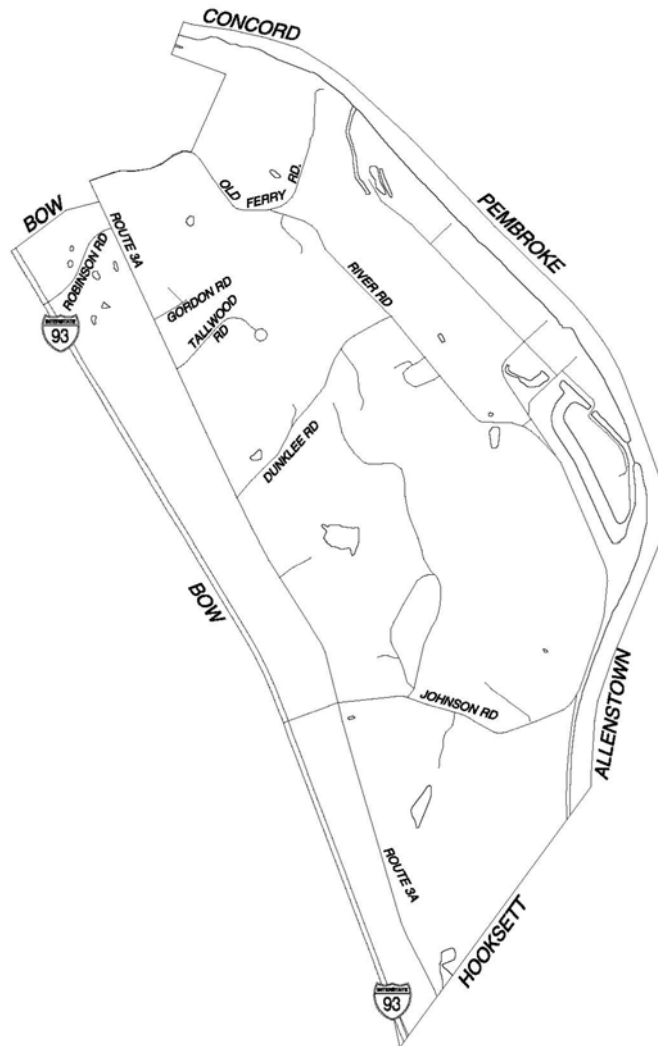


# *Bow Business and Industrial Development Area Traffic Impact Fee Ordinance*



Prepared for **Town of Bow, New Hampshire**

Prepared by **VHB/Vanasse Hangen Brustlin, Inc.**  
**Bedford, New Hampshire**

May 2005

# Bow Business and Industrial Development Area Traffic Impact Fee Ordinance

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Prepared for **Town of Bow, New Hampshire**

Prepared by **VHB/Vanasse Hangen Brustlin, Inc.**  
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May 2005

# 1

## Introduction

Vanasse Hangen Brustlin, Inc. (VHB) has been retained by the Town of Bow to develop a procedure for assessing traffic impact fees within the town's Business and Industrial Development Area.

This report describes the procedure and provides an easy to use table with fees for a range of typical development types along with conceptual plans depicting the planned improvements at three key intersections along Route 3A. In addition, the procedure provides a fee per vehicle trip that can be applied to proposed land uses that do not easily fit into any of the specific land use categories. The town is also being provided the impact fee table electronically on an Excel spreadsheet. The spreadsheet is design to allow the fee structure to be adjusted annually for inflation. The impact fee table, accompanying zonal map, and conceptual intersection improvement plans are provided at the end of the report.

# 2

## Background

Accommodating future growth in the Business and Industrial Development Area will require improvements to the roadway system. This chapter provides a brief discussion on the purpose of the Business and Industrial Development Area, a summary of existing traffic flow roadway conditions, and a summary of the planned future roadway improvements.

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### Business and Industrial Development Area

The Town of Bow has established a Business and Industrial Development Area located primarily along Route 3A from Robinson Road southward to the Hooksett town line. As described in the town's zoning ordinance, the purpose of the area is to:

- Attract environmentally acceptable commercial, industrial, recreational, and institutional uses;
- Encourage diversity in the community tax base through appropriate flexibility in land use and land development;
- Optimize financial return on public infrastructure investments and expenditures, including municipal sewer, municipal water supply, and public highways;
- Minimize adverse traffic impacts on Route 3A, future interstate highway interchanges, and surrounding local streets and roadways; and
- Preserve valuable historical, cultural, and natural features within the District and to minimize adverse impacts to water and air, while reducing light and noise pollution, flooding, clear cutting of vegetation, and the blocking of scenic views.

Specifically, the purpose of the traffic impact fee system is to share the cost of needed roadway improvements along Route 3A among those future development projects within the Business and Industrial Development Area that would benefit from those improvements. The idea is that no one development project would be placed in a position where it would be responsible to construct major roadway improvements simply because the timing of the particular development project coincided with the need to upgrade the corridor.

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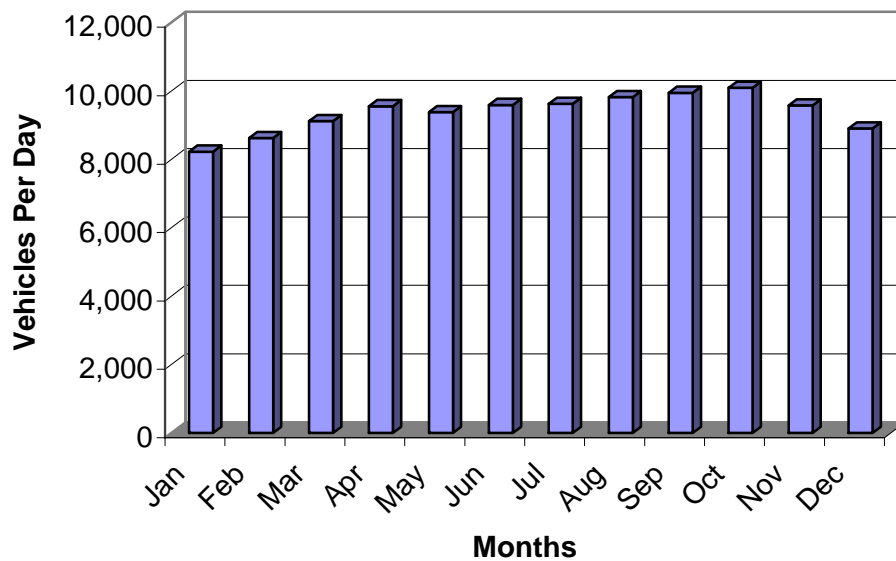
### Existing Traffic Volumes

To determine existing traffic volume demands and flow patterns in the area, weekday evening peak period (4:00 – 6:00 PM) manual turning movement counts were conducted at the three study area intersections in April 2004. To supplement

the intersection turning movement counts, 24-hour automatic traffic recorder counts recorded at the NHDOT permanent count station on Route 3A south of Robinson Road were obtained and reviewed.

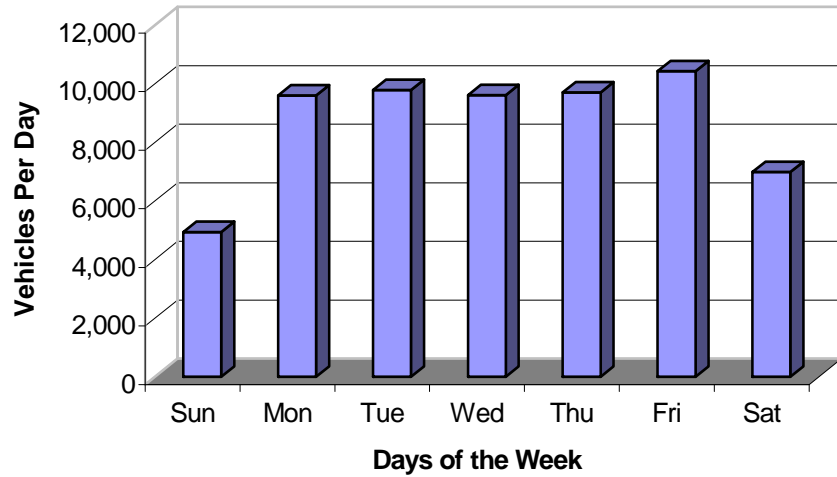
Examination of the variation in average daily traffic (ADT) along Route 3A for 2004 shows October with an ADT of approximately 10,100 vehicles per day (vpd) as the peak month. Overall, the level of traffic remains relatively high from April through November with the volume of traffic somewhat less during the winter months of December, January and February. The monthly variations are depicted graphically in Figure 1.

**Figure 1**  
**Monthly Variations (2004)**  
**Route 3A South of Robinson Road**



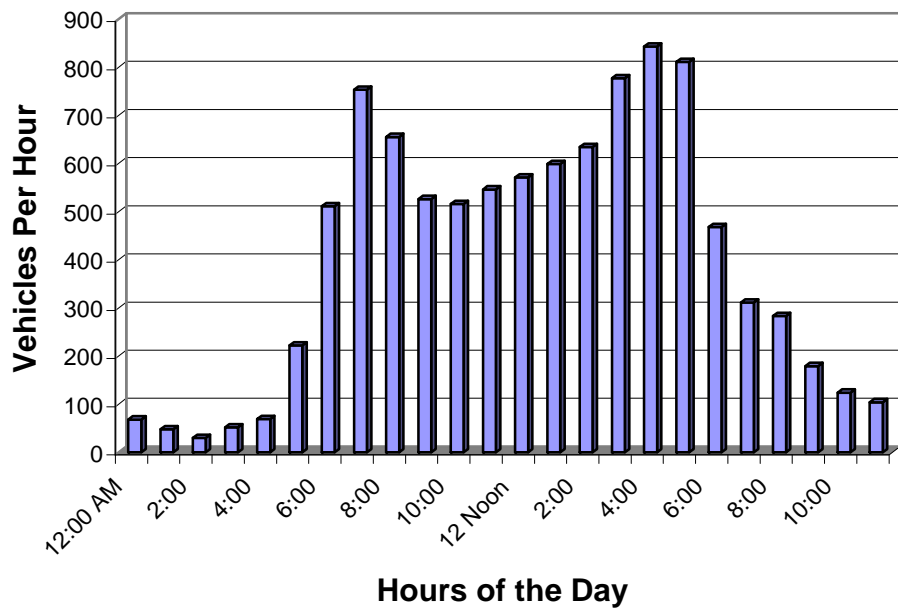
Examination of a the daily traffic variations along Route 3A during the peak month of October revealed relatively consistent daily volume during the weekdays ranging from approximately 9,600 vph to 10,400 vph. The volume of traffic on the weekend is substantially lower with Saturday and Sunday volumes recorded at approximately 7,000 vph and 4,900 vph, respectively. The daily variations are depicted graphically in Figure 2.

**Figure 2**  
**Daily Variations (2004)**  
**Route 3A South of Robinson Road**



A breakdown of hourly variations for a typical weekday (Thursday) revealed distinct commuter morning and evening peak periods. The highest volumes of the day occur during the evening peak hours. In fact, the three highest hours of the day occur between 3:00 PM and 6:00 PM. The hourly variations are depicted in Figure 3.

**Figure 3**  
**Hourly Variations (2004)**  
**Route 3A South of Robinson Road**



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## Existing Roadway System

Route 3A, within the study area, is a state maintained two-lane bi-directional arterial roadway that runs in a general north-south direction paralleling I-93 to the east. Throughout its length the roadway provides two 12-foot wide travel lanes with minimal shoulder area (1 to 2 feet). Johnson Road and Dunklee Road each intersect Route 3A from the east at a “T-type” intersection. Robinson Road intersects Route 3A from the west opposite a driveway to Audley Construction to form a 4-way intersection. Currently traffic at each of the intersections is STOP signed controlled on the minor street approaches to the intersections. No turn lanes are provided.

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## Planned Roadway Improvements

Based on the findings of the Bow Economic Strategy, which was conducted by RKG Associates and Dufresne-Henry, Consulting Engineers under the direction of the Bow Business Development Commission, it is estimated that with the extension of water and sewer to the Business and Industrial Development Area, as much as 880,000 square feet of non-residential development would be expected within the study area. To accommodate this type of growth, it will be necessary to provide for the safe and efficient access onto Route 3A. To do this, Route 3A at the primary access points, namely Johnson Road, Dunklee Road, and Robinson Road, should be widened to provide left and right-turn lanes. These primary access points would also need to be placed under traffic signal control. Conceptual improvement plans depicting the planned intersection improvements are provided at the end of the report in Figures 5, 6, and 7.

Having established the appropriate actions to upgrade the roadway system, the next step is to estimate the cost of the planned improvements. The results of a preliminary construction cost estimate show the cost to design, reconstruct, widen and install traffic signals at each of the intersections is estimated at approximately \$1 million per intersection resulting in a total cost to upgrade all three intersections at \$3 million.

# 3

## Impact Fee Procedure

The term impact fee generally refers to a municipality's ability to exact a fee from a developer as a means of offsetting the development's impact on the municipality. The specific traffic impact fee process that is being applied in Bow's Business and Industrial Development Area is the "cost allocation procedure" or "CAP". This procedure provides the town a means to equitably share the cost of constructing roadway improvements. The basis of the procedure is that public providers, such as the Town of Bow, are responsible for addressing or fixing existing roadway deficiencies while future users of the transportation system are responsible for their proportionate share of the cost of providing sufficient capacity to accommodate future growth. The future users are charged a user or impact fee through the private developer.

The CAP has been designed to meet the "rational nexus" test, which is the underpinning of fairness in allocating impact fees. To meet the rational nexus test, the level of user or impact fee must be determined in proportion to the impact of the user on the roadway improvement or in proportion to the benefit that the user derives from the improvement. An impact fee system that fails to demonstrate this direct link of proportional impact or benefit could be subject to legal challenge.

In general and historically, the standard CAP formula has been determined by establishing both a base and a future traffic volume condition, establishing a planned roadway improvement program, and calculating the additional reserve capacity provided by the future planned roadway improvements. The costs of roadway improvements are apportioned to private development projects based on the portion of available reserve capacity used by the new site development-related traffic. A specific development's fee is determined by multiplying the allocable cost by the ratio of the units of capacity used by the new development (during the peak hour) over the total available reserve capacity.

For the purpose of simplicity, the standard formula has been modified so that it is now stated in terms of "total cost" and "total capacity" rather than in terms of "allocable cost" and "available reserve capacity". The resulting fee is the same regardless of which ratio is used.

In its most basic form, the cost allocation formula is as follows:

$$\text{Development Fee} = \text{Total Cost} \times \text{T} / \text{Total Capacity}$$

Where T is the units of critical lane capacity that is used by the new traffic generated by a development project. The total cost is the total cost of the roadway improvement. The total capacity is the capacity of a given intersection in terms of a critical lane sum. The total capacity is a constant and is set at 1,400. By calculating the units of critical lane capacity at future signalized intersections, the procedure accounts for the proximity of the development project (and thereby its impact) on a specific segment of the corridor. The capacity calculations, which are based on the weekday evening peak hour condition, were measured at the intersections of Route 3A with Robinson Road, Dunklee Road, and Johnson Road

It is important to recognize that the public sector is responsible for a proportionate share of the total cost of the planned improvements. The allocable costs, which reflect the portion of the total cost that is associated with the additional capacity that is built into the roadway system, are the costs that can be assigned or allocated to future development projects. The cost associated with the portion of the capacity that is used by the existing traffic is the responsibility of the public sector (town, state and/or federal funds can be used as public sector contributions).

In this case, of the total \$3 million in planned roadway improvements approximately \$1.9 million (63 percent) can be allocated to future generators of traffic by way of the impact fee, while approximately \$1.1 million (37 percent) is the responsibility of the public sector. The collected impact fees can be expended on the design, construction, and/or the purchasing of right-of-way to accommodate the planned improvements.

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## Sample Calculation

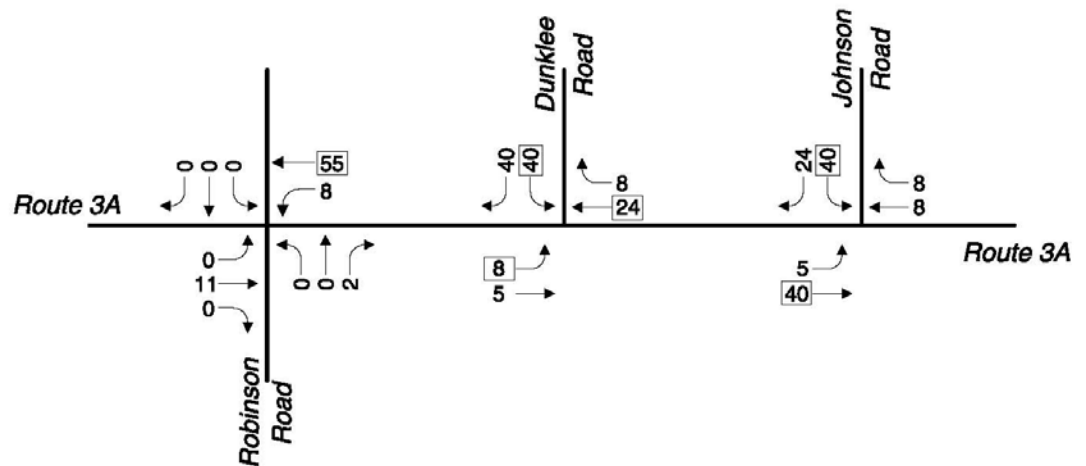
The following is a sample calculation to illustrate how the fees in the impact fee table were determined. For this example, we will use a 100,000 square foot office building located within Impact Fee Zone 5. The steps are as follows:

### Step 1 - Estimate Weekday PM peak hour traffic for 100,000 sf office.

Entering Trips	32
<u>Exiting Trips</u>	<u>158</u>
Total	255

### Step 2 - Assign trips to roadway network.

The following diagram shows the PM peak hour trips distributed through the Robinson Road, Dunklee Road, and Johnson Road intersections.



**Step 3 - Calculate "Critical Lane Sum"**

The critical lane movements (the movements that affect the capacity of the intersection) are shown with boxes around the volumes.

Critical Lane Sum at each intersection

Robinson Road	55
Dunklee Road	40+24+8=72 (actually 71 due to rounding)
Johnson Road	40+40=80 (actually 79 due to rounding)

**Step 4 - Calculate the Fee**

Development Fee = Total Cost x T/Total Capacity

Robinson Road	\$1.0 million x 55/1,400 (also divide by 100,000 to convert to s.f.) = \$0.40
Dunklee Road	\$1.0 million x 71/1,400 (also divide by 100,000 to convert to s.f.) = \$0.51
Johnson Road	\$1.0 million x 79/1,400 (also divide by 100,000 to convert to s.f.) = \$0.56

$$\$0.40 + \$0.51 + \$0.56 = \$1.47$$

See table for office use in Zone 5. The fee is \$1.47 per square foot.

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## Using the Procedure

The following steps should be followed when calculating a development impact fee.

1. Use the traffic zonal map to identify which zone the proposed development is located. In the event that a project overlaps two or more sectors, the fee should be determined for each and averaged.
2. Identify the appropriate land use in the first column of the Impact Fee Table. Town staff should have a copy of Trip Generation, 7<sup>th</sup> edition by the Institute of Transportation Engineers, which will be helpful in selecting appropriate categories and provides more specific detail on trip generation data and sample size.
3. Having selected the land use, move across the table to the appropriate traffic zone to obtain the fee per variable unit such as per square foot (or per stall or per pump in the case of the Quick Lube or the Service Station etc.).
4. Multiply the rate found in the table by the variable units of the development. For example, in the case the Quick Lube, multiply the rate by the number of service stalls.

Note that the impact fee table also provides a fee per weekday evening peak hour vehicle trip that can be applied to proposed uses that do not easily fit into any of the specific land use categories. Two non-specific land use categories (workplace and commercial) are provided because the directional flow of traffic for workplace and commercial uses differ. It is important to recognize that town planning staff will be responsible for making key decisions such as choosing the appropriate land use and recognizing unique development projects where the non-specific use rate should be applied. When applying the non-specific category, a qualified traffic engineer should determine the vehicle trip estimate.

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## Construction Cost Adjustment

Because the construction cost estimates that were developed for use in the traffic impact fee procedure are in present day dollars, procedure has been designed to allow the fee structure to be adjusted annually for inflation. Engineering News Record (ENR) has been tracking a construction cost index (CCI) since 1921 and publishes the index. The traffic impact fee matrix is being provided to the town on an Excel spreadsheet that is designed to be adjusted annually by simply inputting the current year CCI.

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## Town Impact Fee Ordinance

The Town of Bow has an Impact Fee Ordinance (adopted and revised through March, 2002) in place that allows the town to collect impact fees for capital facilities. As defined in the ordinance, capital facilities include “Any equipment, structure, and

related durable items used to deliver or support public services including water treatment and distribution; wastewater collection, treatment, and disposal; storm water, drainage, and flood control; **public road systems, rights of way**; municipal administration or maintenance services; public schools; public safety services; solid waste collection, transfer, recycling, processing, and disposal; public libraries, public recreation; and a proportionate share of cooperative or regional services.

The traffic impact fee is consistent with the town's existing Impact Fee Ordinance and once adopted by the Planning Board (following a public hearing) the traffic impact fee can be incorporated into the town's ordinance.

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## Land Use Categories

The impact fee procedure provides common land use categories and provides a fee per vehicle trip that can be applied to proposed land uses that do not easily fit into any of the specific land use categories.

The traffic zone map and the traffic impact fee matrix are provided at the end of this section. The following provides a brief description of each of the land use categories that are included in the table.

### Land Use Types

**General Light Industrial** – Light industrial facilities usually employ fewer than 500 persons and have an emphasis on activities other than manufacturing. Typical light industrial activities include printing plants, material testing laboratories, assemblers of data processing equipment, and power stations. Most light industrial facilities are freestanding and devoted to a single use.

**Manufacturing – Manufacturing** facilities are areas where the primary activity is the conversion of raw materials or parts into finished products. In addition to the actual production of goods, these facilities may also have office, warehouse, and research functions.

**General Office Building** – A general office building houses multiple tenants; it is a location where affairs of businesses, commercial or industrial organizations, or professional persons or firms are conducted. An office building may contain a mixture of tenants.

**Hospital** – A hospital is any institution where medical or surgical care and overnight accommodations are provided to non-ambulatory patients. However, the term “hospital” does not refer to medical clinics (facilities that provide diagnoses and outpatient care only) or nursing homes (facilities devoted to the care of persons unable to care for themselves).

**Warehousing** – Warehouses are primarily devoted to the storage of materials; they may also include office and maintenance areas.

**Day Care Center** – A day care center is a facility where care for pre-school age children is provided, normally during the day time hours. Day care facilities generally include classrooms, offices, eating areas, and playgrounds. Some centers also provide after-school care for children.

**Bar or Pub** – A place where alcoholic beverages and snacks are served and possibly some type of entertainment such as music, television screens, video games, or pool tables.

**Fast Food Restaurant with Drive-Through Window** – Fast food restaurants are characterized by a large carryout clientele, long hours of service, and high turnover rates. The restaurants in this category provide drive-thru window service.

**Fast Food Restaurant without Drive-Through Window** – Fast food restaurants are characterized by a large carryout clientele, long hours of service, and high turnover rates. The restaurants in this category do not provide drive-thru window service.

**Health Club** – Health clubs are generally privately owned facilities that primarily focus on individual fitness or training. Typically they provide exercise classes, weightlifting, fitness and gymnastics equipment; spas; locker rooms; and small restaurants or snack bars. This land use may also include ancillary facilities, such as swimming pools, whirlpools, saunas, tennis, racquetball and handball courts and limited retail.

**High Turnover Restaurant** – High turnover restaurants usually have turnover rates of an hour or less. This type of restaurant is usually moderately priced and frequently belongs to a restaurant chain. Generally these establishments serve lunch and dinner; they may also be open for breakfast and are sometimes open 24 hours a day. Some of these restaurants may also contain a bar area for serving food and alcoholic drinks.

**Medical/Dental Office** – A medical-dental office building is a facility that provides diagnoses and outpatient care on a routine basis, but is unable to provide prolonged in-house medical and surgical care. One or more private physicians or dentists generally operate this type of facility.

**Mini – Warehouse** – Mini – warehouses are buildings in which a number of storage units or vaults are rented for the storage of goods. They are typically referred to as “self-storage” facilities. Each unit is physically separated from the other units, and access is usually provided through an overhead door or other common access point.

**Multiplex Movie Theater** – A multiplex movie theater consists of audience seating, several screens, a lobby and a refreshment area. The development usually generally

has one or more of the following amenities: digital sound, tiered stadium seating and moveable or expandable walls.

**Pharmacy/Drugstore with Drive-Thru Window**- Pharmacies/Drugstores are retail facilities that primarily sell prescription and non-prescription drugs. These facilities may also sell cosmetics, toiletries, medications, stationary, personal care products, limited food products and general merchandise. The drugstores in this category provide drive-thru window service.

**Pharmacy/Drugstore with no Drive-Thru Window**- Pharmacies/Drugstores are retail facilities that primarily sell prescription and non-prescription drugs. These facilities may also sell cosmetics, toiletries, medications, stationary, personal care products, limited food products and general merchandise. The drugstores in this category do not provide drive-thru window service.

**Quick Lubrication Vehicle Shop** - A quick lube shop is a business where the primary activity is to perform oil change services for vehicles. Other ancillary services provided may include preventative maintenance, such as fluid and filter changes. Automobile repair service is generally not provided.

**Service Station with Convenience Market** - This land use includes service stations with convenience markets where the primary business is the fueling of the motor vehicles, although they may also have facilities for servicing and repairing motor vehicles.

**Retail** - A shopping center is an integrated group of commercial establishments that is planned, developed, owned, and managed as a unit. A shopping center's composition is related to its market area in terms of size, location, and type of store. A shopping center also provides on-site parking facilities sufficient to serve its own parking demands.

**Hotel** - Hotels are places of lodging that provide sleeping accommodations and supporting facilities such as restaurants, cocktail lounges, meeting and banquet rooms and limited recreational features.

**Golf Course** - Golf courses generally provide between 9 and 36 holes and are either municipally run or private country clubs. Some courses also provide driving ranges and clubhouses with a pro shop, restaurant/lounge, or banquet facilities.

**Bank** - Banks are generally free-standing buildings providing customer service within the building as well as drive-up windows.

**Library** - A library can be either a public or private facility that consists of shelved books, reading rooms or areas and sometimes meeting rooms

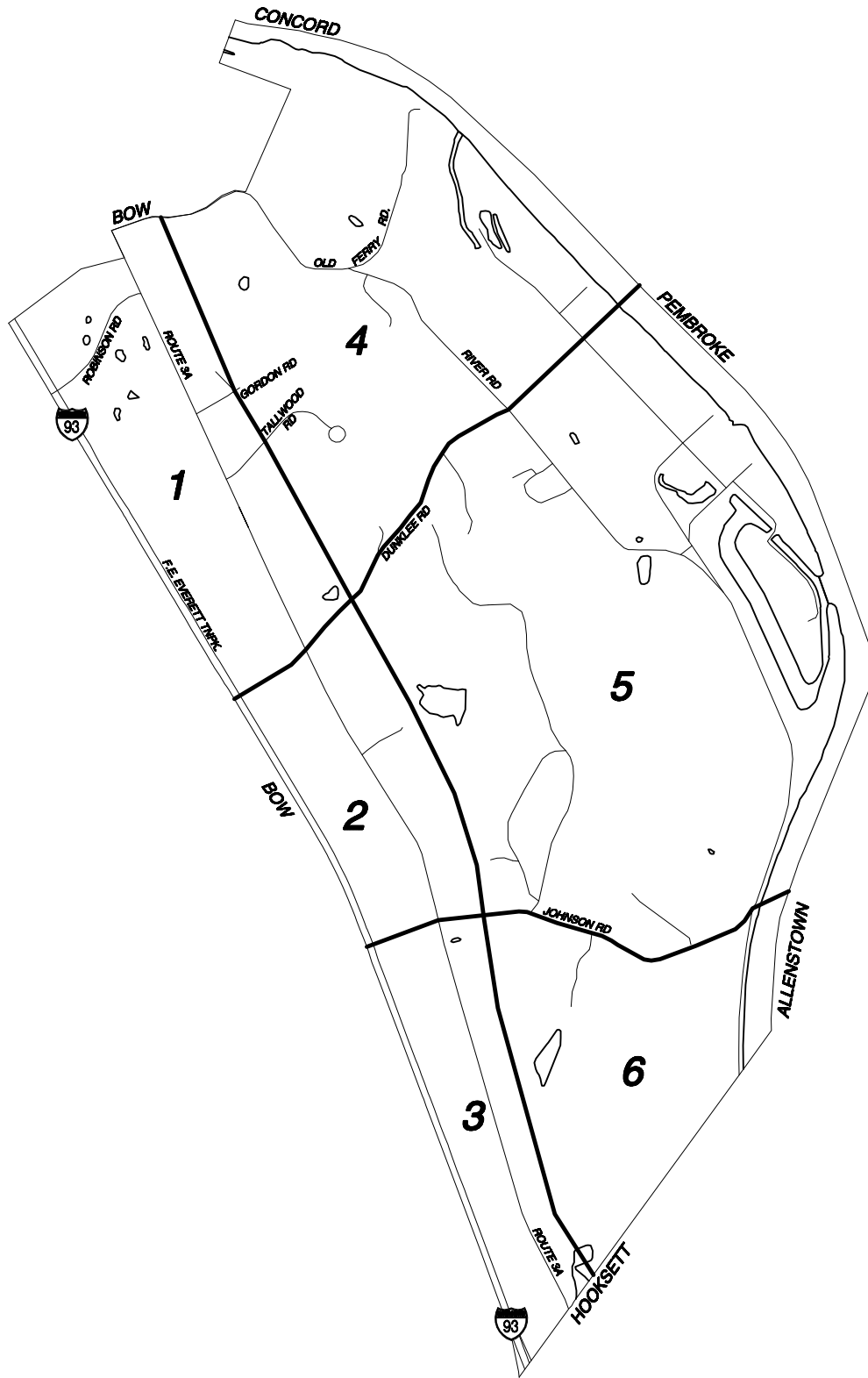
**Church** - A church is a building in which public worship services are held. A church houses an assembly hall or sanctuary; it may also house meeting rooms and classrooms.

**Auto Parts Store** - Auto parts facilities specialize in the sale of automobile parts for do-it-yourself maintenance and repair. These facilities are not equipped for on-site vehicle repair.

# BOW BUSINESS AND INDUSTRIAL DEVELOPMENT AREA IMPACT FEE TABLE

(2005 Dollars)

ITE LAND USE	Variable	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5	Zone 6
<b>GENERAL INDUSTRIAL</b>	square foot	\$0.60	\$0.84	\$0.61	\$0.76	\$0.76	\$0.84
<b>MANUFACTURING</b>	square foot	\$0.46	\$0.64	\$0.46	\$0.57	\$0.57	\$0.64
<b>OFFICE BUILDING</b>	square foot	\$1.18	\$1.64	\$1.19	\$1.47	\$1.47	\$1.64
<b>HOSPITAL</b>	square foot	\$0.73	\$1.01	\$0.74	\$0.91	\$0.91	\$1.01
<b>WAREHOUSING</b>	square foot	\$0.29	\$0.40	\$0.29	\$0.36	\$0.36	\$0.40
<b>DAYCARE CENTER</b>	square foot	\$3.19	\$3.39	\$3.30	\$3.88	\$3.46	\$3.39
<b>BAR OR PUB</b>	square foot	\$5.49	\$5.83	\$5.67	\$6.68	\$5.95	\$5.83
<b>FAST FOOD RESTAURANT W/ DRIVE THRU</b>	square foot	\$8.38	\$8.90	\$8.67	\$10.20	\$9.09	\$8.90
<b>FAST FOOD RESTAURANT W/O DRIVE THRU</b>	square foot	\$6.33	\$6.72	\$6.54	\$7.70	\$6.86	\$6.72
<b>HEALTH CLUB</b>	square foot	\$2.94	\$3.12	\$3.04	\$3.58	\$3.19	\$3.12
<b>HIGH TURNOVER (SIT DOWN) RESTAURANT</b>	square foot	\$5.29	\$5.61	\$5.46	\$6.43	\$5.73	\$5.61
<b>MEDICAL - DENTAL OFFICE BUILDING</b>	square foot	\$3.60	\$3.82	\$3.72	\$4.38	\$3.91	\$3.82
<b>MINI - WAREHOUSE</b>	square foot	\$0.25	\$0.27	\$0.26	\$0.31	\$0.27	\$0.27
<b>MULTIPLEX MOVIE THEATER</b>	square foot	\$5.05	\$5.37	\$5.22	\$6.15	\$5.48	\$5.37
<b>PHARMACY/DRUGSTORE WITH DRIVE-THRU WINDOW</b>	square foot	\$4.17	\$4.43	\$4.31	\$5.08	\$4.52	\$4.43
<b>PHARMACY/DRUGSTORE NO DRIVE-THRU WINDOW</b>	square foot	\$4.08	\$4.33	\$4.21	\$4.96	\$4.42	\$4.33
<b>QUICK LUBE</b>	stall	\$1,255.93	\$1,333.76	\$1,298.38	\$1,528.34	\$1,362.06	\$1,333.76
<b>SERVICE STATION W / CONVENIENCE MARKET</b>	pump station	\$1,618.91	\$1,719.24	\$1,673.64	\$1,970.06	\$1,755.72	\$1,719.24
<b>RETAIL</b>	square foot	\$3.17	\$3.37	\$3.28	\$3.86	\$3.44	\$3.37
<b>HOTEL</b>	room	\$285.55	\$303.24	\$295.20	\$347.48	\$309.68	\$303.24
<b>GOLF COURSE</b>	hole	\$1,326.11	\$1,408.29	\$1,370.93	\$1,613.74	\$1,438.17	\$1,408.29
<b>BANK</b>	square foot	\$11.07	\$11.76	\$11.45	\$13.47	\$12.01	\$11.76
<b>LIBRARY</b>	square foot	\$3.43	\$3.64	\$3.55	\$4.18	\$3.72	\$3.64
<b>CHURCH</b>	square foot	\$0.64	\$0.68	\$0.66	\$0.78	\$0.69	\$0.68
<b>AUTO PARTS STORE</b>	square foot	\$2.89	\$3.07	\$2.99	\$3.52	\$3.14	\$3.07
<b>WORKPLACE NON-SPECIFIC USE (\$ PER PM PEAK HOUR TRIP)</b>		\$617	\$859	\$623	\$771	\$771	\$859
<b>COMMERCIAL NON-SPECIFIC USE (\$ PER PM PEAK HOUR TRIP)</b>		\$484	\$514	\$500	\$589	\$525	\$514

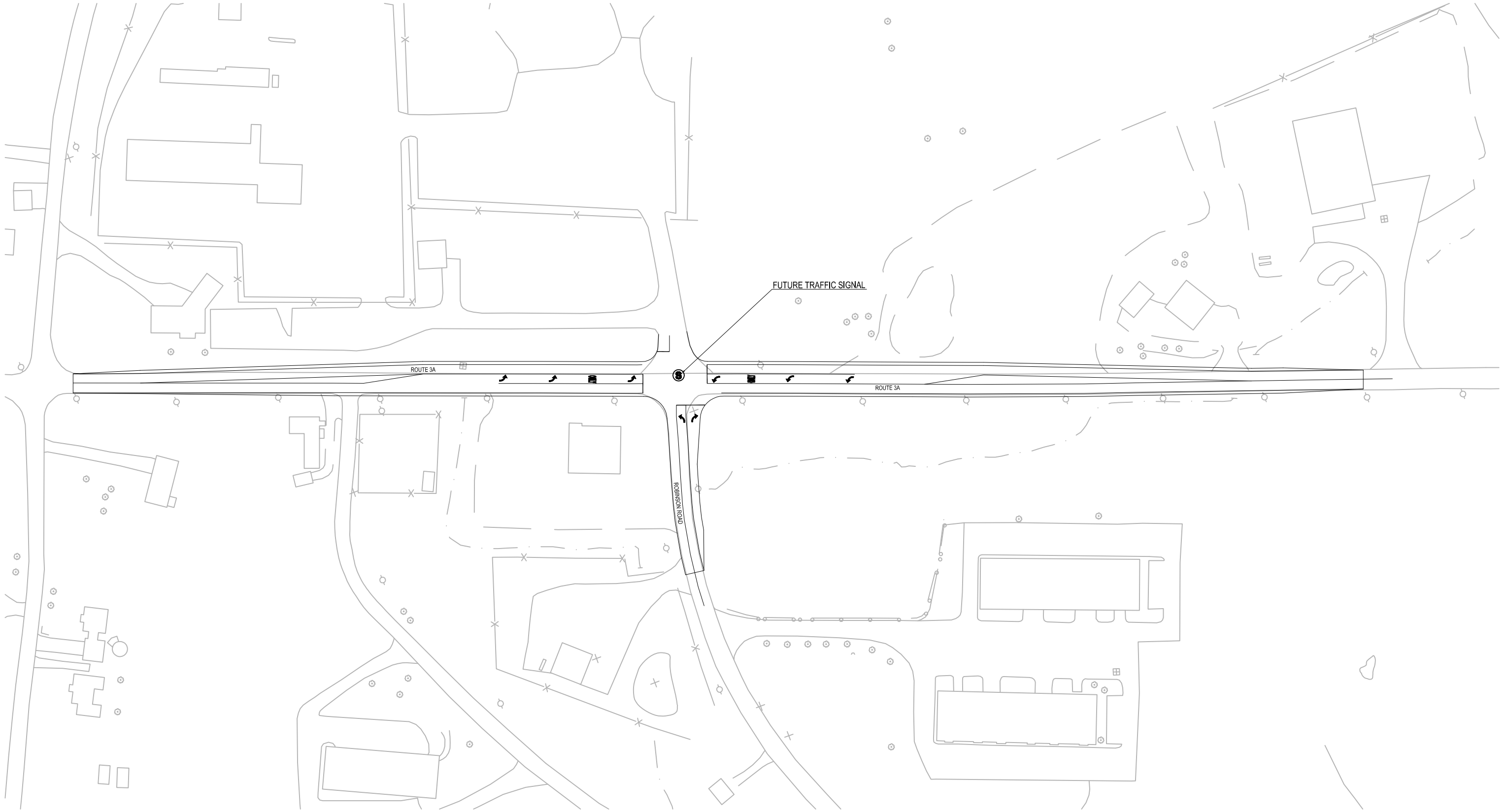


Not to Scale

Vanasse Hangen Brustlin, Inc.

Traffic Zone Map

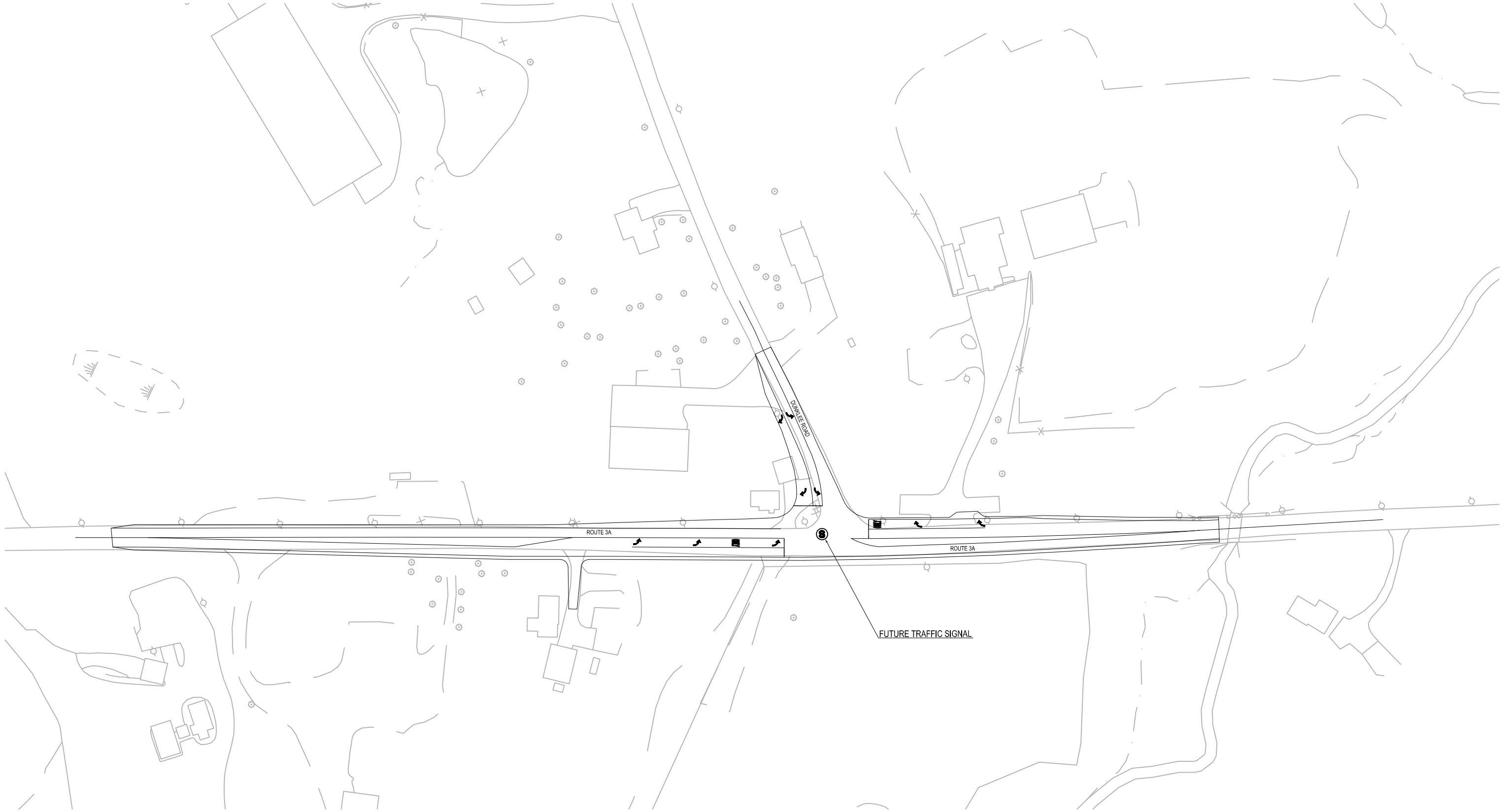
Figure 4



**Vanasse Hangen Brustlin, Inc.**

Conceptual Improvement Plan  
Robinson Road and NH Route 3  
Bow, New Hampshire

Figure 5



**Vanasse Hangen Brustlin, Inc.**

Conceptual Improvement Plan  
Dunklee Road and NH Route 3  
Bow, New Hampshire

Figure 6



**Vanasse Hangen Brustlin, Inc.**

Conceptual Improvement Plan  
Johnson Road and NH Route 3  
Bow, New Hampshire

Figure 7