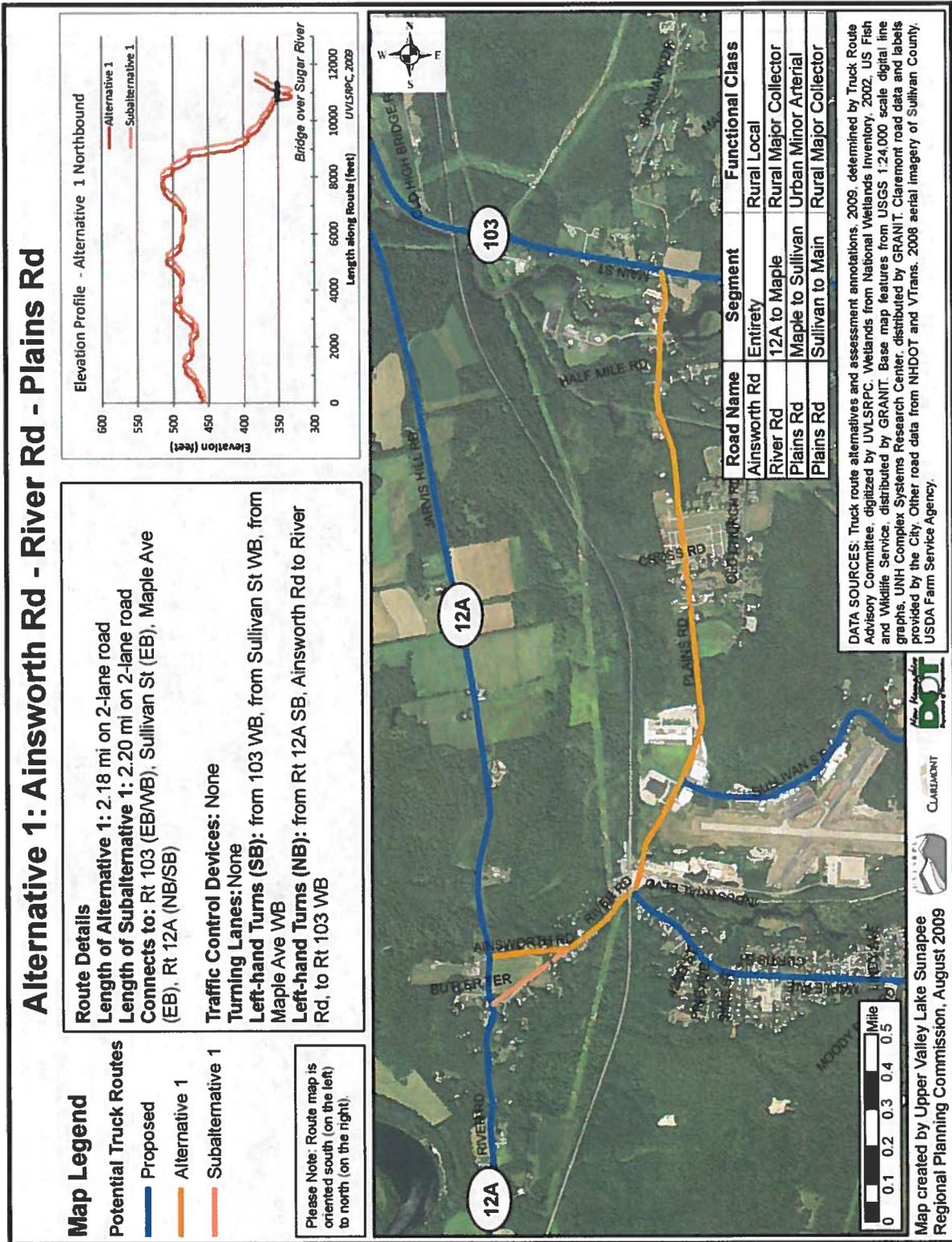
Four alternatives were generated for consideration to enhance north-south/east truck travel (See Maps 5-1 to 5-4).

**Table 5-1: Summary of Truck Route Alternatives**

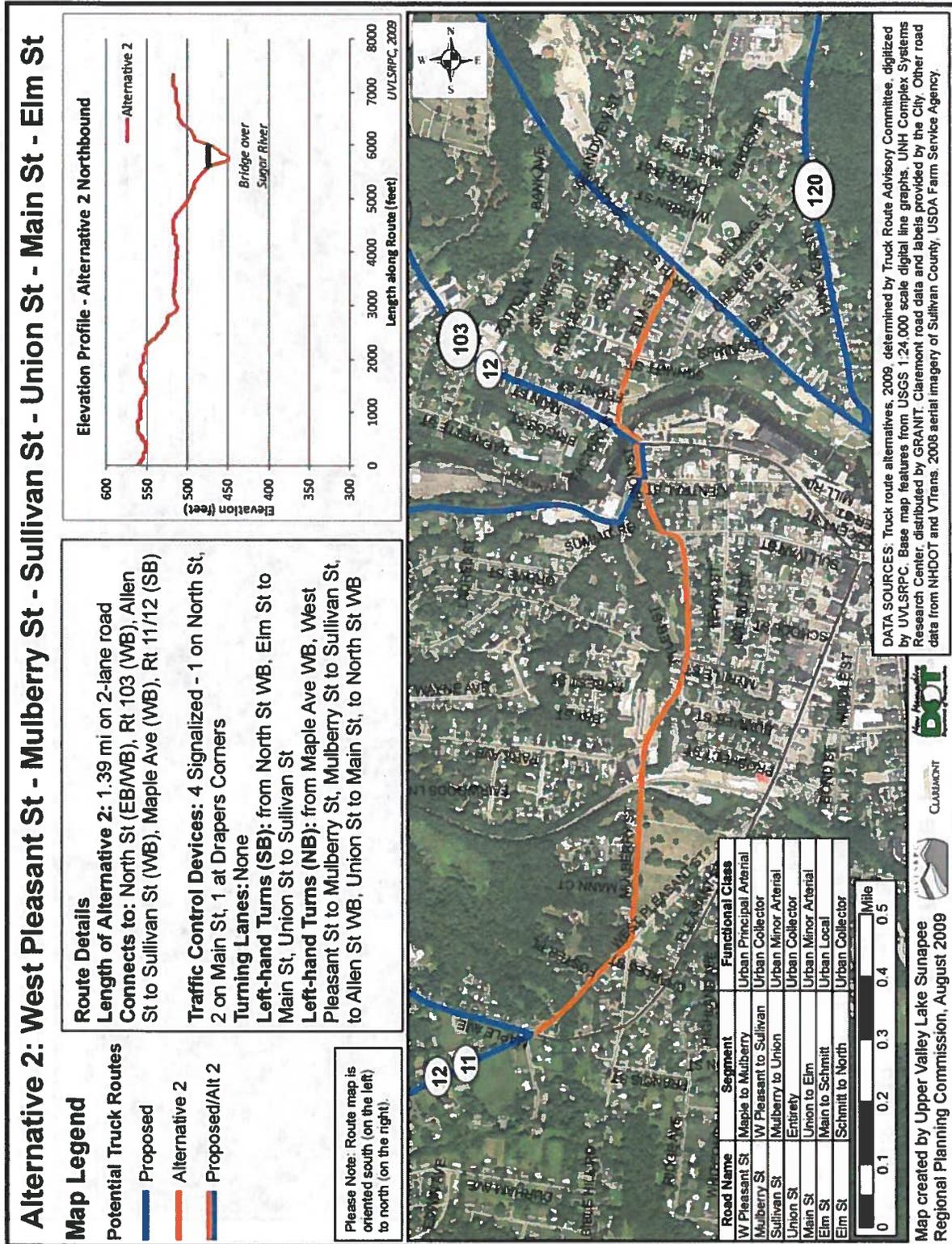
Alternative	Roads/Streets	Description
Alternative 1	River Road/Ainsworth-Plains Road	Includes Plains Road, and due to the skew angle intersection of the Plains Rd/Route 12A intersection, an Ainsworth Road alternative is presented to allow southbound turns onto Route 12A north.
Alternative 2	West Pleasant St-Mulberry St-Sullivan St.-Union St.-Main St.-Elm St.	This alternative is an in-town route that provides a relatively direct connection between West Pleasant Street and Main Street.
Alternative 3	Pleasant St.-Summer/South-Broad St.	This alternative comprises the city's historic truck route and historic South St. sub-alternative
Alternative 4	Maple Ave.-Pleasant St.-South St.-Chestnut St.- <u>New</u> Bridge to Washington St.	Includes a new connection via bridge from Washington Street to Chestnut Street.

The four alternatives were generated considering existing highways system, the built environment, and topography and are intended to represent the range of possibility for enhanced truck travel. Effort was made to be comprehensive in the determination of alternatives. Each of the alternatives was numbered according to the physical location from west to east. Information was assembled in terms of the functional classification of the roads, the connections made to the larger proposed truck network, and elevations to show roadway grades.

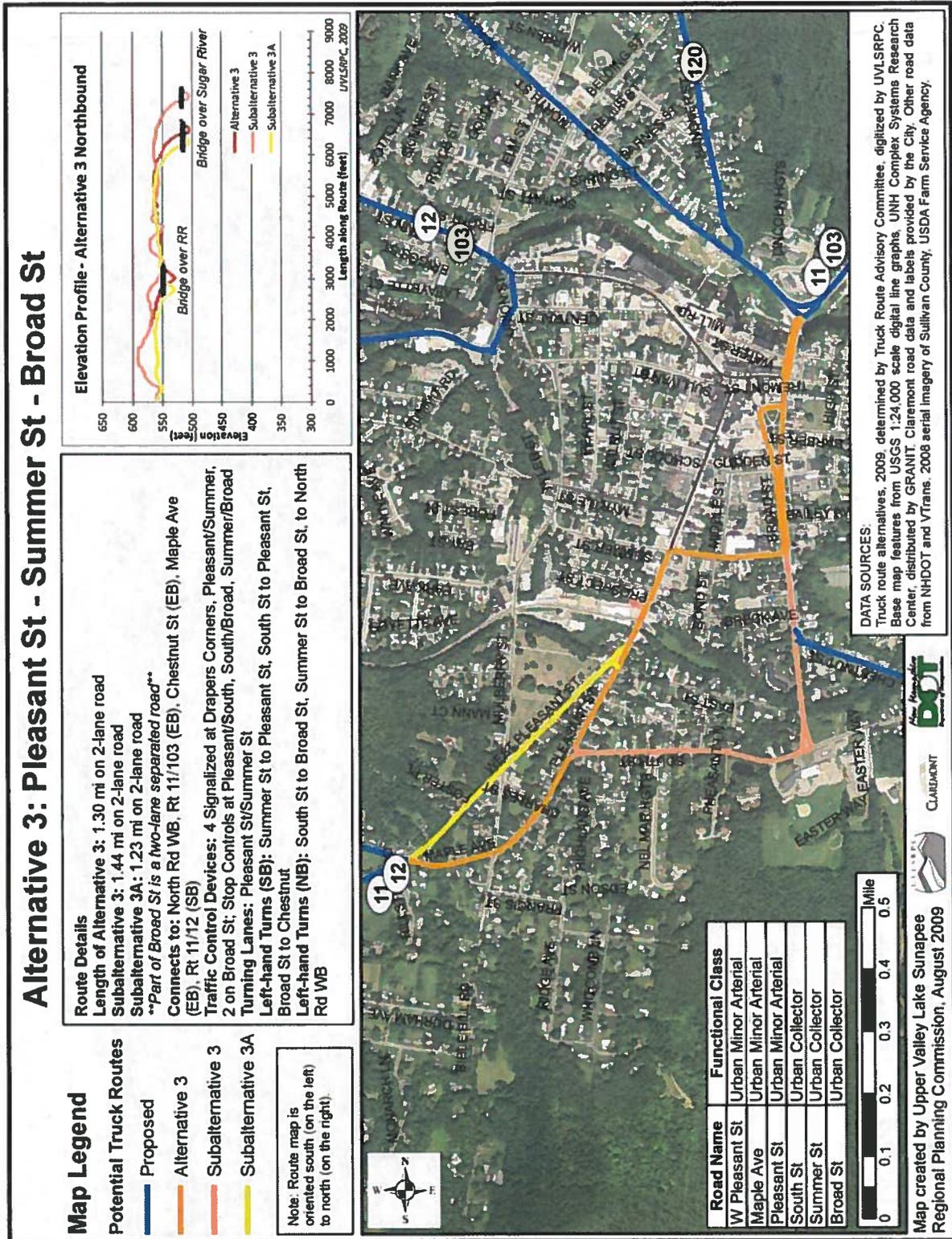
Map 5-1: Alternative 1- Ainsworth Rd.-River Rd.-Plains Rd.



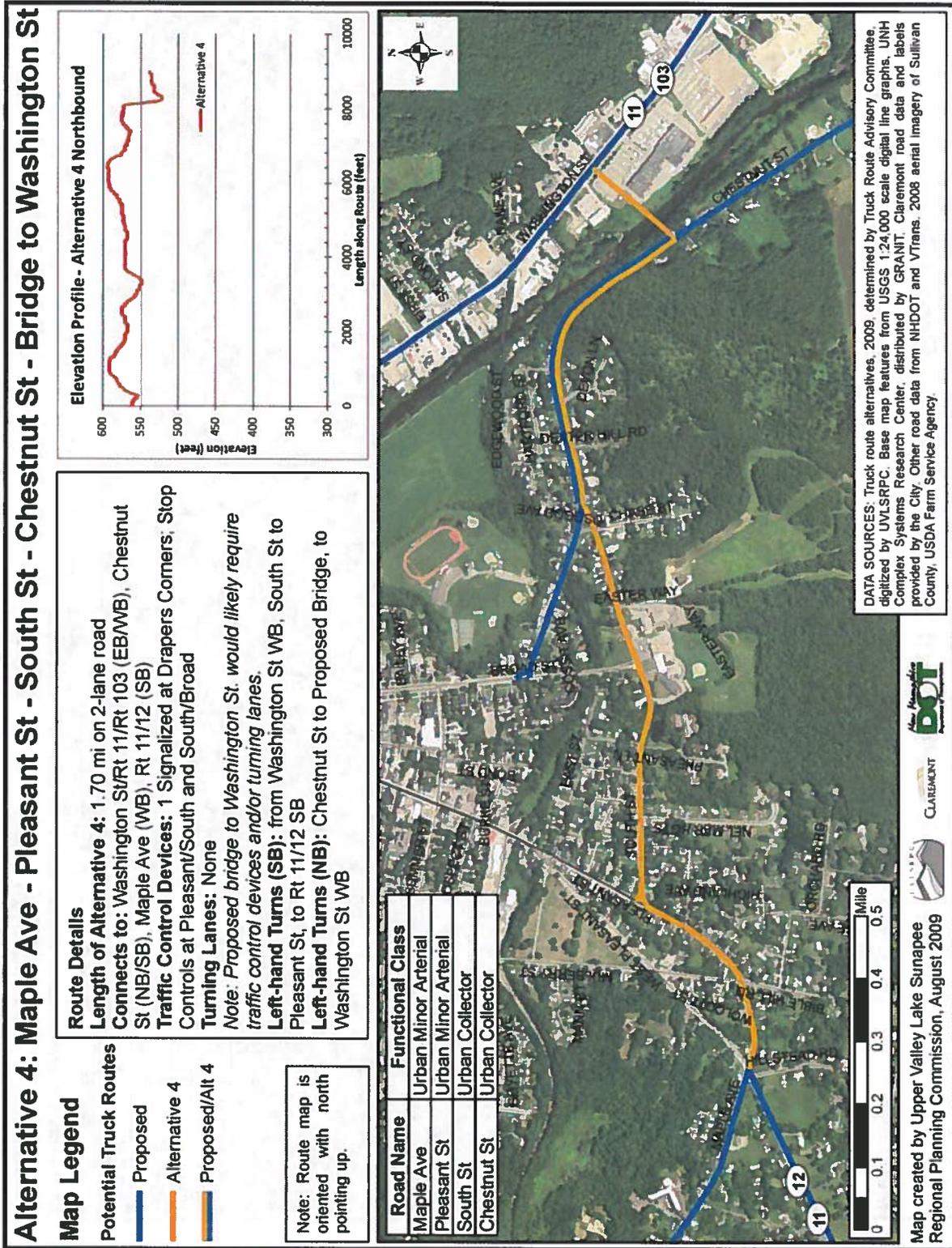
Map 5-2: Alternative 2- West Pleasant St.-Mulberry St.-Sullivan St.-Union St.-Main St.-Elm St.



Map 5-3: Alternative 3- Pleasant St.-Summer St./South St.-Broad St.



Map 5-4: Alternative 4- Maple Ave.-Pleasant St.-South St.-Chestnut St.- Washington St. Bridge



## 6.0. Assessment of Truck Network & Alternatives

An assessment of each alternative described in Section 5.0 was conducted in effort to better understand the impacts of each proposed route and its effectiveness in meeting the objectives of the study. The results from the public consultation process and evaluation screening criteria were used to provide a relative assessment and ranking of the alternatives.

The following summarizes the main themes raised from the public consultation process:

- Suggestions for specific roads or routes to be used for truck routes or for specific truck routes to be removed;
- The need for coordination between the Truck Route Study and other relevant studies, for example the Stevens High School Master Plan and the Claremont Community Center Conceptual Plan;
- Ensuring the safety of both vehicular and pedestrian traffic;
- Nuisances due to truck traffic, such as noise or vibrations;
- The impact of truck routes on quality of life and property values;
- The need for efficient routes for trucks, including those carrying oversized or agricultural loads;
- Enforcement of speeding trucks and of trucks travelling on routes that prohibit truck traffic, and;
- Confusing signage directing truck and vehicular traffic.

Key routes of concern include:

- North Street;
- Summer Street;
- Plains Road and Route 12A (steep grades);
- Maple Avenue.



*Confusing signage at the corner of Pleasant and Summer Streets*

### 6.1 Proposed Truck Network

The proposed truck network discussed in Section 4.0 was not assessed using the screening criteria used to evaluate the alternative truck routes presented in Section 5.0. Rather, the proposed truck network was assumed adequate in order to focus on specific truck route alternatives. Local knowledge of the study area and public input indicated a number of issues related to this proposed network. The results are described below.

1. Remove Maple Avenue from the proposed network. Other alternatives exist and Maple Ave. has predominately residential development.
2. Chestnut Street and Grissom Lane are substandard and in poor condition.

3. Generally poor signage.
4. Approaches to the intersection of North and Main Streets contain steep grades. Drapers Corner is a High Accident Location.
5. Steep grades on Route 12A.

## **6.2 Screening Criteria**

Screening criteria were developed to assess the truck route alternatives. A scale ranging from “Very Poor” to “Excellent” was used to qualitatively score each criterion. Generally, “Very Poor” means that the impacts are the greatest and infrastructure is most inadequate for trucks. “Excellent” means that impacts are inconsequential and/or the infrastructure is optimal for accommodating truck traffic.

All four alternatives are screened for comparison. The status quo was not included in the screening due to its inconsistency with the objectives and problem statement of the study.

Screening Criteria:

- *Existing Land Use*
- *Infrastructure Adequacy*
- *Consistency with Future Land Use Plan*
- *Cost of Implementation*
- *Environment*
- *Safety*

### **6.2.1 Existing Land Use**

The existing land use surrounding the proposed route is important in understanding the potential impact to residents and the ability of the route to serve nonresidential development. This criterion is assessed by asking two questions: 1) would the alternative adequately serve existing nonresidential development? and 2) would the alternative minimize the impact to existing residential development?

Existing tax assessment records were used to identify land uses within the corridor of each alternative. That information was used to assess access to nonresidential properties and the impact upon residence based upon the number of residential dwellings.

### **6.2.2 Cost of Implementation**

Cost of implementation is intended to assess the relative financial resources that would be required for implementing the proposed alternative. Would the alternative require significant resources to implement? Is that cost financially feasible? Does the project lend itself to phasing the alternative?

No cost estimates were determined as part of this plan. A relative comparison was made by assessing the number of improvements that would potentially be required and whether complexities and transaction cost would be great based upon right-of-way acquisition needs.

### **6.2.3 Infrastructure Adequacy**

Using existing information a comparison was made of the adequacy of infrastructure. Four questions related to adequacy were assessed: adequate road construction, sight distances, turning radii, and steep grades. Historic reports and input from the public consultation process were used for this assessment.

### **6.2.4 Environment**

Environmental impacts are an important consideration, especially in terms of the impacts to buildings. Also critical is whether the objective of the plan, the removal of truck traffic from downtown. Two questions are to be considered: 1) would the alternative mitigate vibration impacts to historic buildings? and would the alternative remove truck traffic from the downtown?

City tax assessment records were used to determine the number of buildings within 20 feet of the proposed route. The age of the buildings were used to determine if they met the definition of an historic structure, i.e. 50 years old and older.

### **6.2.5 Consistency with Future Land Use Plan**

The city's future land use plan is important in understanding the potential future impact to residents and the ability of the route to serve nonresidential development. This criterion is assessed in basically the same manner as existing land use: 1) would the alternative adequately serve future nonresidential development? and 2) would the alternative minimize the impact to future residential development?

The city's future land use map was used to identify land uses within the corridor of each alternative. That information was used to qualitatively assess impact upon residence and utility for nonresidential development.

The existing and future land use planning identifies the southwest quadrant as an industrial growth center. This effort to develop an industrial core has been integrated into the local Master Plan and Zoning Ordinance. Connectivity to industrial and commercial growth centers is an integral to this Truck Route Plan. Each alternative serves the existing and future land uses.

On balance with facilitating access to the commercial and industrial growth centers, there will be impacts to existing and future residential areas. This remains a significant challenge to identifying and a truck route that would avoid impacts to historic, residential, or other zoning districts (present or future) that are more sensitive to heavy truck traffic. A reasonable goal is to minimize impacts to these more sensitive land uses.

### **6.2.6 Safety**

Another concern is safety. The location of truck route is a concern when they are proximate to important civic buildings that are frequently locations of public assembly, (e.g. City Hall, schools, etc). Conflicts between different modes of transportation are also a concern, for instance, if there is the presence of at-grade railroad crossings.

Pedestrian safety was another consideration. The issue of steep grades is evaluated under infrastructure Adequacy.

### 6.3 Screening Results Summary

#### 6.3.1 Alternative 1 Screening Results

The Plains Road alternative offers very little time savings and require that trucks maneuver a 6 percent grade. This alternative has several strengths including minimal impacts to historic buildings, few conflicts with alternative modes of transportation, and minimal impact to residential development. However, given the minimal time savings and grade issues, this alternative may be too expensive for the minimal benefits albeit the relatively low cost. This alternative passes locations where trucks need to go, but it is indirect unless destinations are nearby.



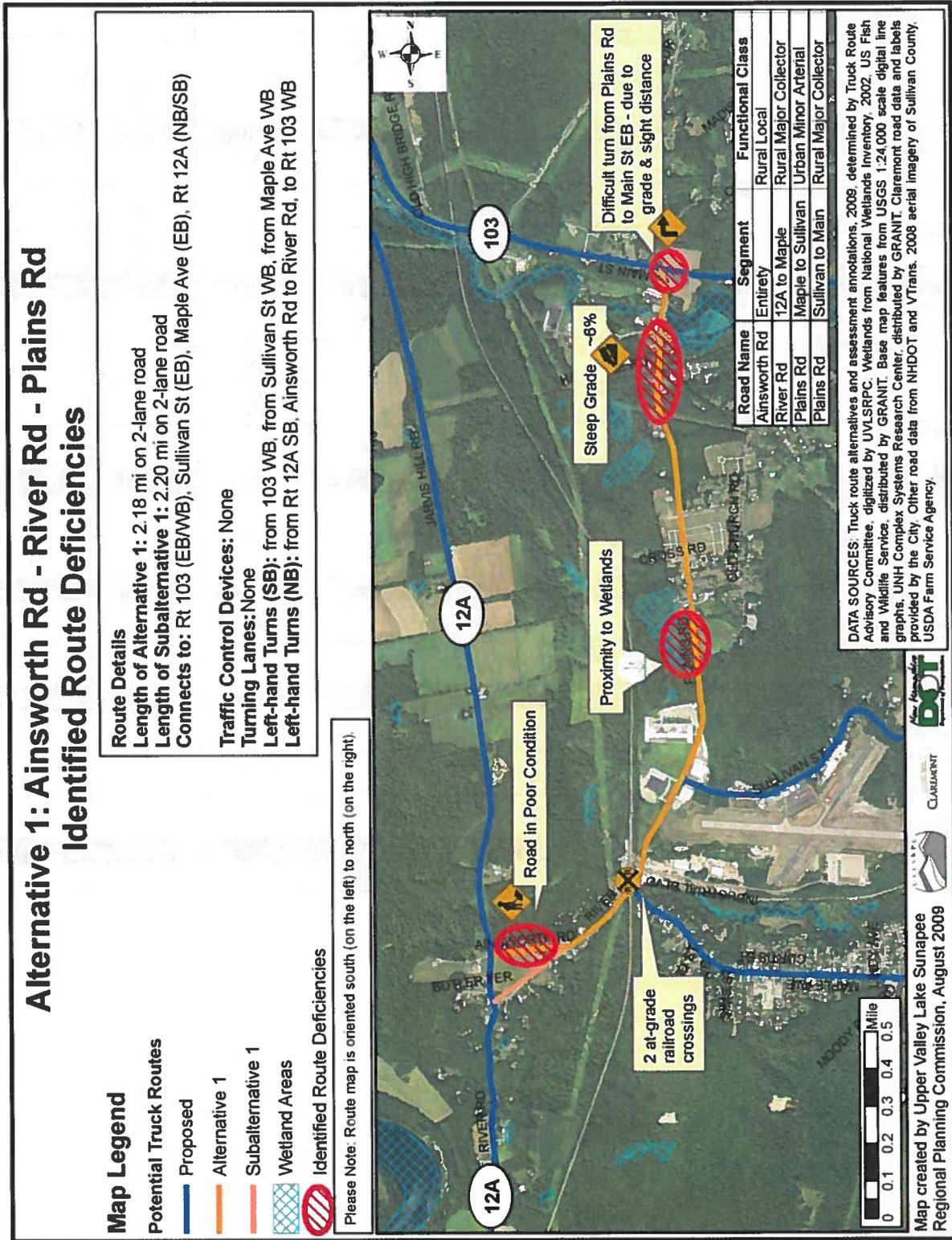
*An informal path has been created by vehicle maneuvering the tight turning radius at the River Road/Route 12A intersection*

Land uses are currently predominantly residential, however, buildings are located further away from the route as oppose to more urbanized areas within the city. Future land use objectives for the area are consistent with existing conditions.

**Table 6.3.1(A): Alternative 1 Attribute Summary Table**

Criterion	Alternative 1 Attributes
Existing Land Use	<ul style="list-style-type: none"> <li>• Single family residential-52%</li> <li>• Multi-family residential-4%</li> <li>• Industrial-4%</li> <li>• Commercial-4%</li> </ul>
Cost of Implementation	MEDIUM
Infrastructure Adequacy Issues (Y/N)	Y (steep grade and turning radii)
Environment-Historic Buildings Per Mile	3.2/mile
Future Land Use	<ul style="list-style-type: none"> <li>• Suburban Residential-56.8%</li> <li>• Neighborhood Business-13.6%</li> <li>• Industrial-29.5%</li> </ul>
Safety	NONE

Map 6.3.1: Alternative 1- Ainsworth Rd.-River Rd.-Plains Rd. Identified Route Deficiencies



**Table 6.3.1(B): Alternative 1- Detailed Screening Results**

<b>Existing Land Use</b>	<b>Very Poor</b>	<b>Poor</b>	<b>Adequate</b>	<b>Good</b>	<b>Excellent</b>
Does the alternative serve existing commercial and industrial uses?				X	
Is the alternative a direct route for through truck traffic?		X			
Would the alternative minimize impact to existing residential development?				X	
<b>Cost of Implementation</b>	<b>Very Poor</b>	<b>Poor</b>	<b>Adequate</b>	<b>Good</b>	<b>Excellent</b>
Would the alternative require significant resources to implement?			X		
Is the alternative financially feasible?				X	
How well does this alternative lend itself to phasing?				X	
<b>Infrastructure Adequacy</b>	<b>Very Poor</b>	<b>Poor</b>	<b>Adequate</b>	<b>Good</b>	<b>Excellent</b>
Would the alternative contain adequately constructed roads?		X			
Would the alternative contain adequate sight distances?			X		
Would the alternative contain adequate turning radii?			X		
Would the alternative contain steep grades?		X			
<b>Environment</b>	<b>Very Poor</b>	<b>Poor</b>	<b>Adequate</b>	<b>Good</b>	<b>Excellent</b>
Would the alternative mitigate vibration impacts to historic buildings?					X
Would the alternative remove truck traffic from the downtown?					X
<b>Consistency with Future Land Use Plan</b>	<b>Very Poor</b>	<b>Poor</b>	<b>Adequate</b>	<b>Good</b>	<b>Excellent</b>
Would the alternative adequately serve future nonresidential development?			X		
Would the alternative minimize impact to future residential development?				X	
<b>Safety</b>	<b>Very Poor</b>	<b>Poor</b>	<b>Adequate</b>	<b>Good</b>	<b>Excellent</b>
Would the alternative minimize impacts to critical facilities (e.g. schools and public facilities)?					X
Would the alternative improve safety for pedestrians in downtown Claremont?					X
Would the alternative reduce conflicts between different modes of transportation?					X
<b>Overall</b>	<b>Unreasonable</b>			<b>Reasonable</b>	
	<b>Potentially</b>				

### 6.3.2 Alternative 2 Screening Results

This alternative is one of the most direct routes through the city. The route travels through the city's urban core but avoids prominent locations like Opera House Square and Broad Street. Land uses along the route are mostly urban and mixed which makes this alternative fairly consistent with existing and future land use plans.



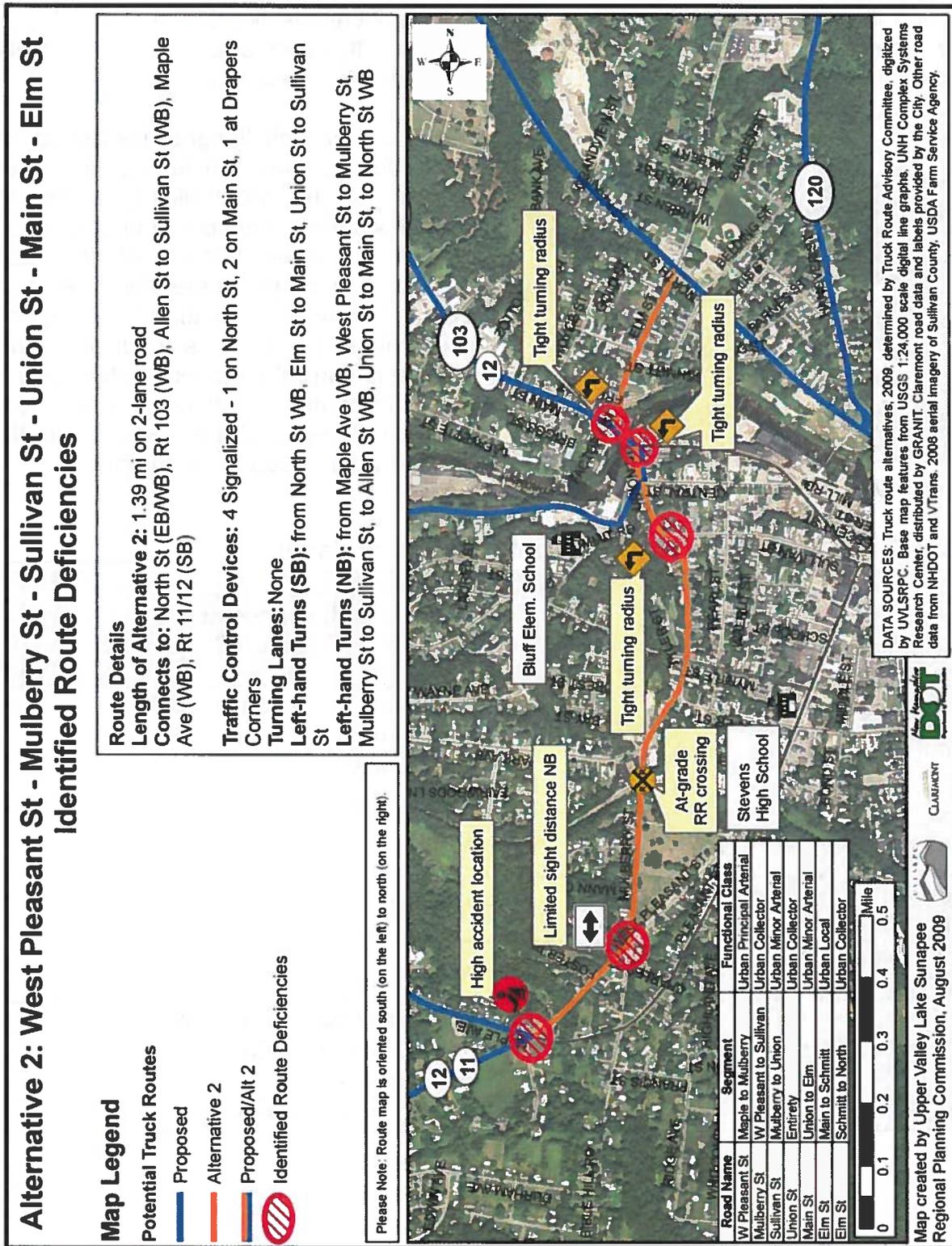
*Making a right turn from Main Street to Elm Street is difficult.*

There are some challenges associated with this route as well including the close proximity of historic buildings and two intersections that have tight turning radii (See Map 6.3.2). The number of historic building within 20 feet of the route per mile is the greatest of any of the alternatives (35/mile) making vibration and noise a concern. While the route is currently maneuverable for most trucks, the corners of Union and Min Street and Main Street and Elm Street are tight turns and would need to be improved.

**Table 6.3.2(A): Alternative 1 Attribute Summary Table**

Criterion	Alternative 2 Attributes
<b>Existing Land Use</b>	<ul style="list-style-type: none"> <li>• Single family residential-30%</li> <li>• Multi-family residential-35%</li> <li>• Industrial-3%</li> <li>• Commercial-12%</li> </ul>
<b>Cost of Implementation</b>	MEDUIM
<b>Infrastructure Adequacy Issues (Y/N)</b>	Y (turning radii)
<b>Environment-Historic Buildings Per Mile</b>	34.5/mile
<b>Future Land Use</b>	<ul style="list-style-type: none"> <li>• Suburban Residential-29%</li> <li>• Urban Mixed-Use-68%</li> <li>• Industrial-4%</li> </ul>
<b>Safety</b>	Bluff School (1/4 mile away)

**Map 6.3.2: Alternative 2- West Pleasant St.-Mulberry St.-Sullivan St.-Union St.-Main St - Elm St. Identified Route Deficiencies**



**Table 6.3.2(B): Alternative 2- Detailed Screening Results**

<b>Existing Land Use</b>	<b>Very Poor</b>	<b>Poor</b>	<b>Adequate</b>	<b>Good</b>	<b>Excellent</b>
Does the alternative serve existing commercial and industrial uses?				X	
Is the alternative a direct route for though truck traffic?			X		
Would the alternative minimize impact to existing residential development?			X		
<b>Cost of Implementation</b>	<b>Very Poor</b>	<b>Poor</b>	<b>Adequate</b>	<b>Good</b>	<b>Excellent</b>
Would the alternative require significant resources to implement?			X		
Is the alternative financially feasible?			X		
How well does this alternative lend itself to phasing?				X	
<b>Infrastructure Adequacy</b>	<b>Very Poor</b>	<b>Poor</b>	<b>Adequate</b>	<b>Good</b>	<b>Excellent</b>
Would the alternative contain adequately constructed roads?			X		
Would the alternative contain adequate sight distances?			X		
Would the alternative contain adequate turning radii?			X		
Would the alternative contain steep grades?				X	
<b>Environment</b>	<b>Very Poor</b>	<b>Poor</b>	<b>Adequate</b>	<b>Good</b>	<b>Excellent</b>
Would the alternative mitigate vibration impacts to historic buildings?		X			
Would the alternative remove truck traffic from the downtown ?				X	
<b>Consistency with Future Land Use Plan</b>	<b>Very Poor</b>	<b>Poor</b>	<b>Adequate</b>	<b>Good</b>	<b>Excellent</b>
Would the alternative adequately serve future nonresidential development?				X	
Would the alternative minimize impact to future residential development?				X	
<b>Safety</b>	<b>Very Poor</b>	<b>Poor</b>	<b>Adequate</b>	<b>Good</b>	<b>Excellent</b>
Would the alternative minimize impacts to critical facilities (e.g. schools and public facilities)?				X	
Would the alternative improve safety for pedestrians in downtown Claremont?				X	
Would the alternative reduce conflicts between different modes of transportation?				X	
<b>Overall</b>	<b>Unreasonable</b>			<b>Reasonable</b>	
				<b>Potentially</b>	

### 6.3.3 Alternative 3/3B Screening Results

Potential impacts to critical facilities within alternative 3 are problematic for the city: 1) expansion of Stevens High School on Summer Street, and 2) the potential campus concept at the South Street area near the middle school and the proposed community center.



*Small raised island at the corner of South and West Pleasant Street is reported to frequently cut tire on southbound truck traffic.*

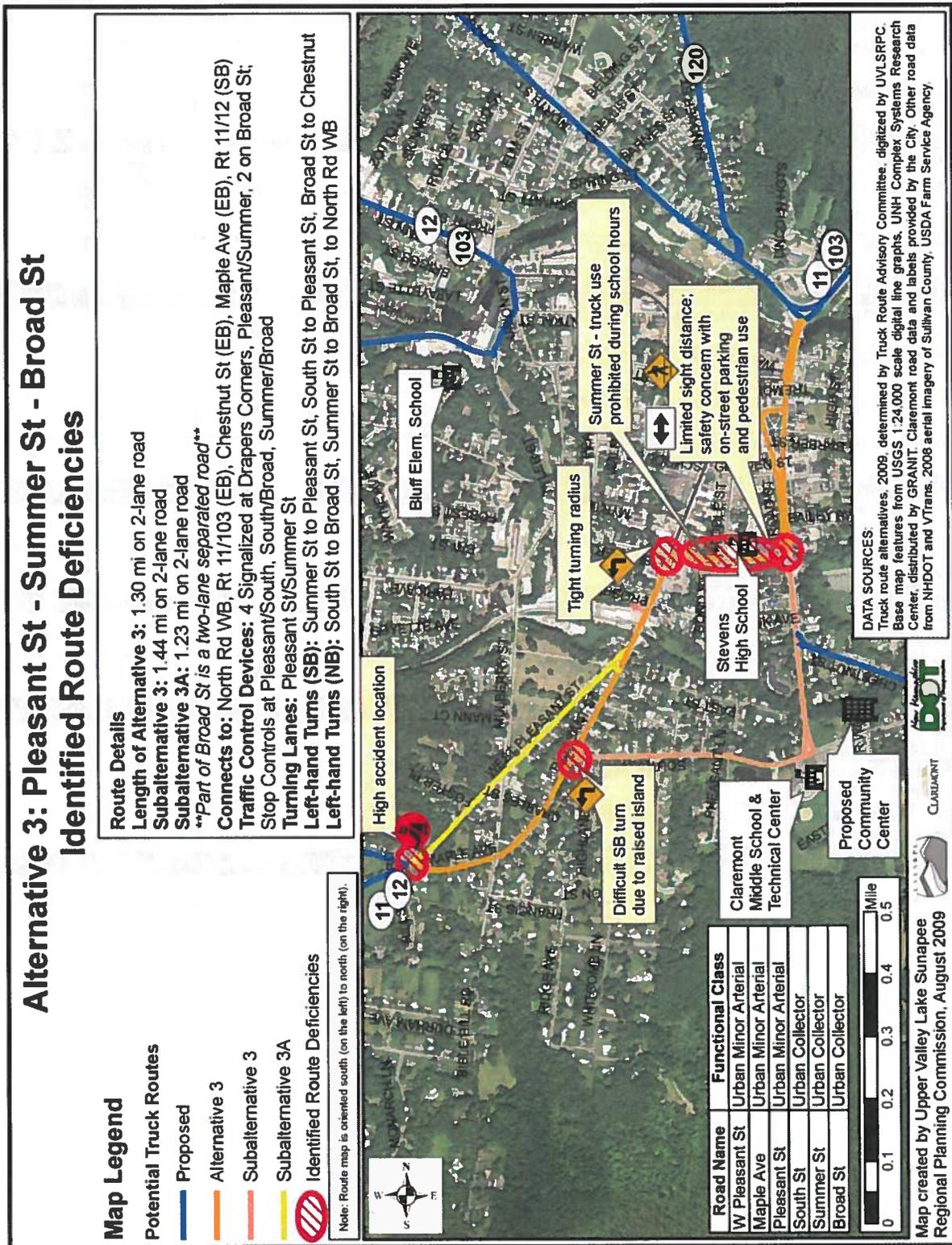
Both the alternative and sub-alternative would require some investment to make improvements. These investments would either be contradictory to the planned renovation of SHS, which has identified truck traffic and the associated noise as an impediment to learning or to the community center campus concept. In fact, state accreditation has indentified the traffic noise as disruptive to the learning environment.

For the city and school district to move forward with counter productive investment would be illogical.

**Table 6.3.3(A): Alternative 3 Attribute Summary Table**

Criterion	Alternative 3 Attributes	Alternative 3B (South Street sub-alternative) Attributes
Existing Land Use	<ul style="list-style-type: none"> <li>• Single family residential-38%</li> <li>• Multi-family residential-17%</li> <li>• Industrial-0%</li> <li>• Commercial-24%</li> </ul>	<ul style="list-style-type: none"> <li>• Single family residential-34%</li> <li>• Multi-family residential-23%</li> <li>• Industrial-0%</li> <li>• Commercial-19%</li> </ul>
Cost of Implementation	LOW	LOW
Infrastructure Adequacy Issues (Y/N)	Y (turning radii)	Y(turning radii)
Environment-Historic Buildings Per Mile	22.3/mile	6.9/mile
Future Land Use	<ul style="list-style-type: none"> <li>• Suburban Residential-38%</li> <li>• Urban Mixed-Use-62%</li> </ul>	<ul style="list-style-type: none"> <li>• Suburban Residential-64%</li> <li>• Urban Mixed-Use-36%</li> </ul>
Safety	Stevens High School City Hall Proposed Community Center	Middle School Stevens High School City Hall Proposed Community Center

Map 6.3.3: Alternative 3- Pleasant St.-Summer St./South St.-Broad St. Identified Route Deficiencies



**Table 6.3.3(B): Alternative 3- Detailed Screening Results**

<b>Existing Land Use</b>	<b>Very Poor</b>	<b>Poor</b>	<b>Adequate</b>	<b>Good</b>	<b>Excellent</b>
Does the alternative serve existing commercial and industrial uses?			X		
Is the alternative a direct route for though truck traffic?					X
Would the alternative minimize impact to existing residential development?		X			
<b>Cost of Implementation</b>	<b>Very Poor</b>	<b>Poor</b>	<b>Adequate</b>	<b>Good</b>	<b>Excellent</b>
Would the alternative require significant resources to implement?				X	
Is the alternative financially feasible?				X	
How well does this alternative lend itself to phasing?				X	
<b>Infrastructure Adequacy</b>	<b>Very Poor</b>	<b>Poor</b>	<b>Adequate</b>	<b>Good</b>	<b>Excellent</b>
Would the alternative contain adequately constructed roads?			X		
Would the alternative contain adequate sight distances?			X		
Would the alternative contain adequate turning radii?			X		
Would the alternative contain steep grades?					X
<b>Environment</b>	<b>Very Poor</b>	<b>Poor</b>	<b>Adequate</b>	<b>Good</b>	<b>Excellent</b>
Would the alternative mitigate vibration impacts to historic buildings?		X			
Would the alternative remove truck traffic from the downtown ?		X			
<b>Consistency with Future Land Use Plan</b>	<b>Very Poor</b>	<b>Poor</b>	<b>Adequate</b>	<b>Good</b>	<b>Excellent</b>
Would the alternative adequately serve future nonresidential development?				X	
Would the alternative minimize impact to future residential development?			X		
<b>Safety</b>	<b>Very Poor</b>	<b>Poor</b>	<b>Adequate</b>	<b>Good</b>	<b>Excellent</b>
Would the alternative minimize impacts to critical facilities (e.g. schools and public facilities)?	X				
Would the alternative improve safety for pedestrians in downtown Claremont?		X			
Would the alternative reduce conflicts between different modes of transportation?		X			
<b>Overall</b>	<b>Unreasonable</b>			<b>Reasonable</b>	
	<b>Potentially</b>				

**Table 6.3.3(C): Alternative 3B- Detailed Screening Results**

<b>Existing Land Use</b>	<b>Very Poor</b>	<b>Poor</b>	<b>Adequate</b>	<b>Good</b>	<b>Excellent</b>
Does the alternative serve existing commercial and industrial uses?			X		
Is the alternative a direct route for through truck traffic?					X
Would the alternative minimize impact to existing residential development?		X			
<b>Cost of Implementation</b>	<b>Very Poor</b>	<b>Poor</b>	<b>Adequate</b>	<b>Good</b>	<b>Excellent</b>
Would the alternative require significant resources to implement?				X	
Is the alternative financially feasible?				X	
How well does this alternative lend itself to phasing?				X	
<b>Infrastructure Adequacy</b>	<b>Very Poor</b>	<b>Poor</b>	<b>Adequate</b>	<b>Good</b>	<b>Excellent</b>
Would the alternative contain adequately constructed roads?			X		
Would the alternative contain adequate sight distances?			X		
Would the alternative contain adequate turning radii?			X		
Would the alternative contain steep grades?					X
<b>Environment</b>	<b>Very Poor</b>	<b>Poor</b>	<b>Adequate</b>	<b>Good</b>	<b>Excellent</b>
Would the alternative mitigate vibration impacts to historic buildings?				X	
Would the alternative remove truck traffic from the downtown ?		X			
<b>Consistency with Future Land Use Plan</b>	<b>Very Poor</b>	<b>Poor</b>	<b>Adequate</b>	<b>Good</b>	<b>Excellent</b>
Would the alternative adequately serve future nonresidential development?				X	
Would the alternative minimize impact to future residential development?		X			
<b>Safety</b>	<b>Very Poor</b>	<b>Poor</b>	<b>Adequate</b>	<b>Good</b>	<b>Excellent</b>
Would the alternative minimize impacts to critical facilities (e.g. schools and public facilities)?	X				
Would the alternative improve safety for pedestrians in downtown Claremont?		X			
Would the alternative reduce conflicts between different modes of transportation?		X			
<b>Overall</b>	<b>Unreasonable</b>			<b>Reasonable</b>	
	<b>Potentially</b>				

### 6.3.4 Alternative 4 Screening Results

The fourth alternative was popular with most participants in the study, from the Master Plan Advisory Transportation Subcommittee to representatives for industry and truckers. A new connection to Chestnut Street would introduce redundancy to the transportation network, which would disperse traffic and provide additional travel options. These benefits would not only be helpful to truck traffic, but also to emergency response. There would be additional traffic impacts to Chestnut and South Streets.

While alternative 4 has beneficial aspects, the concept will be expensive to implement. It was report during the July 28, 2009 public meeting that the city investigated the connector bridge approximately 10 years ago. Estimates at that time were around \$20 million dollars. Federal funding was not available to assist with design and construction. At present federal funding, although competitive, would likely be available on a competitive basis for the current proposal.

Environmental permitting would be extensive and include local, state, and federal review. Complicating the matter development rights near the river are reportedly owned by the State of New Hampshire. This will make land acquisition for the bridge difficult. Members of the public have also indicated that a prior sewer main crossing took a substantial effort to implement. Another significant issue with this alternative is the potential for a campus concept between the school and community center on South Street. The alternative would increase truck and vehicle traffic in that location, which would be contrary public investments.

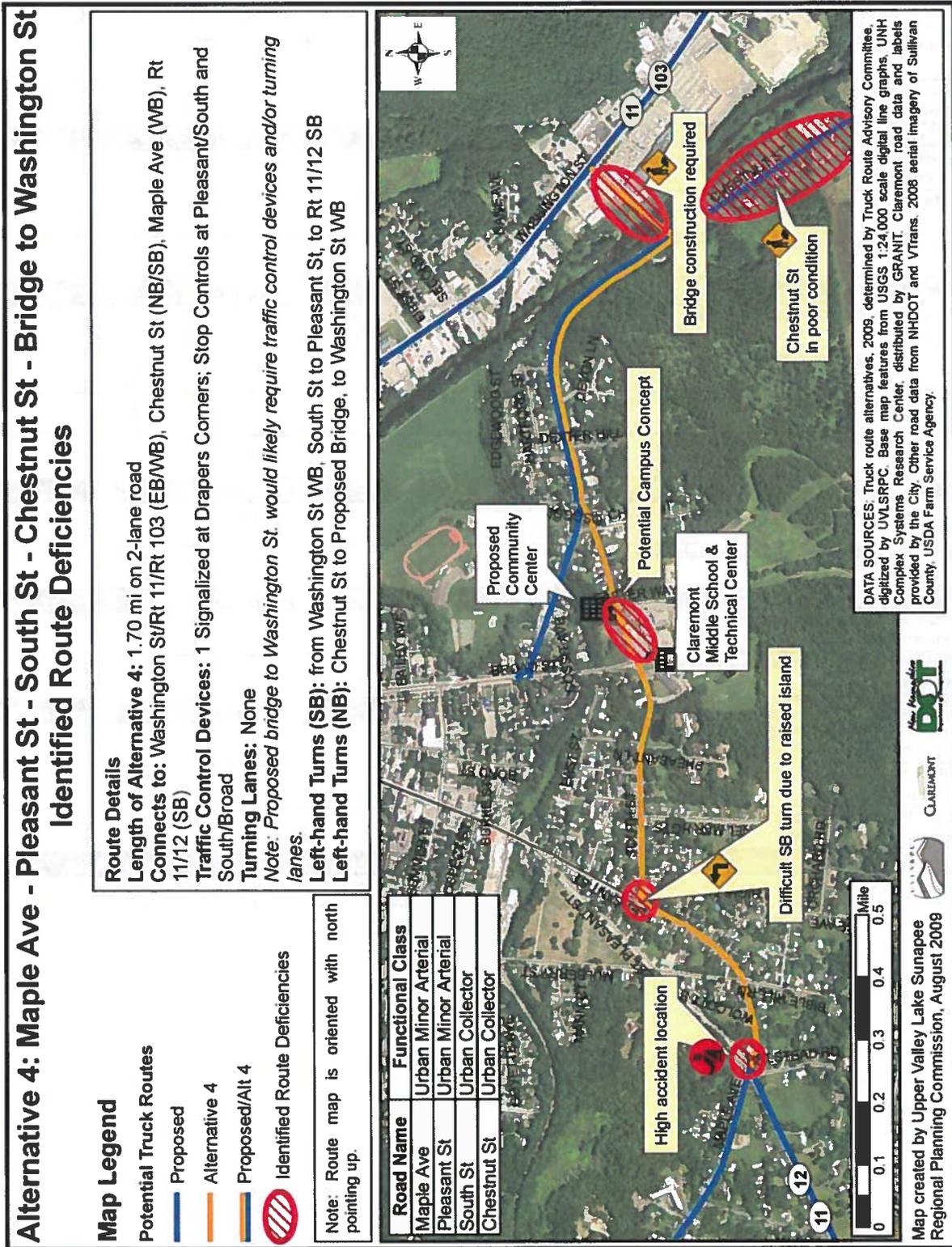


*Chestnut Street will require significant investment to correct deteriorating pavement*

**Table 6.3.4(A): Alternative 4 Attribute Summary Table**

Criterion	Alternative 4 Attributes
Existing Land Use	<ul style="list-style-type: none"> <li>• Single family residential-66%</li> <li>• Multi-family residential-26%</li> <li>• Industrial-0%</li> <li>• Commercial-1%</li> </ul>
Cost of Implementation	HIGH (No option for phasing)
Infrastructure Adequacy Issues (Y/N)	Y (Chestnut road condition)
Environment-Historic Buildings Per Mile	11.2/mile
Future Land Use	<ul style="list-style-type: none"> <li>• Suburban Residential-53%</li> <li>• Urban Mixed-Use-13.6%</li> <li>• Highway Buisniess-12%</li> </ul>
Safety	Middle School & Proposed Community Ctr

Map 6.3.4: Alternative 4- Maple Ave.-Pleasant St.-South St.-Chestnut St.- Washington Street Bridge Identified Route Deficiencies



**Figure 6-3(E): Alternative 4- Detailed Screening Results**

<b>Existing Land Use</b>	<b>Very Poor</b>	<b>Poor</b>	<b>Adequate</b>	<b>Good</b>	<b>Excellent</b>
Does the alternative serve existing commercial and industrial uses?			X		
Is the alternative a direct route for through truck traffic?					X
Would the alternative minimize impact to existing residential development?	X				
<b>Cost of Implementation</b>	<b>Very Poor</b>	<b>Poor</b>	<b>Adequate</b>	<b>Good</b>	<b>Excellent</b>
Would the alternative require significant resources to implement?	X				
Is the alternative financially feasible?	X				
How well does this alternative lend itself to phasing?	X				
<b>Infrastructure Adequacy</b>	<b>Very Poor</b>	<b>Poor</b>	<b>Adequate</b>	<b>Good</b>	<b>Excellent</b>
Would the alternative contain adequately constructed roads?		X			
Would the alternative contain adequate sight distances?				X	
Would the alternative contain adequate turning radii?				X	
Would the alternative contain steep grades?					X
<b>Environment</b>	<b>Very Poor</b>	<b>Poor</b>	<b>Adequate</b>	<b>Good</b>	<b>Excellent</b>
Would the alternative mitigate vibration impacts to historic buildings?			X		
Would the alternative remove truck traffic from the downtown ?				X	
<b>Consistency with Future Land Use Plan</b>	<b>Very Poor</b>	<b>Poor</b>	<b>Adequate</b>	<b>Good</b>	<b>Excellent</b>
Would the alternative adequately serve future nonresidential development?				X	
Would the alternative minimize impact to future residential development?		X			
<b>Safety</b>	<b>Very Poor</b>	<b>Poor</b>	<b>Adequate</b>	<b>Good</b>	<b>Excellent</b>
Would the alternative minimize impacts to critical facilities (e.g. schools and public facilities)?			X		
Would the alternative improve safety for pedestrians in downtown Claremont?				X	
Would the alternative reduce conflicts between different modes of transportation?			X		
<b>Overall</b>	<b>Unreasonable</b>			<b>Reasonable</b>	
	<b>Potentially</b>				

## 7.0 Truck Route Implementation

A Truck Route in the City of Claremont would be implemented through a four-pronged approach:

- 1) Adopting a City Ordinance regulating heavy vehicle travel on Class IV, Class V, and Class VI roads;
- 2) Installing clear, permissive signage along the designated Truck Route;
- 3) Improving infrastructure along the designated Truck Route to eliminate geometric obstacles to heavy vehicle travel; and
- 4) Re-classifying State Highways as appropriate.

### Local Ordinance

Communities have the authority to place weight restrictions on local highways per RSA 231:191, which states that, *"The governing body of a municipality may establish maximum weight limits, seasonal or otherwise, which are more restrictive than limits set forth in RSA 266:17-26, for any class IV, V, or VI highway or portion of such highway, when the highway agent determines that such highway requires postings to prevent unreasonable damage or extraordinary municipal maintenance expense."*

Often, this RSA is used to prohibit travel on dirt roads during "mud season." However, it may also be used to regulate heavy vehicle traffic on local roads. In fact, a number of New Hampshire communities, including the City of Keene, have enacted ordinances prohibiting heavy vehicle travel on local roads. Exceptions are provided for emergency vehicles, infrastructure repairs (construction vehicles), and deliveries off of designated truck routes.

A model truck route ordinance, which may serve as a starting point for the City of Claremont, is provided in Appendix D of this report.

### Signage

One way to facilitate efficient truck travel through the City of Claremont is through the installation of clear and effective signage along a designated Truck Route. Truck Route signage is most effective when it is permissive (i.e. directing truckers where to travel) rather than restrictive (i.e. informing truckers where they may not travel). Upon the formalization of a Truck Route, there are many potential sources of funding to assist the Claremont Department of Public Works in funding the purchase and installation of appropriate signage. These funding sources are available through state and federal transportation grant programs including the State Aid Highway or Betterment Programs.



*An Example of Permissive Truck Route Signage*

### Infrastructure Improvements

As discussed in the previous sections of this report and shown on the preceding infrastructure adequacy maps, each truck route alternative presents infrastructure challenges. In many cases, infrastructure deficiencies involve poor turning radii and limited sight distances. The selection of a Truck Route should inform the city's Capital Improvement Planning and future projects submitted for Ten-Year Plan, Transportation Enhancement, or Congressional funding consideration.



*The City of Claremont has secured federal funding for reconstructing the intersection of North Street and Main Street. In part, this work will improve the maneuverability of the intersection for large vehicles.*

In addition, the base network of truck routes should be continually reviewed to ensure that the infrastructure is capable of handling heavy vehicle traffic. For instance, the City of Claremont has recently secured federal funding for reconstructing the intersection of Main Street and North Street. The work, currently scheduled for 2012, will improve the maneuverability of the intersection for large vehicles.

### Re-classification of State Highways

The numbering of the existing state highway network presents challenges to efficient travel. These issues extend beyond the borders of the City of Claremont to much of Grafton, Sullivan, and Merrimack County. The New Hampshire Department of Transportation will be reviewing, and potentially making changes to, state highway numbering with the following goals:

- Creating interstate connectivity for numbered state highways (e.g. Route 103 in New Hampshire does not connect to Route 103 in Vermont).
- Eliminating confusing lettered state highway designations (e.g. Routes 12A, 25A, 25B, 25C, 130A, 103B, etc).
- Clarifying numbering on important statewide corridors (e.g. the state highway that runs adjacent to the Connecticut River is Route 10 in the Upper Valley, Route 12A from Plainfield to Claremont, and Route 12 from Charlestown southward).

The formalization of a Truck Route in the City of Claremont should inform the State Highway re-numbering process. Because the City of Claremont does not have the authority to regulate vehicle weights on the state highway network, this process presents an opportunity for Truck Route implementation.

## 8.0 Recommendations

The following recommendations are provided to assist the city in the implementation of a comprehensive truck route.

1. Consider obtaining a facilitator to assist in the truck route implementation process. A trained facilitator will be helpful should the city need assistance in the selection of a preferred alternative truck route. It will be helpful if the facilitator has a background in planning or engineering given the topical matter. This process could also include further screening of the alternatives, studies, and public input. Any truck route should strive for a balance between residential and industrial impacts.
  - a. We recommend that the city give consideration to a phased approach to truck route implementation.
  - b. We recommend Alternative 2 as the preferred truck route for any additional future assessment of the alternatives presented in this report. Alternative 2 is one of the strongest alternatives that could be easily phased for implementation.
  - c. Long-term consider Alternative 4 which will require significantly more planning in terms of right of way acquisition and finance.
2. Include capital projects that have been identified in the proposed truck route network and any selected truck route alternative in the city capital improvement program.
3. Remove Maple Avenue from the proposed truck network.
4. Coordinate with the school district and recreation department in the consideration of truck routes. Primary issues include the Stevens High School campus concept and potential impacts to traffic circulation should South Street be closed as part of the recreation center campus.
5. Seek State and Federal funding to assist with the implementation of the Truck Route Plan.
6. Implement the city truck route through a four-pronged approach: local ordinance, permission signage, infrastructure improvements, and re-classification of state highways. Work closely with the NHDOT to determine a comprehensive highway reclassification scheme.
7. Monitor truck route implementation to identify how well the route is serving the needs of the community and industry. Develop standards for measuring the impacts of the truck route on adjacent land uses as well as impacts on other areas in the city that may have a reduced heavy truck volume due to implementing a truck route. This is especially important with a phased implementation of Alternative 2. Make adjustments with infrastructure or policy to address any identified deficiencies.



**9.0 Appendices**





**Appendix A- Press Coverage**





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**ATTENTION TRUCK DRIVERS**

The City of Claremont and the Upper Valley Lake Sunapee Regional Planning Commission will be surveying truck traffic within the City of Claremont at various locations between May 21 and June 2, 2009. The survey is intended to assist the City in developing a Truck Route Plan.

This survey is voluntary. We appreciate your cooperation. Providing us this valuable survey information will allow the City of Claremont to consider truck route alternatives that best serve the City and commercial vehicle operators.

If you have any questions, please call Peter Dzewaltowski, Senior Planner, UVLSRPC, 603-448-1680. This project is funded by the New Hampshire Department of Transportation.

## City conducting truck traffic study

By ANGEL ROY  
Staff Writer

An origin and destination survey of heavy vehicle traffic will be conducted from May 21 to June 2 as part of a truck route study in the city.

The voluntary surveys will be conducted at the following entrances to the city:

- Route 12A South
- Route 12A North
- East Main Street
- West Washington Street
- Route 120 North
- South Charlestown Road

The drivers of the heavy traffic vehicles will be asked where they entered and exited Claremont and at what time.

"We want to know what stops they make and piece together their routes," said interim City Planner Peter Dzewaltowski.

Dzewaltowski will conduct the survey as the project manager for the Upper Valley Lake Sunapee Regional Planning Commission.

A 1986 traffic study done in the city concluded that the heavy truck volume did not warrant that a heavy truck route study be pursued, Dzewaltowski said.

This will be the first truck route study for Claremont.

The study is funded through a

New Hampshire Department of Transportation grant applied for by the UVLSRPC, with contributions from both the commission and the city.

The project cost is \$45,000 which is funded by a federal contribution of \$36,000 and \$2,263 from the UVLSRPC Service Incentive Program.

For an in-kind grant match of \$6,737 the city will provide patrol officers and vehicles at the survey destinations to help direct traffic, Dzewaltowski added.

The driving force behind the study, Dzewaltowski said, was the perception of the amount of heavy vehicle traffic — by design of the roadway system — through Opera House Square, the core of the community.

The traffic in the square, he continued, is "generally inconsistent with the type of development and growth that the city would like to see there."

The heavy vehicle traffic and the vibrations and noise that accompanies it, Dzewaltowski said, has become a "detriment to the core of the community."

The survey, he added will ask specifically if the vehicle passed through Opera House Square and if the driver was passing through Claremont to avoid weight restrictions on Interstate 91.

The Granite State has been able to obtain some variances and exceptions for heavier vehicle traffic on its interstate highway system, Vermont has not been granted the same exception.

Vehicle weight restrictions, Dzewaltowski said, are different in Vermont.

The effect of heavier vehicles on roadways "depend on the weight which is why the federal government restricts the interstate highway system," he continued, citing the impact on the roads for the restrictions.

"The impact all has to do with how the base, surface and binding of the roadway are constructed," Dzewaltowski said.

The community, he added, is concerned about the impact of the heavy traffic vehicles.

Part of the process, Dzewaltowski said, will be to "look for community input and find out what the concerns are" during public forums and focus groups.

Interviews with stakeholders in the industry and truck drivers will also be conducted as part of the survey, he added.

Dzewaltowski estimates that the study will be finished by August.

Angel Roy can be reached at (603) 504-3103, or by e-mail at [aroy@eagletimes.com](mailto:aroy@eagletimes.com).

# Claremont Considers Truck Route

By JOHN P. GREGG  
Valley News Staff Writer

CLAREMONT — Planning and transportation officials are trying to solve a problem that has vexed the city for decades — how, and whether, to establish designated truck routes through Claremont to steer big trucks away from scenic Opera House Square.

A meeting to gather suggestions from the public will be held tonight at 7 in the community room of Claremont Savings Bank on Broad Street.

"The crux of this is getting trucks alternative routes for north-south travel," said Peter Dzewaltowski, a senior planner with the Upper Valley Lake Sunapee Regional Planning Commission who said helping trucks avoid Opera House Square, where Routes 11, 12 and 103 converge, is "challenging."

"They are trying to create an environment for the redevelopment of the downtown, and the heavy truck traffic isn't very consistent with that," said Dzewaltowski, who also serves as the city planner for Claremont through an interim contract the city has with UVLSRPC.

Aided by a \$45,000 grant from the New Hampshire Department of Transportation, the planning commission hired a consultant to conduct a truck route survey for Claremont in May and early June.

Dzewaltowski said the main problem is with trucks following state routes and driving north on Route 12, then heading onto Pleasant Street toward Opera House Square. As many as 550 trucks a day were tallied on Routes 12 and 11 just south of Draper's Corner, he said.

City Councilor Jeff Goff said heavy trucks rumbling through downtown, with noise from their braking system, created both a safety issue and an aesthetic concern, especially for restaurants that may be considering patio service.

"The concern is we're trying to develop the downtown into more of a merchant-friendly mecca area, and

the last thing you want to deal with is being a major truck route," Goff said.

Nancy Merrill, Claremont's business development coordinator, said she saw a logging truck get stuck in Opera House Square last week, with traffic stalled until the trucker was able to back up and maneuver again to get his load around the square.

"That said, we have a lot of industry in Claremont, and they need to move the product," Merrill said. "I think it's a good idea having a public meeting on it to get public input."

Dzewaltowski said four alternative routes might be considered for larger trucks, including Plains Road paralleling Route 12A west of the city; West Pleasant and Mulberry streets leading to Main Street and Elm Street; Pleas-

ant Street to Summer Street to Broad Street; or a more "conceptual plan" to link Chestnut Street and Washington Street, which is Routes 11 and 103 east of downtown, with another bridge over the Sugar River.

Dzewaltowski said Claremont once had a codified truck route and has been considering the issue since 1964. But some of the alternatives, he said, might put trucks nearer residential areas.

"We're concerned about that," Dzewaltowski said. "Right now we are very much at a planning stage."

The survey found about 40 percent of trucks are just passing through the city, rather than headed to a destination within Claremont, and Dzewaltowski said "those are the ones that are typically ending up in Opera House Square ... the truckers don't like going through that either, (but) that's where the state routes are now."

Along with city officials, a DOT planner is also expected to attend tonight's meeting.

Besides the public meeting tonight, a presentation of preferred alternatives is scheduled to be held on Aug. 25, also at 7 p.m. at Claremont Savings Bank.

John P. Gregg can be reached at [jgregg@vnews.com](mailto:jgregg@vnews.com) or (603) 727-3213.

**"They are trying to create an environment for the redevelopment of the downtown."**

Peter Dzewaltowski  
Interim City Planner

**Appendix B- Public Input Summary**





## **Public Meeting Summary**

The following is a summary of the public input process including public meetings on July 28, 2009 and August 25, 2009; Planning Board meeting on August 10, 2009 and City Council meeting on August 12, 2009; and targeted interviews.

### **Proposed Network**

North Street and issues with noise

Grade of North Street is steep near the intersection with Main Street

Should the status quo be maintained and Opera House Square improved to better accommodate truck traffic?

Make it impossible for trucks to use Opera house Sq

J-brake noise on Route 12A

Use the rail trail for truck traffic and freight

Glidden Street alternative

Intersection of North Street and Main Street dangerous due to grade

Chestnut Street in poor condition from Broad Street to Urban Compact

Signage is confusing

Maple avenues should not be part of the network due to the location of the school and amount of residential development. Also, it is not a critical link.

### **Alternative 1: Plains Rd**

Issues with residential development and steep slopes

Poor road condition on Ainsworth Road

Poor road condition near wetlands

Steep grades

Dangerous in the Winter

Minor savings in travel time

Intersection of Main Street and Plains road challenging due to poor sight distance

J-brake complaints

Don't like this alternative

How can the resting dead be at peace with a truck route nearby?

### **Alternative 2: West Pleasant St-Mulberry St-Sullivan St-union St-Main St**

Sullivan-Mulberry-Union interception may need improvement. Possibly "T" Sullivan Street into Mulberry...<see attached diagram>

Intersection of Mulberry and Main Street...near hardware store difficult to maneuver.

Intersection of Main and Elm difficult turning radii

Eastern end of Sullivan Street dangerous in the winter

School traffic is an issue

Residential development on Mulberry Street

### **Alternative 3: Pleasant St-Summer St-Broad St OR Pleasant St-South St-Broad St**

Corner of Summer Street and Broad has poor sight distance complicated by on-street parking and school children.

Location of Stevens High School and impacts of learning environment  
Master Plan Transportation Committee doesn't like this option re: location of Stevens High School and pedestrian and vehicle conflicts  
Structal's current route is Pleasant, South and Broad Street.  
Truck traffic prohibited from Summer Street by city ordinance

**Alternative 3a Pleasant St-South St-Broad St**

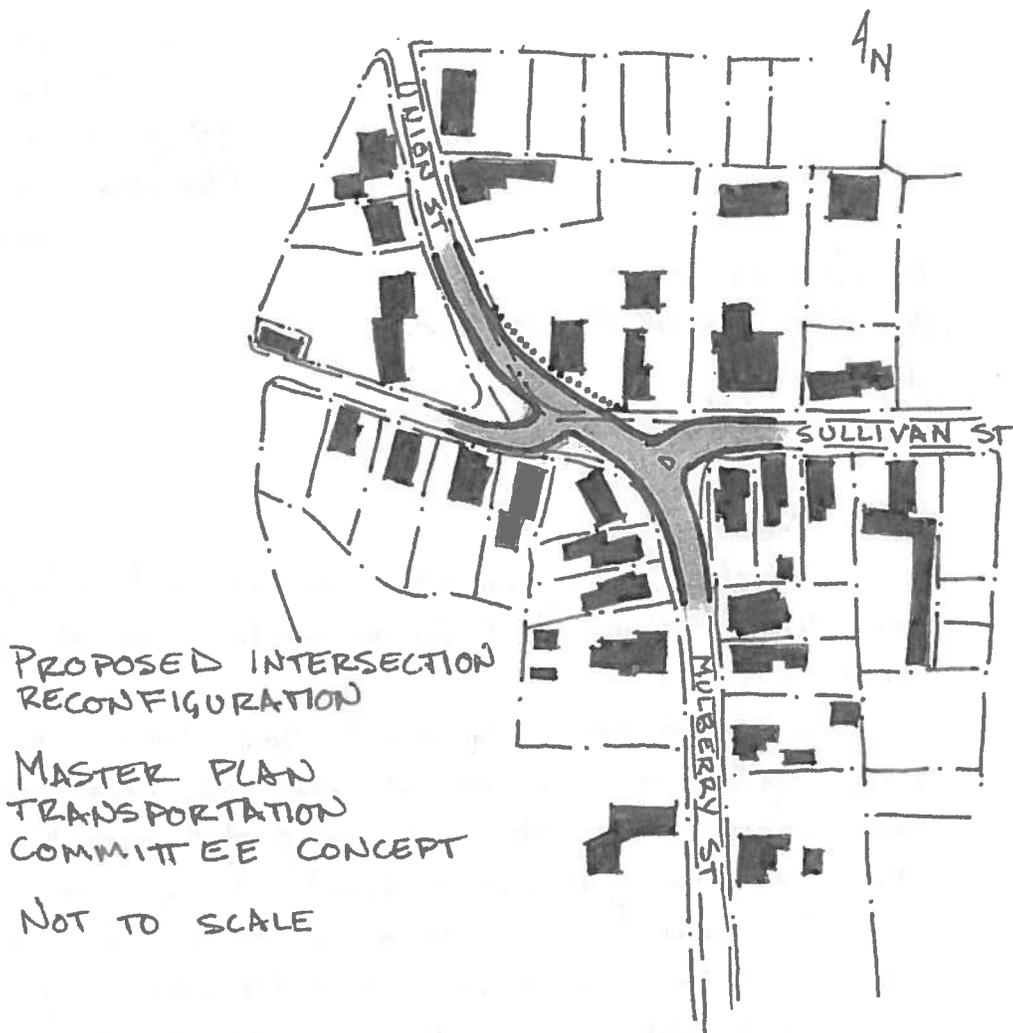
Works well northbound but southbound is difficult due to the left turn at south and pleasant street due to raised island  
South Street is a better alternative than Summer Street.

**Alternative 4: Sugar River Connector**

Expensive  
Best option long-term  
No federal money available  
Property takings  
Adds Washington Street traffic onto Chestnut Street  
Add redundancy to the street network. Desirable to provide ways to avoid Washington Street.  
Helps with emergency response  
Best alternative  
Like this alternative \*\*

**Other ideas**

Use rail trail  
New road in vicinity of Thrasher Road  
Improve Opera House Square for trucks to use  
Roundabouts near Glidden Street (similar to 1963 loop concept, see enclosed map)



PROPOSED INTERSECTION  
RECONFIGURATION

MASTER PLAN  
TRANSPORTATION  
COMMITTEE CONCEPT

NOT TO SCALE

AUG 01 2009

AUG. 1, 2009  
Albert Sr. Pierre  
59 Jeffrey Rd.  
Charlestown N.H.  
03603

Mr. Nate Miller  
Upper Valley Regional Planning Comm.  
30 BANK ST.  
Lebanon N.H. 03766

Dear NATE,

Thanks for taking the time to meet with me and listen to my ideas for a Traffic route through Claremont.

I found the map which Bob Weaver had put together for me several years ago. Street names have changed since this map was printed but it allows me to give you a visual of my ideas.

I colored one with my vision and the other is blank for you to have to color your way.

Good luck with it and I'll see you at the next Rt. 12 meeting in September.

Sincerely,  
Albert

A roundabout at the intersection of Pine St. (now Glidden St.) and Broad Street would clear up a lot of traffic flow issues.

The intersection of Pleasant Street and Pine Street (now Glidden Street) would require the relocation of Citizen Bank and removal of the building.

Pleasant St. from Pine St. to Tremont Square (Now opera house square) could become a parking lot or a mall.

Two-way traffic from the Post office to the Fire Station would create options on the west side of Broad St. Park including more parking and expansion of the municipal parking lot.

Opera House would be a rotary with traffic entering from Rt 12 via Tremont St. and exiting to Rt. 12/Broad St at the fire station.

North Street becomes route 12 and 103 instead of Main St.

Broad St. Park could be moved south to the High School area. Major traffic would be flowing to Pleasant Street from Broad St. so two way traffic in the east side of the Islands would allow this.

Stevens High School has declared it will be renovated instead of moving to a new site.

Several options open up by moving major traffic to the orange route.

Summer St. in front of the high school could be a one-way and be used as a bus lane and student drop off. Considerations would have to be made for the residences along this section of Summer St.

Broad St. traffic could be moved to the east side of the islands to allow for parking on the west lane and discontinuance of thru traffic in that lane which causes chaos when school is in session.

Pedestrian Traffic from the High School to Monardnock park would spend less time in the street as it would be reorganized @ the Summer St / Broad St intersection.

The middle school would also see less traffic at the South St / Broad St. intersection

Considerations for oversize loads from the bridge co. on River Road, which require a state permit, would still have to be allowed via South St to Broad St. as the roundabouts would probably be too restrictive for the major length of their product.





**Appendix C- Alternative Screening Supporting Materials**





## Historic Buildings per Mile

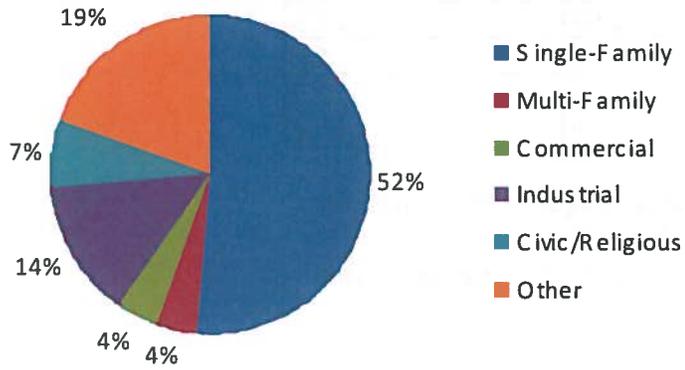
<i>Claremont Truck Route Study: Screening Criteria</i>	Total Proximate Buildings per Mile	Proximate Historic Buildings per Mile
Alternative 1	3.7	3.2
Subalternative 1	3.6	3.2
Alternative 2	35.3	34.5
Alternative 3	23.8	22.3
Subalternative 3	7.6	6.9
Subalternative 3A	22.0	19.5
Alternative 4	11.2	11.2

\* Proximate: within 20 feet of roadway edge, as measured on City of Claremont WebGIS, 08/19/09

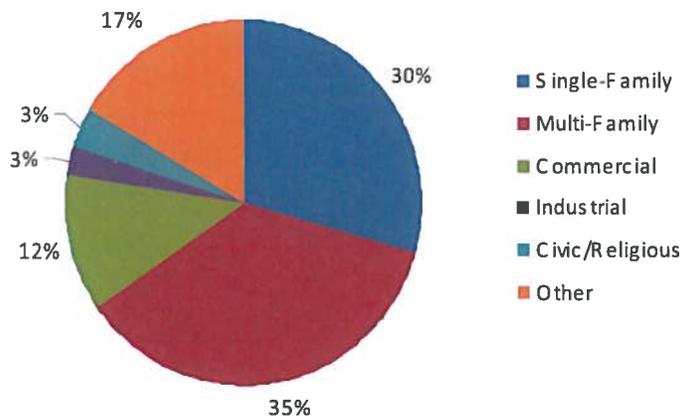
\* Historic: older than 50 years, as reported in assessor's table on City of Claremont WebGIS, 08/19/09

## Existing Land Use

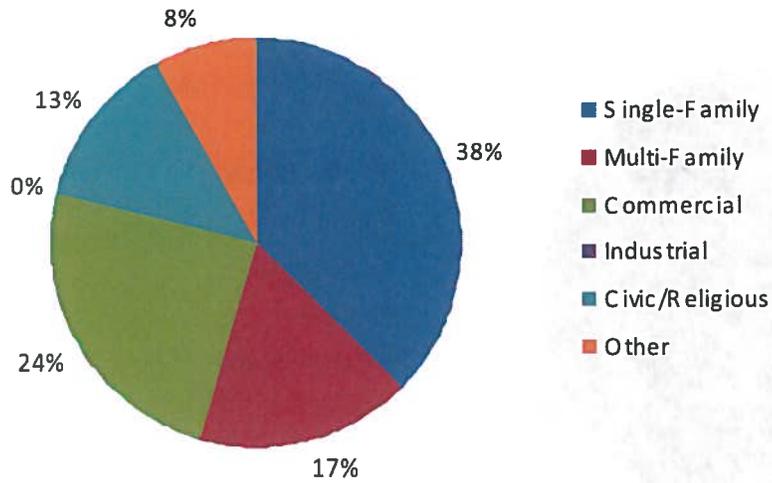
### Alternative 1: Existing Land Use



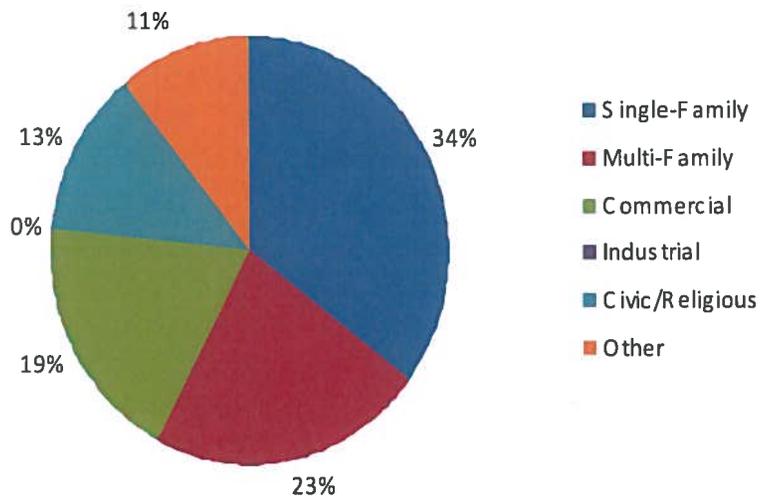
### Alternative 2: Existing Land Use



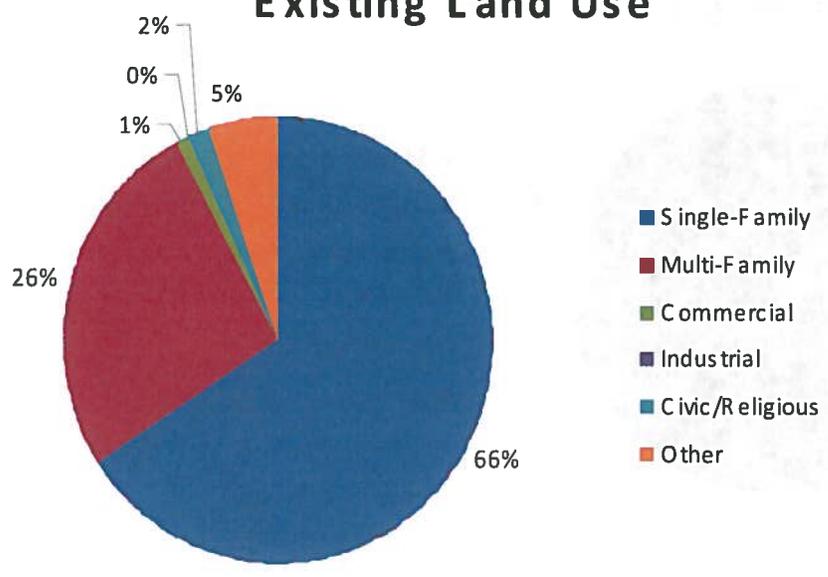
### Alternative 3: Existing Land Use



### Sub-Alternative 3



### Alternative 4: Existing Land Use



# Future Land Use

Claremont Truck Route Study

8/21/2009

## Future Land Use Concept

Evaluation - method considers land use plan on both sides of roadway

Alternative 1/Subalt 1  
FLU Type  
Suburban Residential  
Neighborhood Business  
Industrial  
Suburban Residential  
Industrial

	Total Length		2.2 mi
Mileage	Sides of Route	% of Route	
1.1	Both	50.0%	
0.3	Both	13.6%	
0.5	Both	22.7%	
0.3	East	6.8%	
0.3	West	6.8%	

Alternative 1		
FLU Type	% of Route	
Suburban Residential	56.8%	
Neighborhood Business	13.6%	
Industrial	29.5%	
		<i>does not total to 100% due to rounding</i>

Alternative 2  
FLU Type  
Suburban Residential  
Urban Mixed Use  
Urban Mixed Use  
Industrial

	Total Length		1.4 mi
Mileage	Sides of Route	% of Route	
0.4	Both	29%	
0.9	Both	64%	
0.1	East	4%	
0.1	West	4%	

Alternative 2		
FLU Type	% of Route	
Suburban Residential	29%	
Urban Mixed Use	68%	
Industrial	4%	
		<i>does not total to 100% due to rounding</i>

Alternative 3  
FLU Type  
Suburban Residential  
Urban Mixed Use

	Total Length		1.3 mi
Mileage	Sides of Route	% of Route	
0.5	Both	38%	
0.8	Both	62%	

Alternative 3		
FLU Type	% of Route	
Suburban Residential	38%	
Urban Mixed Use	62%	

Subalternative 3  
FLU Type  
Suburban Residential  
Urban Mixed Use

	Total Length		1.4 mi
Mileage	Sides of Route	% of Route	
0.9	Both	64%	
0.5	Both	36%	

Subalternative 3		
FLU Type	% of Route	
Suburban Residential	64%	
Urban Mixed Use	36%	

Subalternative 3A  
FLU Type  
Suburban Residential  
Urban Mixed Use

	Total Length		1.2 mi
Mileage	Sides of Route	% of Route	
0.5	Both	42%	
0.7	Both	58%	

Subalternative 3		
FLU Type	% of Route	
Suburban Residential	42%	
Urban Mixed Use	58%	

Alternative 4  
FLU Type  
Suburban Residential  
Urban Mixed Use  
Highway Business

	Total Length		1.7 mi
Mileage	Sides of Route	% of Route	
0.9	Both	53%	
0.6	Both	35%	
0.2	Both	12%	

Subalternative 3		
FLU Type	% of Route	
Suburban Residential	53%	
Urban Mixed Use	35%	
Highway Business	12%	



**Appendix D- Model Truck Route Ordinance**





## ARTICLE XX. TRUCK ROUTE ORDINANCE TEMPLATE

### DIVISION X. GENERALLY

#### Sec. XX. Applicability.

All trucks operated in the city having an empty weight of eight tons or more shall be operated only over and along the truck routes established in this division or in compliance with this chapter.

#### Sec. XX. Exception.

This division shall not prohibit the following:

- (1) Operation on street of destination. The operation of trucks upon any street where necessary to the conduct of business at a destination point, provided streets upon which such traffic is permitted are used until reaching the intersection nearest the destination point.
- (2) Emergency vehicles. The operation of emergency vehicles upon any street in the city.
- (3) Public improvements and utilities. The operation of trucks owned or operated by the city, public utilities, or any contractor while engaged in the repair, maintenance or construction of streets, street improvements, or street utilities within the city.
- (4) Detoured trucks. The operation of trucks upon any officially established detour when such truck could lawfully be operated upon the street for which such detour is established.

#### Sec. XX. Established.

(a) Generally. There is hereby within the city the following truck routes; these are to be considered the state-numbered and state-maintained highways and limited local roads:

- (1) Route 12A from the Town of Charlestown to the Town of Cornish;
- (2) <INSERT TRUCK ROUTES HERE>
- (3) <INSERT TRUCK ROUTES HERE>
- (4) <INSERT TRUCK ROUTES HERE>
- (5) <INSERT TRUCK ROUTES HERE>
- (6) <INSERT TRUCK ROUTES HERE>
- (7) <INSERT TRUCK ROUTES HERE>

(b) Outside origin, outside destination.

- (1) Westbound. When entering the city from the Town of Newport...<INSERT TRUCK ROUTES HERE>
- (2) Southbound. When entering the city from the Cornish...<INSERT TRUCK ROUTES HERE>
- (4) Southbound. When entering the city from the Town of Cornish... <INSERT TRUCK ROUTES HERE>
- (5) Eastbound. When entering the city from the State of Vermont...<INSERT TRUCK ROUTES HERE>
- (6) Northbound. When entering the city from the Town of Charlestown...<INSERT TRUCK ROUTES HERE>
- (7) Northbound. When entering the city from the Town of Charlestown...<INSERT TRUCK ROUTES HERE>

(c) Truck traffic in city. Trucks operated within the city shall operate in the following manner:

- (1) Outside origin, inside destination.
  - a. One inside destination point. All trucks entering the city for a destination point in the city shall proceed only over an established truck route and shall deviate only at the intersection with

the street, upon which such traffic is permitted, nearest to the destination point. Upon leaving the destination point, a deviating truck shall return to the truck route by the shortest permissible route. Permissible inside streets to reach destination points are: <INSERT TRUCK ROUTE COLLECTORS HERE>

b. Multiple destination points. All trucks entering the city for multiple destination points shall proceed only over established truck routes and shall deviate only at the intersection with the street, upon which such traffic is permitted, nearest to the first destination point. Upon leaving the first destination point a deviating truck shall proceed to other destination points by the shortest direction and only over streets upon which such traffic is permitted. Upon leaving the last destination point, a deviating truck shall return to the truck route by the shortest permissible route. Permissible inside streets to reach destination points are: <INSERT TRUCK ROUTE COLLECTORS HERE>

(2) Inside origin.

a. Outside destination point. All trucks, on a trip originating in the city and traveling in the city for a destination point outside the city shall proceed by the shortest direction over streets on which such traffic is permitted to a truck route as established in this division. Permissible inside streets to reach destination points are: <INSERT TRUCK ROUTE COLLECTORS HERE>

b. Inside destination point. All trucks shall proceed only from the point of origin via the shortest route to the truck route and then proceed via the established truck route. Once upon the truck route, the truck shall deviate only at the intersection with the city street which provides the shortest and most direct route to the destination point. When the distance between the point of origin and the point of destination is less than the distance between the point of origin and the truck route via the shortest route, the truck is permitted to use the most direct route on streets which provide the most direct and shortest route to the destination point.

Sec. XX. Permitted weights.

Any truck, as defined in this chapter, which cannot reach its destination without passing over one or more of the streets designated in this division or cannot reach its destination without detouring over an excessively long or circuitous route may obtain permission in writing from the police chief to use one or more of the streets mentioned in this division. The police chief shall endeavor to select the shortest and safest route to the destination. The operator of the truck shall follow such route or shall be in violation of this division.

Sec. XX. Maps.

The police chief shall keep and maintain accurate maps spelling out truck routes and streets on which truck traffic is permitted. Copies shall be on file in the city clerk's office and the police department.

Secs. XX. Reserved.

## DIVISION 2. HAZARDOUS MATERIALS

Sec. XX. Placards.

(a) Any truck carrying in excess of 1,000 pounds of hazardous substances having a hazard of three or greater, as defined by National Fire Protection Association Standard 704, Standard System for the Identification of the Fire Hazards of Materials.

(b) All trucks carrying in excess of 1,000 pounds of hazardous substances, as defined by NFPA 704, must be placarded in accordance with the provisions of U.S. Department of Transportation Regulations, Code of Federal Regulations, title 49, chapter 1, subpart F, p. 148, revised as of December 31, 1976.

Secs. XX. Reserved.

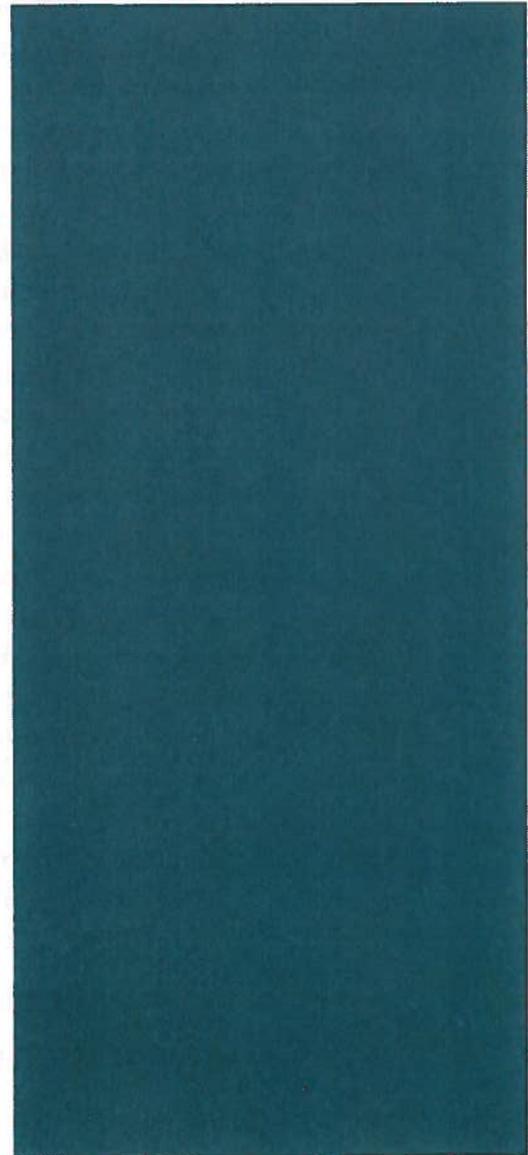
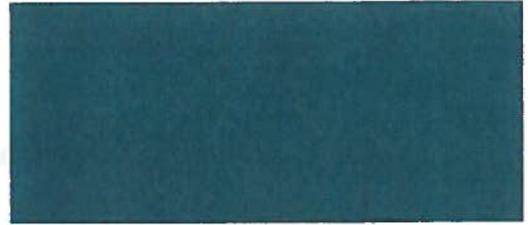


## **Appendix E- Origin and Destination Survey Report**





**RS&G** INC.  
TRANSPORTATION



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# Claremont Truck Survey: Claremont, NH

**July 2009**

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### APPENDIX A: SURVEY INSTRUMENT

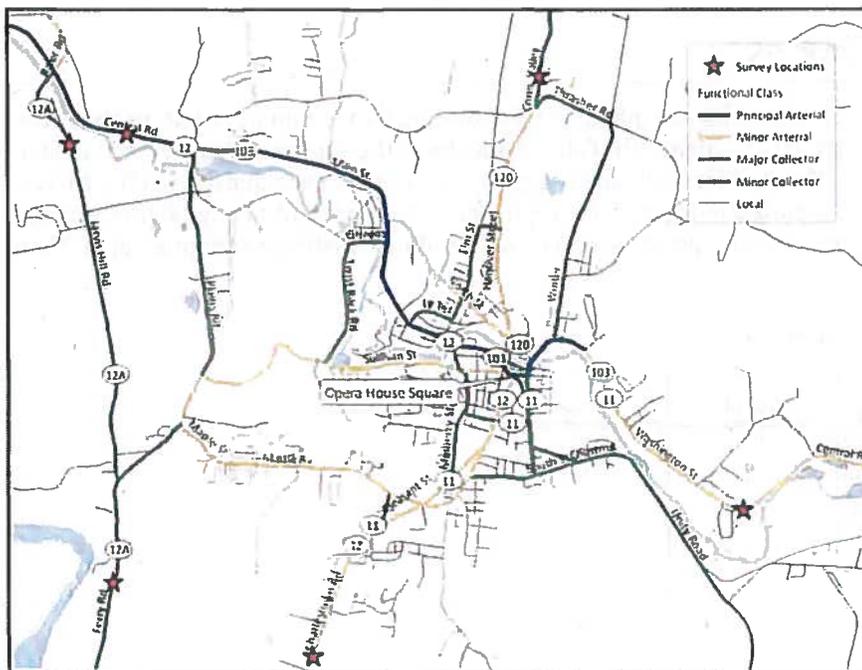
### APPENDIX B: DATA SLIDES FROM 5-5-09 SURVEY PLANNING MEETING



## 1.0 SURVEY SAMPLING METHODOLOGY

Resource Systems Group conducted a truck route survey in Claremont, NH, with the assistance of the Claremont Police Department, on 21 May 2009, 26 May 2009, 28 May 2009, and 2 June 2009. The survey was administered from 11:00 AM to 2:00 PM to outbound trucks (exiting Claremont, NH) that were FHWA Class 6 or larger. The survey sampling times were selected to occur during the hours of the day when truck traffic in Claremont, NH is greatest, based on results of traffic counts conducted by the Upper Valley Lake Sunapee Regional Planning Commission. The survey sampling locations were selected to cover all of the primary vehicle routes into and out of Claremont, NH and are depicted in Figure 1 with red stars.

Figure 1: Claremont, NH Truck Route Survey Sampling Locations



On each sampling day, the survey was administered at three of the six sampling locations. A Claremont City police officer and two survey staff were stationed at each sampling location where the survey was being administered. At each survey location, the police officer directed truck drivers to pull onto the road shoulder or into a coned-off portion of the traveled way. Once stopped, survey staff informed truck drivers they had the option to complete the voluntary survey or proceed on their way. Of the 220 truck drivers contacted, 205 completed a questionnaire, resulting in a 93% survey response rate. The number of completed questionnaires, by sampling location and date is reported in Figure 2.

Figure 2: Number of Completed Questionnaires, by Sampling Location and Date

Completed Questionnaires, by Sampling Location and Date					Total
	5/21/2009	5/26/2009	5/28/2009	6/2/2009	
Main Street (12 N)	36		27		63
Charlestown Road (12 S)	19		23	22	64
Washington Street (11 E)	24		31		55
12A North		7		3	10
12A South		2		8	10
120 North		3			3
				Total:	205

## 2.0 FREQUENCY TABLES

The truck route survey instrument included eight questions designed to obtain information about truck route patterns through the city of Claremont, NH. Tabular results of the survey are presented in Figure 3 through Figure 21 and report the number and percentage of responses to each question in the survey instrument. Note that counts reported in Figure 3 through Figure 21 represent the number of survey participants corresponding to survey response options and therefore constitute a sample, rather than a census.

Figure 3: Route of Entry into Claremont, NH

Entry Location	Count	Percent
Main Street (12 North)	58	28
120 North	6	3
Washington Street (11)	77	38
Charlestown Road (12 South)	38	19
12A South	8	4
12A North	12	6
Started in Claremont	6	3
Total	205	100

The proportion of survey participants entering and exiting Claremont via the 6 survey locations is depicted graphically in Figure 4 and Figure 6 below.



Figure 4: Route of Entry into Claremont, NH – Graphical Representation

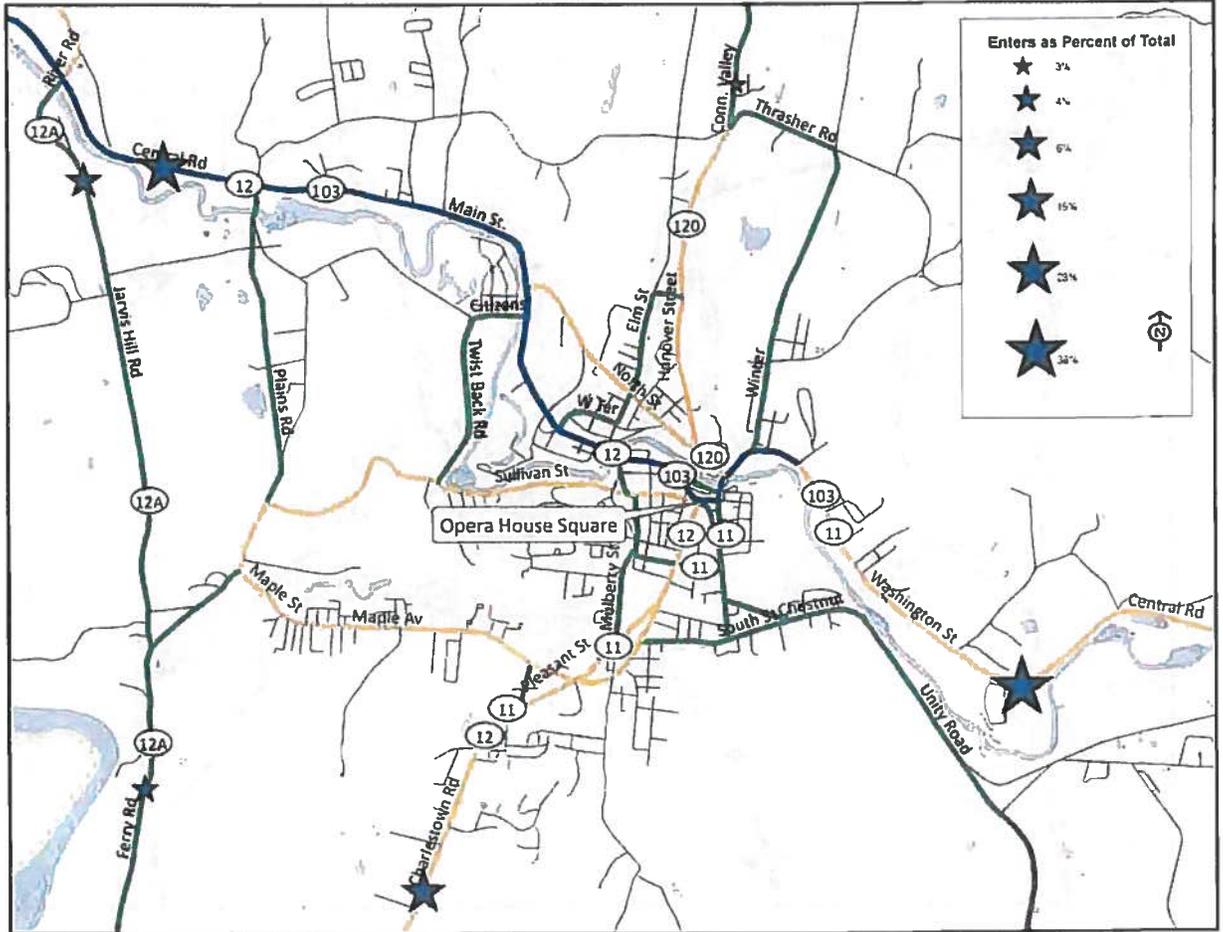


Figure 5: Route of Exit out of Claremont, NH

Exit Location	Count	Percent
Main Street (12 North)	63	31
120 North	3	1
Washington Street (11)	55	27
Charlestown Road (12 South)	64	31
12A South	10	5
12A North	10	5
Total	205	100



Figure 6: Route of Exit out of Claremont, NH – Graphical Representation

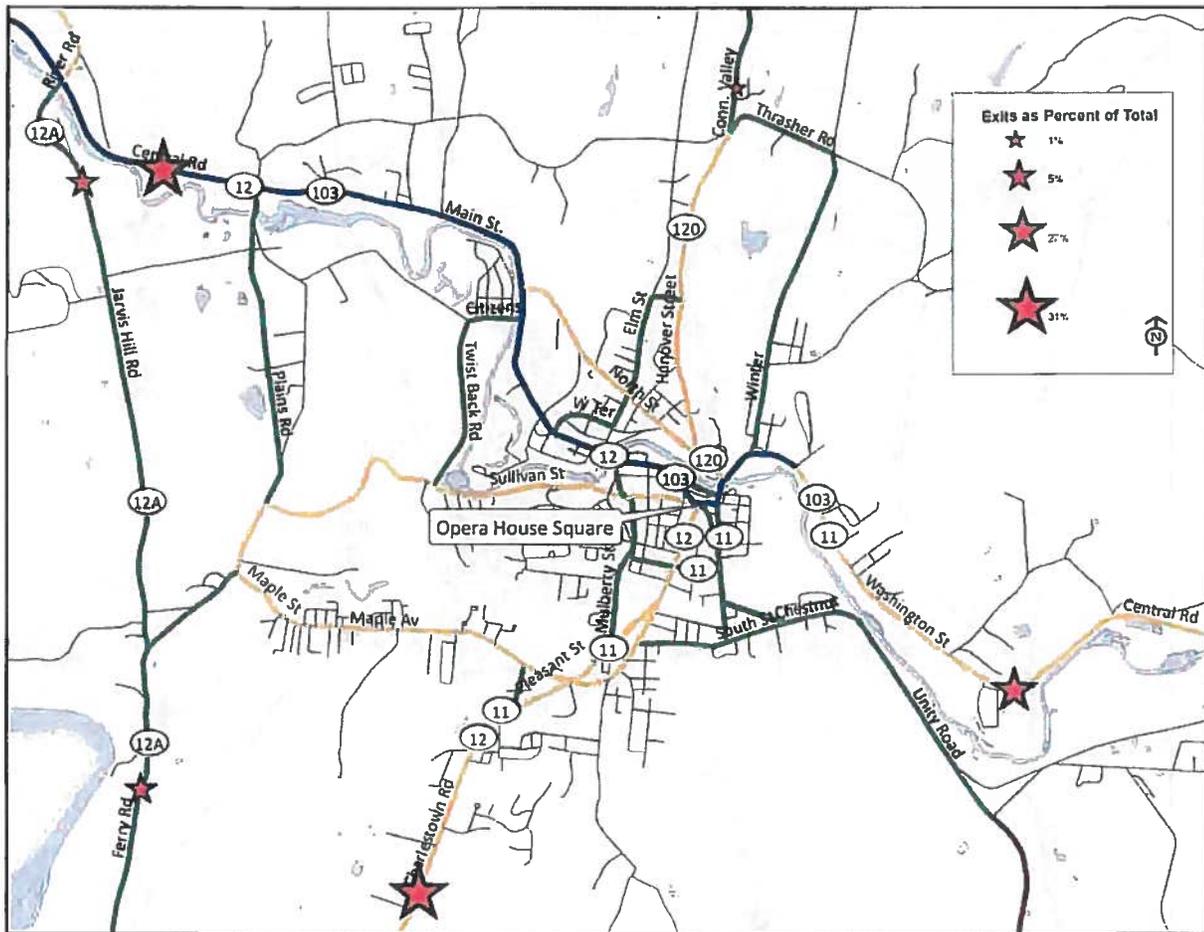


Figure 7: Time of Day Entered into Claremont, NH

Time Entered Claremont	Count	Percent
Prior to 7:00 AM	12	6
7:00 - 8:00 AM	6	3
8:00 - 9:00 AM	4	2
9:00 - 10:00 AM	7	3
10:00 - 11:00 AM	46	22
11:00 - 12:00 PM	53	26
12:00 - 1:00 PM	49	24
1:00 - 2:00 PM	28	14
Total	205	100



Figure 8: Time of Day Exited out of Claremont, NH

Time Exited Claremont	Count	Percent
10:00 - 11:00 AM	5	2
11:00 - 12:00 PM	68	33
12:00 - 1:00 PM	73	36
1:00 - 2:00 PM	59	29
Total	205	100

Figure 9: Total Amount of Time Spent in Claremont, NH

Time Spent in Claremont	Count	Percent
0-15 min	45	22
15-30 min	38	19
30-60 min	35	17
60-120 min	44	21
120-300 min	28	14
>300 min	15	7
Total	205	100

Figure 10: Number of Stops Made in Claremont, NH

# of Stops	Count	Percent
0	85	41
1	83	40
2	15	7
3	12	6
4	7	3
>=5	3	1
Total	205	100

Figure 11: Route of Travel Through Claremont, NH Includes Traveling Through Opera House Square

Through Opera House Square	Count	Percent
Yes	75	37
No	125	61
Not Sure	5	2
Total	205	100

Figure 12: Traveled Through Claremont, NH to Avoid Weight Restrictions on I-91

Avoided Weight Restrictions	Count	Percent
Yes	5	2
No	200	98
Total	205	100



Figure 13: FHWA Classification of Trucks Traveling Through Claremont, NH

FHWA Class	Count	Percent
Class 6	66	32
Class 7	6	3
Class 8	39	19
Class 9	71	35
Class 10	23	11
Total	205	100

Figure 14: FHWA Classification of Trucks Passing Through Opera House Square

FHWA Class	Count	Percent
Class 6	27	36
Class 7	3	4
Class 8	13	17
Class 9	23	31
Class 10	9	12
Total	75	100

Figure 15: Location Where Trip Began that Day (Region)

Region of Origin	Count	Percent
NH North of Claremont	9	4
NH South of Claremont	46	22
NH East of Claremont	43	21
VT North of Claremont	16	8
VT South of Claremont	19	9
VT West of Claremont	4	2
States South of Claremont	36	18
ME and Canada	6	3
West of Claremont (not VT)	11	5
Claremont	15	7
Total	205	100



Figure 16: Location Where Trip Began that Day (State/Province)

Origin	Count	Percent
Vermont	39	19
New Hampshire	113	55
Massachusetts	28	14
New York	11	5
New Jersey	3	1
Quebec	2	1
Maine	4	2
Rhode Island	1	<1
Connecticut	4	2
Total	205	100

Figure 17: Location Where Trip was Expected to End that Day (Region)

Region of Destination	Count	Percent
NH North of Claremont	12	6
NH South of Claremont	44	21
NH East of Claremont	42	20
VT North of Claremont	16	8
VT South of Claremont	20	10
VT West of Claremont	3	1
States South of Claremont	34	17
ME and Canada	12	6
West of Claremont (not VT)	9	4
Claremont	12	6
Unkown	1	<1
Total	205	100



Figure 18: Location Where Trip was Expected to End that Day (State/Province)

Destination	Count	Percent
Vermont	39	19
New Hampshire	110	54
Massachusetts	21	10
New York	9	4
New Jersey	3	1
Canada	1	<1
Quebec	6	3
Maine	5	2
Rhode Island	1	<1
Connecticut	3	1
South Carolina	1	<1
Virginia	1	<1
Pennsylvania	4	2
Unknown	1	<1
<b>Total</b>	<b>205</b>	<b>100</b>

Figure 19: Route of Travel Through Claremont, NH Includes Stops in Claremont

	Count	Percent
Stopped in Claremont	123	60
No Stops in Claremont	82	40
	<b>205</b>	<b>100</b>



Figure 20: Map of Zones Used to Categorize Stopping Locations in Claremont, NH

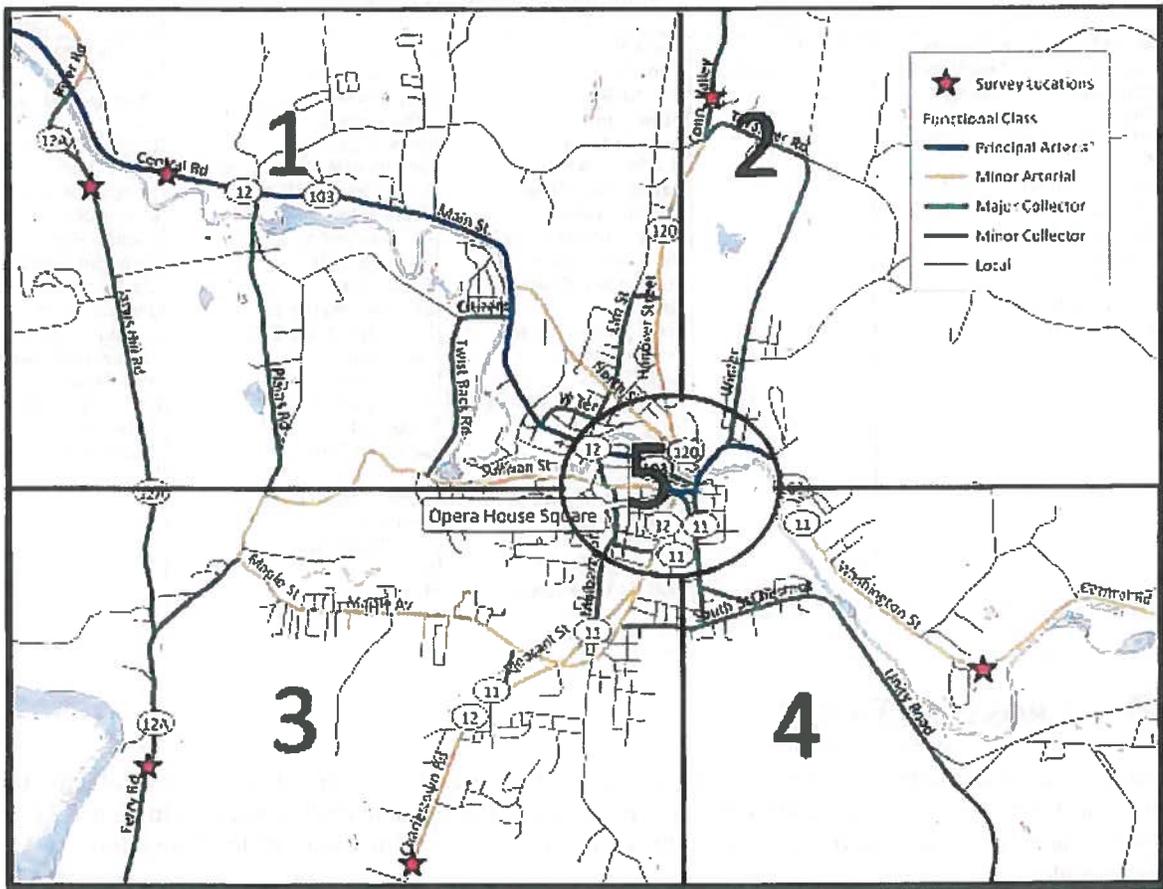


Figure 21: Route of Travel Through Claremont, NH Includes Stops in Zones Depicted in Figure 20

	Count	Percent*
Stopped in Zone 1	20	10
Stopped in Zone 2	10	5
Stopped in Zone 3	41	20
Stopped in Zone 4	41	20
Stopped in Zone 5	20	10

\*Percent of the 205 trucks surveyed that stopped in each zone. Some trucks stopped in multiple zones.

Figure 22 lists the individual locations where stops were observed for each zone identified above.



Figure 22: Stopping Locations (as Described by Survey Participants) by Zone in Claremont, NH

Stopping Locations by Zone				
Zone 1	Zone 2	Zone 3	Zone 4	Zone 5
Waste Management Facility	Walmart	Hayes Farm	West Unity Rd	Cumberland Farms Summer St
Prefered Building Twistback Rd	Lumberjack Lumber	River Rd	Tire Warehouse	Joe Tire
Valley Regional Hospital		Piperhill Rd	Staples Washington St	Lavalley Building Center
Plains		Incinerator	Washington St	East St
Before Train Tressel		Grissom Lane	Home Depot	Disnard Elementary
Wastewater Plant		Charlestown Rd	Claremont Warehouse Rte 11	Bluff School
American Brush		Lumber Auto Sales	Ron's Fixit Shop First St	Stringer Funeral Home
Lambert Lumber		Memorial Drive	Dexter Tire	Blue Anchor
Building Systems		Bordeus Mattress Factory	401 Washington St	Doolittle Print Shop
Cedar St		Maple Acre Schol	Market Basket	American Plate Glass
Pool Man		Ct. Precision Castings	Family Dollar	Claremont Glassworks
Claremont Junction		Thermo	Stevens High School	Chelsea Green
Smokehouse		Howe (Chevy/Toyota)	Claremont Middle School	Ramuntos Pizza
		Storage Center	The Dump	Pleasant St Restaurant
		Eagle Times	Liquor Store	ABC Paper
		Crowne Point (Cabinetry)	Rockingham Electric	Stone Arch Bakery
		Maple Avenue	Rollerblade	Water St
		R. Filian	Cash and Carry	Liberal Beef
		LaClaire Farm	Big Lots	
		(Belfon &) Osgood Welding	Lowes Building	
		Davis Frame	Hannaford	
		Bible Hill	Ford Dealership	
		Lane Ridge Rd	KFC	
		Hinckley Co. Propane	Burger King	

### 3.0 CROSTAB TABLES

Crosstab tables contained in Figure 23 through Figure 28 allow for multiple categories in a database to be compared simultaneously in a matrix format. For example, the crosstab table presented in Figure 23 relates the entry location of trucks driving through Claremont, NH with their exit location out of Claremont.

A chi-square test statistic and associated p-value are included as footnotes in Figure 23 through Figure 27. The chi-square test is used to asses whether the distribution of responses to a survey question is significantly different for subgroups of respondents. For example, the chi-square test associated with Figure 23 tests whether the exit location of respondents differs as a function of the location where they entered Claremont. Similarly, the chi-square test associated with Figure 24 tests whether the FHWA vehicle class of respondents differs as a function of the location where they entered Claremont. Chi-square tests with a p-value of 0.05 or smaller are interpreted as indicating a statistically significant difference among respondent subgroups.



Figure 23: Entry Location into Claremont, NH by Exit Location out of Claremont, NH

Entry Location	Exit Location						Total (n)
	Main Street (12 North)	120 North	Washington Street (11 East)	Charlestown Road (12 South)	12A South	12A North	
Main Street (12 North)	30 52%	2 3%	13 22%	8 14%	3 5%	2 3%	58 100%
120 North	0 0%	0 0%	3 50%	2 33%	1 17%	0 0%	6 100%
Washington Street (11 East)	27 35%	1 1%	17 22%	29 38%	1 1%	2 3%	77 100%
Charlestown Road (12 South)	3 8%	0 0%	14 37%	19 50%	1 3%	1 3%	38 100%
12A South	1 13%	0 0%	4 50%	1 13%	1 13%	1 13%	8 100%
12A North	2 17%	0 0%	2 17%	2 17%	3 25%	3 25%	12 100%
Started in Claremont	0 0%	0 0%	2 33%	3 50%	0 0%	1 17%	6 100%
Total (n)	63 31%	3 1%	55 27%	64 31%	10 5%	10 5%	205 100%

Count  
% within Entry Location

<sup>a</sup>( $\chi^2 = 72.08, p < 0.001$ )

Figure 24: Entry Location into Claremont, NH by FHWA Classification

Entry Location	FHWA Classification					Total (n)
	Class 6	Class 7	Class 8	Class 9	Class 10	
Main Street (12 North)	14 24%	1 2%	12 21%	21 36%	10 17%	58 100%
120 North	2 33%	0 0%	0 0%	3 50%	1 17%	6 100%
Washington Street (11 East)	24 31%	4 5%	14 18%	30 39%	5 6%	77 100%
Charlestown Road (12 South)	14 37%	1 3%	9 24%	11 29%	3 8%	38 100%
12A South	3 38%	0 0%	1 13%	2 25%	2 25%	8 100%
12A North	5 42%	0 0%	3 25%	3 25%	1 8%	12 100%
Started in Claremont	4 67%	0 0%	0 0%	1 17%	1 17%	6 100%
Total (n)	66 32%	6 3%	39 19%	71 35%	23 11%	205 100%

Count  
% within Entry Location

<sup>a</sup>( $\chi^2 = 17.75, p = 0.815$ )



Figure 25: Traveled Through Opera House Square, by Entry Location into Claremont, NH

Entry Location	Through Opera House Square (y/n)			Total (n)
	Yes	No	Not Sure	
Main Street (12 North)	19 33%	38 66%	1 2%	58 100%
120 North	1 17%	4 67%	1 17%	6 100%
Washington Street (11 East)	41 53%	34 44%	2 3%	77 100%
Charlestown Road (12 South)	9 24%	29 76%	0 0%	38 100%
12A South	2 25%	6 75%	0 0%	8 100%
12A North	1 8%	10 83%	1 8%	12 100%
Started in Claremont	2 33%	4 67%	0 0%	6 100%
Total (n)	75 37%	125 61%	5 2%	205 100%

Count  
 % within Entry Location  
<sup>a</sup>( $\chi^2 = 26.01, p = 0.011$ )

Figure 26: Traveled Through Opera House Square, by Exit Location out of Claremont, NH

Exit Location	Through Opera House Square (y/n)			Total (n)
	Yes	No	Not Sure	
Main Street (12 North)	24 38%	39 62%	0 0%	63 100%
120 North	0 0%	3 100%	0 0%	3 100%
Washington Street (11 East)	19 35%	33 60%	3 5%	55 100%
Charlestown Road (12 South)	29 45%	35 55%	0 0%	64 100%
12A South	1 10%	7 70%	2 20%	10 100%
12A North	2 20%	8 80%	0 0%	10 100%
Total (n)	75 37%	125 61%	5 2%	205 100%

Count  
 % within Exit Location  
<sup>a</sup>( $\chi^2 = 25.23, p = 0.005$ )



Figure 27: Route Through Claremont, NH Includes Stops in Claremont, by Entry Location into Claremont, NH

	Stopped in Claremont	No Stops in Claremont	Total (n)
Main Street (12 North)	39 67%	19 33%	58 100%
120 North	4 67%	2 33%	6 100%
Washington Street (11)	41 53%	36 47%	77 100%
Charlestown Road (12 South)	26 68%	12 32%	38 100%
12A South	2 25%	6 75%	8 100%
12A North	9 75%	3 25%	12 100%
Started in Claremont	2 33%	4 67%	6 100%
Total (n)	123 60%	82 40%	205 100%
Entry Location			

Count  
% within Entry Location  
<sup>a</sup>( $\chi^2 = 10.95, p = 0.090$ )

Figure 28: Stops in Zones Depicted in Figure 20, by Entry Location into Claremont, NH

Entry Location	Stops in Zone*					
	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5	No Stops
Main Street (12 North)	7 12%	2 3%	9 16%	18 31%	7 12%	19 33%
120 North	0 0%	0 0%	3 50%	0 0%	1 17%	2 33%
Washington Street (11)	9 12%	5 6%	12 16%	17 22%	6 8%	36 47%
Charlestown Road (12 South)	2 5%	3 8%	14 37%	4 11%	5 13%	12 32%
12A South	1 13%	0 0%	1 13%	0 0%	0 0%	6 75%
12A North	1 8%	0 0%	2 17%	2 17%	1 8%	3 25%
Started in Claremont	0 0%	0 0%	0 0%	0 0%	0 0%	4 67%
Total (n)	20 10%	10 5%	41 20%	41 20%	20 10%	82 40%

\*Percentages represent percents within entry location. Note that some vehicles stopped in multiple zones and thus percentages don't sum to 100%.



**APPENDIX A**

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**Survey Instrument**



# Claremont, NH Truck Route Survey

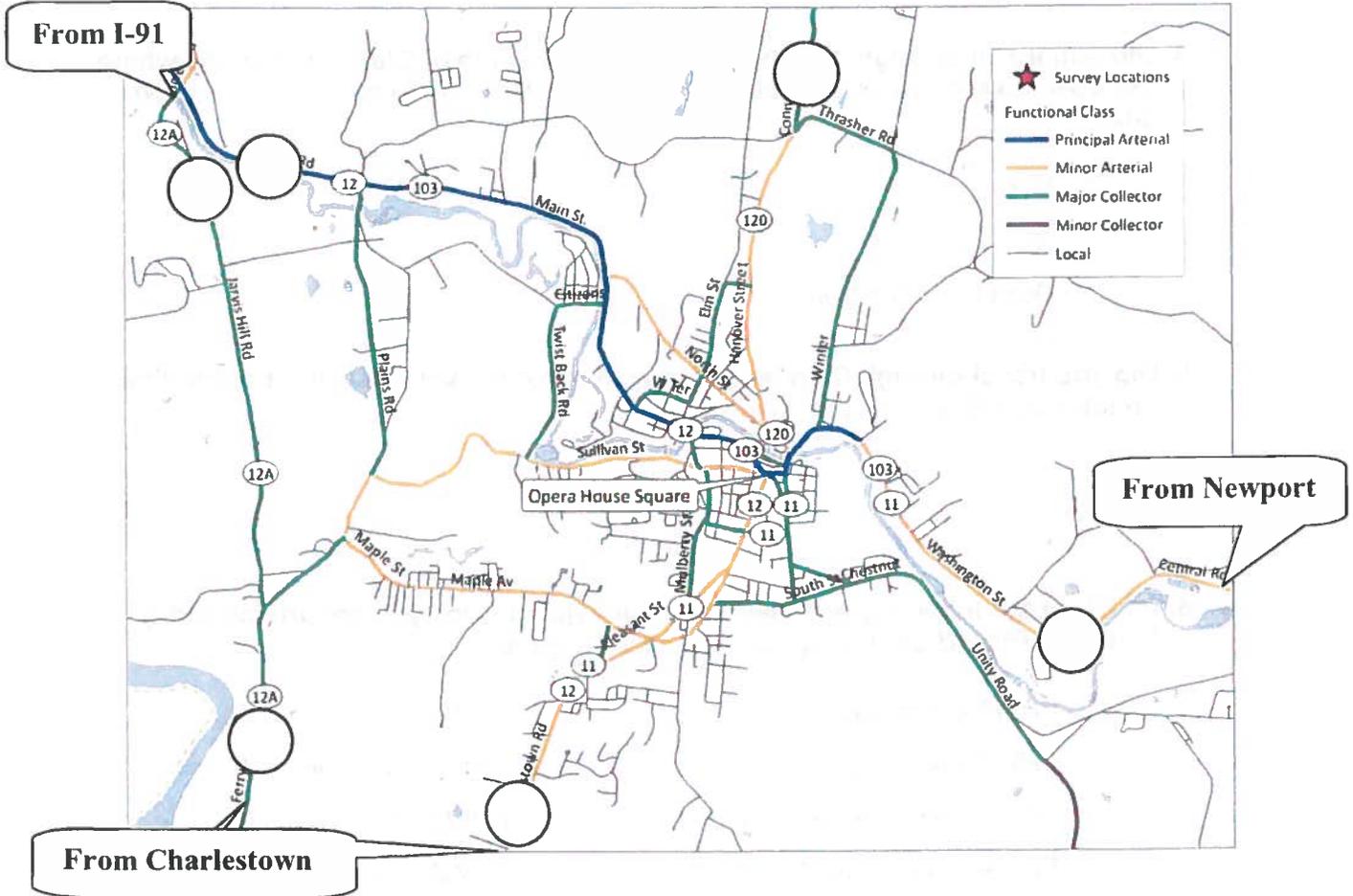
Survey Location: \_\_\_\_\_

Current Time: \_\_\_\_\_

Date: \_\_\_\_\_

## 1. At which location did you enter Claremont today?

Surveyor: Refer driver to the map & mark with an "E" (for enter) the circle where the driver entered Claremont today.



## 2. At approximately what time did you enter Claremont at this location today?

Surveyor: Fill in the blank and circle AM or PM.

\_\_\_\_\_ : \_\_\_\_\_ AM / PM

Claremont, NH Truck Route Survey

**3. Please list the stops you made in Claremont today, in the order in which you made them. Surveyor: Fill in the blanks or check the box.**

Stop 1: \_\_\_\_\_ Stop 4: \_\_\_\_\_

Stop 2: \_\_\_\_\_ Stop 5: \_\_\_\_\_

Stop 3: \_\_\_\_\_

OR  I made no stops in Claremont today.

**4. Did you travel through the Opera House Square area of Claremont today, where the downtown circular is located? Surveyor: Refer driver to the map & check one box.**

- Yes
- No
- Don't know/Not Sure

**5. Did you travel through Claremont today to avoid the vehicle weight restrictions on Interstate 91? Surveyor: Check one box.**

- Yes
- No

**6. Which of the following best describes the type of truck you are driving today? Surveyor: Refer driver to diagram, and check one box.**

- FHWA Class Group 6
- FHWA Class Group 7
- FHWA Class Group 8
- FHWA Class Group 9
- FHWA Class Group 10
- FHWA Class Group 11
- FHWA Class Group 12
- FHWA Class Group 13

OR  Don't Know/Not Sure

**7. Where did you BEGIN your trip today? Surveyor: Fill in the blanks.**

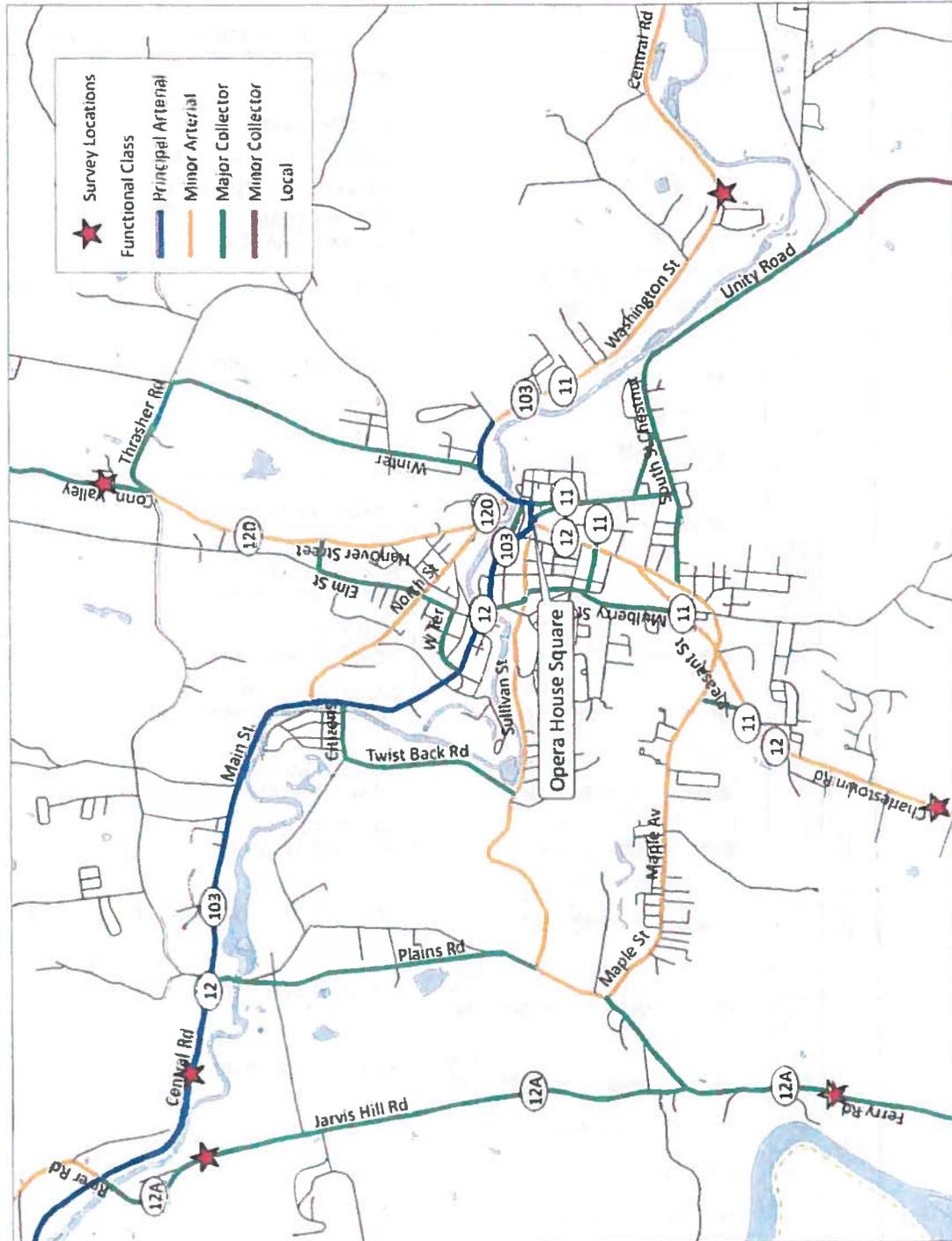
City: \_\_\_\_\_ State/Province: \_\_\_\_\_

**8. Where do you expect to END your trip today? Surveyor: Fill in the blanks.**

City: \_\_\_\_\_ State/Province: \_\_\_\_\_

*Surveyor: Thank you, have a great day! Please be careful merging back into traffic.*

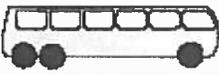
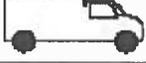
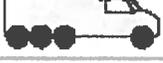
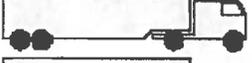
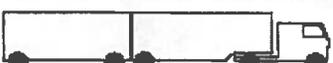
Refer to map to answer Question 1



Refer to diagram to answer Question 6

Figure 1

### FHWA VEHICLE CLASSIFICATION

CLASS GROUP		DESCRIPTION	NO. OF AXLES
1		MOTORCYCLES	2
2		ALL CARS CARS	2
		CARS W/ 1-AXLE TRAILER	3
		CARS W/ 2-AXLE TRAILER	4
3		PICK-UPS & VANS 1 & 2 AXLE TRAILERS	2, 3, & 4
4		BUSES	2 & 3
5		2-AXLE, SINGLE UNIT	2
6		3-AXLE, SINGLE UNIT	3
7		4-AXLE, SINGLE UNIT	4
8		2-AXLE, TRACTOR, 1-AXLE TRAILER (2&1)	3
		2-AXLE, TRACTOR, 2-AXLE TRAILER (2&2)	4
		3-AXLE, TRACTOR, 1-AXLE TRAILER (3&1)	4
9		3-AXLE, TRACTOR, 2-AXLE TRAILER (3&2)	5
		3-AXLE, TRUCK W/ 2-AXLE TRAILER	5
10		TRACTOR W/ SINGLE TRAILER	6 & 7
11		5-AXLE MULTI-TRAILER	5
12		6-AXLE MULTI-TRAILER	6
13		ANY 7 OR MORE AXLE	7 or more
14		NOT USED	
15		UNKNOWN VEHICLE TYPE	

HEAVY TRUCKS





**APPENDIX B**

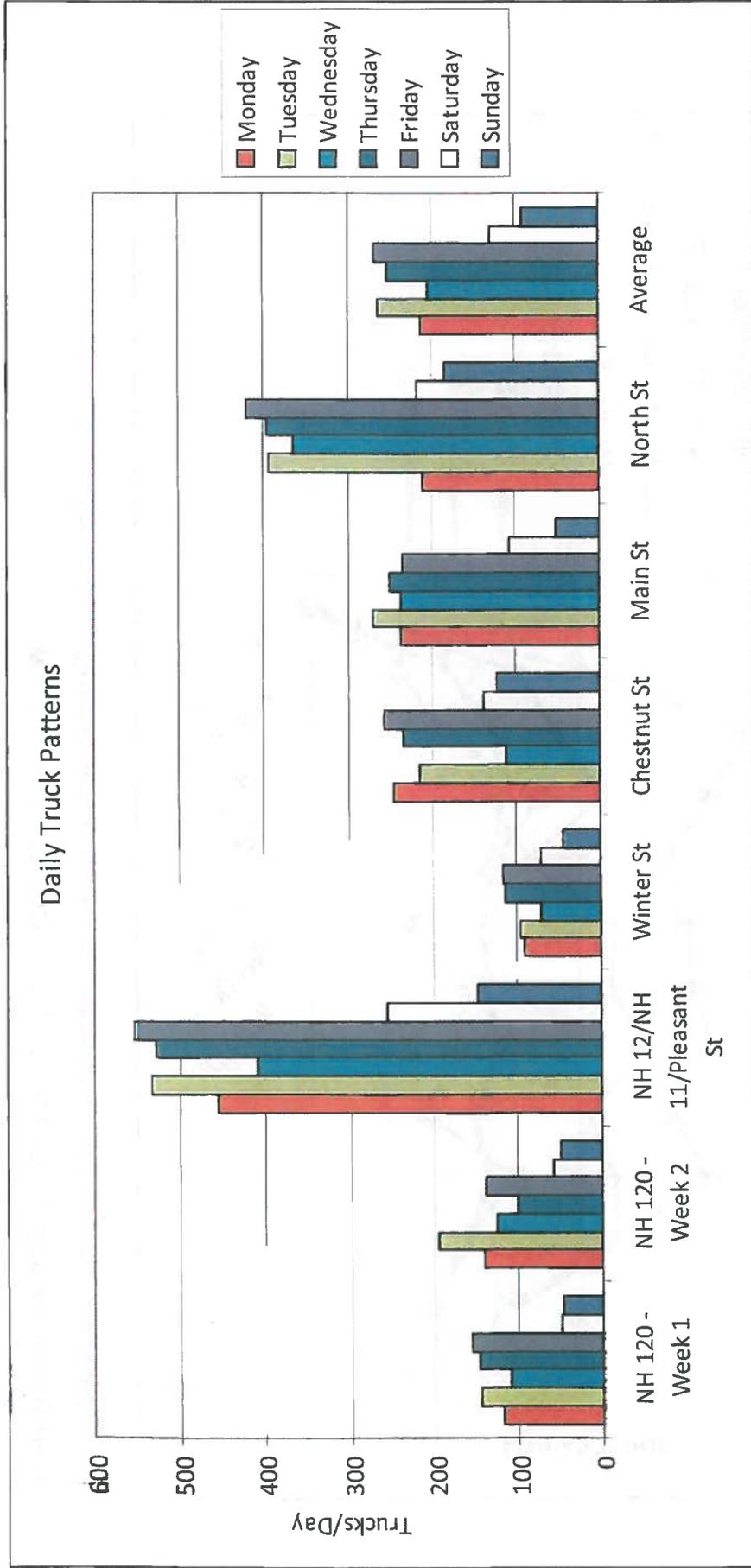
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**Data Slides from 5-5-09 Survey Planning Meeting**



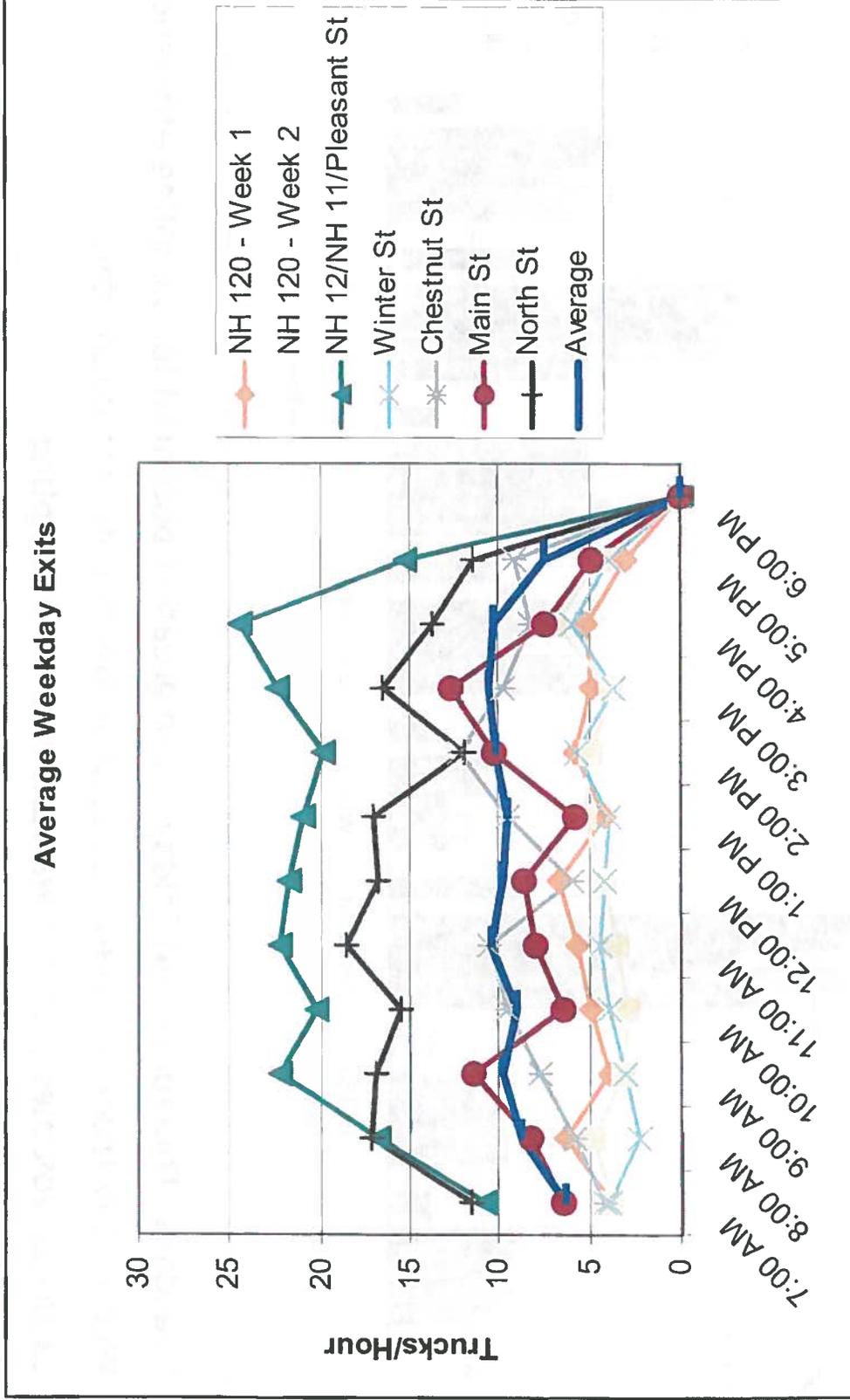


# Daily Truck Traffic



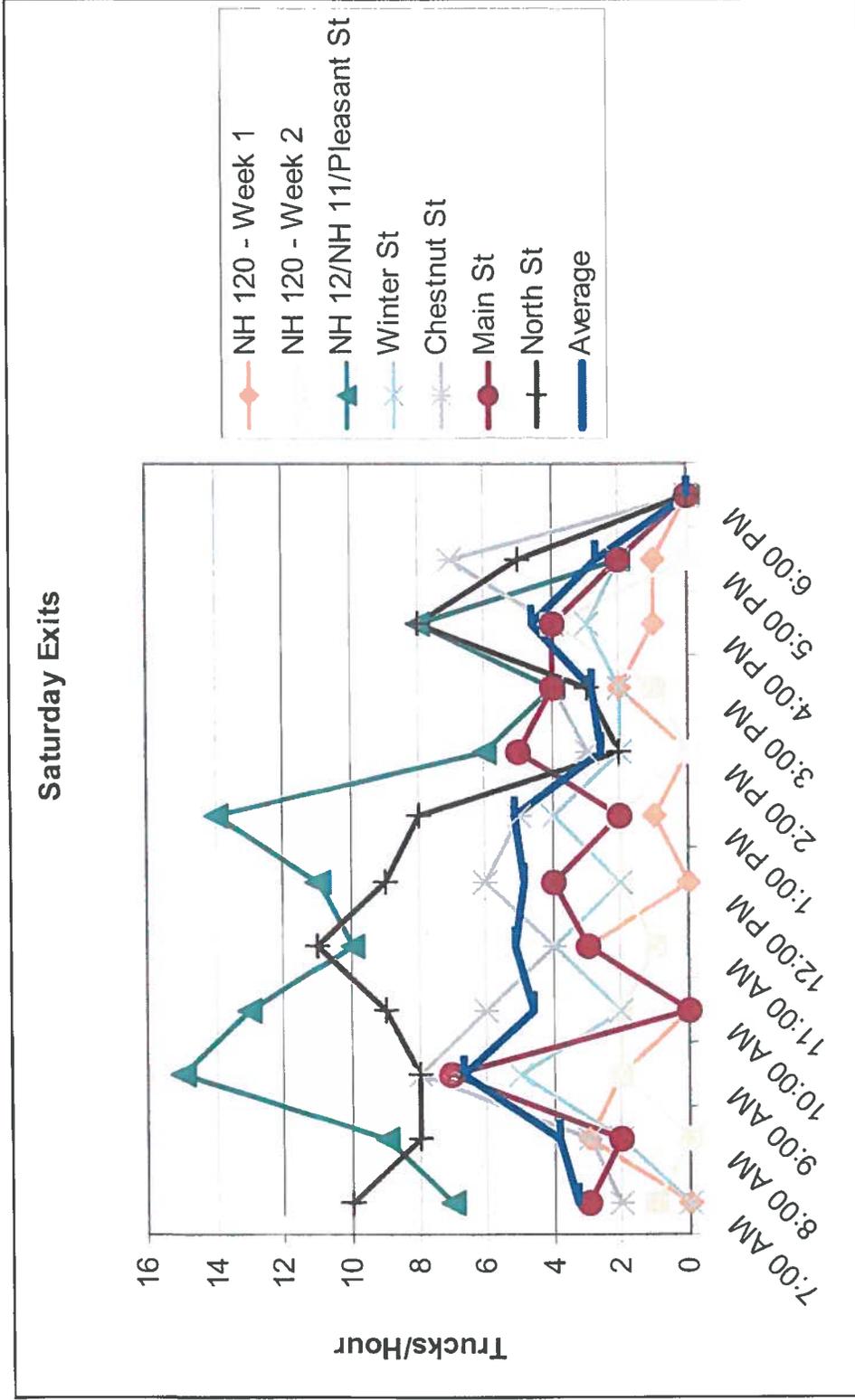
- Tuesdays, Thursdays and Fridays have greatest potential for sampling efficiency
- Wednesday truck volumes may appear low due gaps in count data
- Saturday volumes may not warrant weekend sampling

# Hourly Truck Traffic



- 11:00 AM - 1:00 PM has greatest potential for sampling efficiency
- Relatively steady truck traffic from 9:00 AM to 4:00 PM
- ~150-200 completed questionnaires, assuming 50% "capture rate" & weekend sampling

# Hourly Truck Traffic



- 9 AM - 11 AM has greatest potential for sampling efficiency
- Volumes data are “noisier” due to relatively low volumes
- ~100-120 completed questionnaires, assuming 50% capture rate

10/10/10

1. The first part of the paper is a review of the literature on the topic of [unclear]. It discusses the various methods used to study [unclear] and the results of these studies. The authors conclude that there is a need for further research in this area.



Figure 1

