11.12.7

SUMMARY

BURLINGTON M 5000(1)

FEDERAL HIGHWAY ADMINISTRATION

ADMINISTRATIVE ACTION ENVIRONMENTAL STATEMENT

( ) DRAFT (X) FINAL

( ) SECTION 4(f) STATEMENT ATTACHED

Additional information concerning the proposal and statement may be obtained from:

Director of Engineering and Construction
Agency of Transportation
State Administration Building
Montpelier, Vermont 05602

Telephone: 802-828-2661

Division Administrator
Federal Highway Administration
U. S. Department of Transportation
Federal Building
Montpelier, Vermont 05602

Telephone: 802-223-5294

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Description of Proposed Action

Project Burlington M 5000(1) comprises construction of approximately 2½ miles of highway known as the Southern Connector, in the City of Burlington, Chittenden County, Vermont; commencing at the interchange of I 189 with Shelburne Street (US 7) and extending westerly and northerly to the intersection of Battery and King Streets in the Burlington Central Business District.

The proposed highway will have four-twelve foot travel lanes for its entire length. From the beginning of the project to Pine Street, typical section will have ten foot outside shoulders, four foot inside shoulders, and a median tapering from 42 feet to 12 feet. From Pine Street to Home Avenue, the typical will have ten foot outside shoulders, and a 12 foot slope-edged median. From Home Avenue to the project terminus at King Street, there will be a two foot offset on either side with a curb typical. Turning lanes will be provided where necessary. Limited access with partial control is to be exercised from the beginning of the project to the area of the railroad yard. The project involves modification of the I 189-Shelburne Street Interchange, including replacement of the structure over Shelburne Street and construction of additional ramps, to provide for all directional turning movements.

Action Required by Other Federal Agencies

U. S. Army Corps of Engineers - Section 404 Permit.

Major Alternates Considered

1) No Build
2) Use of Alternate Travel Modes through the project corridor
3) New Location Alternate
4) Pine Street Alternate

Summary of Environmental Impacts

Implementation of the proposed action would result in a significant improvement in the quality of travel through the south end of Burlington City. Without this improvement, the existing street network will continue to deteriorate; eventually leading to a lower quality of travel, a lessening of residential desirability, and a reduction in business throughout the area.

Right-of-way acquisition will involve the taking of 41.1 acres and 16 families will be displaced. Based on the 1976 Grand List and Tax Rate, the estimated tax loss would be 1.04 percent with this project.

Noise levels will exceed FHWA Design Noise Levels at some locations. At this time, no abatement measures are being contemplated. It is the finding of the Air Pollution Control Section of the Agency of Environmental Conservation that air quality will be within standards set by the State's Air Quality Implementation Plan. No natural, ecological, or archaeological resources within the project area will be significantly impacted. No significant effect on water supplies or water quality is anticipated. While there are several historic sites within the project corridor, none will be affected by this project.

There will be some interference with the operation of the Vermont Railway resulting from loss of parking and storage areas at the railroad yard. A few businesses which use the railroad facility will also be inconvenienced. The only anticipated social impact would be the severing of a small portion of the south end neighborhood.

This project, being a controlled access highway, will divert more traffic from the existing streets, thus protecting businesses along Pine Street from increased congestion; and allowing faster travel times for buses, possibly encouraging more bus travel.

Implementation of the project will be in accordance with detailed plans and specifications, and under the direction of the resident engineer. Adherence to specifications will ensure a minimum of adverse effects (erosion, siltation, water quality impairment, etc.) during the construction period.

Agencies and Organizations from which comments were requested:

Federal

U. S. Environmental Protection Agency, Regional Administrator "Reply Received"

U. S. Department of the Interior, Office of Environmental Project Review "Reply Received"

U. S. Army, Corps of Engineers, North Atlantic Division "Reply Received"

U. S. Department of Agriculture

U. S. Department of Health, Education and Welfare

U. S. Department of Commerce

U. S. Department of Housing and Urban Development "Reply Received"

U. S. Energy Administration "Reply Received"

U. S. Coast Guard, Third Coast Guard District "Reply Received"

State

Vermont State Planning Office (Clearinghouse) "Reply Received"

Vermont Agency of Environmental Conservation "Reply Received"

Vermont Agency of Development and Community Affairs "Reply Received"

Local

Chittenden County Regional Planning Commission

Aldermen, City of Burlington "Reply Received"

Councilmen, City of South Burlington "Reply Received"

Burlington Planning Commission

South Burlington Planning Commission

Comments were also received from:

Vermont Public Interest Research Group

Mr. Armand J. Beliveau

Mr. Peter Judge

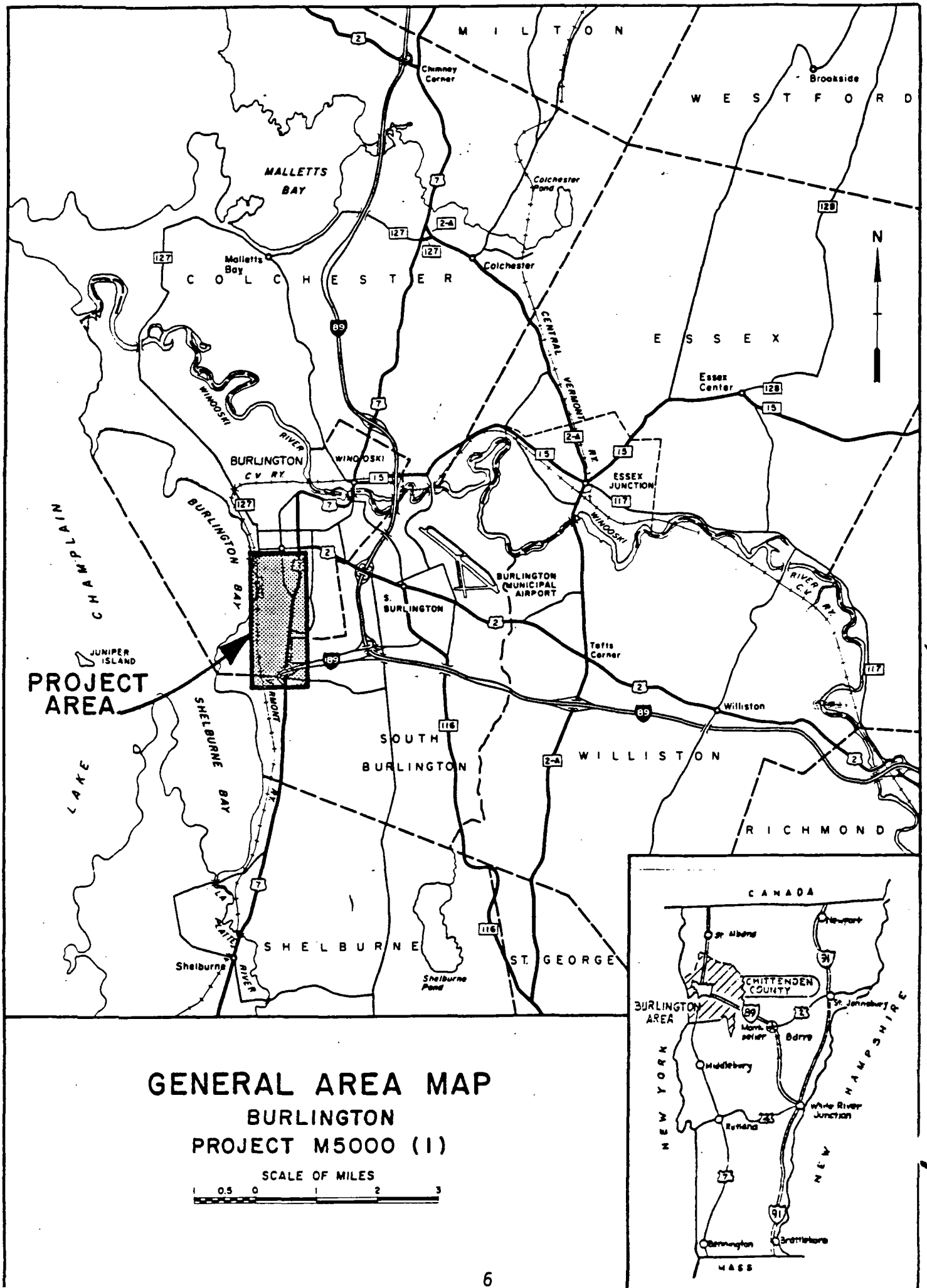
Mr. Robert Wilson

General Electric Company

Mrs. Catherine Neubert

Date Draft EIS mailed to Council on Environmental Quality

The draft environmental impact statement was mailed to the Council on Environmental Quality on September 26, 1977. Its availability was published in the Federal Register, Volume 42, #195 October 7, 1977 and a period of 45 days from that date was established for review and comment.



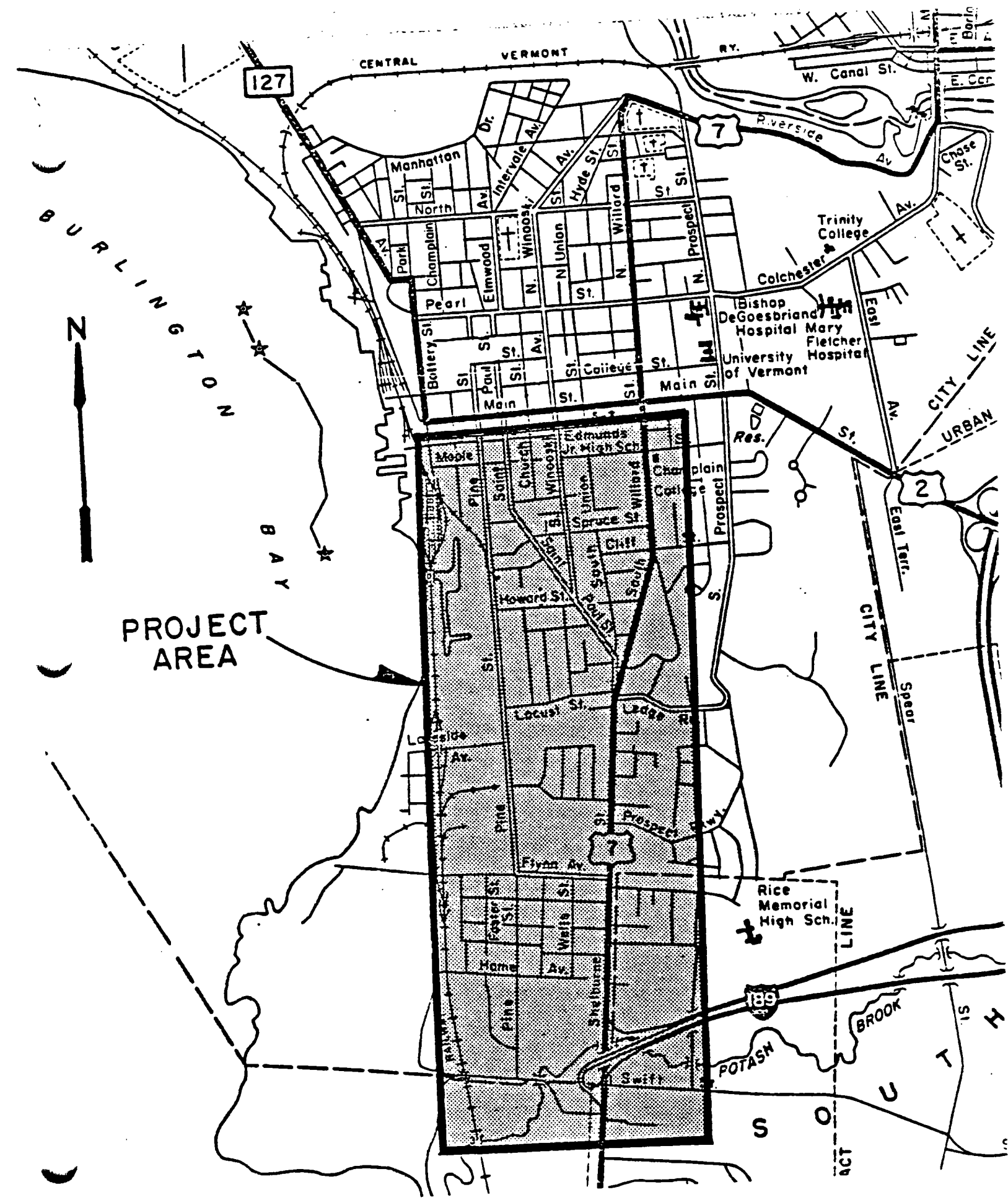
GENERAL AREA MAP

BURLINGTON

PROJECT M5000 (I)

SCALE OF MILES

1 0.5 0 1 2 3



PROJECT AREA MAP

BURLINGTON SOUTHERN CONNECTOR

PROJECT M5000(1)

SCALE

FINAL

ENVIRONMENTAL IMPACT STATEMENT

BURLINGTON M 5000(1)

Need for the Project

The City of Burlington extends for approximately seven miles along the eastern shore of Lake Champlain in Chittenden County, Vermont. As the City has grown from its late 18th Century beginnings, there has not always been planning and coordination in the extension of the street system into newly developing areas. The result, in the late 20th Century, is a city-wide street pattern with few continuous north-south travel routes.

As the Project Area Map indicates, this deficiency is particularly marked with regard to access between the southeast corner of the City near the junction of two major arterial routes, I 189 and US 7, and the Central Business District, which is the commercial hub of the Greater Burlington Urban Area. Shelburne Street and Willard Street, the urban extension of US 7, provide a reasonably continuous route through the City; however, this route lies easterly of the commercial area.

The principal routes into the Central Business District are St. Paul Street, which diverges from Shelburne Street in a northwesterly direction, and Pine Street, which is only accessible from Shelburne Street through use of east-west facilities such as Queen City Park Road, Home Avenue, Flynn Avenue, Birchcliff Parkway, and Locust Street. While both these facilities terminate in the commercial area, they are not located to provide north-south route continuity beyond this section of the City. The mixture of frontage development-commercial on Lower Shelburne Street; industrial, commercial, and residen-

tial on various sections of Pine Street; and generally residential on St. Paul Street and the east-west connectors--results in a system which must perform simultaneously as arterial, collector and local street.

Present traffic volumes on Shelburne Street are in the 12,000-18,500 ADT range; St. Paul Street traffic varies between 6,000 and 9,000 ADT; Pine Street carries a maximum of 11,000 ADT; and the principal Pine Street-Shelburne Street connectors, Queen City Park Road, Home Avenue and Flynn Avenue have ADT volumes in the 3,000 range. While sufficient capacity for stable flow of peak hour traffic now exists at the principal intersections on these routes, it is anticipated that by 1996, 13 of 21 major intersections will experience capacity deficiencies. Some indication of present operating conditions is furnished by the accident experience--in the years 1972 - 1975, 243 accidents were reported on Pine Street, and 602 on Shelburne and St. Paul Streets. Indeed, as the traffic volumes on Shelburne Street have increased, there has been an observable trend towards use of Pine Street as an alternate route to downtown.

The need for improved travel quality in this corridor is recognized by local government. The Official Comprehensive Master Plan, City of Burlington adopted January 8, 1973, includes the following recommendations in the "Transportation Plan."

> Major Streets: 1. High Priority should be given to the widening of Battery Street to four lanes south of College Street and to the construction of its connection to Pine Street, so as to eliminate the traffic snarls, which currently exist between the two streets.
>
> Arterials: 2. An arterial should be constructed between the City limits and I 189 at the south and the Regional Core as an alternative to the use of Pine Street and Shelburne Street.

This same document includes the following in its "Land Use Areas and Policies".

Land Use Policies: 4. --- This should be provided with better vehicular access through an extension which connects I 189 to the Regional Core. The City should encourage the Development of high employee ratio type industries for this area. ---"

Project History and Present Status - The weakness of the Burlington Street System in affording expeditious north-south movement between the south end of the City and downtown has been apparent for a number of years, and means for its alleviation have been suggested in several planning reports.

The 1961 Burlington Comprehensive Plan's Traffic Plan recommendations included, in conceptual form, a new Lakefront Arterial facility extending westerly from the I 189 - Shelburne Street Interchange, and northerly into the CBD along the Rutland Railroad tracks.

During the early 1960's the Vermont Department of Highways conducted an Urban Area Transportation Study for the Greater Burlington Urban Area. This study confirmed the need for improved north-south circulation through Burlington City; the major recommendation of the study report comprised a controlled access freeway facility (The Burlington Beltline) connecting with I 189 and running the length of the City, with interchanges spaced to serve traffic originating in the city's several neighborhoods. This facility was planned for construction in sections, by priority of need. The initial section, between the central city area and North Avenue, was completed in 1971. The GBUA Report assigned next priority to extension of the facility south through the CBD, and ideally,to I 189; unless major improvements had been made to Shelburne or Pine Streets.

In 1971-1972 Project WATER, a study of the resources and potential of the Burlington Waterfront, was undertaken by University of Vermont students, with National Science Foundation funding. The Transportation Analysis of Project WATER also identified the need for travel improvement, and recommended a Waterfront Parkway comprising an extension of I 189 (similar to the Beltline concept) to a point on Pine Street near Sears Lane, the improvement of Pine Street, and construction of a connection from Pine Street to the foot of Battery Street.

During the early 1970's, liaison was maintained between the Highway Department and the Burlington Planning Commission, and various concepts for improvement in the project corridor were considered. These concepts reflected the policy of the Burlington 1973 Comprehensive Plan, which emphasizes the need for a new arterial facility between I 189 and downtown. This document noted that while future northerly extension of an arterial highway was not ruled out, it should be subject to further study, and approved by the City Council.

The establishment of the Urban Systems concept by the Federal-aid Highway Act of 1973, brought solution of the problem within the realm of feasibility. In the development of the Burlington Urban System, a projected route between I 189 and the CBD was included, and the City formally requested an improvement in this location in March 1976.

While A-95 Clearance was received on June 19, 1972, (with no adverse comment) all preliminary study work was performed with State funding prior to the programming for Preliminary Engineering of Project M 5000(1) on April 13, 1976. In conformance with Vermont's Action Plan procedures, a Citizen's Committee was assembled, representing the Cities of Burlington and South Burlington. Department personnel held twelve meetings with the Committee between June 30, 1976 and March 2, 1977. The Committee supplied substantial input to the planning process; their assistance will also be useful through the development of the design process.

Following the circulation of the Draft Environmental Impact Statement (DEIS) and the Corridor Hearing November 10, 1977, all comments received were analyzed. Based on all data available, the Agency of Transportation selected Alternate 3 (New Location Alternate) as the preferred project alignment.

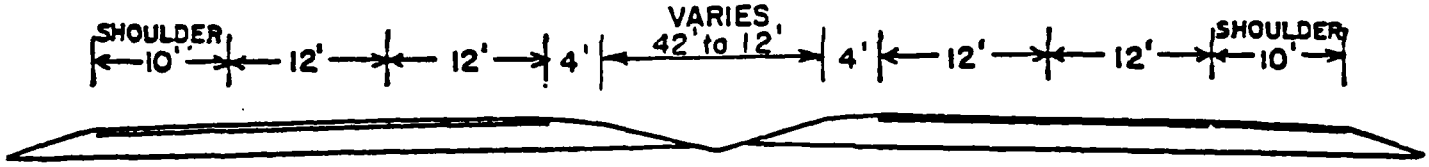
Description of Proposed Action

The proposed action is the construction of 2.3 miles of highway, known as the Southern Connector, in the City of Burlington, Chittenden County, Vermont. The selected alignment was described in the Draft Environmental Impact Statement as Alternate 3, New Location. The termini of the project are the Interstate I 189 - US 7 interchange and the Battery Street - King Street intersection. The improvement will be a four lane facility with additional width provided for turning lanes at intersections. For further detail refer to the typical sections on page 14 .

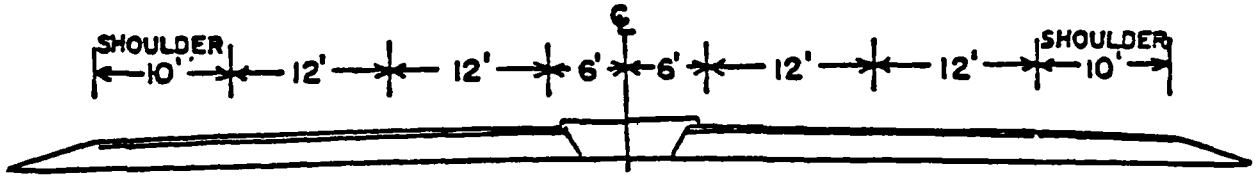
Modification of the I 189 - US 7 Interchange to provide additional ramps for all direction turning movements will be a necessary part of the project. Design of the project will include provision for continuity with the South Burlington Connector project, M 5200 ( ), the location of which is now being discussed by a Citizens Committee from South Burlington and Agency of Transportation Planning Division personnel. The design of the Burlington South Connector will be accomplished to be compatible with this subsequent project.

Some adjustments of Vermont Railway trackage will also be required. Any facilities taken will be replaced in locations near the present ones.

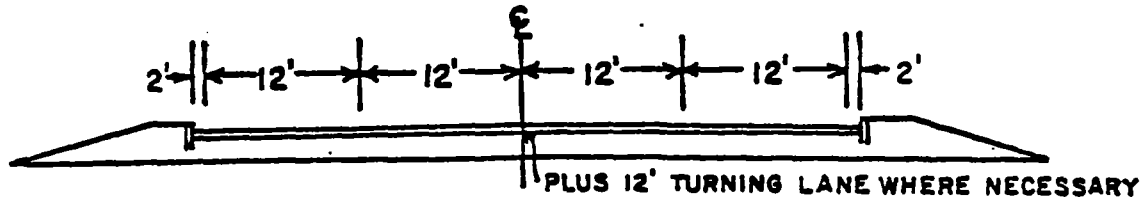
The greater portion of the proposed highway involves construction on new location, while the remainder involves the widening and improvement of existing streets. Limited access with partial control is to be exercised from the beginning of the project to the area of the railroad yard. The right of way will be fenced with the exception of cross streets not terminated,and access barred from abutting property. Access to the highway will be limited to designated intersections with other streets.



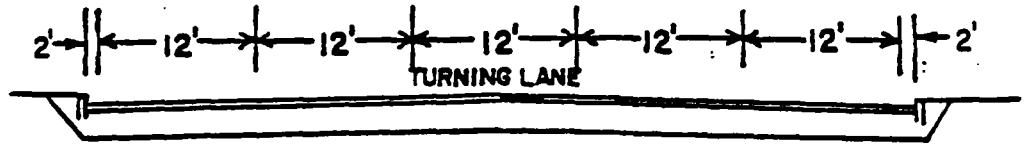
(BEGINNING OF PROJECT TO PINE STREET)



(PINE STREET TO HOME AVENUE)



(HOME AVENUE TO KING STREET)



TYPICAL SECTION WITH 12' TURNING LANE

(WHERE NECESSARY)

TYPICAL SECTIONS

BURLINGTON SOUTHERN CONNECTOR
PROJECT M 5000 (1)

A pedestrian overpass will be constructed at Home Avenue - inclusion of a second overpass, at Sears Lane, will be dependent on the outcome of a feasibility study.

The geometric design will permit safe operation at the anticipated posted speed of 40 MPH. Maximum grade and curvature are within the allowable design standards for this speed.

Traffic at the termini and along the route of the proposed action vary considerably. Refer to page 37 for 1976 traffic figures, and page 51 for 1995 figures with construction of the project.

The selected alignment presented in this document is identical to the New Location Alternate (Alternate 3) depicted in the Draft Environmental Impact Statement. Two sections of this alignment will undergo extensive design study before a precise plan can be consummated. As explained in other sections of this document, studies between Shelburne Road and Home Avenue will be undertaken to be assured that the Southern Connector can be compatible with the proposed future South Burlington Connector. In addition, detailed design and right-of-way studies are currently underway between Flynn Avenue and Lakeside Avenue in an attempt to find the best possible design alignment through this intensively developed commercial area. The objectives of this study are to estimate right-of-way costs, and to determine impacts on adjacent properties and on the job market. This study will provide necessary data for the selection of a final project design, which will minimize to the highest degree possible the total right-of-way costs, while at the same time producing the least possible impact on the area. The overall affect to the natural environment will essentially be the same for all design alternatives.

The Social, Economic and Environmental Context of the Area

A discussion of the immediate project area follows, but is prefaced here by an analysis of Chittenden County and the two communities (the City of Burlington and City of South Burlington) which would be primarily affected by any changes in travel patterns in the project area. The functioning of the economy and the life style in all of the communities that comprise the Greater Burlington Urban Area is very much an interdependent situation.

Chittenden County, in recent decades, has been the fastest growing county of Vermont. Its population has increased at a rate much faster than that of the entire state. In 1930, Chittenden County had 13.3 percent of the population of the State, but by 1970 this jumped to 22.3 percent. Between 1960 and 1970 the population of the county increased 33.2%. This accounted for 45% of the state's total growth during the same period. The population history and projected population for Chittenden County, based upon 1970 U.S. Census data and Chittenden County Regional Planning Commission estimates, is as follows:

1930	1940	1950	1960	1970
47,471	52,098	62,570	74,425	99,131

Est. 1975	Est. 1980	Est. 1985	Est. 1990	Est. 1995	Est. 2000
110,868	122,407	135,147	149,425	164,976	183,149

The estimated 1975 population of the State of Vermont is 471,000 and the projected population for the year 2000 is 630,400.

Chittenden County is located in northwestern Vermont. In many respects, it has been and remains the center of Vermont's economic, political and intellectual activity. Much of the region's early development was due in large part to its location adjacent to Lake Champlain. This was the main transportation corridor for settlement and commerce between New York and Canada.

An abundance of prime agricultural land was also a major factor in early development. The eastern portion of Chittenden County is dominated by the Green Mountains with elevations in excess of 4,000 feet. The western two-thirds of the county, located in the Champlain lowland region, consists of generally level or rolling land at elevations less than 500 feet above sea level. Soil types in this area consist of the soils of the St. Lawrence-Champlain Plains; soils generally influenced by limestone, sands, silts, loams, clays in every stage of drainage, with clays predominating. Soils in the eastern part of the county consist of upland or mountain soils, many stoney or shallow to bedrock. Forest products dominated the early economy of the area. The western portion is a forest zone of transition hardwoods, white pine, and hemlock. Certain favorable climatic conditions helped agriculture develop as a prime economic factor in the area. While all of Vermont suffers from a severe northern climate, western areas of the State have a more moderate climate due to the presence of Lake Champlain. These areas have a growing season in excess of 140 days while other parts of Vermont have a growing season of less than 90 days.

While farming continues to retain an important position in the economy of Chittenden County, manufacturing and commerce are the prime economic factors in Chittenden County today. In 1970, out of a total county employment of 45,751, 39% were engaged in manufacturing and 27% were engaged in commerce and trade. The U. S. Department of Labor reported that in June 1976 there was a total non-agricultural employment of 42,800 with 9,700 in the Manufacturing Division. The average weekly earnings in manufacturing for June 1976 was $207.27. The 1972 census of retail trade reported 870 retail establishments in Chittenden County with total annual sales of $251,169,000.

While most of Chittenden County is still rural in character, the 1970 census reported that 61% of the population resided in urban areas. Chittenden County constitutes a small-scale metropolitan area with characteristic trends

of development which are inherent in much larger places. One of the characteristic trends is the trend toward decentralization with much faster growth in suburban areas than in the central core of the City of Burlington.

The Greater Burlington Urban Area comprises the Cities of Burlington and Winooski, the Village of Essex Junction, and portions of the City of South Burlington, and the Townships of Colchester, Essex and Williston. The 1970 estimated population within the urban area was 72,000 based upon State Planning Office and Highway Department estimates. The 1990 projected population based upon the same estimates is 106,000. The Greater Burlington Urban Area has developed on an economic base centered around manufacturing, retail and wholesale trades; and financial, medical and educational services. And, like most metropolitan areas, the Greater Burlington Urban Area is at the hub of a regional transportation network. The area is at the crossroads of US Route 7 and Interstate 89; it is also served by the Vermont Railway, the Central Vermont Railway, and Amtrak. Burlington is also served by the Burlington International Airport and several major airlines.

Until the mid-1950's, the primary retail center for the area was the Central Business district of the City of Burlington. However, since then the forces of decentralization in the total metropolitan area have made inroads on Burlington's position. Increased demand for housing resulted in rapid suburban development in communities such as Colchester and South Burlington which became bedroom communities serving Burlington. Suburban shopping centers began to draw away much of the retail trade from downtown Burlington merchants. The central core of Burlington City started to become more of a residence for older persons and students as younger families moved to suburban areas.

Despite the shift in distribution, the Central Business District (CBD) of Burlington is still the center for retail trade in the GBUA. Downtown Burlington

is undergoing a series of dramatic changes which should do much to renew the economic vitality of the area. During the early sixties, several blocks of dilapidated structures were razed, making way for the City's urban renewal program. When complete, this area will include 170,000 sq. feet of retail space, town-tower apartment buildings, banks, office space, a hotel, and parking space for over 1000 cars. A study is presently underway to consider closing off the major downtown street (Church Street) to traffic, and creating a pedestrian mall. Currently, shoppers must compete with a large volume of through traffic, which creates heavy congestion and discourages people from shopping downtown./1

The City of Burlington is centrally located on the western edge of Chittenden County and is bordered by Lake Champlain and by the City of Winooski, the Town of Colchester, and the City of South Burlington. Burlington was chartered on June 7, 1763 and was incorporated on November 23, 1852. In the late 1700's, Burlington, which has the best natural harbor on the eastern side of Lake Champlain, became a center for the shipment of lumber products. Burlington, in turn, became a center for a thriving ship building industry.

With the invention of the steamboat, Burlington grew and prospered, and the lake became crowded with steam and sail boats carrying cargo and passengers north to Canada and south to New York. In 1849, the first train came into the City and water-borne commerce began to decline, but Burlington became a thriving railroad center. The availability of water power and fertile land as well as a natural harbor provided the stimulus for industry and Burlington became the economic center of western Vermont. Serious setbacks to economic development occurred in the 1930's and early 1950's, but during the past 20 years, excellent progress has been made and it is expected that Burlington's present economic growth will continue.

/1 Greater Burlington Federal-aid Urban Area Transportation Study (1976)

The recorded 1970 U.S. Census of the City of Burlington was 38,633. The population history and projections for the City, based on Chittenden County Regional Planning Commission estimates, is as follows:

1930	1940	1950	1960	1970	
24,789	27,685	33,155	35,531	38,633	
1975	**1980**	**1985**	**1990**	**1995**	**2000**
41,567	44,452	47,637	51,207	55,095	59,388

Much of the character and success of the City of Burlington can also be attributed to its role as a medical and educational center. The Vermont Medical Center Hospital in Burlington, as well as the University of Vermont, Champlain College, and Trinity College provide sound and varied service and educational facilities for the area and make significant contributions to the local economy and social environment. Burlington has a City form of Government with a Mayor and Board of Aldermen. The (1976) tax rate was $10.08 with a grand list of $975,529.00.

A major issue which the City of Burlington has had to face during the last several years is the revitalization of the Central Business District. Since the late 1950's Burlington's downtown has been in a period of almost zero growth. While the area has not declined, the amount of increase in commercial activity in quantative terms appears to have been negligible. Downtown Burlington's role as the commercial center for the region has been increasingly challenged by new shopping centers being developed in suburban areas. However, Burlington's urban renewal program which has been in progress for the last several years should provide the stimulus necessary for the revitalization of the CBD. The Burlington Square shopping mall with 45 stores should attract a great deal of activity to the area. And the recently opened Radisson Hotel - Convention Center will be competitive throughout the northeastern region of the United States. Implementa-

tion of a Southern Connector project will help these projects to be successful.

The City of South Burlington is located to the east and south of Burlington. In 1950, South Burlington had a population of 3,279, while the 1970 census showed a population of 10,032. South Burlington began to develop initially as a residential community for the City of Burlington. While in many respects, South Burlington can now be considered as part of an expanded core area, it was initially one of the first suburban communities to come under development pressures. South Burlington has most recently begun to develop as a commercial and industrial center. It is most reasonable that urban development should use up all appropriate lands in the core area before moving into rural agricultural areas of the remainder of Chittenden County. In 1976, South Burlington had a grand list of $683,169.30 with a tax rate of $6.62.

The City of South Burlington is commonly separated into two districts: Williston Road (Route 2 east from Burlington) and Shelburne Road (Route 7 south from Burlington). Each is a heavily developed commercial strip with inherent traffic congestion problems. These two areas, largely undeveloped in 1950, were the first sites of suburban shopping centers in the Greater Burlington Area and have continued to develop since that time. Most of the remainder of South Burlington consists of medium and low density housing areas and rural residential lands, although scattered commercial and industrial development is occurring in these areas. Areas adjacent to the Burlington International Airport, located in South Burlington, are the principal sites for industrial development. The existing pattern of development in South Burlington can be expected to continue in the future.

Project Area

The area which would be directly affected by the Southern Connector project is composed of several distinct neighborhoods or land use groupings. Pine Street from Maple Street to Flynn Avenue parallels the shore of Lake Champlain, approximately one-half mile to the west. This section of Pine Street serves a heavily developed industrial and commercial district including both sides of Pine Street and the area to the lake shore. The lake shore area was originally developed as railroad yards and as a barge basin for the shipment of lumber products and later the unloading of coal. The Vermont Railway is still active, but the coal barges have been replaced by oil storage tanks and off-shore unloadings of petroleum products. Pine Street serves an industrial district which includes beverage, cereal, and plastic products manufacturing facilities. Also located in this area is the General Electric Company plant, which manufactures military armament systems. This has long been the largest single employer in the City of Burlington, employing almost 2,000 people. During the last ten years, several new facilities have located in the area served by Pine Street, including manufacturing facilities and several wholesale and distribution firms. Fronting Pine Street are also several retail outlets including automotive repair facilities. Most recently, several older manufacturing facilities have been converted to small shops and residential units, including the Jackson Terrace Apartments. There is vacant land, zoned for industrial development, available on the lake side of Pine Street behind the developed frontage. There is, also, vacant land with frontage on Pine Street suitable for commercial uses. This land can be expected to develop, contingent on suitable soil conditions, as there is little other vacant land in the City.

North of this commercial-industrial area is the Battery Street Historic District, which was recently nominated to the National Register of Historic Places. It extends easterly from the waterfront to St. Paul Street and southerly

from Main Street to the rear property lines of the buildings on the south side of Maple Street. This is a mixed commercial and residential neighborhood. There are several wholesale and retail sales establishments located within the neighborhood with a large number of multi-family residential units. Much of the housing in the district is in need of refurbishing and most of the area is zoned for high density residential use. It is the oldest section of the City of Burlington. For the present, it appears that this neighborhood will remain a mixed land use area, although primarily multi-family residential. Some building units within the historic district have recently been refurbished with the help of federal funds. Fifty percent of the improvement costs are borne by the property owner. The other fifty percent comes from Economic Development Administration Title 10 Grants, and National Park Service Historic Preservation Grants in Aide. It is expected a continuing program will be set up so that each year a limited number of buildings within the district will be improved.

On the west side of the Historic District is the Lake Champlain waterfront. It is a commercial district and highly tourist oriented during the summer season. The Lake Champlain Transportation Company ferry and the City of Burlington boat basin are located here, as well as various commercial establishments. Much of Burlington's total lake shore area is dominated by tank farms, rail yards, and industrial uses; therefore, the preservation and development of this small district's visual impact and tourist oriented commercial establishments will be important. A study of the Burlington Waterfront made by the Waterfront Board recognizes the"South End Connector"as part of their overall plan, assuring adequate north-south access to and through the waterfront.

South of the Pine Street industrial area is a residential neighborhood, from Flynn Avenue to Queen City Park Road. The area is bounded by Shelburne Road on the east and Batchelder and Briggs Streets on the west, and is primarily composed

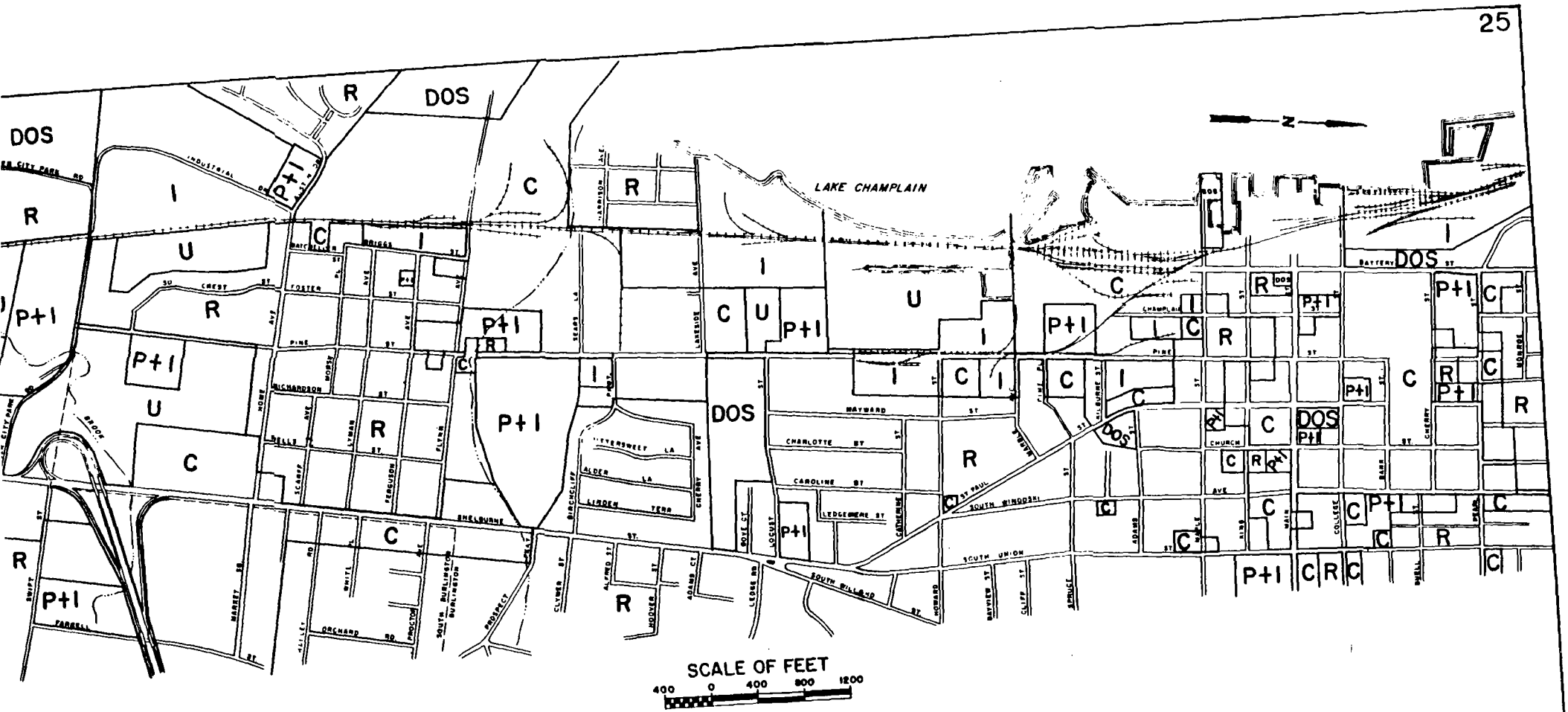
of older well-kept homes. This residential area is now essentially split by Pine Street which functions as an arterial street through the area. South Crest Drive is a newer development with new housing still under construction.

To the west of the Vermont Railway tracks is an industrial, commercial zone. Industrial Drive, a development road, is located in the southern area of the zone and is the site of recent industrial development which is expected to continue. In July 1974, the headquarters for the Chittenden County Transportation Authority were dedicated here. The newly constructed building contains offices, as well as a large storage garage-maintenance shop. Also located in the zone area is Vermont Structural Steel, various wholesale-retail distributors, and large tank farms adjacent to the lake shore.

Westerly from the industrial development area to the lake shore is a waterfront residential area served by Home Avenue - Austin Drive, and a recreation-conservation area served by Flynn Avenue. Located in this area is an apartment complex built within the last ten years. Single family housing is now developing on the lake shore. Burlington's Cliffside Park is located adjacent to the residential area.

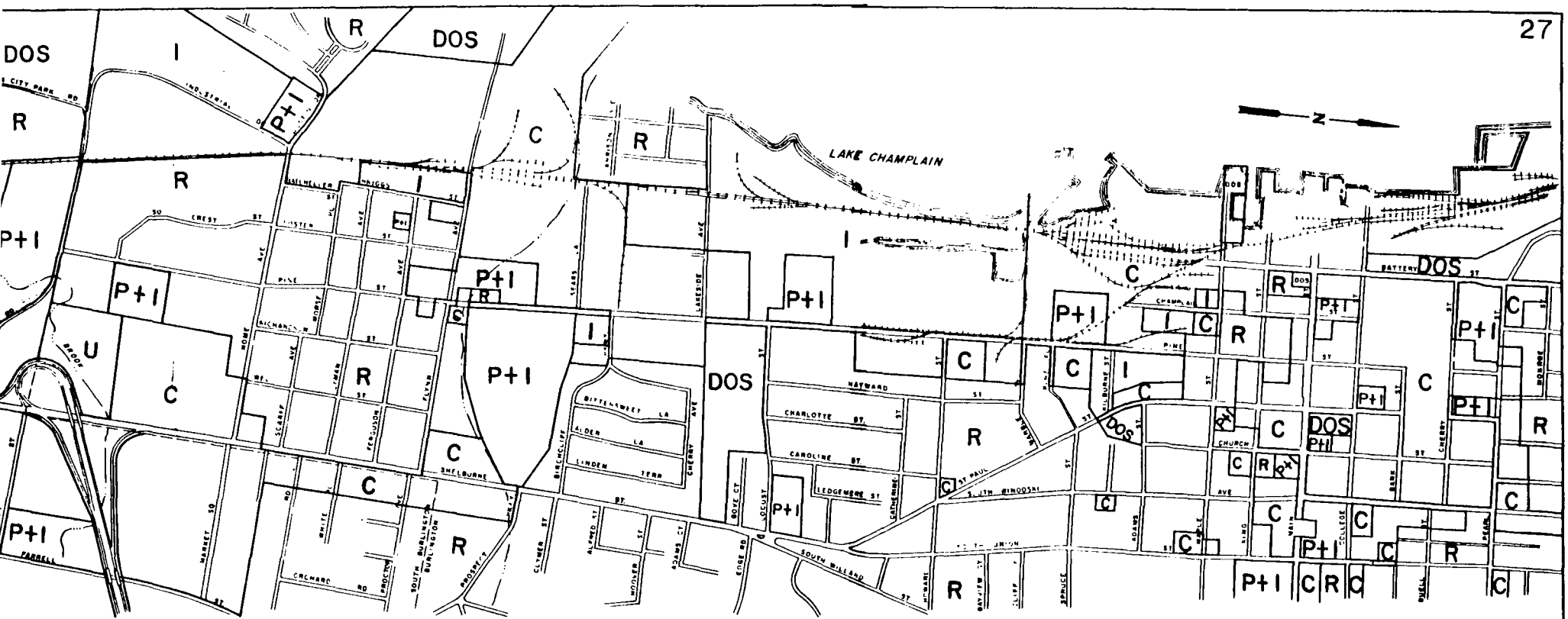
Queen City Park Road, at the southern termini of Pine Street, provides access to the Queen City Park residential area, which is made up of single family units. Red Rocks Recreation Area in the South Burlington, consisting mainly of hiking trails and a beach for swimming, is also reached by Queen City Park Road.

West of the railroad tracks and south of Lakeside Avenue is the so-called "Lakeside Community", a residential community composed primarily of residents of French extraction.



EXISTING LAND USE

BURLINGTON SOUTHERN CONNECTOR
PROJECT M5000(1)



SCALE OF FEET

400 0 400 800 1200

KEY

R–RESIDENTIAL
C–COMMERCIAL
P+I–PUPLIC and INSTITUTIONAL
DOS–DEVELOPED OPEN SPACE
U–UNDEVELOPED

FUTURE LAND USE

BURLINGTON SOUTHERN CONNECTOR
PROJECT M5000(11)

Land Use Planning

The scope and status of the Greater Burlington Area's planning process is well established. As with other Vermont communities, the area is in compliance with the spirit and guidelines of Chapter 117 of Title 24, Vermont municipal and Regional Planning and Development Act; there are State, Regional, and Local planning activities at the present time. All have published plans, zoning ordinances, and subdivision regulations, as a part of the ongoing planning process. Concurrent with many of these plans are zoning and other land use maps.

In addition to a thorough review of the Regional and local land use maps and associated documents, a field survey of existing land uses has been conducted. Present and Future Land Use Maps were prepared; see pages 25 and 27. The present land in the area consists of a variety of relatively dense residential, commercial, industrial, and public or institutional uses. These are somewhat localized by type; with residential areas, commercial areas and so on. The area can be said to be typically urban, or a central business district fringe, in land use characteristics. For the most part, the future land use is an expansion and intensification of the existing land use patterns. Residential areas will continue, and there will be some expansion of all types into the remaining open space. It does appear that the predominant nature of the majority of the land will be commercial, industrial, with some public and institutional. Building up, rather than out, will require improved access in order to maintain these development patterns.

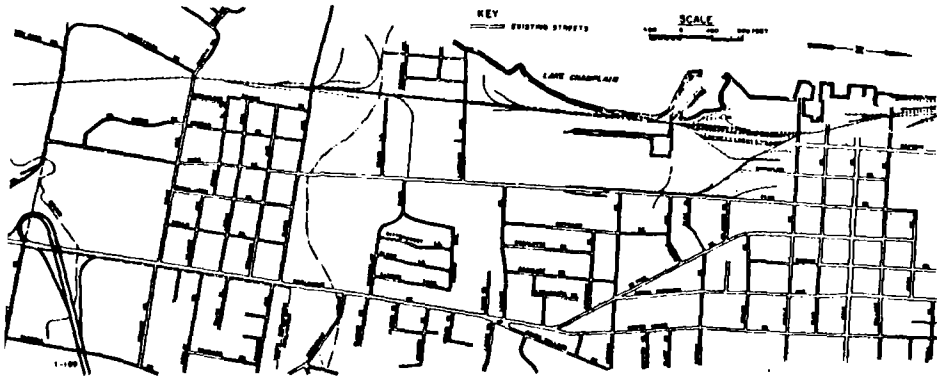
In the area of land use planning at the State level, a review was made of the State Land Use Map. Additionally, a review of proposed land use changes that would qualify for Act 250 review by the Environmental Control Commission was undertaken. Again, no major conflicts were apparent.

Support for the Southern Connector project can be found in the Burlington Comprehensive Master Plan, the South Burlington Comprehensive Plan and zoning map, the Chittenden County Regional Plan, and the 1976 Greater Burlington Federal-aid Urban Area Transportation Study. Generally speaking, the proposed improvement will complement the present land use conditions found in the area and further augment the land use activities expected to occur in the study area. The land use plans for the area were developed with the proposed action as part of them. A direct excerpt from the Burlington Comprehensive Master Plan is as follows:

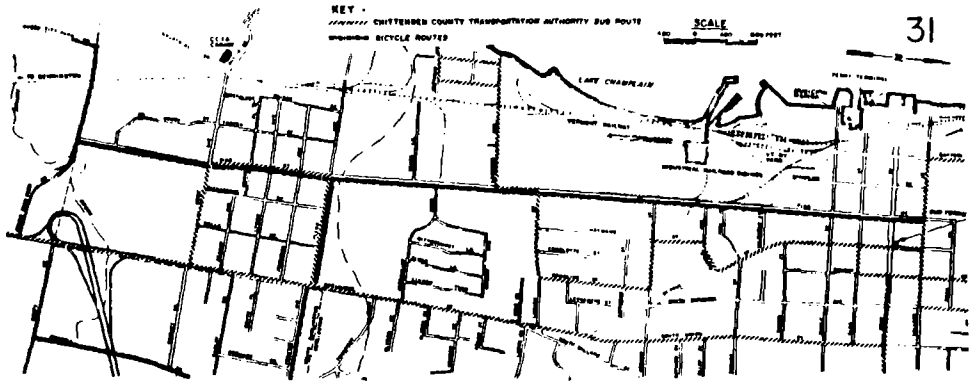
> "2. An arterial should be constructed between the city limits and I 189 at the south and the Regional Core as an alternative to the use of Pine Street and Shelburne Street."

South Burlington's Comprehensive Plan recommends a future north-south highway westerly of US 7 which would in effect be an extension of the proposed project. While the facility is not a part of this proposed action, it is entirely compatible with it. This subject is discussed in more detail on page 57.

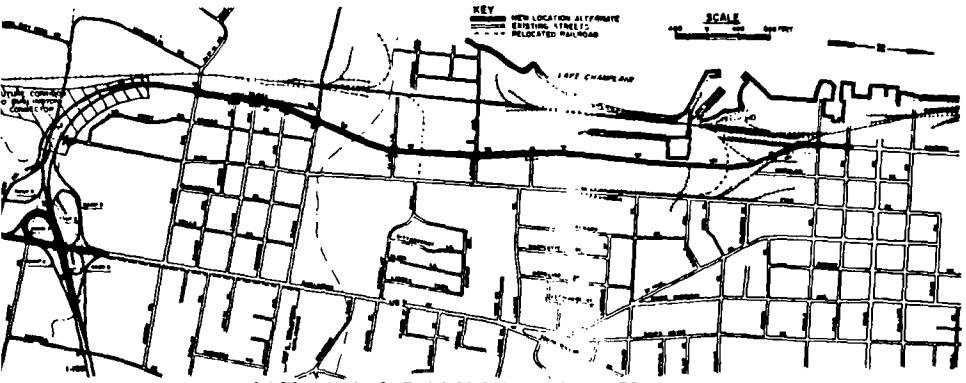
In summary, the proposed highway should be to the mutual benefit of the vehicle user and the area resident as well. It will help to ensure the regional dominance of the downtown Burlington area by providing an artery for the flow of people, goods, and services upon which substantive land use development is based.



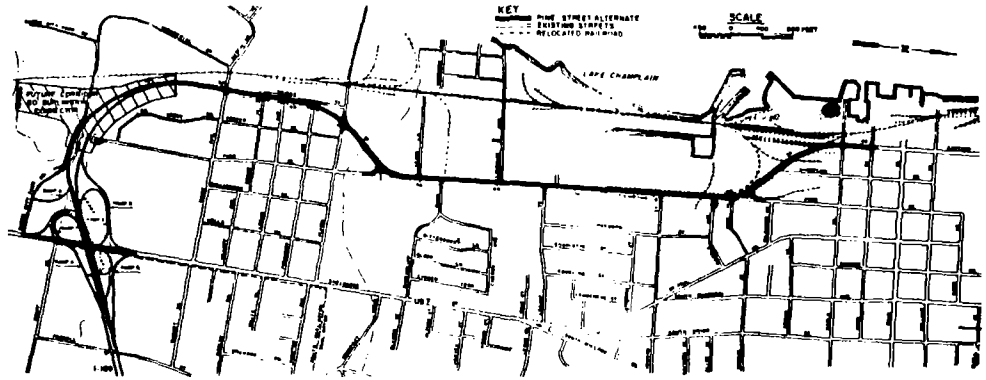
1. NO BUILD



2. ALTERNATE TRAVEL MODES



3. NEW LOCATION ALTERNATE



4. PINE STREET ALTERNATE

ALTERNATIVE	LENGTH (MILES)	TYPICAL CROSS SECTION	LIMITED ACCESS PER 19 VSA 10850	DESIGN SPEED	TRAFFIC	RIGHT-OF-WAY ACQUISITION (ACRES)	IMPROVEMENTS TAKEN	DISPLACEMENTS: FAMILIES	BUSINESSES	OTHER	TOTAL	DECREASE LOCAL TAX BASE %	COSTS (1976): TOTAL PROJECT COST	COST DISTRIBUTION	REMARKS
1. NO BUILD	Varies	Varies	No	Varies	SEE TRAFFIC MAPS	0	0	0	0	0	0	0	None	None	Not in conformance with local or regional planning goals.
2. ALTERNATE TRAVEL MODES (BUS)	N/A	Varies	N/A	Varies		0	0	0	0	0	0	0	None	None	Bus service compliments and supplements the automobile, but cannot significantly reduce the traffic on the existing street systems.
3. NEW LOCATION ALTERNATE (SELECTED ALTERNATE)	2.3	50' Curb-to-Curb	Limited Access from Interchange to existing Battery Street near Maple Street	40		38.5	35	15	6	3	24	1.04	Construction $ 9,780,000; Preliminary Engineering $ 310,000; Right-of-Way $ 2,600,000; Utilities (reimbursable) $ 430,000; Participating Project Cost $10,120,000; Non-Participating Municipal Utility Cost $ 130,000; TOTAL PROJECT COST $10,250,000	Federal 70%: $7,080,000; State 15%: $1,520,000; Local: 15% participating cost $1,520,000; 100% Non-Participating: City Owned Utilities $ 80,000; Public Service Co. $ 50,000; TOTAL LOCAL COST $1,650,000	Compared to the No Build condition: this alternate reduces Pine Street traffic about 50% and reduces Shelburne Street traffic about 40%
4. PINE STREET ALTERNATE	2.4	50' Curb-to-Curb	Limited Access from Interchange at the intersection with existing Pine Street near Sears Lane.	30		25.5	29	15	3	4	22	0.65	Construction $ 5,910,000; Preliminary Engineering $ 340,000; Right-of-Way $ 2,360,000; Utilities (reimbursable) $ 360,000; Participating Project Cost $ 8,970,000; Non-Participating Municipal Utility Cost $ 690,000; TOTAL PROJECT COST $ 9,660,000	Federal 70%: $6,280,000; State 15%: $1,350,000; Local: 15% participating cost $1,350,000; 100% Non-Participating: City Owned Utilities $ 460,000; Public Service Co. $ 190,000; TOTAL LOCAL COST $1,990,000	Compared to the No Build condition: this alternate increases traffic demand on Pine Street by about 20% and reduces Shelburne Street traffic volume by about 5%

TABULATION OF ALTERNATIVES

BURLINGTON SOUTHERN CONNECTOR
PROJECT M5000 (1)

Description of the Atlernates Considered

In the development of the proposed action, the range of reasonable alternates was considered to include the following:

1. No Build.
2. The use of Alternate Travel Modes through the project corridor.
3. New Location Alternate - construct on new location, westerly of Pine Street from the I 189 interchange to the foot of Battery Street, and improve Battery Street as far as King Street. (Selected Alternate).
4. Pine Street Alternate - construct on new location from the I 189 interchange to a point on Pine Street northerly of Flynn Avenue, improve Pine Street from this point to Pine Place, construct on new location to the foot of Battery Street, and improve Battery Street as far as King Street.

These alternates are summarized in the table on page 31 ,and are discussed on the following pages. The cost figures reported are in terms of 1976 unit prices.

Justification for Selection of Alternate 3

Based on the environmental assessment for this highway section contained in the Draft Environmental Impact Statement, and after consideration and analysis of the comments received during the circulation and review of the Draft Environmental Impact Statement, and the Corridor hearing; the decision has been made to select Alternate 3, New Location, for construction. It is the alternate which provides in the most satisfactory manner for safe, expeditious movements of traffic; with the least adverse social, economic, and environmental effect.

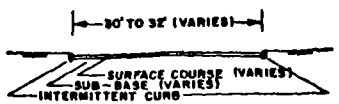
The other alternates were discarded for the following reasons:

A no build alternate presents no solution to the problem. At the present time traffic volumes and number of intersections adversely affect the quality of traffic flow. Capacity problems are common during peak demand periods. A continuing decrease in travel quality will occur with increasing traffic volumes; and accident frequency may also be expected to increase. With an increase in traffic congestion interference between through and turning traffic will occur, and access to the Central Business District will decline. These factors could have an adverse economic effect on the area.

The use of Alternate Modes of travel in the project corridor to meet the total transportation demand is considered unrealistic. Although several transit modes, other than private automobile, now operate in this area; a diversion of a significant amount of the travel demand to these alternates modes is not feasible. A transportation system which includes mass transit; not as an independent alternate, but in combination with highway improvement; is considered to be the best solution to the traffic problems in this area.

Alternate 4, Pine Street, was not selected because although less expensive to build, the adverse impacts on the surrounding area were greater than with construction on new location. Detrimental impacts of this alternate include: abolishment of parking on Pine Street, restricting of access to businesses on Pine Street, conflict of through and turning traffic movements, inconvenience during the construction period, and cost to the City of Burlington for relocation of utilities. Although this alternate would improve travel within the project area, the improvements would be substantially greater with the selected alternate.

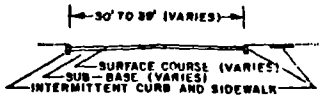
The selection of Alternate 3, New Location, was based on the following



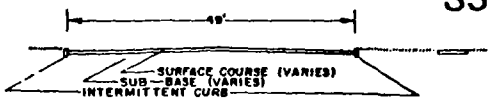
HOME AVENUE
SHELBURNE STREET TO PINE STREET

FLYNN AVENUE
SHELBURNE STREET TO PINE STREET

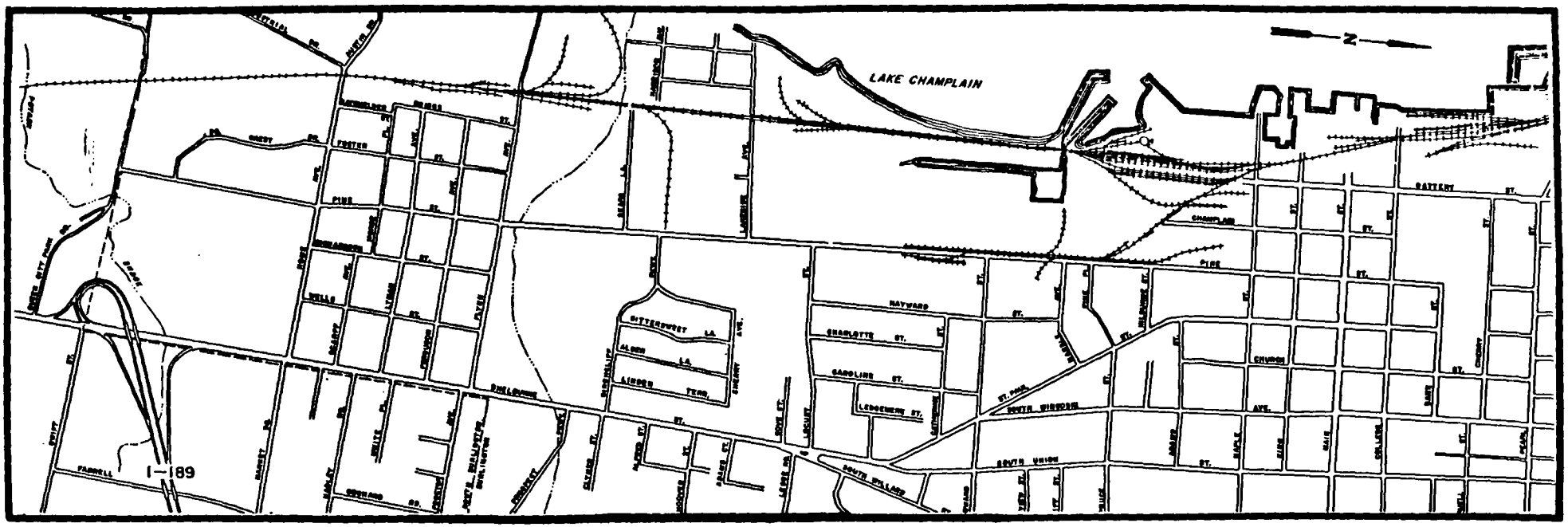
PINE STREET
QUEEN CITY PARK ROAD TO FLYNN AVENUE

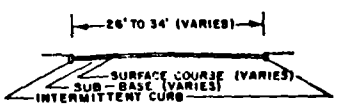


PINE STREET
FLYNN AVENUE TO KING STREET



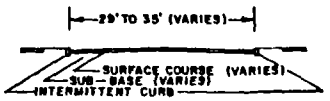
BATTERY STREET
NORTH OF KING STREET





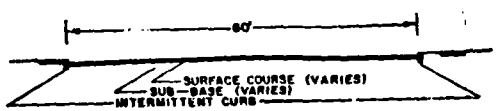
QUEEN CITY PARK ROAD
SHELBURNE STREET TO PINE STREET

I-189

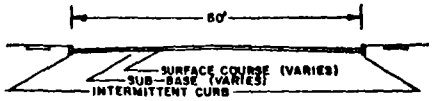


ST. PAUL STREET
SHELBURNE STREET TO KING STREET

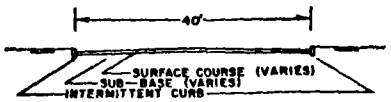
NOTE: PROFILES ARE NOT SHOWN. GRADES ON THE PRINCIPAL STREETS VARY, 5% IS THE MAXIMUM



SHELBURNE ROAD
QUEEN CITY PARK ROAD TO SWIFT STREET



SHELBURNE STREET
SWIFT STREET TO SOUTH WILLARD STREET

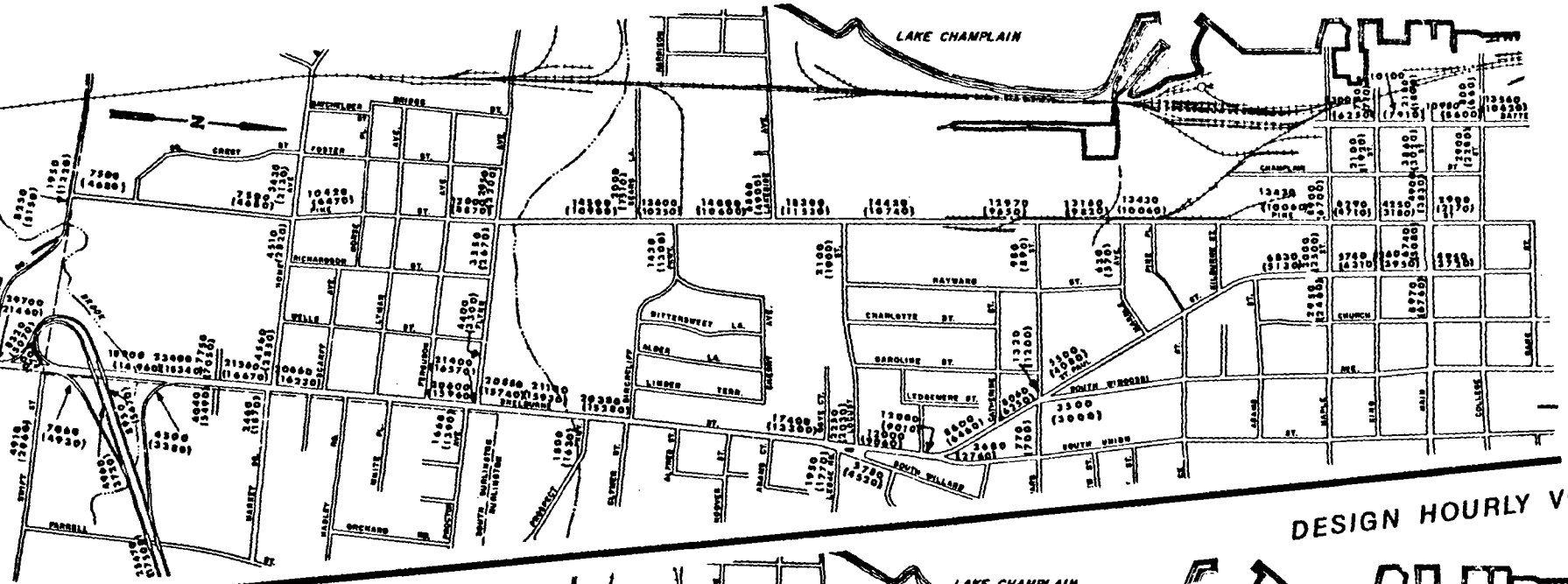


SHELBURNE STREET
SOUTH WILLARD STREET TO ST. PAUL STREET

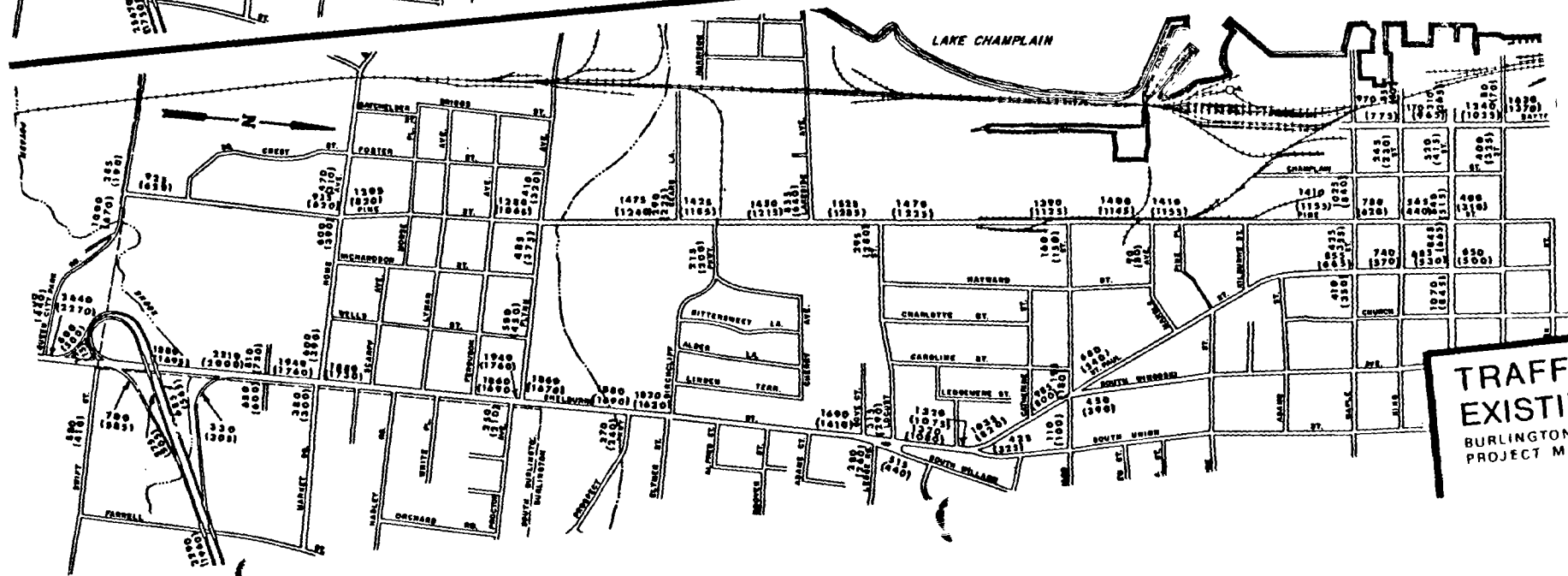
CROSS SECTIONS OF EXISTING STREETS

BURLINGTON SOUTHERN CONNECTOR
PROJECT M5000(1)

AVERAGE DAILY TRAFFIC (ADT)



DESIGN HOURLY VOLUMES (DHV)



TRAFFIC MAPS EXISTING STREETS

BURLINGTON SOUTHERN CONNECTOR
PROJECT M5000 (1)

considerations. This alternate, being on new location, will have control of access, which will result in safer and more efficient movement of traffic. Diversion of traffic from Pine, Shelburne and other existing streets will improve travel quality on these streets. There will be no disruptive effect to the businesses on Pine Street with this alternate. Inconvenience during the construction period will be less; and the cost to the City of Burlington, as fewer utilities will require relocation, will be less with this alternate.

Alternate 1 - No Build

The No Build Alternate is a proposal to leave the existing street network in its present state. Layouts depicting the geometric design of these streets are reproduced on page 35 . This alternative is not in conformance with current local and regional planning goals (see Land Use Section, page 30), which recognize deficiencies and recommend that steps be taken to eliminate present, and expected future, transportation related problems in the southwestern quadrant of Burlington.

The map on page 37 shows the 1976 Average Daily Traffic volumes on the existing circulation system, and estimated 1995 volumes if no major changes are made to the street system.

Alternate 2, Alternate Travel Modes

An inventory and analysis of the travel modes presently existing in the project corridor was made to determine if the potential exists for diversion of travel demand to the extent that highway construction might be postponed, or a smaller scale improvement considered.

Rail, water and highway transit modes operate in the South Connector corridor (see page 41 for a map of routes and terminal facilities).

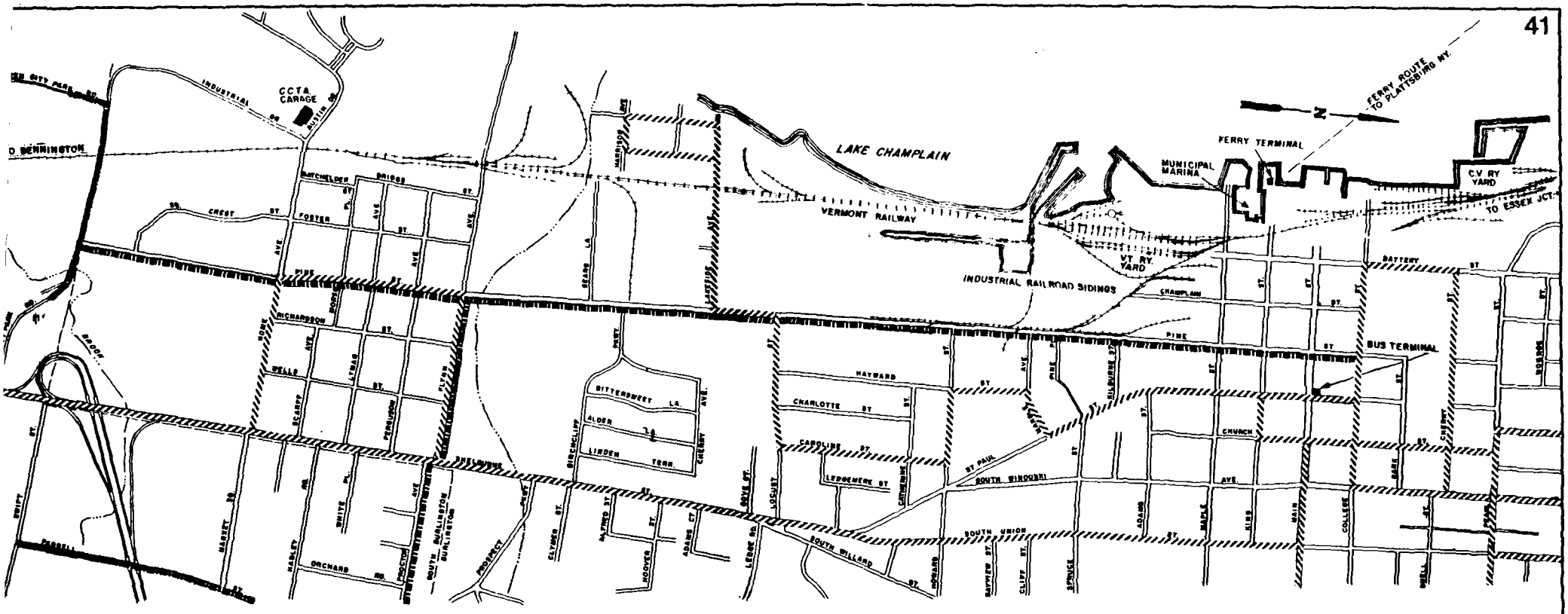
The Vermont Railway yard is located on the lakeshore near the foot of Battery Street, and the railroad's main line extends southerly, generally parallel to Pine Street, connecting with the Delaware and Hudson and Green Mountain Railroad in Rutland, and the Boston and Maine in North Bennington.

Passenger service has not been offered since 1953, when it was discontinued by Vermont Railway's predecessor, the Rutland Railroad.

While the general trend in freight traffic on the Vermont Railway has been upward, and the freight car loadings and piggy back trailer represent a diversion of freight from the highway system, the conclusion must be that there is small likelihood of rail passenger service contributing to a decrease in the number of automobiles moving between downtown Burlington and points south.

The Lake Champlain Transportation Company's ferry terminal is located at the foot of King Street. The ferry affords service between Burlington and Port Kent, New York, and could not provide an alternative service in the project corridor. It might be noted, however, that a highway improvement such as the proposed action would improve accessibility to the ferry terminal.

In Vermont's severe climate, bicycling must be considered a seasonal travel mode. A statewide bicycle survey indicates that 60 percent of cyclists interviewed used their machines solely for recreational purposes. Only 11 percent commuted. In view of the varied trip purposes of motorists travelling to the center of Burlington and the distances involved, it does not appear reasonable that bicycling could satisfy any significant amount of the travel demand.



KEY

//////// CHITTENDEN COUNTY TRANSPORTATION AUTHORITY BUS ROUTE

BICYCLE ROUTES

2. ALTERNATE TRAVEL MODES

BURLINGTON SOUTHERN CONNECTOR
PROJECT M5000 (1)

The present public transit service in the Greater Burlington Area is provided by buses operated by the Chittenden County Transportation Authority (CCTA) which began operation in July 1973. The municipalities served include Burlington, Winooski, Essex Junction, Essex Town, South Burlington, and a small portion of Colchester. The bus routes in the South End of Burlington are indicated on the map on page 41.

Ridership has increased steadily since the CCTA began operation in July 1973. Despite this increase, revenue growth has not matched the rise in costs of operation; total operating expenses climbed 30% during fiscal year 1975. In order to balance the deficit between operating revenues and expenses each community served by the CCTA invests in its operation, based on route miles of bus service. In addition to the foregoing inventory of existing travel modes various innovative concepts, including car pooling, paratransit, and fringe parking,were considered.

Organizing commuters into car pools as a substitute for the private automobile could, theoretically, remove large numbers of automobiles from the highway and thus increase the carrying capacity of existing facilities. Of the many approaches to conserve fuel that are being discussed today, car pooling may have the greatest potential.

Even though "pooling" has substantial theoretical benefits and is an under-utilized resource at this time, there is little evidence to indicate that these benefits can be achieved through voluntary efforts. Cost savings is perhaps the major benefit available to the users. The primary cost associated with it is the loss of privacy and convenience normally associated with the private automobile. Thus, there is substantial resistance to car pooling among auto drivers. Also, it is unlikely that car pools would be formed in sufficent numbers to achieve the widespread impact desired; greatly reduced congestion.

Paratransit is a concept which includes a number of less well-known modes which fill a gap between the services provided by conventional transit and private automobiles. Included would be limousine and jitney services as well as taxi. All services are for hire. The chief advantage of paratransit lies in the route deviation nature which potentially allows it to serve any pattern of origins and destinations.

In general, studies have found that the greater flexibility offered by paratransit services was offset by higher user costs. Little evidence is available to indicate that demand for a new highway facility would be relieved through expansion of such service (Source: A 1973 Report titled "Low Cost Urban Transportation Alternatives"; initiated by the Office of Urban Transportation Systems, U. S. Department of Transportation).

A positive factor for mass transit is that it allows people to go"downtown" while decreasing the number of autos that the city must contend with. Adding to the available long-term parking facilities by constructing new ones at locations in the fringe area may increase bus transit usage and thus help to alleviate rising traffic volume increases.

The development of a "Park and ride" lot at the intersection near I 189 and Shelburne Street would ease traffic congestion and aid in reducing energy consumption by facilitating shared transportation. Under ideal conditions, one 40-passenger bus could make three round trips in an hour. This would mean twenty minute headways, a reduction of 75 cars in directional traffic flow, and the necessity of providing eight hours of parking for 75 cars. Trade offs would include the necessity of communities investing in parking facilities located outside the Central Business District that would be used in part for automobiles normally parked on private lots, such as at General Electric. If the parking lot was large enough to handle another 150 spaces for short term

users, it would generate enough patronage to keep the one bus in operation all day. A 225 space parking area would require a minimum of an acre and three-quarters of land. These 225 cars are equivalent to approximately 2% of the average daily traffic of the corridor.

Any reduction in the numbers of vehicles using the streets in the corridor would improve the environment by reducing air and noise pollution along the streets. At the same time, constructing new parking facilities to induce travelers to park and ride, increases the density of development in the area of the new facility. This would attract other retail and service establishments that, in turn, would increase congestion.

The conclusions regarding alternate travel modes, based on this evaluation and on a presentation by the General Manager of the Chittenden County Transit Authority, at the September 13, 1976 meeting of the Citizen's Committee are as follows:

1. There is no one travel mode which, by itself, will serve the total travel modes of all segments of Burlington's population.
2. A bus system is the basic public transportation system of most urban areas and the Burlington area is fortunate enough to have such a system. Chittenden County Transportation Authority (CCTA) service presently covers the proposed project corridor and will most likely continue to be the focus of public transportation. The automobile user is not in competition with the Transportation Authority, for each mode provides for different travel needs under different conditions. The success of both modes depends on an efficient traffic circulation system. Roadways and streets must provide local as well as arterial continuity. Failure to provide for each mode will eventually result in detriment to the economic

life of the community and to the free flow of people and goods.

3. A transit service, such as that provided by CCTA, is needed and important; a balanced transportation plan is a marriage of a good highway system with bus service. Actually, a mass transit alternate and an improved, or new highway, alternate are not separate alternatives; one complements the other. Either of the two "build" alternatives would help mass transit by improving travel quality and travel times on streets over which buses operate.

4. Fringe parking and shuttle bus service between the Central Business District would require a heavy investment in both buses, and land for parking areas, and still not significantly affect traffic volumes.

5. A goal of a balanced and integrated transportation system is the convenient and economical movement of people and goods. Therefore, the development of transportation systems which will complement and supplement the present transportation modes should be urged. The Burlington area needs to consider transportation alternatives and provide for combinations of travel modes which seek to serve all segments of the population. This implies that any attempt to apply an exclusive solution without regard for total transportation needs, will fall short of the desired improvements to Burlington's traffic problem.

   Any increases in bus ridership will have a positive effect on reducing existing or future highway congestion; however, mass transit in itself cannot be viewed as an independent alternative. It is only in combination with highway or street improvement of some type that a true overall solution to Burlington's south end traffic problems can be reached.

Alternate 3, New Location - Selected Alternate

Under the New Location concept, as depicted on Page 49 , the Southern Connector would commence at the I 189/Shelburne Street Interchange and extend westerly and northerly 2.3 miles, generally on relocation between Pine Street and the Vermont Railway, to the intersection of Battery and King Streets.

The typical cross section provides for four 12-foot travel lanes, which is in effect, an extension of the I 189 traveled way. The 42-foot median on I 189 will be transitioned to a 12 foot slope edged divider west of Shelburne Street. This will be terminated at Home Avenue, the first at-grade intersection, and the highway will continue as an undivided facility to the northerly terminus. Turning lanes, where required, will be delineated by areas of contrasting pavement. The 10-foot outer shoulders on I 189 will be carried only to Home Avenue. Beyond this point curbing with an offset of two feet from the outer travel lanes, will be installed. The resultant roadway width will be 52 feet curb-to-curb.

The northern terminus of this project, at the intersection of Battery and King Street., is at a point where Battery Street is four lanes in width. This matches the typical section of the project. With construction of this project the level of service at this intersection, for the year 1995, will be C. This indicates a stable traffic flow with some restrictions as to speed and maneuverability.

Overall horizontal and vertical alignment were developed in terms of 40 MPH design speed. The maximum curvature attained is 7^{0} - 30' and the steepest grade on the project is a continuation of the 3.4% grade on I 189 at the southerly terminus. The grade line generally follows existing ground with a maximum cut of approximately 15 feet near Southcrest Drive, and a maximum fill of approximately 22 feet at the crossing of Potash Brook.

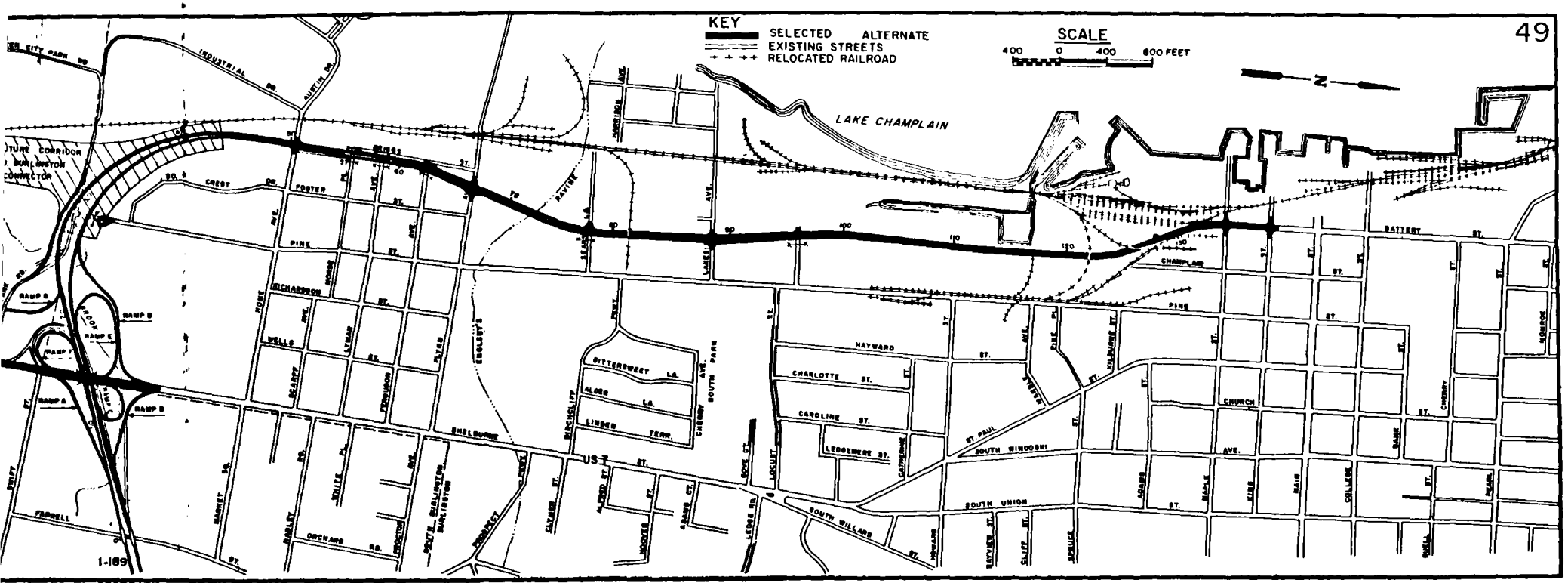
Limited access with partial control will be exercised over all but

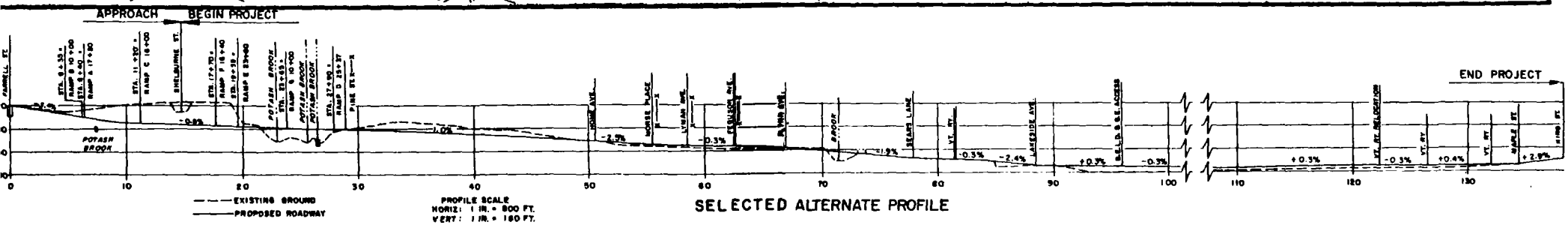
the last few hundred feet of the project where the alignment goes through the railroad yard, and utilizes the present Battery Street right-of-way. This will bar access from abutting private property, and restrict it to designated public rights-of-way. At-grade intersections will be constructed at Home Avenue, Flynn Avenue, Sears Lane (west side only), and Lakeside Avenue. An access will be provided to the General Electric Company truck loading area. Should the need arise, additional access points could be authorized in the future. The highway right-of-way will be fenced.

A pedestrian overpass will be constructed at Home Avenue. If investigation proves it is feasible to provide a public access for pedestrian movement from the"Lakeside Community" to Sears Lane, a pedestrian overpass will also be constructed at Sears Lane. Overpasses at these locations will provide safe crossing points for pedestrians, especially school children, from the Lakeside and Austin Drive residential areas. At the present time there are 62 children from the Sears Lane-Lakeside area, and 33 from the Austin Drive area, who attend school at the Champlain school on Pine Street. Safety of these children while crossing the highway justifies building these overpasses.

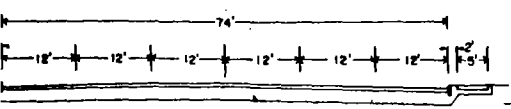
As indicated on Page 49, the present trumpet interchange at I 189 and Shelburne Street will be modified to provide full directional access to and from the extended facility. With this revision, total ramp length would be 1.26 miles. Ramp alignment and grading will remain within the present I 189 right-of-way east of Shelburne Street, and minimal right-of-way acquisition will be required to the west.

The existing ramp structures over Shelburne Street will be removed, and the grade of the new facility designed to permit an underpass at this point. In connection with the new grade separation structure a 1,100 foot section of Shelburne Street will be widened to 72 feet curb-to-curb, to accommodate speed change lanes and turning lanes at ramp termini.

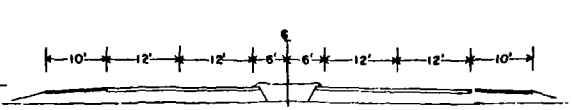




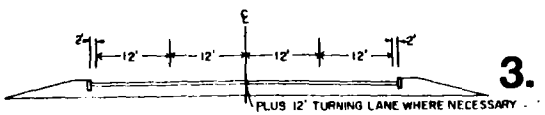
SELECTED ALTERNATE PROFILE



SHELBURNE STREET
AT INTERCHANGE



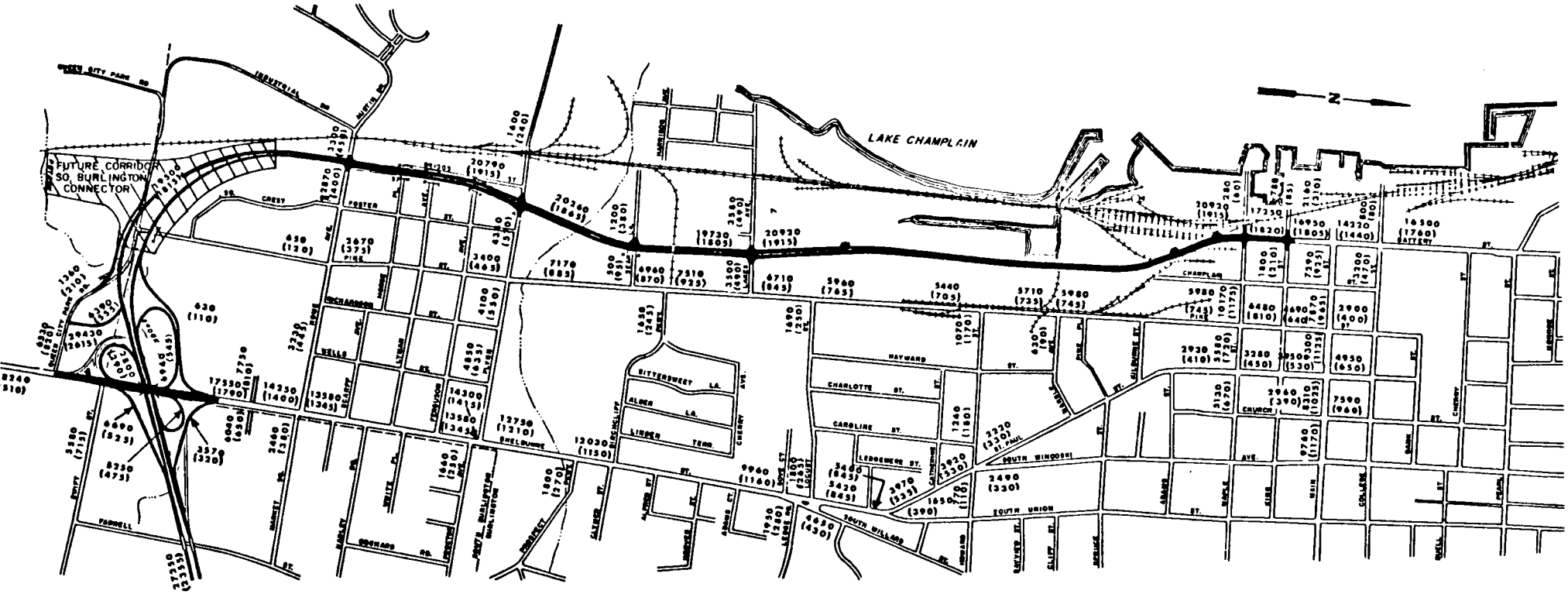
SELECTED ALTERNATE
PINE STREET TO HOME AVENUE



SELECTED ALTERNATE
HOME AVENUE TO KING STREET

3. SELECTED ALTERNATE

BURLINGTON SOUTHERN CONNECTOR
PROJECT M 5000 (1)



KEY

0000 1995 AVERAGE DAILY TRAFFIC (ADT)

(0000) 1995 DESIGN HOURLY VOLUMES (DHV)

SELECTED ALTERNATE

EXISTING STREETS

TRAFFIC MAP
3. SELECTED ALTERNATE

BURLINGTON SOUTHERN CONNECTOR
PROJECT M5000(1)

Design of this project will be compatible with the South Burlington Connector project now in the planning stage.

A 600-foot section of Queen City Park Road, in the vicinity of Potash Brook, will be relocated outside the construction limits of the new facility.

Near its northerly terminus, the alignment will pass through the easterly edge of the Vermont Railroad yard. It will take a portion of the railroad's parking area, and require trackage adjustments. These track relocations have been discussed with the Vermont Railway management. They are in general agreement that any facilities that are taken will be replaced in locations near the present ones. The track which now connects the yard with the industrian sidings on Pine Street would cross the Southern Connector alignment at an unacceptable angle, and will be discontinued. It will be replaced by a track on curved alignment from the south end of the yard to Pine Street as shown on Page 49. This new track will cross the highway at-grade. The track which runs from the southern end of the railroad yard in an easterly direction to a connection with the track from River Street will be retained and a grade crossing constructed. This will permit maintaining of a "wye" configuration for turning railroad cars. A third grade crossing will be constructed at the intersection of the highway and the railroad siding south of Lakeside Avenue. It is recommended that train movements over these crossings be protected by flash signals actuated by the train crew.

Use of these sidings will be limited to an average of eight movements per week across the proposed project at the siding south of Lakeside Avenue; and three to five movements daily across the relocated track. The northerly most crossing would be used on the infrequent occasion when it is necessary to turn equipment around. There will be no time limitations on train usage of at-grade crossings, as operations are dependent on the need of the shipper for picking up or delivering cars.

In a recent study by the Vermont Agency of Transportation it was determined that incident of accidents at grade crossings was one accident per year for every 46 crossings. This compares very favorably with a national average of one accident per year for every 18 crossings. With the protection of flash signals these crossings are not considered to constitute a hazard.

The northerly 400 feet of the Southern Connector, which will be located on Battery Street, is within the Battery Street Historic District, which is a National Register eligible site. The Council on Environmental Quality has not objected with an FHWA determination that widening this section of Battery Street to a 52 feet width does not adversely effect the District. (See Appendix Q).

Probable impacts of the New Location Alternative are as follows:

A) The investment of public funds in the implementaiton of this alternate is estimated as follows:

Preliminary Engineering	$ 476,000		
Right-of-Way	4,906,000		
Utilities Adjustment	645,000		
Construction	10,053,000		
Participating Cost /1	$16,080,000		
Non-Reimbursable Utilities	191,000)	114,000	Municipal Utilities
Total	$16,271,000)	77,000	Private Utilities

/1 Costs shared by Federal, State and Local Governments

These figures have been updated from those used in the Draft Environmenta Impact Statement and shown on the tabulation sheet, Page 31 ; to reflect costs in the year 1981, the construction year.

The right-of-way acquisition involves an estimated 41.1 acres, and 37 improved properties. The project displaces 16 families and 7 businesses.

Refer to Assessment of Relocation Impacts, page 73 for additional right-of-way information.

B) Construction of this project will involve minimum inconvenience to traffic. It will include the following within its construction area: the reconstruction of the I 189 interchange and a 600-foot section of Queen City Park Road; the elimination of Batchelder Street; the dead-ending of Morse Place, Lyman Avenue, Pine Street, Sears Lane, and Ferguson Avenue; and reconstruction of a 600-foot section of Battery Street. Aside from these, the project involves work in present traveled-ways at the crossings of four streets.

C) The following streets will be terminated at the crossing of the Southern Connector; Pine Street, Sears Avenue (eastern end), Morse Place, Lyman Avenue and Ferguson Avenue. In addition, Batchelder Street will be within the construction limits of the new highway; however, access to properties on the east side of this street will be retained. While there might be objections to making these streets less accessible, the advantages of this "dead-ending" include elimination of traffic not destined for, or originating on, a particular street; thus increasing the street's value for residential purposes. The shift of traffic will benefit the residential neighborhood from Flynn Avenue to Queen City Park Road.

D) This project will provide an access to the Southern Connector at Sears Lane, which will improve the accessibility of the General Electric Company parking lot south of Lakeside Avenue. The Southern Connector-Lakeside Avenue intersection will be located adjacent to the main gate of the plant.

E) The alignment of the project traverses near the old barge basin. According to the Waterfront Master Plan the alignment, as located on the easterly side of the basin, is not in conflict with future waterfront plans.

However, the opportunity for co-development exists, and is encouraged, between the Agency of Transportation and the City's Waterfront Board.

F) The control of access to be exercised over the Southern Connector should result in a significantly lower accident rate because of the absence of entrances and exists between access points. Pedestrians and bicyclists on Pine Street will also benefit from this diversion of traffic.

G) While the project will bypass the majority of existing businesses on Pine Street, good access will be provided by the planned intersections. These businesses should not suffer from loss of exposure because of the alternate's close proximity to them.

H) The Southern Connector will have some adverse effect on the Vermont Railway due to acquisition of a portion of their parking area, interference with switching operations, and possible inconvenience to property holders who use the railroad for shipping.

Highway traffic at grade crossings on the new highway will interfere with railroad switching operations at three locations, as traffic control devices will be manually operated. These include the new section of railroad spur track, the easterly yard track, and the siding adjacent to Sears Lane. While retention of the easterly yard track is not essential to providing service to the Pine Street area, it is necessary for the completion of a "Wye", which would expedite the Vermont Railway operations. In order to mitigate the effect on the railway a new track connecting the railway yard with Pine Street will be constructed as part of the project. In addition, the limited access order will end south of the rail yard in order to provide direct access from the rail yard to the South Connector. A new loading ramp to load "piggyback" cars will be provided to replace one acquired as part of the project. Also, there will be no time limitations on train usage of crossings.

I) With implementation of this project, there will be a substantial reduction of traffic volumes on Shelburne Street and other existing streets, due to diversion to the new facility. This diversion will alleviate capacity deficiencies at key points on the existing system, and improve travel times along the existing streets. Bus travel operation will become more efficient, and possibly more attractive to potential users.

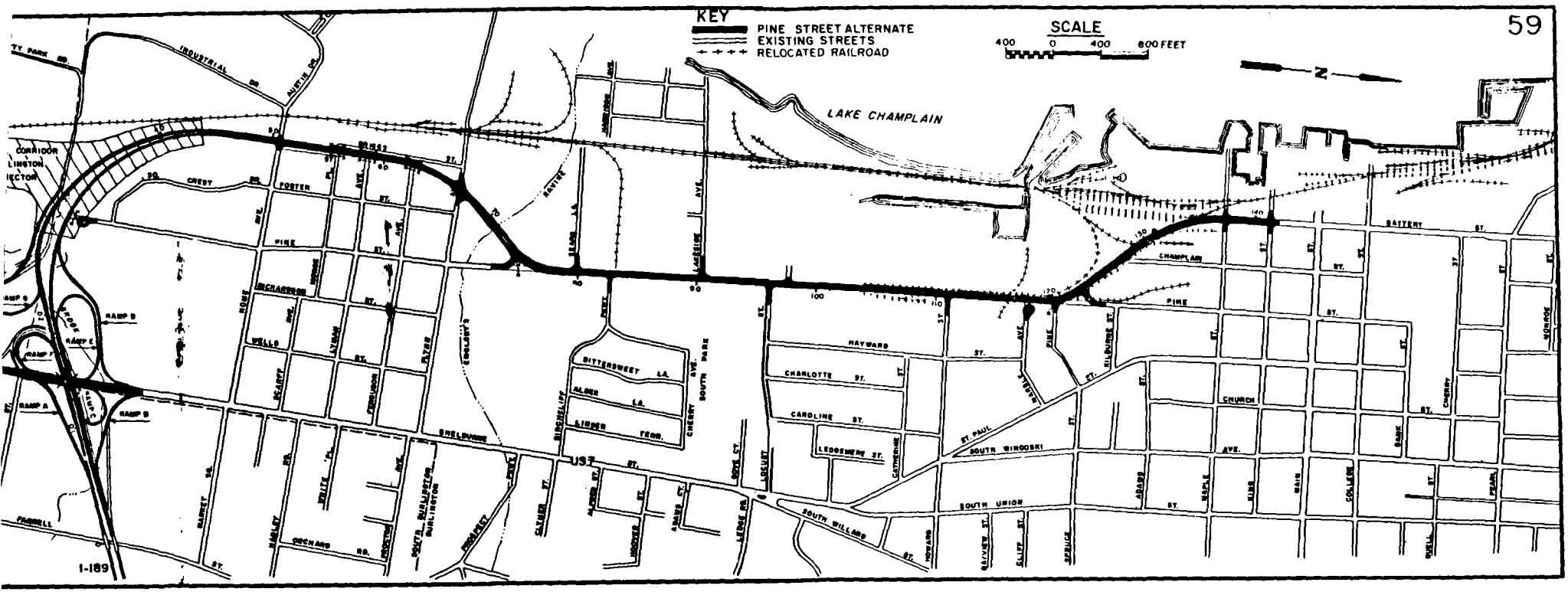
Estimated 1995 ADT on the Southern Connector is in the 20,000 range. As indicated by the tabulation on Page 63 ; which is a summation of the data on pages 37, 51, & 61, the usage of the Southern Connector will create a diversion of traffic from existing streets. As these traffic tabulations indicate, no significant changes are estimated in future traffic volumes on Shelburne Road south of the I 189 interchange, due to construction of this project.

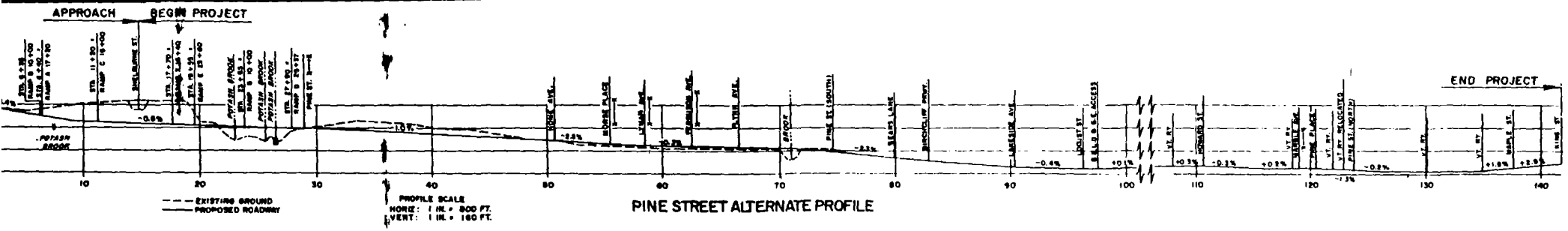
J) The South Burlington Comprehensive Plan recommends a new highway facility westerly of US 7 from Holmes Avenue; which runs perpendicular to US 7 and about one mile south of the South Burlington-Burlington City line; to the intersection of Queen City Park Road and Pine Street. This route would parallel the Vermont Railway tracks. In furtherance of this recommendation, the Greater Burlington Federal Aid Urban System includes this proposed highway facility.

At the present time a South Burlington Citizens Committee is meeting with Agency of Transportation Planning Division personnel to determine alternate locations for project South Burlington M 5200 ( ), which follows these same general alignment. Several methods for connecting this project with the Southern Connector are being studied by this committee. Final design of the Southern Connector itself will be accomplished to assure compatibility with this future project.

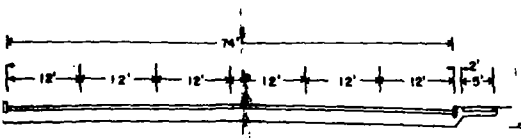
Alternate 4, Pine Street

With this concept, as depicted on Page 59 , the Southern Connector would commence at the I 189-Shelburne Street Interchange and extend westerly and northerly 2.4 miles to the intersection of Battery and King Streets. From I 189 to Flynn Avenue, it would utilize a location between Pine Street and the Vermont Railway, identical with that of Alternate 3. North of Flynn Avenue, the location would continue northeasterly to Pine Street and utilize the present Pine Street right-of-way as far as Pine Place. It would diverge here and run on new location northwesterly to the foot of Battery Street, continuing on Battery Street to the terminus at the King Street intersection.

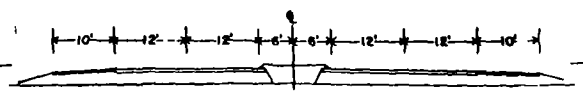




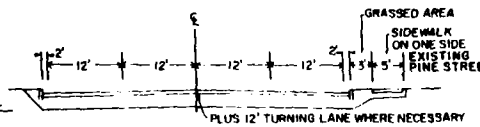
PINE STREET ALTERNATE PROFILE



SHELBURNE STREET
AT INTERCHANGE



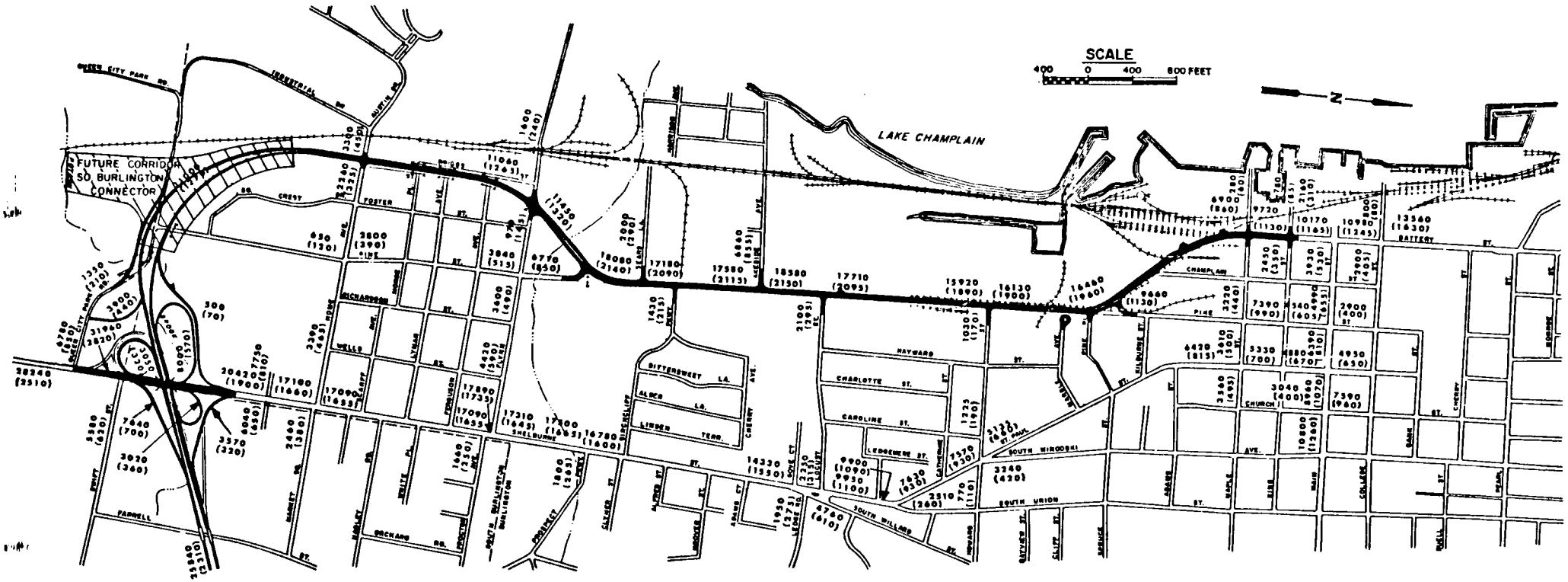
PINE STREET ALTERNATE
PINE STREET TO HOME AVENUE



PINE STREET ALTERNATE
HOME AVENUE TO KING STREET
TYPICAL SECTION

4. PINE STREET ALTERNATE

BURLINGTON SOUTHERN CONNECTOR
PROJECT M 5000(1)



KEY

0000 1995 AVERAGE DAILY TRAFFIC (ADT)
(0000) 1995 DESIGN HOURLY VOLUMES (DHV)
PINE STREET ALTERNATE
EXISTING STREETS

TRAFFIC MAP
4. PINE STREET ALTERNATE

BURLINGTON SOUTHERN CONNECTOR
PROJECT M5000 (1)

TRAFFIC SERVICE

ESTIMATED 1995 ADT

Traffic on Southern Connector

Between	With Alt. 3, New Location	With Alt. 4, Pine Street	Difference
I 189 and Home Avenue	19,500	11,000	8,500
Home Avenue and Flynn Avenue	20,790	11,060	9,730
Flynn Avenue and Pine Street	20,260	11,450	8,810
Pine Street and Sears Lane		18,080	2,180
Sears Lane and Birchcliff Parkway	19,730	17,180	2,550
Birchcliff Parkway and Lakeside Avenue		17,580	2,150
Lakeside Avenue and Locust Street		18,580	2,340
Locust Street and Howard Street		17,710	3,210
Howard Street and Pine Place	20,920	16,630	4,290
Pine Place and Pine Street		16,460	4,460
Pine Street and Maple Street		6,900	14,020
Maple Street and King Street	17,250	9,720	7,530

Traffic on Existing Streets

	With No Build	With Alt. 3 New Location	With Alt. 4 Pine Street	Difference with Alt. 3	Difference with Alt. 4
Shelburne Street					
South from Queen City Park Road	28,240	28,240	28,240	0	0
I 189 - Home Avenue	23,400	17,550	20,420	-5850	-2980
Home Avenue - Flynn Avenue	20,660	13,580	17,090	-7080	-3570
Flynne Avenue - Prospect Parkway	21,100	12,750	17,500	-8350	-3600
Prospect Parkway - Birchcliff Parkway	20,380	12,030	18,780	-8350	-1600
Brichcliff Parkway - Locust Street	17,400	9,960	14,330	-7740	-3070
St. Paul Street					
South Union Street - Howard Street	8,600	3,970	7,630	-4630	- 970
Howard Street - Kilburn Street	5,500	2,220	5,135	-3280	- 365
Kilburn Street - Maple Street	6,830	2,930	6,520	-3900	- 410
Maple Street - King Street	5,790	3,280	5,330	-2460	- 410
Pine Street					
Southcrest Drive - Home Avenue	7,500	650	650	-6850	-6850
Home Avenue - Flynn Avenue	12,000	3,400	3,840	-8600	-8160
Flynn Avenue - Sears Lane	14,500	7,170	18,080	-7330	+3580
Sears Lane - Lakeside Avenue	14,000	7,510	17,580	-6990	+3580
Lakeside Avenue - Howard Street	15,300	6,710	18,580	-8590	+3280
Howard Street - Marble Avenue	13,160	5,710	16,130	-7450	+2970
Marble Avenue - Pine Place	13,430	5,980	16,460	-7450	+3030
Pine Place - Maple Street	13,430	5,980	9,660	-7450	-3770
Maple Street - King Street	6,290	6,480	7,390	+ 190	+1100

THE PROBABLE IMPACT OF THE PROPOSED ACTION ON THE ENVIRONMENT

The most immediate direct impact of the proposed action will be the beneficial effects of improving route continuity and providing for safe, efficient movements of traffic between the project termini. The existing routes in this corridor are characterized by circuitousness, congestion and frequency of traffic accidents.

Access between the central area of Burlington and the major southern entrances to the city will be facilitated, as well as to properties in the project area. Construction of a new facility will divert traffic from the Shelburne Street - St. Paul Street route, with a consequent decrease in noise and congestion along that route.

The extent of social, economic, and environmental impacts attendant upon this improvement is discussed in following sections.

PRIMARY AND SECONDARY IMPACTS

Primary Effects - The New Location Alternative will require the expenditure in the range of $15,000,000 of public funds for the costs of right-of-way and construction. It will require the right-of-way acquisition of 16 residences, 7 businesses and 41.1 acres of land.

This project should greatly improve arterial traffic service in the Pine Street corridor, as it will be a controlled access facility with few traffic conflicts. Service to local traffic on existing Pine Street should also be improved providing better access to facilities served by this street. Traffic on existing Route 7 - Shelburne Street - should also be reduced. This will improve access to commercial facilities located there, and will enhance the character of adjacent residential neighborhoods.

Secondary Effects - While the new highway facility will help protect the interests of the commercial center of the City of Burlington, it should not generate any unwanted growth. It should act as a stimulus for commercial activity in the downtown and some new jobs may result. Any resultant demand for new residential development would be dispersed throughout the Chittenden County region, and would cause little demand for additional public services or facilities. The Greater Burlington Urban Area is a rapidly growing area and this new highway facility would be meeting an existing need. It is not intended to act as a development highway.

The established commercial and industrial facilities on Pine Street will be protected by retention of adequate access for customers and employees. The installation of the new facility will also have a positive effect on the non-driving segment of the population. Bicycles will not be permitted on the new highway, but reduced traffic on Pine Street will greatly reduce present hazards for bicyclists. Reduced traffic on Pine Street will be a benefit to pedestrians, particularly the elderly and school

The project should be of major benefit to public transportation in the City of Burlington. The Chittenden County Transportation Authority garage is located on Industrial Drive with direct access to the new highway. The bus system will have good access to downtown Burlington and outlying areas in the region via the new highway. Much more efficient service can also be provided to traffic generators on Pine Street due to the reduction in traffic congestion. This could encourage ridership with resulting benefits in the financial condition of the public transportation system.

Implementation of a Southern Connector highway will help the Central Business District of Burlington and the Mall-Hotel complex. Much improved arterial traffic service will be provided between the downtown and outlying areas in the region. As there is little vacant land available in the Pine Street area, it is unlikely that this project will cause any increases in development in this area. Plans for the development of Burlington's downtown have already been initiated, and it is unlikely that these will be altered. If these plans are successful and result in a commercial resurgence in the downtown, some new jobs may be created in the process. This could result in some additional demand for housing units in the region. However, the additional demand is expected to be small and the impact on residential areas throughout the Chittenden County region will be minimal. It should not result in an increased demand for public facilities or services.

Traffic studies indicate that the project is not of sufficient length to induce additional traffic (i.e., traffic over the above ordinary traffic growth). For this reason there will not be signfiicantly more traffic on South Burlington's portion of US 7, south of Queen City Park Road, with a new connector than there would be without a new connector.

Considering the project corridor as a whole, a comparison of the summations of the major north-south streets (Shelburne Street, Pine Street, and/or the new route), traffic volumes show that this project would result in a larger total than if the Pine Street Alternate had been implemented; 36,000 vehicles per day and 31,000 vehicles per day, respectively. This difference of 5,000 vpd is not due to induced traffic, but mainly due to diverted traffic. That is, vehicles destined to or from Burlington's CBD will utilize the new Southern Connector highway, rather than the Main Street route or the Winooski River Bridge route, etc., that they are presently utilizing. For instance a vehicle with origin in Milton will follow the routing of I 89, I 189, and the new Southern Connector. It follows then, that a secondary effect on this action will be reducing, to some extent, the traffic volume on some streets outside the project area such as the two mentioned. The extent and location of the reductions is very difficult to predict with accuracy, since there are so many possibilities; however, the eased traffic congestion should be noticeable to the highway users on those streets.

Natural, Ecological, or Scenic Resources

Chittenden County contains, and is surrounded by, a wide variety of natural and man-made physical features. The Greater Burlington Urban Area encompasses a large urban complex with many of the physical aspects that are associated with major American cities.

Lake Champlain forms the western boundary and is an important scenic, recreational, transportation, and water resource. The scenery on this beautiful inland sea has amazing variety and contrasts, and is among the most breathtaking in North America. A panoramic view of the Adirondack Mountains rises from the lake to the west, while the eastern skyline is dominated by several of the highest peaks in the Green Mountain Range. Over a portion of its length, users of the new highway will enjoy the pleasant view that the lake and mountains to the west provide. The aesthetic and safety features of the new highway will be enhanced by landscape treatment on completion of the construction phase of the project.

The lake is widely used for canoeing, sailing, power boating, swimming, fishing year-round, and other recreational purposes. The impact on recreational access to the lake is not anticipated to be significant. This project, being controlled access, would result in limiting east-west pedestrian movements to intersection locations only. However, Home, Flynn, Lakeside Avenues, and Maple and King Streets would remain open.

The waters of Lake Champlain contain a fisheries resource made up of a variety of species common to the State of Vermont, including several game species. One of the lake's fish - Lake Sturgeon - is included on the endangered species list, adopted in 1972 by the Vermont Agency of Environmental Conservation. Complete reasons for the decline of Lake Sturgeon are not known, but indications are that general habitat decline through increased siltation

of spawning areas and dam barriers may be contributing factors.

The two streams affected by the Southern Connector, Potash Brook and the brook in Engelsby's Ravine, have been identified by Vermont's Fish and Game Department and the U. S. Fish and Wildlife Service as being limited fishery resources. It is the latter's statement that "initial impacts on Potash Brook may be limited. The brook is limited in terms of fishery resources, probably because of its small size and low flows during summer. Without knowing the details of your plans, however, we cannot go into any great detail yet on the impacts." As plans are developed further, coordination will be maintained to mitigate adverse impacts.

The lake is also the main source of public water for many municipalities including Burlington, South Burlington, Colchester, Essex, Shelburne, Williston and Winooski.

Construction of the Southern Connector is not expected to significantly affect the lake, from the aspects of fisheries resources or water supply. Siltation during construction will be controlled, as discussed in a following section. The lack of impact on water supply is also addressed further on in this document.

The unique or Fragile Area Map of Chittenden County, in the Land Capability Map series published by the Vermont State Planning Office, identifies no area of specific or unusual interest in the project area.

A consultant Botanist has conducted a field reconnaissance of the project area. His conclusion is that "There is nothing here with the exception of the common plants, which are found almost everywhere." The State Archaeologist has also conducted a field reconnaissance of the area and found nothing significant from an archaeological standpoint. The full reports of their findings are included in Appendices E, H and I.

There are several sites of historic and cultural significance located in the vicinity of the project. A discussion of these sites, assessment of impact, and record of consultation with the State Historic Preservation Officer, is included in the section "Impacts on Properties and Sites of Historical and Cultural Significance." (Page 109).

Natural resources consumption will vary. It will require labor and materials in the form of earth fill, concrete, steel, fuels, etc. This is addressed in more detail in following sections.

Social Impacts

The overall social impact of the Southern Connector highway is anticipated to be beneficial; any localized adverse impacts appear to be minor in nature.

Implementation of the project will assist in maintaining the integrity of the residential area west of Shelburne Street, between Queen City Park Road and Flynn Avenue. The highway location will generally lie along the westerly edge of the district, paralleling the Vermont Railway tracks. The improved access to downtown afforded by the new facility, and the termination of Pine Street at Queen City Park, will effectually discourage the use of this section of Pine Street by through traffic.

The continuity of the street system in the Pine Street neighborhood will be maintained, except for the above-mentioned closing of the south end of Pine Street; the eastern side of Sears Lane; the termination of the Morse Place, Lyman Avenue, and Ferguson Avenue connections with Briggs Street; and the inclusion of Batchelder Street in the project right-of-way. Thus Briggs Street, at the extreme edge of the neighborhood would be severed.

There would be no impairment of access to the major community facilities in the neighborhood -- St. Anthony's Church, The Champlain School and the Fire Station on Ferguson Avenue. A possible social impact on the "Lakeside Community" has been indicated by the Vermont Advisory Committee for the U. S. Commission on Civil Rights. This predominantly French-Canadian residential area is now somewhat isolated from the rest of the community as it is located between the Vermont Railway and the lake shore. The only highway access in the area is along Lakeside Avenue through an inadequate railroad underpass. This is a long standing problem, antedating the planning for the Southern Connector.

The Lakeside residents feel that construction of this project will

create further barriers, including the terminating of a pedestrian path to Pine Street. In order to mitigate this additional problem, the Agency of Transportation will investigate the feasibility of constructing a pedestrian overpass of the Southern Connector at Sears Lane as part of this project. The investigation will include the practicability of providing public access from the Lakeside area to the strcture, as use of the existing path involves trespassing on private property.

No other significant impacts on any social groupings (elderly, school-age children, etc.) are anticipated, except for representatives of these groups who may be among the 16 families who would be displaced through acquisition of right-of-way. In addition to the experience of relocating their place of residence, there could be a severing of church and school associations, unless replacement housing is available in the same area.

The proposed project will have a beneficial impact on bicyclists using Pine Street, which is designated a bicycle route, because of the reduced amount of traffic.

Assessment of Relocation Impacts

The Vermont Agency of Transportation has developed a Relocation Assistance Program that is available to displaced individuals and families (owners or tenants), businesses, farm operations, and non-profit organizations, who may be eligible for relocation advisory services and payments as provided by the Federal Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970. The conduct and methodology of this program is oriented to the interests of the relocatee and its policy is based on three guarantees. First, no person shall be displaced by highway construction unless and until adequate replacement housing has already been provided for, or is built. Highway construction will be authorized only upon verification that replacement housing is in place and has been made available to all affected persons. And finally, all replacement housing must be fair housing, open to persons regardless of race, color, religion, sex or national origin and this available replacement must be offered to all displaced persons.

In general, the project area is divided into two distinct neighborhoods. The first neighborhood, from Queen City Park Road to Ferguson Avenue, is comprised of a residential middle class neighborhood with the majority of houses being single family homes. The second neighborhood, from Ferguson Avenue to King Street, is mixed; with commercial, industrial, and residential building. This project will not significantly alter or disrupt these neighborhoods.

The alignment involves taking of 16 residential units. Of the 16 families displaced, nine are considered to be low to middle income, four middle income, and three middle to upper income. Two families on Batchelder Street will be required to relocate from property that also involves their own business. These businesses are car and truck repair oriented, and are located behind the involved dwellings. There are no known ethnic, racial, or cultural minorities directly affected by these alignments. There are no non-decent, unsafe or unsanitary housing, elderly persons, large families, or other similar relocation problems to be encountered.

A partial survey of the project area indicates that a more than adequate supply of available comparable replacement housing is available. There are no indications that within the foreseeable future this housing supply would be any less. Several apartments and houses for rent are available if the displacees should choose to rent. These listings and rentals are scattered throughout the City of Burlington. However, if the market search was extended to surrounding towns, an even more abundant supply of replacement housing is available.

Due to the proximity of most of the 16 homes to other homes in the neighborhood, only those in the Batchelder Street area would seem to be in an area which would indicate a feasibility for retention. An orderly, humane and timely relocation housing program is feasible for the 16 homes to be acquired, without the need for special relocation advisory services or the necessity of resorting to the provision for last resort housing.

There is only one other known project in the city that would be displacing families and competing for existing housing. The project is Burlington-

Colchester, M 5000 (3), and it involves three improvements and three families. This project is expected to run concurrently with the Southern Connector, but the Right-of-Way Division does not anticipate any difficulty in relocating these displacees.

The new project will require acquisition of a warehouse used for recycling beverage containers; a garage housing a construction company; two storage-workshop buildings, used by Vermont Gas Systems; and a warehouse owned by a second-hand dealer. In addition construction will require acquisition of one large oil storage tank, one warehouse, and four buildings belonging to the City of Burlington Public Works (5 bay brick garage, machine shed, salt shed and office building). The oil storage tank relocation will require zoning clearances; approval by the Fire Marshall's Office; building permits; physical alterations; and, of course, a replacement site. Through consultations with Burlington petroleum distributers and the Greater Burlington Industrial Corporation (GBIC) about future operation of the remaining oil storage facility, comments were made that it is feasible to continue operation without the acquired storage tank. This could be accomplished through use of railroad delivery service in combination with barge service. Rail service is already being utilized by another supplier in the same area. Relocation of the involved buildings in the Burlington Public Works Complex can be carried out utilizing the functional replacement provisions as described in FHWA Federal Aid Highway Program Manual 7-2-2-1. This is defined as replacement of property in public ownership, acquired as a result of a highway project, which will provide equivalent utility. It is questionable if there is enough remaining area on the present site to accomplish this. If not, some thought would have to be given to separating the operation, consolidating the complex, or relocating the entire Burlington

Public Works Complex. It is also possible that St. Johnsbury Trucking could have access problems to the extent they may have to relocate.

The project would not generate any significant adverse relocation impact within the community. However, temporary individual residential and business impacts are expected and unavoidable.

It is anticipated that all businesses would and could relocate in the project area, thereby causing no unemployment or adverse effect on the area economy. The following is a list of affected businesses with the number of employees:

Business	Number of Affected Employees
Fitzpatrick Garage	12
D. J. (Contractor)	10
St. Johnsbury Trucking (Gas Pumps)	N/A
Rosetti's (Recycling)	---

Basic Chart on Homes to be Acquired versus Available Replacements

Price Range	To Be Acquired	Listings (See Appendix O)
Under $20,000	0	0
$20,000 - $25,000	2	5
$25,000 - $30,000	6	4
$30,000 - $35,000	2	12
$35,000 - $40,000	6	9
$40,000 - $45,000	0	5
Total	15	35

No deficiency is expected in the $25,000 to $30,000 price range even though the above indicates so. As stated before, the above represents only a partial survey. Most of the homes to be acquired in this price

range are near the $30,000 figure, so it can be assumed they would use replacement housing monies to purchase a home in the $30,000 to $35,000 price range. This range has a surplus of 8 based on a partial survey.

Detailed right-of-way information is on file in the Right-of-Way Division of the Vermont Agency of Transportation.

All Right-of-Way functions will be performed by the Agency of Transportation. On completion of the project title to the right-of-way will be vested with the City. For this reason the project Agreement will specify the City the condemning authority for those parties not in agreement with the fair market value offered.

Noise Impacts

The problems caused by the steady increase in noise levels in our cities, suburbs and rural highway corridors are rapidly becoming an important environmental consideration. Except for localized areas near airports or large industrial centers, motor vehicle noise is the single most important component of background noise levels through any highway corridor. Recognizing this fact, the Federal Highway Administration requires the assessment of existing and projected traffic noise impact prior to approval of construction through any highway corridor. The Vermont Agency of Transportation conducted such a study for the proposed action.

Basis of Analysis - The analysis was based on calculated present and design year noise levels, at developed sites within the project corridor. Observation points were selected to be representative of the area, or at sensitive receptors. Many receptors were selected as being nearest to the roadway. This assures that since noise levels decrease with distance from the source, the estimated noise levels will represent the worst conditions in the area. Thirty-two sites were selected so that a reasonable sampling of varying traffic volumes, land use categories, and effects of other roadways could be provided. The accuracy of calculated noise levels was checked through field measurements at 21 points, 10 of which were used to calibrate the computer model. Sensitive receptors identified within the corridor are: The Champlain School, the Baird Children's Home, the St. Anthony's church school and playground, and two ball fields. The ball fields and playground were considered representative of outdoor activities. The Children's Home (school) and Champlain School were considered representative of indoor and outdoor activities. No activities were discovered which would require "special qualities of serenity and quiet." [1]

Certain specific units having industrial usage were identified; however, the areas containing those units are mixed in land use. This mixture of residential with industrial precludes the application of higher design noise levels [2] to significantly large contiguous areas. Small areas and individual units could be considered to fall within this category.

Noise contour maps were prepared[3] to determine the number of units in the various categories which would be affected. The 70 and 60 dBA contour distances were computed generally using the typical conditions for each segment of the studied roadways.

The observations points, and a tabulation of pertinent data are included on page 81.

Land Use Types and Units Affected - In terms of land use, the project affects the following categories; residential units, commercial units, public or institutional units, and industrial units. The following tabulation indicates the number of units in each category which would exceed their respective design noise level in 1995. Appendix K lists the FHWA design noise levels for each category of land use.

UNITS EXCEEDING DESIGN NOISE LEVEL

	Residential	Commercial	Public and Institutional	Industrial	Developed Open Space
With Project	19	25	1	4	0

1976 figures (refer to tabulation on page 81) show that 88% of 26 selected receptors exceed Design Noise Levels (DNL). In 1995, with a No Build Alternate, 96% of these same receptors will exceed Design Noise Levels.

1 FHWA PM 7-7-3 Category A

2 FHPM 7-7-3 Category C

3 [illegible] for inspection at the Vermont Agency of Transportati[illegible]

With implementation of this project, 72% of the receptors will exceed Design Noise Levels.

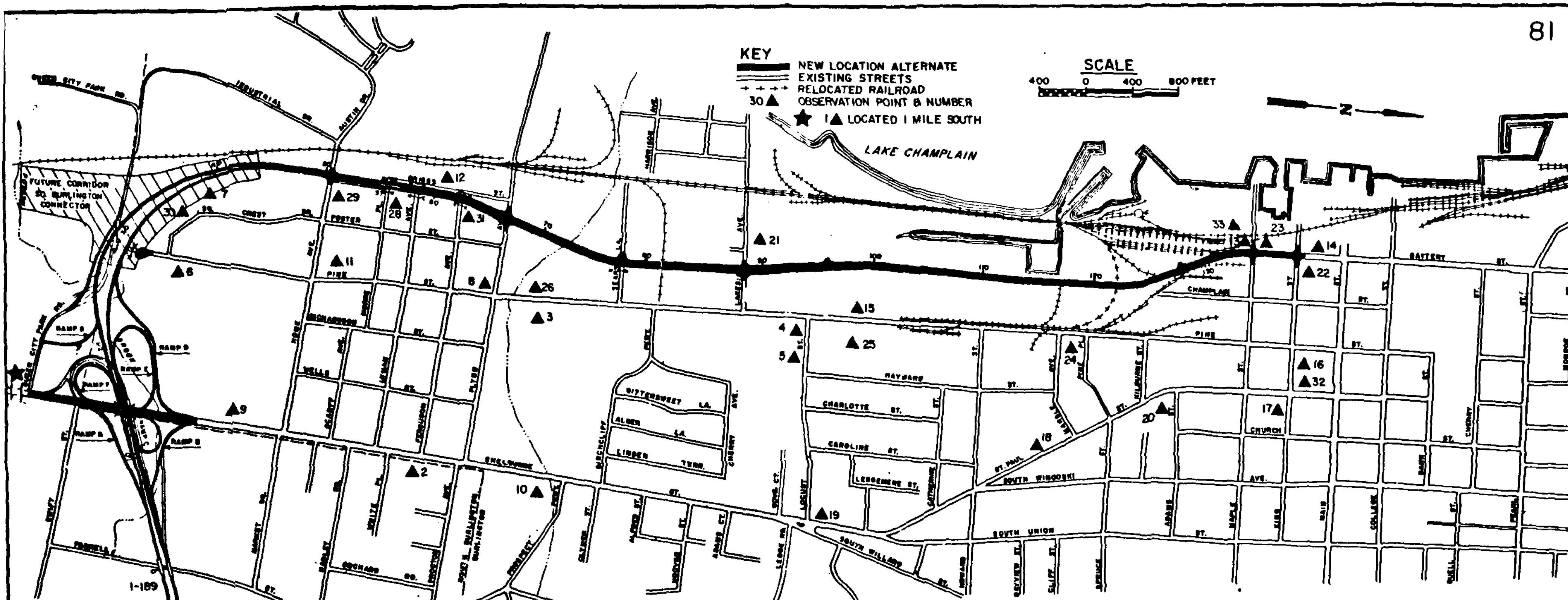
The following tabulation illustrates the extent of 1995 noise impacts within the project corridor by number of units exceeding the design noise levels in each category. By removing traffic from the existing street system, the project will substantially reduce the residential units exposed to noise levels above FHWA design levels.

UNITS EXCEEDING DESIGN NOISE LEVELS WITHIN TOTAL CORRIDOR

	Residential	Commercial	Public and Institutional	Industrial	Developed Open Space
No Build	374	87	12	11	2
With Project	260	85	8	14	1

Construction Noise Impact - A review of the project corridor has failed to indicate the presence of any sensitive receptors which would require special protection from noise during the construction period. The contractor will be required, under provisions of the Occupational Safety and Health Act, to provide protection from excessive noise exposure during this time. The Agency's Standard Specifications restrict blasting operations (if any), one of the noisier aspects of construction, to daylight hours, and require advance notice to potentially affected parties.

It was determined impractical and unnecessary to conduct interior field noise measurements for this project. Federal Highway Program Manual 7-7-3 permits a 10 dBA reduction in interior levels from calculated exterior levels for all building types with open sash, an additional 10 dBA is permitted for closed sash and a total of 25 dBA may be deducted with storm sash. As storm sash or closed sash are dominant in the area due to climate, no significant interior noise impact is expected to occur with the implementation of this project



OP #	Description	FIELD MEASURED *DR	Vol.	Hour Vol.	% Trk.	Comp. 40	Meas. L10	EXISTING CONDITIONS 1976 and 1995 (No Build) *DR	1976 DHV	% Trk.	Speed	1976 L10	1995 DHV	% Trk.	Speed	1995 L10	3. NEW LOCATION ALT. (SELECTED ALT) *DR	1995 DHV	% Trk.	Speed	L10
1	US 7 at Gerz Dodge	40'	309	1,304	1.0	73.4	72+2-3	40'	1,375	3.7	40	75.3	1,650	3.7	40	76.5	40'	1,650	3.8	45	76.3
2	Shelburne Road at Carrols	50'	104	1,300	1.0	73.8	70+3-2	50'	1,690	1.5	24	76.3	1,880	1.5	20	78.4	50'	1,345	2.3	20	79.2
3	Pine Street at School	100'	240	949	3.0	69.4	66+3-1	100'	1,240	3.0	24	71.6	1,475	3.0	10	77.0	96'	885	3.0	25	69.4
4	Pine Street at Ballfield	30'	207	1,005	2.0	73.9	75+2-3	30'	1,280	2.0	24	78.2	1,525	3.0	10	80.7	30'	849	3.0	20	77.0
5	Pine Street at Ballfield	100'	536	1,286	1.0	61.7	63+2-2	100'	1,285	3.0	24	71.3	1,525	3.0	10	76.7	100'	845	3.0	20	69.9
6	Pine Street at Children's Home	120'	333	396	1.9	57.7	61+7-3	120'	620	2.2	24	63.2	975	2.2	18	67.0	124'	120	0.8	25	51.1
7	South Crest at Tree Line	167'	1	No. Traf.	-Not	Computed	50+1-1		No Traf. -	Not	--	Computed.	No Traf.	- Not..		Computed	300'	908	2.3	40	60.7
8	Pine & Flynn at Church Yard	31'	208	1,000	1.0	71.1	71+1-2	31'	1,065	2.2	24	79.7	1,280	2.2	10	87.9	31'	465	3.0	25	75.8
9	Shelburne Road at Sears	106'	337	1,076	2.0	69.2	64+1-1	106'	2,000	2.2	23	75.4	2,210	2.2	18	77.2	106'	2,790	2.3	23	75.4
10	Shelburne Road at Emmc. Sq.	56'	347	1,110	1.0	68.0	64+2-2	56'	1,690	1.5	24	72.0	1,880	1.5	20	74.0	56'	1,210	1.5	25	72.9
11	Pine St. at Home and Horse	36'	69	460	1.5	66.4	64+2-2	36'	820	2.2	24	77.3	1,205	2.2	10	82.8	36'	875	3.0	25	79.9
12	Briggs at Vt. Struct. Steel	50'	0	No Traf.	-Not	Computed	55+2-1	N/A	N/A	N/A	--	N/A	No Traf.	- Not..		Computed.		No Traf.	- Not	--	Computed.
13	Cor. Battery and Maple	16'	203	663	2.0	70.4	70+2-2	10'	775	2.2	15	78.4	970	2.2	15	79.3	32'	1,020	2.3	15	84.2
14	Battery at King and Main	17'	246	804	1.0	69.2	71+3-3	31'	865	3.0	18	82.7	1,170	3.0	15	84.3	23'	1,805	3.0	25	85.2
15	Pine Street at Whiting	106'	440	880	2.0	65.2	65+1-1	106'	1,225	3.0	24	71.1	1,470	3.0	10	76.4	96'	765	3.0	20	69.7
16	Cor. King and Pine Street	22'	246	443	1.0	72.7	74+0-3	22'	440	2.2	18	81.1	565	2.2	10	86.5	22'	840	2.3	10	86.7
17	Cor. King and St. Paul	24'	137	479	1.0	71.9	73+3-3	24'	570	1.5	24	77.9	740	1.5	10	76.7	24'	650	2.3	25	74.6
18	St. Paul at Golden Place	23'	62	405	3.0	70.9	70+2-1	23'	600	2.0	24	74.1	860	2.0	10	78.5	23'	330	2.3	25	67.6
19	Shelburne, St. Paul, Etc.	52'	830	834	1.0	69.8	69+3-2	52'	1,080	1.0	24	75.1	1,370	1.5	10	78.5	52'	535	2.3	25	71.4
20	St. Paul at Ballfield	10'	249	242	1.0	69.7	72+3-2		No Traf. -	Not	--	Computed.	No Traf.	- Not..		Computed.		No Traf.	- Not	--	Computed.
21	Lakeside at G.E.	30'	35	233	1.0	66.1	67+3-2	30'	640	2.0	18	64.8	855	1.5	18	73.2	168'	1,915	2.3	40	68.0
22	Battery & King at House	NOT FIELD MEASURED						32'	985	3.0	15	81.5	1,170	3.0	15	83.0	32'	1,805	3.0	15	86.0
23	Battery & Maple Mfg. Site							37'	775	2.2	15	78.0	970	2.2	15	80.2	37'	1,020	3.0	15	83.9
24	Pine and Marble at House							40'	1,155	3.0	24	76.0	1,410	3.0	10	79.9	30'	745	2.3	20	74.7
25	Pine Street at Jackson Apts.							36'	1,285	3.0	24	78.0	1,575	3.0	10	85.5	36'	765	3.0	20	75.6
26	Pine at No. across from School							91'	1,240	3.0	24	72.2	1,475	3.0	10	77.9	91'	979	2.0	25	69.0
28	Briggs and Horse at House								No Traf. -	Not	--	Computed.	No Traf	- Not..		Computed.	68'	1,915	2.3	40	72.6
29	Batchelder & Home at House							81'	295	6.7	20	70.8	455	6.7	12	77.5	55'	1,915	2.3	40	77.3
30	South Crest Drive at House								No Traf. -	Not	--	Computed.	No Traf.	- Not..		Computed	161'	1,065	2.3	40	63.3
31	Ferguson at House								No Traf. -	Not	--	Computed.	No Traf	- Not..		Computed	54'	1,915	2.3	40	75.3
32	Same as 16 w/2 DU							44'	640	2.2	15	77.1	565	2.2	10	87.4	44'	640	2.3	10	82.8
33	Same as 13 w/2 DU							32'	775	2.2	15	72.4	970	2.2	15	75.3	64'	1,020	2.3	15	80.3

KEY:

*DR = Distance to centerline near lane

DHV = Design Hour Volume

VOL = Counted Traffic

HOUR VOL = Counted Traffic Converted to an Hourly Volume

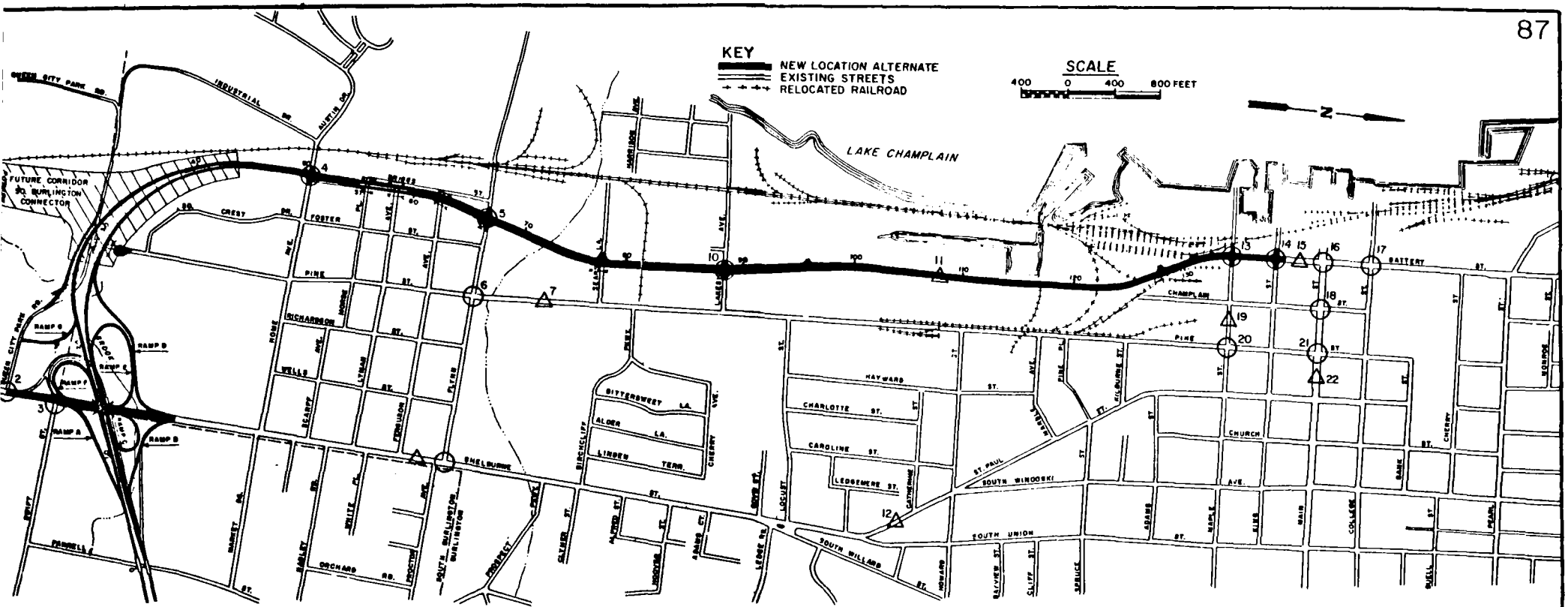
% TRK = Percentage of Trucks in DHV.
Note % TRK for noise computations includes only trucks and buses over 10,000 pounds.

L10 = Noise Level which is exceeded 10% of time in DHV (6 Min.)

Note: for multi-element OP's, DR, and DHV are given for nearest or highest volume element.

NOISE STUDY
OBSERVATION POINTS AND NOISE LEVEL TABULATIONS

BURLINGTON SOUTHERN CONNECTOR
PROJECT M5000(1)



△ FREE FLOWING ○ INTERSECTION

CONCENTRATION
PARTS PER MILLION

LOCATION	1985	1990	1995
1	DROPPED AS NOT MEETING 15% CRITERIA		
2	8.6	8.9	8.3
3	8.1		8.1
4	8.8		8.3
5	8.5		7.8
6	5.8		5.0
7	4.9		4.0
8	7.9		6.8
9	7.3		7.3
10	8.0	7.6	5.5
11	7.9		6.1
12	3.3		2.1
13	8.6		7.9
14	7.6		5.2
15	8.5		6.5
16	7.5		6.1
17	8.2		6.0
18	4.8		4.1
19	7.9		5.9
20	8.0		5.0
21	5.2		4.5
22	7.4		5.5

AIR STUDY
OBSERVATION POINTS AND CONCENTRATION TABULATION

BURLINGTON SOUTHERN CONNECTOR
PROJECT 000(1)

GENERAL NOISE STUDY CONCLUSIONS

1. There exists a noise problem within the study corridor which will worsen with time and increased traffic flow.

2. This problem would be partially alleviated by this project.

3. It does not appear prudent or reasonable to incorporate abatement measures within the project scope. An exception to the Design Noise Levels will be required for impacted receptors abutting the controlled access portion of the selected alternate. The request for this exception will be included in the final Noise Study Report.

4. Abatement by "Quieter Vehicles", i.e., source reduction is not within the control of this agency.

A detailed analysis of noise impacts is contained in the Noise Study Report on file at the Vermont Agency of Transportation.

Air Quality

An air quality study was made of automotive generated pollutants with construction of the Southern Connector. A microscale analysis to determine concentrations of carbon monoxide (CO) was made at the intersections on the Southern Connector, and at intersections where a traffic increase of more than fifteen percent is expected to occur. Additional CO levels were calculated between intersections where traffic increases occur; or, as on Shelburne Street, to show the decrease of CO that will ensue with construction of this project.

The concentrations for the eight consecutive peak hour traffic were computed at all points, and levels for number one peak hour traffic were calculated where traffic volumes indicated a potential violation. These were compared to the National Ambient Air Quality Standards (NAAQS) of 8.7 parts per million (ppm) for eight hours, and 35 ppm for number one peak hour.

"Guidelines for Air Quality Maintenance Planning and Analysis, Volume 9: Evaluating Indrect Sources" (January, 1975, EPA-450/4/74-001) was used to estimate CO concentrations at intersections. Correction factors, as provided by the United States Environmental Protection Agency (EPA) were used to adjust the emission factors in Volume 9 to the more recent emission factors computed by the MOBILE-1 computer program. Additional correction factors were used to adjust for variations in speed, temperature, calendar year, and vehicle mix.

For those points where traffic is free flowing, MOBILE-1 computer program (referred to in the Environmental Protection Agency's letter as Supplement 8 of AP 42) was used to compute emission factors, and CALINE-1 computer program to calculate concentrations.

Initially a screening review employing a "worse-worse" condition approach was used. This analysis combined annual peak eight hour traffic with worst meteorological conditions. Those points in violation of NAAQS were then further analyzed using more refined input data. A background level of 2.5 ppm, as provided by the Vermont Agency of Environmental Conservation (AEC) for this project area, was used. Also provided by the Vermont Agency of Environmental Conservation was a "persistence factor" of 0.56, to account for the unlikelihood of a narrowly defined combination of wind speed and wind direction which occur for one hour, to persist over an eight hour period.

In order to achieve compliance with NAAQS, traffic signal timing at some intersections was adjusted to speed traffic flow; and at one intersection an additional turning lane was required.

The microscale analysis for CO concentrations was made for three specific years; one, five, and ten years after project opening. Results indicate no violations of carbon monoxide standards are expected to occur at the locations analyzed. Refer to map on page 87 showing location of points analyzed, and accompanying tabulation of concentrations as provided by the Air Pollution Control Section of the Agency of Environmental Conservation.

A mesoscale analysis for CO indicated a decrease in pollutant burden from 4202 kg/day for 1976 to 909 kg/day for the year 1995 with construction of the Southern Connector. More efficient movement of traffic with this new project contributes to reduction in CO on an areawide scale.

A mesoscale analysis for nitrogen oxides (NO_x) indicated that the burden in 1995 will be 44 kg/day with construction of the Southern Connector and 31 kg/day in a no build situation. The Agency of Environmental Conservation

Air Pollution Control Section has indicated that this difference is insignificant when compared with the 1976 pollutant burden of 240 kg/day. As there is no model currently available to assess automotive NO_x emissions, and no short term ambient standards for NO_x; it is impossible to make a determination of the impact of NO_x on NAAQS.

A mesoscale analysis was also undertaken for hydrocarbons (HC). Hydrocarbons are not, by themselves, a health hazard; but, combined with the oxides of nitrogen, they produce photochemical oxidants. The area of the Southern Connector is a nonattainment area for photochemical oxidants. This analysis for HC showed a reduction from 510 kg/day in 1976 to 55 kg/day in 1995 with construction of the Southern Connector. Since the project will increase the speed of traffic flow, while generating no new traffic, the project will have a beneficial effect upon the regional hydrocarbon burden. In addition a tighter Federal automotive emission standards will decrease future automotive emissions. The Air Pollution Control Section of the Agency of Environmental Conservation has stated that this approach is adequate to insure improvement toward attainment of the oxidant standard, and that no other hydrocarbon reduction measures are necessary.

As the Southern Connector is expected to handle only existing and normal growth traffic, and not generate any new traffic, the amount of total suspended particulates (TSP) is anticipated to be the same as with a no build situation. The increase in number of cars with emission control devices, and increasing use of unleaded gasoline will reduce future burden of TSP.

This project was reviewed by the Air Pollution Control Section of the Agency of Environmental Conservation on the basis of the following criter

1. That the project would neither cause nor exacerbate a violation of NAAQS for the pollutants carbon monoxide (CO), nitrogen oxides (NO_x), and total suspended particulate (TSP).

2. That the project has been reviewed for its impact on the regional oxidant problem by estimating its expected hydrocarbon contribution.

3. That all reasonable hydrocarbon emission reduction strategies have been incorporated in the project's design.

Based on this review, it has been determined by the Agency of Environmental Conservation that the proposed project is consistent with the Vermont State Implementation Plan for attainment of NAAQS. See Appendix M.

The Federal Highway Administration has indicated that the CO review, as presented in this document, constitutes the indirect source analysis required by 23 CFR 770. See Appendix N.

Water Quality

The assessment of possible impacts upon water quality through the project corridor, and particularly upon Lake Champlain, has included consideration of both the short-term effects anticipated during the construction period and the long-term impacts attributable to the operation of the highway.

As discussed earlier, Lake Champlain is the main source of the public water supply for the Cities of Burlington, South Burlington and Winooski; as well as the Towns of Colchester, Essex, Shelburne and Williston. Burlington pumps its water from a point approximately 2½ miles northwest of the project area. The Champlain Water District, serving the other towns listed above, has its intake pipe located about 1½ miles west of the project area, ½ mile offshore, 85 feet deep. Both of these pumping stations utilize filtration plants.

Due to both the remoteness of the intake pipes from the project area and the precautions which will be taken during construction (see Construction Impact Section), it is anticipated that the proposed action will have no effect on the area's public water supply.

In the coordination process for this project, some members of the Citizens' Committee expressed concern that the quality of Lake Champlain's water might be degraded as a result of the proposed action, and suggested that specialists, with expertise in the field, study the proposed alignments and respond with specific comments addressing water quality. The Vermont Water Resources Department was asked to comment on the various study alignments. Their initial reply contained no reference to potential water quality problems Subsequently, they were requested to address the water quality impacts of the proposed action.

Their second response included recommendations for construction techniques and storm water management measures for the mitigation of impacts on the Quality of Lake Champlain's water. See Appendix D for correspondence relative to natural resource impacts.

Potash Brook and an unnamed brook, located north of Flynn Avenue in Engesby's Ravine, pass through the project area and cross the proposed alignment. Potash Brook flows south and west 0.9 river miles to Shelburne Bay on Lake Champlain. It is subject to high pollution loads during high flow periods due to the fact its drainage area is relatively high in urban (38%) and agricultural (48%) characteristics. Generally, there are no problems with the brook's water quality; it is quite turbid during high flow, excellent during other periods, with the exception of a coliform problem. Coliform is in excess of standards; probably non-point source in nature.

Rechannelization and culvert construction on Potash Brook will be done in such a way as to avoid significantly steepening the channel gradient which would create higher channel velocities. This will minimize the effects of increased sediment transport. The side slopes will be protected by stone fill to prevent erosion. Construction changes of this magnitude will have no significant effect on the brook as a whole.

The unnamed brook in Engesby's Ravine, flows west from the project area about 2,000 feet to Burlington Bay on Lake Champlain. The crossing of the ravine will be accomplished without alteration of either stream alignment or gradient.

Impairment of water quality from erosion of earth slopes will be minimized through erosion control measures prescribed in the General Contract Provisions. These are discussed in more detail in the Construction Impacts section of this statement. In addition, the fact that the project has a low profile, i.e. most cuts and fills will be less than 15 feet, will in itself be a deterrent

to soil erosion.

The possibility of stream pollution during the construction period due to accidental spills will be minimized through the contractor's compliance with the General Contract Specifications pertinent to Environmental Protection during construction operations. These specifications enjoin the contractor to "exercise every reasonable precaution to prevent pollution to the waters of the State. Pollutants such as chemicals, paints, fuels, lubricants, bitumens, raw sewage and other harmful waste shall not be discharged into or alongside these waters, or into natural or man-made channels leading thereto." The provisions would generally preclude refueling, greasing or batching operations being performed where noxious runoff into Lake Champlain, or any streams, might result. Unless otherwise approved in writing, the use of mechanized equipment in streams is prohibited, except as necessary to construct changes in channel and permanent or temporary structures. Turbidity effects on the streams in the project area and on Lake Champlain itself should be minimal, if measurable at all, and of short duration.

The specifications cited above, relative to pollution prevention, will be enforced during the construction period, as well as any additional conditions imposed by the Corps of Engineers in their permit approvals.

One major concern regarding any highway's effect on water quality, is the impact of winter road salting. Due to Vermont's severe climate, the application of salt for de-icing purposes is considered to be a necessity. However, the concern remains that sodium chloride might migrate into either surface or ground water supplies, as large quantities of either sodium or chloride, and may constitute a health hazard. Several studies have been performed to evaluate the extent of this hazard. One very extensive study by the Institute of Safety Analysis, "Benefits and Costs in the use of Salt to

Deice Highways," compared the benefits and adverse effects of using salt to deice highways. The conclusion of this report was that health threats created by the failure to deice roads is a more serious danger than the health threats caused by deicing.

A study by the Hydraulics Engineer of the Highway Department, for this Project's effects on road salt levels in the two brooks concerned, indicates only minimal concerns. Potash Brook will not be adversely affected; and the brook in Engelsby's Ravine will not be affected, as a closed drainage system is utilized in this area. There is not felt to be any potential for damage to Lake Champlain due to the high dilution volume of water available.

The complete report as prepared by the Hydraulics Engineer may be found in Appendix P.

A grass seed formula consisting of Creeping Red Fescue, Alfalfa, Red Top, Orchard Grass, Perennial Rye Grass and Birdsfoot Trefoil has been utilized, with minor modification, since 1958 with little evidence of salt damage to the turf. In selecting trees and shrubs, native salt resistant species are the first choice, and no plantings are placed closer than 30 feet from the edge of pavement. Little effect from salt is generally observed beyond this limit, except salt spray may cause some damage to conifers.

In addition to salt, roadway runoff pollutants may include lubricants, rubber and asbestos from tires, exhaust emissions, brake fluids, coolants, asphalt, cement, road marking paint, joint compounds, silt, leaves, grass clippings, tobacco, paper, oil and chemical spills. It is virtually impossible to control or even predict the amounts of these pollutants that might run off the highway. However, they appear to behave much like chloride. Heavy concentrations appear at roadside, but drop off quickly as the distance [illegible] highway increases.

Several studies have been made to analyze the amounts and effects of these pollutants and in most cases they have been found to be minimal. These studies have usually been conducted in urban areas with heavy traffic counts (up to 64,000 ADT). Under the circumstances, no significant adverse effect is anticipated for this project, which has an anticipated 1995 ADT in the 15,000-20,000 range.[1]

/1 Sylvester, R.O. & DeWalle, F. B., 1972 Character and Significance of Highway Runoff Waters - a Preliminary Appraisal, Washington State Highway Department Research Program Report 7.1.

Flood Hazard Evaluation

The western part of the project corridor contains a portion of the Lake Champlain floodplain. While the project will infringe slightly on this floodplain, the Hydraulics Engineer for the Agency of Transportation has determined that this will not cause any increase in the Lake's flood level because such a small percentage of the total available overflow area will be lost. The culverts which will be located along the highway will be designed to pass a Q 50 storm (a storm which occurs on the average every 50 years, and has a 2 percent chance of occurrence in any given year), and will be checked against the flood of record of Q 100 (whichever is greater) to assure that no adverse impacts would result from such a storm. Water levels during flooding in this low lying area near the Lake and the Old Barge Basin are controlled by the level of Lake Champlain. There will be virtually no danger of the new highway becoming inundated as the lowest highway elevation (107.5) is well above the highest recorded Lake level (101.5), and the predicted 100 year lake level.

Potash Brook flows through the southern portion of the corridor in the area of the I 198 - US 7 Interchange. The culverts in the interchange area will be designed for a Q 50 storm and checked against either the flood of record or Q 100 as discussed above. Thus no significant effect on the stream's flood stage is anticipated.

Wetlands

The section of the project corridor northerly of Lakeside Avenue, between Pine Street and the railroad embankment, and adjacent to the abandoned barge terminal, contains an area which is inundated each spring. Much of this area remains wet and swampy throughout the warm months; and, in certain areas, displays characteristic wetland vegetation.

The Vermont Land Capability maps published by the Vermont State Planning Office do not indicate wetlands in this area. The Landscape Engineer for the Highway Department has indicated that the original wetland area comprised about 21 acres, but that over the years dumping of waste material has occured along the eastern edge. Also parts of the barge channel have been subject to fill operations. The extent of the wetland area at the present time is approximately 11.5 acres. Construction of this project would involve taking of approximately two acres of this wetland.

The highway alignment adjacent to the wetland area has been kept as far easterly as possible to minimize taking of the wetlands. Location of buildings along the western side of Pine Street prevent moving the line any further in that direction.

A field survey by a qualified botanist identified no flora of a rare or unique species in the area. One of the plants growing in the wetland was identified by the botanist as a variety of sedge (Cyperaceae). Although some types of sedge are listed as rare, this sedge is a common variety. (See Appendix I .)

The Agency of Environmental Conservation has indicated that the wetland area, although a small one, is important to fish and wildlife resources. (See Appendix S .) It has value as a nesting and wintering area for wildlife, and a spawning area for fish in the spring.

To mitigate the loss of this resource the Agency of Environmental Conservation has recommended a "clean-up" of the remaining wetlands in this area to increase their productivity. At the time of construction an effort will be made to satisfy this recommendation. In addition, it has been suggested that a screen of trees be placed within the right-of-way where the highway is adjacent to the wetlands; and that an equalizer pipe be placed under the roadway. These recommendations will be made part of the final design of the project.

At the present time the wetland area is saturated with an oil sludge. Construction of this project will require removal of 10,000 cubic yards of this contaminated muck. Every precaution will be taken to ensure that no further contamination of the wetland area or the Barge Basin will occur with disturbance of this material.

Contamination of the wetland area from roadway salting will not be a problem, as a closed drainage system will be utilized in this area.

It has been determined that there is no practicable alternate to the taking of approximately two acres of wetland for this project; and that all practicable measures to minimize harm have been taken.

Stream Modification Impacts

Potash Brook flows through the southern portion of the project area near the I 189-US 7 Interchange. The project involves rebuilding the interchange so that I 189 will go under US 7 (Shelburne Street), while Shelburne Street stays at its present alignment and grade. To accomplish this construction work, some channel relocation and new reinforced concrete box culverts (totals of 350' and 900' respectively) are required for Potash Brook. The proposed box culverts utilize and extend the present ones ~~that ones~~ that were constructed with the 1961 interchange. If pursuant to Section 404 of Public Law 92-500 a Corps of Engineers permit is required it will be applied for in a timely manner.

Also, a new culvert (approximately 60" in diameter) will be required in the vicinity of Englsby's Ravine, just north of Flynn Avenue. No Corps of Engineers permit will be required for this structure.

It has also been determined that a Section 404 Permit will be required for work contemplated in the vicinity of the Old Barge Basin. The proposed excavation of unsuitable material and backfilling would be below the Lake Champlain ordinary highwater leve. Necessary applications for Corps permits will be made when the project is designed.

The proposal has been reviewed by both the U.S. Fish and Wildlife Service and the Vermont Fish and Game Department pursuant to 16 USC 662 (a). Their comments are included in Appendices C and D.

The U.S. Fish and Wildlife Service indicated that impacts on Potash Brook will be minimal, as it is limited in terms of fishery resources. Their two concerns with this particular highway would be the culvert crossings and associated channel relocation. The former, if not placed

correctly, can result in streambed scouring and impede fish passage by altering the rate of flow of the Stream. The latter destroys terrestrial habitat, and disrupts aquatic habitat. There can also be an increase in the temperature of the stream as a result of removal of the stream-bank vegetation during relocation. Other impacts include sedimentation resulting from construction. Mitigating measures to offset adverse impacts will include construction in the dry to the extent possible, placing boulders and gravel in the new channel to create pools and riffle areas for fish, utilizing of a channel section with transverse slope to insure minimum stream depth during low flow, and revegetation of the streambank.

Construction Impacts

The construction of a highway is traditionally marked by dirt, noise and to the casual observer, confusion. However, the construction of a project is under the control of an Agency of Transportation Resident Engineer, and is done according to detailed plans and the Agency's Standard Specifications for Highway and Bridge construction. This affords assurance that adverse environmental impacts will be minimized. The specifications which cover environmental protection during construction operations are reproduced in Appendix L . Copies of the full specifications document are on file with the Agency of Transportation. Some of the more salient points are discussed below.

The project corridor is partially wooded, and some clearing operations will be necessary. The Standard Specifications (Section 201.03) require the contractor to make every effort to salvage cut trees, either for lumber or firewood. The contractor will be encouraged to dispose of non-salvageable debris by burial, but he may be allowed to use a chipping method.

The project plans and Construction Specifications will require that all earth slopes be smoothed and rounded to conform to natural ground cover, and be seeded and mulched. Unless otherwise approved by the Resident Engineer, the Contractor is limited to 750,000 square feet (about 17 acres) of exposed erodible earth surface at any one time, necessitating seeding at the completion of work in any area.

Section 105.23 of the Specifications requires Agency approval of the Contractor's erosion control plan, prior to commencement of construction. Permanent erosion control measures must be incorporated into the construction at the earliest possible date and temporary

measures, including sedimentation basins and check dams, will be used at the direction of the Engineer.

The Contractor is enjoined by the Specifications, Section 104.11, to employ standard methods to minimize noise and air pollution in his clearing, grubbing, drilling, blasting, excavation and hauling operations. These methods must be acceptable to the Engineer and compatible with the location of the work. Commonly used methods include the following: During clearing and grubbing operations, no burning is permitted near settled areas, and the use of rubber tires in burning is prohibited. Mufflers on air compressors have greatly reduced noise in ledge removal areas. Mufflers are also standard equipment on other types of construction machinery. The use of explosives is limited to daylight hours.

Dust control by water or chlorides is employed on haul roads near settled areas, and on project haul roads as required for the Contractor's safety. Asphalt plants are required to have bag plants to minimize dust emission.

Also, when situations are identified requiring particular care to avoid air or noise pollution, appropriate special provisions covering restrictions on hours of operation, use of equipment, etc., are included in the contract.

Subsequent to completion of construction operations the contractor will be required to clean up all debris, and leave the project area, including all material supply and disposal areas, in a neat, presentable condition.

Traffic on I 189, US 7, Pine Street and adjacent local roads will be maintained during the construction of the proposed project, with the exception of those streets being terminated. Some minor delays to traffic are to be expected. Vehicles moving through work areas will be protected by flag-persons, if necessary, and dust control measures utilized where the pavement has been removed. Provision will be made for the passage of emergency vehicles at all times.

The southerly terminus of the project, where the I 189 - Shelburne Street Interchange will be almost completely rebuilt, will be the scene of the most extensive construction operations. The contractor's operations will be carefully phased to minimize interference with the heavy traffic flow on Shelburne Street. It is anticipated this will include, in order of implementation:

A) Provision for movement of all traffic off and on I 189, via the ramps east of Shelburne Street, through temporary provision for left turns at Shelburne Street terminus. Movement will be protected by traffic lights.

B) Closing of the I 189 ramps which cross Shelburne Street; and removal of ramp fill, west of Shelburne Street, to permit construction of a detour.

C) Diversion of traffic to the detour, closing of Shelburne Street, and removal of I 189 ramp structures over Shelburne Street.

D) Construction of new Shelburne Street structure over Southern Connector location, opening of Shelburne Street to traffic and removal of detour.

From Shelburne Street to Ferguson Avenue, construction will generally interfere with traffic only at crossings of existing streets. It is possible, however, that relocating a short section of Queen City Park Road out of the highway location may require a temporary closing of this facility. Alternate access to the area served by Queen City Park Road is available via Industrial Drive and Home Avenue.

North of Ferguson Avenue, construction would interfere with traffic only at crossings of existing streets.

The development of an optimum alignment and grade for the Southern Connector results in what is known as a "waste job", i.e., the amount of excavated material exceeds the volume of fills which must be made. The selection of areas to dispose of the "waste" is at the option of the contractor, with the concurrence of the Resident Engineer and the District Environmental Coordinator. Material supply and disposal areas are considered necessary adjuncts to the Development Permit for the project, obtained under Title 10, Chapter 151, VSA (Act 250). Such areas must be maintained in a presentable manner and upon closing be smoothed and seeded.

The excess, or "waste", for this project is in the 30,000 cubic yard range. In addition to this, northerly of Lakeside Avenue, the alignment passes through a 3,000-foot long area southerly and easterly of the old barge terminal, where subsoil investigation has revealed the existence of an approximate 20-foot layer of unsuitable foundation material called "muck". This material is largely comprised of decomposed wood fiber, and in one area is saturated with petroleum sludge. Exact composition of this material is available from the Solid Waste Division, Department of Water Resources.. The area was historically

used as a dumping ground by wood finishing industries, and the oil-saturated material is in the vicinity of a former coal gas producing operation.

There are three acceptable methods of dealing with a muck situation such as encountered.

A) Excavate the muck and backfill with granular material.

B) Bridge the muck area.

C) Build on top of the muck, if it can be consolidated sufficiently.

It became evident during consolidation tests of samples of the material that it is not practical to build on the muck. Due to the organic origin, and composition of the material, settlements of as much as 10 feet could be expected and the settlement process could run on for years.

The Department's Bridge Divison investigated the possibility of bridging the area. They are of the opinion that the cost would be prohibitive. Also, the boring logs indicate that point-bearing piles would have to be used and this would mean 110 to 130 - foot piles with very little lateral support.

With these two options eliminated, there remains only the excavate and backfill method. The consensus of opinion is that the only solution is to remove the muck and backfill the area with rock or granular material. The backfilling operation will have to follow along as close as possible to the excavation because of the water situation and the close proximity of the barge canal.

Disposal of the approximately 200,000 cubic yards of the excavated muck will be made on the project. Analysis of this material by the Soils Engineer for the Agency of Transportation indicates that when dried out, it will be

reduced in volume by 50% to 70%. The necessary disposal area will, therefore, be reduced to from 60,000 to 100,000 cubic yards. This disposal will be accomplished by flattening the slopes on ramps D, E, and F; and on the remainder of the project where possible. This material will be kept within the limits of construction. No transportation on city streets will be required.

It has been determined by the geologist for the Solid Waste Division of the Department of Water Resources that about 10,000 cubic yards of this muck material is contaminated with petroleum sludge. Disposal of this contaminated material will be accomplished by "land farming"; a process which entails spreading a six inch layer on the ground, drying and rototilling. This method of disposal has been approved by the Agency of Environmental Conservation, Department of Water Resources, and will require an area of about 12.5 acres. This "land farming" will be accomplished on the project. Additional information, boring logs and laboratory analysis are available from the Agency of Transportation.

Implementation of the project will require the use of approximately 285,000 cubic yards of granular material; 85,000 cubic yards for subbase and 200,000 cubic yards to fill the muck area. Depending on whether gravel or crushed stone is used, possible sources include an existing pit in Hinesburg, about 18 miles southerly of the project area; and a stone quarry north of Winooski City, 6 miles from the project via I 89 and I 189. This material will most likely be brought to the project site by truck. The haul route from the Hinesburg pit would probably be via VT 116, Kennedy Drive and I 189.

Probable Adverse Environmental Effects Which Cannot be Avoided

Temporary adverse environmental impacts will be experienced during the construction period to some extent. The most apparent of these, especially for the road user, will be the disruption of traffic flow along the existing facility. Since the greater part of the project is on new location, interruption of traffic during construction would only be necessary near the project termini and at the intersection of the new highway with city streets. The effects of increased noise levels and raised road dust will also be felt during the construction period.

The implementation of this project will result in several unavoidable impacts other than those associated with the construction period. One impact will be the interference with the Vermont Railroad operation, which will result from the taking of part of the parking areas of both the railroad and several businesses which use the railroad. The alignment will require the acquisition of property now in private ownership, the conversion of this land to highway right-of-way, and the relocation of families. The project will have more effect on open lands than on areas already developed, although the line will sever the edge of the south end residential neighborhood. Implementation of the project will result in noise levels in excess of the FHWA Design Noise Levels at some points.

Construction of this project will also result in the taking of two acres of wetland area adjacent to the Barge Basin, and rechannelization of 350 feet of Potash Brook. Impacts are discussed on pages 96 and 98 respectively.

The Relationship Between Local Short-Term Users of Mans Environment and the Maintenance and Enhancement of Long-Term Productivity

Construction of this project will result in the termination of some residential streets in the south end neighborhood. The immediate effect of this will be reduced accessability to, and severing of part of, the residential neighborhood; but in the long run, "dead-ending" these streets will reduce traffic and should benefit the area. While the acquisition of properties will remove them from the City's tax roll, which would in turn reduce revenues, an improved north-south highway could ultimately improve the economic setting of the city by increasing property values and promoting business throughout the corridor. The Central Business District will be more accessible, and, thus, might also become a more desirable place to work and shop.

This project will result in the taking of 41.1 acres, including 2 acres of wetland, but will provide the service necessary while protecting those businesses located along Pine Street.

Irreversible and Irretrievable Commitments of Resources

In view of the scope of the project, the required right-of-way acquisition and consumption of materials seems minimal. It should be pointed out, however, that the conversion of this land to highway use is for all practical intents and purposes, irreversible.

With the construction of the project, approximately 17 percent of the floodplain area will be irreversibly lost through excavation and backfilling with granular material. This loss would not be considered significant in terms of the Burlington Lake Shore ecological system.

Impacts on Properties and Sites of Historical and Cultural Significance

An inventory of historic and cultural resources in the project corridor has been conducted. Significant locations identified are indicated on page 111.

The State Historic Preservation Officer (memo of February 2, 1977) noted the existence of the Battery Street Historic District, nominated to the National Register of Historic Places, and advised of six individual properties outside the District which were considered eligible for the National Register.

A) The former Rutland Railroad round house on the waterfront, at the foot of Battery Street.

B) The old barge terminal at the foot of South Champlain Street, which served a 19th century industrial complex on Pine Street.

C) The Queen City Cotton Mill Building (now a part of the General Electric Company plant) on Lakeside Avenue, and the 19th century housing development off the west end of Lakeside Avenue, formerly company housing for mill workers.

D) Floral and Mechanics Hall, the sole surviving building of an early county Fairground, on Flynn Avenue.

E) The old Champlain School on Pine Street.

F) St. Anthony's Catholic Church and Rectory on Flynn Avenue.

The Historic American Engineering Record listing includes the Queen

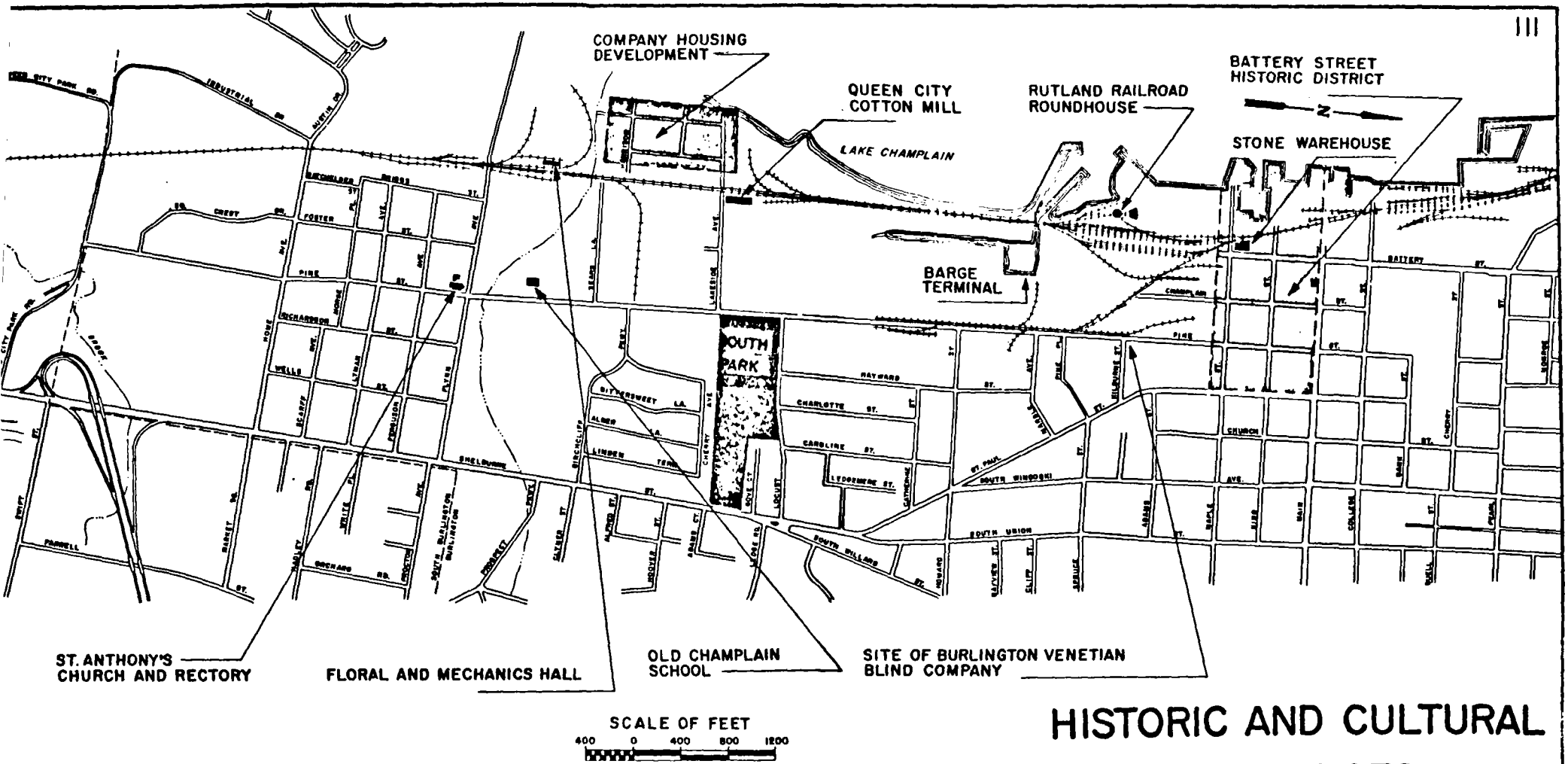
ity Cotton Mill; an early 19th century stone warehouse on Battery Street, the Historic District; and an 1880 factory building (Burlington 'enetian Blind Company) at the corner of Pine and Kilburne Streets. Field ıspection indicates the latter building has been demolished.

No sites of local historical significance in the project area were identified by the Citizen's Committee during the development of the project alternatives.

The State Archaeologist performed a "reconnaissance level archaeological survey" for the area of the project corridor that might possibly contain archaeological riches. "No Archaeological sites were located in the course of the survey."

In coordination with the State Historic Preservation Officer, it has been ascertained by FHWA, and acknowledged by the Advisory Council on Environmental Quality that the proposed action will have no adverse effect on the Battery Street Historic District. See Appendix Q. The Battery Street right-of-way is 100 feet wide; the 25-foot setback from each side of the proposed 52-foot street will allow for mitigative measures, including three plantings, through the one block which the project extends into the District. See Appendix R for determination of no adverse effect. Additional documentation is available at the Agency of Transportation.

The only other National Register eligible property in close proximity to the project is the barge terminal. Adverse effect is avoided here through routing the project a sufficient distance away to permit whatever preservation or restoration efforts may be undertaken in the future. Correspondence pertinent to these issues is included in Appendices E, F, and H.



HISTORIC AND CULTURAL RESOURCES IN PROJECT CORRIDOR

BURLINGTON SOUTHERN CONNECTOR
PROJECT M5000 (1)

Comments from Corridor Hearing

January 10, 1977

Positive Comments on New Location Alternate:

1. Relief of present congestion on Shelburne Street and Pine Street.
2. Improved access to downtown Burlington - less turning movements.
3. Alternate route if Pine Street is closed.
4. Favored by City of Burlington officials.
5. Decrease of traffic in front of Champlain School.
6. No loss of frontage on Pine Street.

Adverse comments on New Location Alternate

1. Consumes too much commercial and industrial property.

Other Comments and Questions:

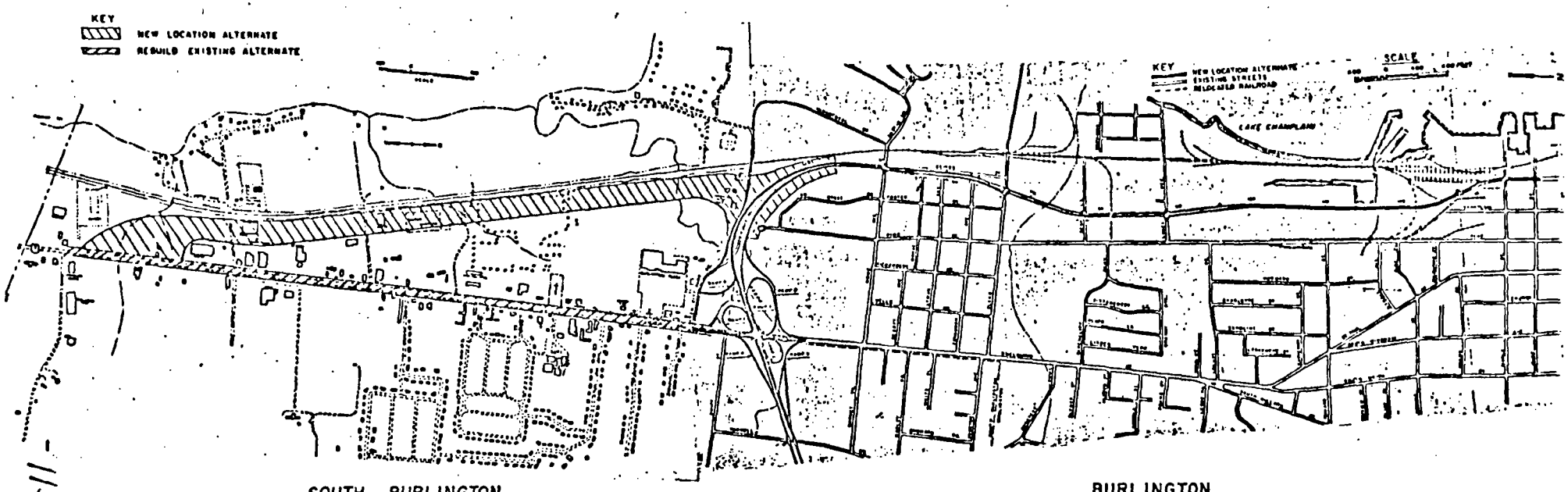
1. Concern of South Burlington residents in relation to impact of project on South Burlington.

Answer - The termini for the proposed Southern Connector are I-189 on the south and downtown Burlington on the north. The FEIS adequately describes the need for this type of connection. The proposed termini are logical and the project has independent utility with or without the construction of the South Burlington Connector. At this time the Planning Division of the Agency of Transportation is meeting with a Task Force from South Burlington to determine alternate alignments for South Burlington project. This project will extend south from the Southern Connector and is included on the ten year program approved by the 1978 legislative session. The South Burlington project, if ever developed, is planned to improve traffic flow on existing Route 7 south of its intersection with I-189. The proposed Southern Connector does not create a need or coerce the construction of the South Burlington Connector. The map on Page 115a shows the possible corridors for the South Burlington Connector. In developing the Southern Connector, the possibility of a future South Burlington Connector project was considered so that the design could be coordinated to eliminate any traffic operational problems. Therefore, if the South Burlington Connector project is progressed, the proposed design for this project could accommodate it.

2. Use of the quarry hole on Queen City Park Road for disposal of muck from project.

Answer - The quarry site will not be used as a disposal area.

3. Impact on Barge Basin area in respect to fish, wildlife and historic value.



SOUTH BURLINGTON
M 5200 (6)

BURLINGTON
M 5000(1)

Answer - Refer to pages 96 and 110.

4. Pedestrian overpass for children attending Champlain School, or complete grade separation.

Answer - To provide safe crossing of the highway by school children, a pedestrian overpass will be constructed at Home Avenue; and also at Sears Lane, if following investigation it is deemed feasible.

5. Additional discussion of Alternate modes, to include combination of two or more as a possible alternative to construction.

Answer - Refer to page 39.

6. Question as to present width of Pine Street.

Answer - Refer to page 35.

7. Comment that with more housing in the area there would be no necessity to commute.

Answer - This has no real bearing on this project.

8. Question pertaining to letter in DEIS from Burlington City clerk relative to vote approving local portion of project cost.

Answer - This letter was written in error as no vote was taken.

9. Question on relocation of families.

Answer - Refer to page 73.

10. Comments that project will promote increased use of automobile.

Answer - Refer to pages 66 and 152.

11. Comment that project will decrease access to waterfront.

Answer - All public access to the waterfront i.e. streets running westerly from Pine Street to the lakefront will be maintained as through streets.

12. Comment on decrease of pedestrian and auto access points; disruption of neighborhood road system.

Answer - Refer to page 71.

13. Question as to when City has to commit itself to funding.

Answer - Within 18 months after a municipality has applied for a project, ratification of the local portion of the funding must be made by the voters.

14. Concern with preservation of rail sidings.

Answer - Refer to page 53.

15. Comment on southbound off ramp terminating on Queen City Park Road.

Answer - It is necessary that this be a full interchange, but in the design process this ramp could be modified to terminate on Shelburne Street at the old I 189 exit terminus.

COMMENTS FROM

AND

RESPONSES TO

DRAFT ENVIRONMENTAL IMPACT STATEMENT

DEPARTMENT OF THE ARMY
NEW YORK DISTRICT, CORPS OF ENGINEERS
26 FEDERAL PLAZA
NEW YORK, N.Y. 10007

IN REPLY REFER TO
NANEN-E

17 November 1977

Acting Commissioner of Highways
Vermont Department of Highways
133 State Street
Montpelier, Vermont 05602

Dear Sir:

The New York District has reviewed the Draft Environmental Impact Statement for the proposed Burlington Southern Connector in the City of Burlington, Chittenden County, Vermont, Project M 5000 (1). The following comments are offered for consideration in the preparation of the Final Environmental Impact Statement.

a. Wetlands. Wetland areas will be filled to construct the New Location Alternate. The DEIS does not assess the full impact of this work. The FEIS should address in greater detail the impacts of filling in wetlands on fish and wildlife resources of Lake Champlain. (1)

b. Regulatory Jurisdiction. All concerns regarding Corps permit requirements should be coordinated with Mr. Vincent J. Monaster, Area Engineer, Regulatory Branch, Operations Division at 212-264-0184. Coordination should be conducted in a timely manner so as not to cause delay in project implementation.

Please submit a copy of the FEIS to this office upon its completion.

Sincerely yours,

J. A. WEISS
Chief, Engineering Division

cc:
Division Administrator
Federal Highways Administration

Department of the Army

1. Refer to page 96 .

Dec 11, 1977

Dear Mr Crosier

Re: our conversation of about a week ago, I am indicating herein my concern over the effect of Burlington's "So End Connector" on the "Lakeside" community.

I am expressing this concern both as a Regional Commissioner and as Chairman of the French-Canadian-Vermonter Section of the Vermont Civil Rights Advisory Commission. As you may know, "Lakeside" has traditionally been a haven for French-Canadian immigrant workers in the local mills. Although it is less French now than 30-50 years ago, it is still primarily so. As such it has always been crowded semi-isolated (wrong side of tracks) from the Burlington community. Even now it has a single thoroughly inadequate vehicular access of times unusable due to flooding - obviously not considered a very high priority concern!

The "So. End Connector" is another physical & psychological barrier between "Lakeside" and the Burlington Community [illegible] sections that the railroad

tracks.

In addition, the south-east corner of the Lakeside community has traditionally been used as a pedestrian connection with ~~its~~ Lakeside's church, stores, recreational facilities and with school. Obviously for community reasons that pedestrian connection must be enhanced & promoted not eliminated. It is also a necessity for energy reasons.

I have spoken to Father LaRue of St Anthony's Church (School) and he also feels strongly about this for his parishioners of both Lakeside and Queen City Park. I have spoken of my concern to Ms Kunin, John Simison and Mr. Malloy of the Gov's Office.

I'm sure this has just been an oversight and will be given proper attention. If you think it would help, I would welcome the opportunity to address the Trans Board on it.

Pls let me help if I can.

Sincerely

[illegible]

Armand Beliveau

1. In order to accommodate residents of the "Lakeside" community, if investigation proves it is feasible to provide public access for pedestrian movement from this area to Sears Lane, a pedestrian overpass will be constructed at Sears Lane. This overpass would conform to Federal Regulations for such structures and would be usable by the handicapped. It would provide safe access, especially for children, to the community facilities east of the Southern Connector project.

As the proposed project is at grade in this area, it will not create a visual barrier to those living in the "Lakeside" community. Highway intersections at Sears Lane and Lakeside Avenue will be at the present grade of these streets.

A pedestrian overpass will also be constructed at Home Avenue to provide access to the Queen City Park - Austin Drive area.

The railroad underpass on Lakeside Avenue is not within the project corridor. Improvement of this underpass would be the responsibility of the City of Burlington.

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
AREA OFFICE
NORRIS COTTON FEDERAL BUILDING
275 CHESTNUT STREET
MANCHESTER, NEW HAMPSHIRE 03103

REGION I
Room 800
John F. Kennedy Federal Building
Boston, Massachusetts 02203

R.J.N.

November 17, 1977

IN REPLY REFER TO:

1.3SS

Acting Commissioner of Highways
Vermont Department of Highways
133 State Street
Montpelier, Vermont 05602

Dear Acting Commissioner:

This office has reviewed the draft environmental impact statement for the Burlington Southern Connector, designated as Project M 5000(1).

In accordance with the comments contained in our letter of June 27, 1977, we would indicate that neither of the "build" alternatives would have direct impact on any current HUD-assisted housing or community development programs, or previous categorical programs.

However, in reviewing the draft, we find that the assessment of relocation impacts is not necessarily consistent with information available to our office.

In this regard, the draft indicates that of the fifteen affected families, nine are low to middle income, four are middle, and two are middle to upper. Further, the draft compares the price range of houses to be acquired with available listings by price range, and indicates a surplus of
(1) eight units based on a partial survey. From the material contained in the draft, it is not possible to determine what the partial survey of available relocation resources entailed, or when the information was gathered. It would also be useful to provide a breakdown of displacees by various characteristics. These might include owner-renter ratios, income range, and elderly vs. non-elderly.

We have also been advised by the City by letter of October 25, 1977, that relocation resources of safe, decent, and sanitary
(2) housing for persons of low income is extremely scarce in Burlington. For your assistance and reference in this regard, we have included a copy of this correspondence from the Community Development Coordinator.

We would urge that your mutual efforts be coordinated so that any adverse impacts associated with displacement and relocation can be minimized or eliminated.

We hope that these comments will be of some use to your agency in carrying out the proposed action. Should you have any questions, please do not hesitate to contact Mr. Neil Sieminski, Environmental Officer, at (603) 666-7788 or 7789.

Sincerely,

Creeley S. Buchanan
Area Director

Enclosure

United States Department of Housing and Urban Development

1. The partial survey consisted of contacts with several real estate offices and information obtained from the Multiple Listing Service. Spot checks of the exterior of several homes were made and comments as to interior conditions were obtained from listing brokers. The survey was made the last two weeks of April, 1977.

A displacee breakdown, per your suggestion, is impossible as the Relocation Act provides for only visual, assumed, and indirect information concerning potential displacees. Information sources used were the City Listers' Office, City Planning Office, local real estate dealers, and existing highway correspondence. From these sources it appears all families are homeowners with no major relocation problems. The income designations used for the draft Environmental Impact Statement are:

Low - Under $8,000
Low to Middle - $8,000 to $12,000
Middle - $12,000 to $16,000
Middle to Upper - $16,000 to $20,000
Upper - Over $20,000

2. The partial housing survey conducted for the DEIS indicated that the single family housing market was in adequate supply for the project needs. Discussion with Mr. Bruce Hyde, Community Development Coordinator for the Burlington Planning Commission confirmed this survey. He also indicated that the demand for low to moderate income rental housing greatly exceeds the supply. As the potential displacees with this project are homeowners, rather than rentors, this shortage of rental property should have no effect.

GENERAL ELECTRIC

GENERAL ELECTRIC COMPANY, ARMAMENT SYSTEMS DEPARTMENT
LAKESIDE AVE., BURLINGTON, VT. 05401 . . . PHONE (802) 658-1500

AIRCRAFT
EQUIPMENT
DIVISION

November 18, 1977

Mr. R. J. Nicholls
Highway Planning Engineer
State of Vermont
Department of Highways
Montpelier, Vermont 05602

Subject: Burlington Southern Connector Public Hearing held on November 10, 1977

Dear Mr. Nicholls:

The General Electric Company has previously communicated with your office on the subject of the Burlington Southern Connector, most recently in a letter to you from Al Rayfield on October 21, 1976. Al Rayfield was transferred from our department this spring and, on July 1, I became the department general manager.

I have followed with keen interest and concern the developments of the connector plan. I would like to take this opportunity to offer the following comments, and I request that they be considered as remarks for the record of the Public Hearing which was held on November 10, 1977, at 7:00 p.m., in the Burlington City Hall auditorium.

The General Electric Company has studied the two proposed "build" alternatives, the new location, and the reconstruction of Pine Street. As a result of our studies, we are opposed to the new location alternative for several reasons.

(1) This plan proposes to cross Lakeside Avenue immediately east of our main plant pedestrian entrance and would deprive us of the access to our receiving and shipping area from Pine Street. All traffic from Lakeside Avenue onto the connector would accumulate directly in front of our main plant entrance, presenting risks and hazards to our employees, especially the handicapped, who would have to cross and intermingle with this traffic. These hazards to pedestrians are significant with the current Lakeside Avenue traffic, which includes employees of the Blodgett Company as well as the residents west of the railroad bridge, and would increase significantly with the proposed new location. We presently have a daily average of 125 vehicles, primarily large trucks, coming to our receiving and shipping area. Adding this traffic to the congestion on Lakeside Avenue presents an absolutely unacceptable condition.

GENERAL ELECTRIC

We feel that our concerns are serious and well developed, and we would be very interested in any proposals which you may have for alleviating the risks and hazards presented by the current new location alternative.

Sincerely,

William J. Cimonetti
General Manager

WJC:asm

General Electric Company

1. Direct access from the Southern Connector to the General Electric receiving and shipping area will be provided.

The intersection of Lakeside Avenue and the proposed project will be 360 feet west of the present intersection of Lakeside Avenue and Pine Street. There will still be a distance of 440 feet from this intersection to the main entrance to the General Electric plant. Traffic in front of the plant will not increase with construction of this project. The projected ADT for the year 1995 west of the parking lot entrance will be 3000 whether the project is built or not. With a shorter distance between the parking lot entrance and the Southern Connector-Lakeside intersection there may be some backup in the parking lot itself. However, ease of traffic flow will be greater on the Southern Connector than on Pine Street, which should expedite traffic movement from the parking lot.

United States Department of the Interior

OFFICE OF THE SECRETARY
WASHINGTON, D.C. 20240

In Reply Refer To:
L7619(460)
(ER 77/913)

DEC 5 1977

Mr. David B. Kelley
Division Administrator
Federal Highway Administration
U.S. Department of Transportation
Federal Building
Montpelier, Vermont 05602

Dear Mr. Kelley:

This responds to your request for the Department of the Interior's comments on the Draft Environmental Statement for Burlington Southern Connector, Chittenden County, Vermont.

PRELIMINARY SECTION 4(f) COMMENTS

Alternate 4 (the original Pine Street Alternate) would require the demolition of the Old Champlain School building, a property eligible for inclusion in the National Register of Historic Places. Of the build alternatives considered, either Alternate 3 or Alternate 4 (Revised) would avoid use of this historic property. Based on information in the draft statement, it appears that both of these alternates are feasible and prudent alternatives to the demolition of the Old Champlain School building, and we recommend the choice of either as the appropriate response to the first proviso of (1) Section 4(f). Should the original version of Alternate 4 be selected, the Section 4(f) statement must rigorously demonstrate that the other build alternatives present "unique problems" or that they result in costs or community disruption of "extraordinary magnitude." This test seems especially important in the choice between the original and revised versions of Alternate 4, where the draft statement acknowledges that the revised alignment would result in better traffic service and where the major conflict appears to be a choice between demolition of the historic school building or the taking of a local business. A secondary non 4(f) factor favoring Alternate 4 (Revised) vis-a-vis the original version of Alternate 4 is that it would move the 4-lane highway 4-500 feet further away from the Champlain Elementary School--thereby decreasing noise impacts on the school.

cc: GJ Doss 12/15/77

AMERICAN REVOLUTION BICENTENNIAL 1776-1976

Alternate 3 and Alternate 4 would both use land in the Battery Street Historic District, a district eligible for inclusion in the National Register of Historic Places. Although we note that the State Historic Preservation Officer has determined that this use will not result in an adverse effect under the provisions of the National Historic Preservation Act, we nevertheless hold that Section 4(f) is applicable to this taking. Should you disagree, we request that an opinion on this issue be obtained from the General Counsel, U.S. Department of Transportation, and included in the final statement. Assuming that the Federal Highway Administration determines that the transportation needs of the Burlington area can be satisfied only by a build alternative, we would concur that there are no feasible and prudent alternatives to the selection of either Alternate 3 or Alternate 4. With regard to the second proviso of Section 4(f), we recommend that the Section 4(f) statement for the Battery Street Historic District involvement discuss and display in detail the actual work proposed in the Historic District and that it demonstrate that such work has been designed in order to maintain the historic ambiance of the District. We note that one of the major impacts of any build alternative will be a considerable increase of traffic through the Historic District, along with attendant noise and air pollution problems. The Section 4(f) statement should discuss the adverse effects these impacts will have on the District and should develop a mitigation plan to reduce or eliminate them.

(2)

Alternate 3 will pass near the Barge Terminal, another property eligible for inclusion in the National Register of Historic Places. Although the draft statement mentions that no adverse effect on this historic property will occur, the exact relationship of the project to this cultural resource is unclear. We recommend that the final statement clearly display the boundaries of the Barge Terminal in relation to the right-of-way required for Alternate 3 and that it address and evaluate possible traffic, noise and air pollution impacts to the terminal.

(3)

Alternate 4 will pass adjacent to South Park. Although the draft statement mentions that the project will not use land from the park, it fails to evaluate possible project caused impacts to this recreational resource. We recommend that the final statement clearly show the park boundaries in relation to the required right-of-way for Alternate 4, and that it address and evaluate possible traffic, noise, air pollution and access change (especially for pedestrians) problems that may adversely affect the park.

(4)

ENVIRONMENTAL STATEMENT COMMENTS

Cultural Resources

(5) While we do not wish to refute the negative archeological reconnaissance level survey, we believe it would be advisable, pursuant to E.O. 11593,

to undertake a more detailed investigation for assurance of no inadvertent damage to archeological resources during construction. When the probable alternative selection is known, we recommend a more intensive field check for archeological values and that a report of that effort be shared with the State Historic Preservation Officer and discussed in the final environmental/Section 4(f) statement.

Fish and Wildlife Resources

From the standpoint of fish and wildlife resources, it appears that Alternate 4 is less damaging than Alternate 3 (New Location Alternate).

Page 123 - The apparent purpose of the field reconnaissance performed by the consultant botanist was to determine the presence or absence of threatened or endangered plant species within the project area. The new location alternate would destroy 2 acres of wetlands in the vicinity of the Pine Street Canal. The area was surveyed on May 26 (6) or 27 (see Appendix I) by the consultant. This is early in the growing season for most herbaceous wetland plants and identification of the members of some families is difficult or impossible without the reproductive structures which mature later in the year. Most importantly, sedges (Cyperaceae) can be identified only with mature fruits. Two members of the sedge family, Scirpus longii and Scirpus Anacistrochaetus have been proposed for inclusion in the list of threatened or endangered species. The consultant's list notes that members of the sedge family were present. No information is given about the actual sedge species which occur in the wetlands adjacent to the Pine Street Canal. A review of available information concerning the two species indicates that the probability is low that either specie occurs in these wetlands. However, we recommend that further botanical surveys be performed during seasons of the year in which the various plant groups exhibit the reproductive structures necessary for accurate species determinations.

The high value of wetlands to fish and wildlife resources has been recognized for some time. In accordance with Executive Order 11990 and DOT ORDER 5660.1, the destruction of wetland areas should be avoided (7) whenever possible. When there is no appropriate alternative to destruction of the wetlands, the value of the area to be destroyed should be discussed. In this case, we believe a more thorough qualitative and quantitative evaluation is warranted and results should be included in the final statement.

Pages 125-126 - This section provides a description of the types of mitigating measures which can be incorporated into the design of projects requiring stream alteration. It does not, however, describe the measures (8) which will be incorporated into the design and construction of the highway's crossing of Potash Brook or an unnamed tributary of Lake Champlain. The mitigating measures proposed should be determined and included in the final environmental statement.

Page 132 - In light of the potential adverse ground and surface water quality impacts which may result from the disposal of this "muck," the (9) actual proposed disposal site should be identified and described in the final environmental statement along with impacts resulting from use of the site.

(10) Page 133 - Wetland destruction and stream alteration should be included in this section.

We note that the project will require a Section 404 permit from the Corps of Engineers. Since there is inadequate information in the draft statement concerning site-specific location, design, and measures to minimize harm for a full understanding of how the project may affect fish and wildlife resources, our present comments do not preclude additional and separate evaluation and comment by the Fish and Wildlife Service, pursuant to the Fish and Wildlife Coordination Act (16 USC 661, et seq.), during the permit review process.

OTHER RESOURCES

(11) Page 119 - Asbestos from tires is also a contaminant present in runoff from highways.

SUMMARY COMMENTS

The "Preliminary Section 4(f) Comments" in this letter are provided to give you an early indication of our thoughts about the 4(f) involvements of this project. They do not represent the results of formal consultation by the Department of Transportation (DOT) with the Department of the Interior (DOI), pursuant to the consultative requirements of Section 4(f) of the DOT Act. Such requirements would be fulfilled only when the Office of the Secretary (DOI) separately comments on any Section 4(f) statement which may be prepared and approved by you for circulation.

As this Department has a continuing interest in the project, we would be willing to provide technical assistance in further project assessment and in the development of additional documentation for review. The field office assigned responsibility for overall coordination on this project and for technical assistance in cultural resource matters is the Regional Director, National Park Service, 150 Causeway Street, Boston, Massachusetts 02114, (617) 223-0058. For technical assistance relating to fish and wildlife, wetlands, dredge and fill, and stream channeliza-

tion, please contact the Regional Director, Fish and Wildlife Service, 1 Gateway Center, Suite 700, Newton Corner, Massachusetts 02158, (617) 829-9200.

Sincerely yours,

/s/ David Ushio

Acting
Deputy Assistant Secretary of the Interior

cc: Chief Engineer
VT Dept. of Highways

United States Department of Interior

1. As Alternate 3 was chosenno 4(f) situation is involved.

2. A determination of no adverse effect on the Battery Street Historic District has been made by the FHWA and acknowledged by the Advisory Council for Historic Preservation; therefore a 4(f) Statement is not necessary.

3. Since 1927 the Barge Terminal has not been used commercially. The railroad bridge over the entrance from Lake Champlain into the Barge Terminal has been welded shut, making it impossible to pass from the lake into the basin. The land surrounding the Barge Basin is a highly developed commercial and industrial area. The southern end is a shipping yard used by General Electric with the usage of about 125 trucks a day. The City of Burlington uses the area between Pine Street and the Barge Basin for disposal of snow in the winter. The construction limits for the proposed project will be from 50 to 250 feet from the Barge Basin. The noise level generated by the highway will be 70 dBA at a distance of 102 feet from the center of the near lane. As the Barge Basin is located in an industrial-commercial area, with a truck shipping and receiving area on the south, and railroad tracks on the western side; it is questionable if the highway traffic will raise noise levels appreciably. Air pollution from the project is discussed on page 84.

4. As Alternate 3 has been chosen there will be no effect on South Park.

5. An archaeological survey of the construction corridor was conducted under the supervision of the State Archaeologist of the Division

of Historic Preservation. A pedestrian survey was done, supplemented by subsurface testing. No archaeological sites were located in the course of the survey. Under the Special Provisions to the Standard Specifications the contractor will be required to notify the State Archaeologist if any previously undisturbed areas are used for fill or disposal.

6. Refer to Appendix I.

7. Refer to page 96 for discussion pertaining to wetlands.

8. Mitigating measures as described on page 99 will be taken.

9. Refer to page 104.

10. Refer to page 106.

11. Refer to page 93.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION I
J.F. KENNEDY FEDERAL BUILDING, BOSTON, MASSACHUSETTS 02203

January 4, 1978

Mr. David B. Kelley
Division Administrator
Federal Highway Administration
Federal Building
Montpelier, VT 05602

Dear Mr. Kelley:

We have completed our review of the Draft Environmental Impact Statement (EIS) for the Burlington Southern Connector and are forwarding our comments for your consideration in preparing the Final EIS. Please excuse our delay in forwarding our comments.

Solid Waste

(1) The removal and disposal of 200,000 cubic yards of material described as "muck" saturated with oil poses significant environmental problems to ground as well as surface water quality. We believe that a further study should be made of the constituents of this waste and geologic and hydrologic studies should be completed before a disposal method is proposed. From an environmental standpoint it is extremely doubtful that disposal of the "muck" in a quarry will be an acceptable alternative. It is also doubtful that the Vermont Agency of Environmental Conservation, which has authority over such disposal, will allow the disposal of the "muck" in this manner. It is strongly felt by this office that other alternatives for the disposal of this material should be investigated.

(2) In addition to the above, we believe the draft EIS should discuss the disposal of demolition wastes and more adequately address the disposal of vegetative wastes. As many as fifteen residences and six business units may be taken during construction of the Connector, we believe the following points should be discussed in detail.

1. The possibility of disposing demolition and vegetative wastes within the project right of way according to state regulations.

2. If demolition wastes are to be disposed of at an approved sanitary landfill, where are the sites under consideration located and how will the wastes be transported to the landfill(s)?

3. What special provisions will be made for the handling of bulky wastes at the disposal site (size reduction, preparation of special area)?

4. Are there any alternatives to disposal of the demolition wastes on site or at a landfill?

The possibility of recycling some of the demolition wastes is not adequately discussed in the supplement. Demolition contractor should (3) be encouraged to recycle as much brick, metal, heavy timber and glass as is economically feasible.

Water Quality

The disposal of the "muck" discussed could have significant impacts on water quality. Disposal at the Quarry site could have serious adverse impacts on ground water quality. As requested above, the (4) geologic and hydrologic characteristics of any disposal site must be thoroughly investigated to insure that leachate from the muck does not migrate and contaminate ground or surface water.

(5) The project will involve wetlands filling, yet the Draft EIS does not mention the necessity of obtaining a Corps of Engineers 404 permit. The Final EIS should mention this.

Air Quality

Changes in attainment dates for auto emission standards have caused the accuracy of Supplement 5 of AP 42 to diminish, as Supplement 5 (6) now is considered to have understated the automotive emissions problem. Supplement 8 of AP 42 is presently available and should be used for the final calculations.

The EIS contains only a single statement referring to the consistency of this project with the SIP. EPA and the state air agency will be working to develop a more detailed procedure to assure that projects are consistent with Implementation Plans. We recommend that the following three criteria be used to determine project consistency:

1. The project will not cause or exacerbate violations of the National Ambient Air Quality Standards for CO, NO_x, or TSP.

2. The project design has incorporated all reasonable hydrocarbon emission reduction measures.

3. The project has been analyzed for its impact on the regional HC burden, and will be included in any area-wide transportation plan which will be reviewed for its consistency with the SIP.

The Draft EIS did not contain an explanation of the criteria used to determine project consistency. Before preparing the Final EIS, the highway agency should consult with the state air agency on this issue.

The discussion of the general feasibility of mass transit as an alternative was quite good. However, we recommend that in the future, combinations of mass transit and highway improvements be considered together as a single alternative, since it is fairly clear (7) that in most areas of Northern New England, the residential densities and trip patterns are less than ideal for a predominantly mass transit system. However, efficient use of mass transit can help reduce the scale of highway development in many areas and thus make the total transportation system more efficient from the environmental quality standpoint.

Current FHWA regulations require that an indirect source analysis be performed for preferred alternatives prior to submittal of the Final EIS. If FHWA considers the future CO review by the State of (8) Vermont to constitute the indirect source analysis required by 23 CFR 770, the findings should be included in the Final EIS. If there is no such formal review process for CO hotspot identification, the Final EIS should still contain any subsequent comments made by the State air agency regarding updated or more detailed air quality analysis.

Noise

We feel that some assessment of night-time noise impacts should be made since this can be the most critical period for annoyance.

(9) The Noise Study Report continually refers to impacts at or near the Design Noise Level as "mild impacts". In our opinion, the noise levels permitted by FHWA are more properly considered moderate impacts. An L10 value of 70 dBA is not "mild".

Based on the above comments and in accordance with our national rating system, a copy of which is enclosed, we have classified the Draft EIS as ER-2. We look forward to working with you, especially regarding the solid waste disposal aspects of the project. Please feel free to contact John Lynch of my office at 617-223-0400.

Sincerely,

Wallace E Stickney

Wallace E. Stickney, P.E.
Director, Environmental & Economic
Impact Office

Enclosure

EXPLANATION OF EPA RATING

Environmental Impact of the Action

LO -- Lack of Objections

EPA has no objections to the proposed action as described in the draft environmental impact statement; or suggests only minor changes in the proposed action.

ER -- Environmental Reservations

EPA has reservations concerning the environmental effects of certain aspects of the proposed action. EPA believes that further study of suggested alternatives or modifications is required and has asked the originating federal agency to reassess these aspects.

EU -- Environmentally Unsatisfactory

EPA believes that the proposed action is unsatisfactory because of its potentially harmful effect on the environment. Furthermore, the Agency believes that the potential safeguards which might be utilized may not adequately protect the environment from hazards arising from this action. The Agency recommends that alternatives to the action be analyzed further (including the possibility of no action at all).

Adequacy of the Impact Statement

Category 1 -- Adequate

The draft environmental impact statement sets forth the environmental impact of the proposed project or action as well as alternatives reasonably available to the project or action.

Category 2 -- Insufficient Information

EPA believes that the draft environmental impact statement does not contain sufficient information to assess fully, the environmental impact of the proposed project or action. However, from the information submitted, the Agency is able to make a preliminary determination of the impact on the environment. EPA has requested that the originator provide the information that was not included in the draft environmental impact statement.

Category 3 -- Inadequate

EPA believes that the draft environmental impact statement does not adequately assess the environmental impact of the proposed project or action, or that the statement inadequately analyzes reasonably available alternatives. The Agency has requested more information and analysis concerning the potential environmental hazards and has asked that substantial revision be made to the impact statement.

If a draft environmental impact statement is assigned a Category 3, no rating will be made of the project or action; since a basis does not generally exist on which to make such a determination.

United States Environmental Protection Agency

1. Refer to pages 104 and 105.

2.A. In accordance with the Standard Specifications for Highway Construction burying of vegetation wastes will be permitted at locations designated on the plans; normally outside a 1 on 1½ slope limit. Every effort will be made to salvage marketable timber. The Standard Specifications state that all materials resulting from demolition shall be disposed of outside and away from the site. Before the contract is let the State may sell buildings or other material for salvage or removal. After the contracted is awarded buildings become the property of the contractor so salvage of all, or part of, any building is at the contractors discretion.

B. Wastes will be disposed of at the Burlington Sanitary Landfill which is located off Manhattan Drive. These wastes will not include muck, which will be disposed of on the project. Transportation will be by truck.

C. Arrangements will be made with the supervisor of the Burlington Sanitary Landfill for the handling of bulky wastes.

D. Some material may be salvaged or moved, before the contract is let by the State; or, after the contract is let, by the contractor.

3. Buildings may be moved or demolished before the awarding of the contract; after that time they become the property of the contractor. Salvageable materials will be recycled if it is economically feasible.

4. The quarry site will not be used as a disposal area.

5. Refer to page 2 .

1.46

6. Refer to page 84 .

7. Refer to page 39 .

8. Refer to Appendix N .

9. As this area is primarily industrial - commercial in use night time noise levels are not considered significant. Whether the impact is considered "mild" or "moderate" seems immaterial as 70 dBA is the established design noise level.

VPIRG
Vermont Public Interest Research Group, Inc. • 26 State Street • Montpelier • Vermont 05602 • (802) 223-5221

November 1, 1977

11/2/77 - Hand Delivered

Ronald Crisman
Acting Commissioner of Highways
Vermont Department of Highways
133 State St.
Montpelier, VT. 05602

RE: Burlington Southern Connector (M 5000(1))

Dear Secretary Crisman,

The Vermont Public Interest Research Group, Inc. (VPIRG) would like to submit the following comments concerning the draft Environmental Impact Statement on the Burlington Southern Connector. We would also like to request, at this time, a copy of the final Environmental Impact Statement.

1. Inadequate Consideration of Alternative Travel Modes.

The draft EIS fails to adequately consider the feasibility of an integrated plan utilizing alternative travel modes such as bus, rail, vanpools, and carpools. The draft EIS considers each of these modes separately and comes to the obvious conclusion that none (1) of these modes in and of itself will adequately meet Burlington's transportation needs. An integrated mix of alternative travel modes, coupled with minor road improvements, is the only alternative plan not fully developed, not analyzed in terms of cost-effectiveness, and not included in the section discussing primary and secondary impacts.

Comments submitted to the Highway Department by the State Planning Office (A-95 review, 9/7/76) clearly state the necessity of analyzing an integrated program of alternative travel modes coupled with minor road improvements. Among the elements of such a plan they list:

A. Preferential lanes for buses and carpools
B. Improvements to the existing bus service, including expanded routes, more frequent service, construction of shelters and pull out areas for bus stops.
C. Development of fringe parking areas (including underutilized sections of shopping center parking lots) and connecting bus service.
D. Incentives for carpools and the use of public transportation systems (agreements with local employers, for example).
E. Pedestrian sidewalks and bicycle paths.
F. Improvements in traffic controls.
G. Promotion of shifts in peak loads through arrangement with local employers.

Nowhere in the draft EIS is there a discussion of a plan incorporating these elements.

On p.45 of the draft EIS it states "...there is substantial resistance to car pooling among auto drivers. Also, it is unlikely that car pools would be formed in sufficient numbers to achieve the widespread impacts desired." This statement is undocumented and clearly inaccurate in light of the growing popularity of carpools and vanpools in the state. Not only are car/vanpools considerably less expensive than the private automobile (vanpools now cost 2 cents per passenger mile compared to approximately 15 cents per passenger mile for a private automobile), but there is now federal money available for van acquisition and start up costs. With the availability of this federal money, increasing participation by businesses in car/vanpooling, and the rapidly rising cost of owning and operating a private automobile, it is evident that this mode of travel can and will play an increasingly important role.

The final EIS should consider the effect of investing the $10 million scheduled for a Southern Connector in a system of alternative travel modes and minor road improvements. Such a plan may be the most cost-effective and would certainly reduce energy consumption, air pollution, and the adverse impact on Burlington's residential neighborhoods.

2. Impact on Downtown Burlington

The draft EIS fails to analyze the potential impact of a Southern Connector resulting in increased access on Burlington's central business district. While increased access will improve the commercial vitality of Burlington, it may also encourage greater use of the private automobile with serious impacts on traffic flow, air quality and noise levels.

(2) The draft EIS states on p.88 that, "Traffic studies indicate that neither of the build alternatives are of sufficient length to induce additional traffic." The EIS, however,fails to cite the methodology or data from these studies to document the claim the Southern Connector will not increase traffic flows into downtown Burlington.

Since the sole purpose of a Southern Connector is to increase access to Burlington, it is likely this increased access and ease of entry into Burlington will encourage greater use of the private automobile in and around Burlington. This has been the experience in many other cities, where increased access through highway building has only increased the reliance on the private automobile as the sole means of transportation and thus ultimately resulted in greater traffic congestion and loss of environmental quality.

Since increased access may affect the ability of Burlington's streets to adequately handle traffic and may result in increased air pollution, the question of induced traffic must be more adequatel addressed. The final EIS should provide supporting data and methodology from the studies indicated on p.88 and document the ability

of Burlington's streets, particularly near the waterfront; to adequately handle flows to and from the Southern Connector.

3. Local Funding

A letter from Frank Wagner, Burlington City Clerk, to Arthur Goss (appendix A) states that Burlington voters "approved the local portion of the cost for the project at the Annual City Meeting held March 1, 1977." This is incorrect. Burlington voters have never approved the local portion, and the question of local financing for the $10 million project remains to be voted on.

Sincerely,

Leigh W. Seddon

Leigh W. Seddon, Assistant Director

Vermont Public Interest Research Group

1. The feasible components of an alternate modes scheme are analyzed on pages 34-46 of the Final Environmental Impact Statement. The plan for a combination of alternate modes was dismissed, for the following reasons, as not being a reasonable solution to the transportation problem in the Pine Street corridor.

Large traffic generators and high population densities are necessary to develop the traffic demand to warrant preferential bus or carpool lanes or to make feasible a fixed rail alternate. The transportation corridor from I-189 to downtown Burlington does not have either of these two factors. Traffic volumes for this corridor are shown on page 51. Trips destined for the Burlington downtown area originate from a widely scattered area to the south and east of Burlington.

Accordingly, demand in this transportation corridor is not sufficient to support preferential bus or car pool lanes or fixed rail alternates, singularly, or in any combination. Furthermore, construction of a preferential lane would cause social, economic, and environmental impacts similar to those of the Rebuild Existing alternate.

Passenger service has not been offered by Vermont Railway or its predecessor, Rutland Railroad, since 1953. Therefore, construction of facilities necessary to provide for rail service could also be expected to have social, economic, and environmental impacts, as well as high cost.

Finally, projected trip diversions from the automobile as a result of preferential lanes would not be sufficient to eliminate the need for the proposed improvement. The use of preferential lanes in several large cities throughout the U. S. (Boston, Los Angeles, and Honolulu) have resulted in a trip diversion of approximately 8-12 percent. Based upon this experience, and assuming the best case of a 12 percent diversion, the design hourly volume for this project would only decrease by approximately 200 vehicles. With a preferential lane available, the amount of diversions to rail would be nil. Both services would be competing for the same percentage of users with no appreciable increase in total diversions. The amount of diversions described above would not solve the transportation demand in the study corridor nor would they eliminate the need for the proposed improvement.

Accordingly, an integrated mass transit alternate for this corridor would not reasonably include preferential lanes or fixed rail.

Other means of encouraging the use of alternate mass transit and of other modes of transportation which are more workable in areas without large traffic generators and high population densities include increased bus service, car pooling, additional park-and-ride facilities, and additional pedestrian and bicycling facilities. Some combination of these services could be used to meet a small fraction of the transportion

demands of the study corridor. However, increased bus service is not self-supporting at this time. Furthermore, even if subsidized, the provision of subsidized, expanded bus service, along with the provision of an integrated mix of alternate modes of transportation, would provide no assurance of increased usage. Such alternate modes of transportation are ordinarily voluntary. It is not realistic to expect the prospective users of this project to voluntarily switch modes of transportation to the extent required to eliminate the need for the project. Switching modes of transportation is inconvenient and time consuming especially for a distance as short as that to be served by this project. Furthermore, the American demand for individual ownership of automobiles and resistance to car pooling continues. Despite economic incentives for van pooling, car pooling, and use of public transportation, continued reluctance to other than private automobile transportation has been demonstrated. This is particularly true for the project area. In the Vermont climate, walking and bicycling could only serve to relieve congestion in the late spring, summer and early fall, and then, to only a minor degree.

Measures mandating the use of alternate modes of transportation, while possible, are also not a reasonable solution. It is unlikely that measures sufficiently stringent to solve the traffic problem in the project area would be accepted by the public. Furthermore, such measures could severely impact the businesses in the project area, and cause a diversion of traffic to other corridors in the CBD.

Traffic control in the City of Burlington has been studied by the city and improvements in the ways of lights, signs and directional one-way movements have been made. When traffic volumes exceed capacity, the result is a decrease in level of service, and additional improvement in traffic control is not possible. Staggering the work hours of businesses in the project corridor would relieve peak hour traffic to some degree, but implementation of this plan would have to be a voluntary arrangement through local employers.

2. This project is designed to improve access rather than to increase access. Improved access serves an already existing demand, whereas increased access will serve demands not already existing.

To support this, reference is made to the congested traffic conditions now existing on streets leading into the downtown area. Also, an origin and destination study made by the Agency of Transportation Traffic Research Division in 1973 indicated that no appreciable number of drivers were reducing trips to downtown due to problems of access. This would indicate that there is not an unsatisfied demand for access, but rather that drivers, although unhappy with congestion levels

are making the trips just the same. The problem thus becomes one of satisfying on existing travel demand, which this project is designed to do, by relieving one of the congested accesses to Burlington Central Business District.

With respect to the length of the Southern Connector and the claim that it is of insufficient length to induce additional traffic, the reasons a specific highway is chosen by the driver are two in number. The first is that the highway provides a travel path between origin and destination that was not provided by some other route, and the second is that the travel time on one particular highway is sufficiently less than by some other route. The Southern Connector will neither access any origin - destination pairs not already served by other highways, nor will it provide a substantial enough timesaving to the prospective user to induce new trips.

The total timesaving to the user of the Connector will be small compared to other routes, once the travel time reducing effects of lower traffic volumes on competing facilities are translated to travel time reductions on those competing routes. Had the Southern Connector been of sufficient length that a substantial travel time advantage via the Connector would be remaining, after travel time adjustments on other routes due to decreased congestion were realized, then the Connector would be more likely to induce new trips.

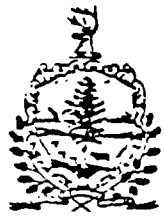
The ability of the existing street system in the area of the downtown terminus of the Southern Connector to handle the additional traffic loadings has been examined. Capacity computations have indicated that, with the exception of the Maple Street westbound approach to

Battery Street,all streets will function at the accepted design level of service C. The Maple Street approach fails to provide the "C" service level, however, vehicle operators, once realizing that unacceptable congestion on Maple Street westbound near Battery Street are to be expected, will alter their routings to avoid the congestion and the reduction in volume on Maple Street so produced, will effectively improve the service level on Maple Street to a tolerable level.

For an analysis of Air Pollution in the project corridor refer to page 84 .

OFFICE OF THE GOVERNOR

STATE A-95 CLEARINGHOUSE



STATE PLANNING OFFICE

AREA CODE 802-828-3326

A.D.A.

R.J.N.

STATE OF VERMONT

MONTPELIER, VERMONT 05602

MEMORANDUM

To: R. J. Nicholls, Highway Planning Engineer
Vermont Dept. of Highways

From: Charles E. Crowell, State A-95 Coordinator

Date: November 14, 1977

Subject: Burlington M 5000(1), Southern Connector, Draft Environmental Impact Statement

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As the State Clearinghouse under USOMB Circular A-95 we have notified other public agencies with a possible interest in your:

Draft Environmental Impact Statement.

Copies of comments received are attached.: from the District Environmental Commission, 111 West Street, Essex Junction., and Agency of Environmental Conservation.

CEC:en
enclosure

State of Vermont

AGENCY OF ENVIRONMENTAL CONSERVATION

DISTRICT ENVIRONMENTAL COMMISSION

Department of Fish and Game
Department of Forests, Parks and Recreation
Department of Water Resources
Environmental Board
Division of Environmental Engineering
Division of Environmental Protection
Division of Planning
Natural Resources Conservation Council

111 West Street
Essex Junction, Vermont 05404

October 6, 1977

MEMORANDUM

TO: Charles Crowell, Coordinator A-95 Review

FROM: Curtis W. Carter CWC WS

RE: Burlington Southern Connector

The plans submitted with the Impact Statement did not show the proposed alternatives. This made it difficult to conduct a detailed review of the project. About all that can be said at this time is that a 250 Permit will be required due to the size and scope of the project.

State of Vermont

AGENCY OF ENVIRONMENTAL CONSERVATION

Montpelier, Vermont 05602
OFFICE OF THE SECRETARY

Department of Fish and Game
Department of Forests, Parks, and Recreation
Department of Water Resourses
Environmental Board
Division of Environmental Engineering
Division of Environmental Protection
Natural Resourses Conservation Council

November 10, 1977

MEMORANDUM

To: Charles Crowell, A-95 Clearinghouse

From: Eldon Morrison, Resources Planner

Subject: Burlington M 5000(1) Southern Connector

The Agency of Environmental Conservation would like to add the following comments to the record for this project.

(1) The wetlands along Pine Street in the Barge Basin are in poor condition due to a large amount of organic material, but this in no way makes them unimportant. They are the only wetlands in the Burlington area. These wetlands provide spawning for several species of fish. In the late spring, the young shiners leave the marsh and they help create a walleye fishery by causing the walleye to move into the shallow area to feed. We would consider reducing the size of this small wetland as being a major impact.

It is believed that Potash Brook does not provide any important sport fisheries.

(2) There is use of the brook in the spring by spawning fish. No matter what the importance of the brook is, the placement of 1/4 mile of culverts has to have considerable effect upon the immediate and downstream water quality, flow and habitat.

EPM:klw

Agency of Environmental Conservation

1. Refer to page 97.

2. The Agency of Transportation's Hydraulics Engineer has investigated the concerns regarding Potash Brook with the following conclusions.

a. Water Quality - Roadway salting will have no adverse effect. (See Appendix O.) Other runoff pollutants generated by the highway will not change water quality a significant amount as the total number of vehicles passing through the Potash Brook watershed is not expected to increase substantially with the construction of this project.

b. Flow - Potash Brook is already a channelized stream through this reach, and flow is controlled by the existing concrete boxes under Shelburne Street and I 189, as well as culverts at the I 189 - I 89 - Dorset Street Interchange. Flow within the interchange area may be increased by the additional pavement, but this increase will be minimal as the entire area adjacent to the brook has bedrock close to the surface. Most of the rainfall, therefore, runs off instead of infiltrating into the soil.

c. Habitat - With little, if any, change in flow characteristics and water quality there is no reason to expect habitat changes. The downstream end of the interchange area outlets into a stable, bedrock exposed reach of stream. This will help control any possible downstream erosion or channel changes. Velocity from the last culvert will also be controlled by the natural bedrock or by use of rock placed in the stream as an energy dissipator, so there will be no change in downstream flow conditions.

Department of Energy
Region I
150 Causeway Street
Boston, Mass. 02114

November 18, 1977

David B. Kelley
Division Engineer
Federal Highway Administration
U.S. Dept. of Transportation
Federal Building
Montpelier, Vermont 05602

Dear Mr. Kelley:

Region I of the Department of Energy has reviewed the Draft Environmental Impact Statement - Burlington Southern Connector - FHWA-VT-EIS-77-02-D Project M 5000 (1). We have the following general comments:

(1) 1. The energy used in construction is accepted so matter of factly that it is easily overlooked. Therefore the statement should evaluate and compare the amounts of fuel that may be consumed for each alternative.

(2) 2. One of the prime reasons for this project is to alleviate the congestion around downtown Burlington. By alleviating this congestion motorist will be saving on fuel consumption that would have been used while idling in traffic. These factors and specific savings are not included in this statement.

Thank you for the opportunity to comment.

Sincerely,

Robert E. Philpott, Director
Energy Conservation, Environment,
& Resource Development

cc: Robert Stern

Department of Energy

1. As per the Region I Department of Energy office the number of BTU's consumed per dollar of construction cost in the year 1980 will be 110,000. Using this criteria the proposed project (Alternate 3, New Location) will expend 63.58×10^{10} BTU's, while Alternate 4, Pine Street would expend 65.01×10^{10} BTU's.

2. Implementation of this project will reduce travel time between termini, as access will be limited to five intersections. Field data obtained in February 1978 indicates an average idling time of 70.2 seconds from the intersection of US 7 and I 189 to the intersection of Battery and King Streets. Idling time for the proposed project has been calculated as 18 seconds. Using a rate of 0.00175 gallons of fuel per second idling time, as supplied by the Department of Energy, and a projected ADT of 20,000 for year 1995, a saving of 183 gallons of fuel per day would be realized. With reduced traffic on Pine, Shelburne, and adjacent streets traffic flow will be smoother with less idling time necessary. This will increase fuel savings in the area as a whole.

City of South Burlington

1175 WILLISTON ROAD
SOUTH BURLINGTON, VERMONT 05401
TEL. 863-2891

OFFICE OF
CITY MANAGER
WILLIAM J. SZYMANSK

November 18, 1977

Agency of Transportation
Department of Highways
133 State Street
Montpelier, Vermont 05602

Re: Project M 500(1) Burlington Southern Connector
Draft Environmental Impact Statement of 9-20-77

Gentlemen:

As was pointed out in the public hearing on the above referenced EIS held at the Burlington City Hall on November 10, 1977, it is the position of the City of South Burlington that the southern connector is of vital importance to both the cities of Burlington and South Burlington.

As the particular project under discussion is the Burlington section it is reasonable that the EIS concentrate on the Burlington problems. However, there are certainly problems which will arise in South Burlington which must be adequately addressed in order that this vital project be completed in a way which maximises the benefits to both communities and the entire region. These have been pointed out by the South Burlington representatives on the Citizens Task Force and by myself and others at the public hearing.

The major problem of the present proposal is the specific design of the intersection between I-189, the southern connector and Route 7, i.e. Shelburne Road. The proposed design calls for the present interchange to be completely re-built in such a way as to make a future extension of the road to the south and the necessary connection of this extension to I-189 impractical without considerable revision. The City of South Burlington has requested that the extension of the southern connector through South Burlington to the south be given project status by the Transportation Board and that, if possible, this portion of the connector be built as soon as the design work can be completed. There are, of course, a

(1)

a number of ways in which the interchange can be designed which would accomplish the desired results, i.e., a connection which will allow traffic in both directions on the connector to enter or exit from I-189 without having to traverse Route 7.

We would also request that instead of completely reconstructing the present overpass of I-189 over Route 7 consideration be given to using the existing structure plus the necessary widening and not having a complete four-way interchange with Route 7 at this point, but move at least the south bound connection from I-189 to a point approximately 2000 feet to the south as a part of the South Burlington portion of the road, thus relieving the considerable conjestion on this portion of Route 7. It may also be advisable to do the same to the north bound connection to the Burlington connector. (Sketch will be forwarded under separate cover).

(2) We would also like to point out that the proposal to dump 125,000 cubic yards of muck into the quarry adjacent to the Champlain Water District plant is completely unfeasible. This quarry is an intrigal part of the treatment plant and the use of this as a dump for muck would render the plant inoperative.

I would like to point out that some preliminary discussions with the Chairman of the Burlington Planning Commission and myself, as well as with representatives of the Highway Department would indicate a desire on the part of all parties concerned to find a solution to these and other problems which have been noted in our comments on the EIS for this project.

It is our hope that the entire project, i.e., both the portion in Burlington and the extension in South Burlington can proceed on an expedited basis as we believe that this project properly constructed can be of great benefit to the entire Chittenden County area. In this we are ready to proceed in whatever manner is required to speedily resolve the problems that have been noted in the present design of the interchange, as well as in other specific deficiencies in the EIS that have been noted.

Respectfully submitted,

Paul A. Farrar

Paul A. Farrar, Chairman
South Burlington City Council

PAF/h
cc: R. Chrisman
R.J. Nichols
D. Kelley
Senators Stafford & Leahy
Congressman J. Jeffords
Arthur Rock
W. Aswald

City of South Burlington

1. The City of South Burlington did not formally request construction of the South Burlington Connector until September, 1977, at which time the DEIS on the South Connector was being circulated. Therefore, it is impossible to build the two projects concurrently. At the present time the South Burlington Citizens Committee and the Planning Division of the Agency of Transportation are exploring several possibilities for connecting the two projects. Design of the South Connector will be accomplished to be compatible with this future project.

2. The muck will be disposed of within the limits of construction.

City of South Burlington
1175 WILLISTON ROAD
SOUTH BURLINGTON, VERMONT 05401
TEL. 863-2891

November 15, 1977

Re: Project M 5000 (1)
Burlington Southern
Connector - Draft
Environmental Impact
Statement of 9/20/77

Agency of Transportation
Department of Highways
133 State Street
Montpelier, Vermont 05602

Gentlemen:

I am responding to the D.E.I.S. of September 20, 1977 on the above named project as a member of the Burlington Southern Connector Task Force and as a member of the South Burlington Transportation Committee. I also reviewed the preliminary draft of the E.I.S. and with the support and approval of the South Burlington City Council, forwarded a written response to the Highway Department. No written reply was ever received to my numerous questions, nor were the specific objections of South Burlington to the proposed project included in this latest draft. Certain details were satisfactorily amended, however, other statements which I questioned were answered by simply deleting them from this last draft.

The position of the Vermont Highway Department is that:

1. Since South Burlington is not in the project as defined by lines drawn on a map, they have no obligation to assess the environmental impact on South Burlington.

(1) They maintain this attitude despite the fact that two of the ramps for the interchange are in South Burlington, and all northbound and all southbound traffic must pass through South Burlington on Route 7 to reach the project. The point at which they pass through, the area immediately south of the existing I-189 overpass, is the single point of highest traffic density in the entire State of Vermont today.

2. Since South Burlington is not in the project as defined by lines drawn on a map, there is no need to provide traffic counts or impact on traffic south of the I-189 overpass. The Highway Department maintains that traffic will not increase in this area due to the project proposed, and that increases will be only those which would normally accrue with or without a new highway and interchange.

(2) Historically, new highways attract a certain amount of new traffic. Traffic projections to the year 1995 were provided at various times by the Highway Department. These projections for south of the overpass were from 28,000 A.D.T. to 35,000 A.D.T. The 7,000 difference must indicate at least some uncertainty about the impact of the project on this area.

The position of South Burlington is that:

1. The proposed interchange is badly planned since it impacts traffic at what is already the most impacted area in the state. A ten million dollar project that worsens a bad situation is a waste of taxpayer's money.

2. The Interchange as proposed would prohibit the future addition of an extension of the Southern Connector through South Burlington as planned for in the 1965 Urban Systems Plan. The Highway Department has mentioned (3) "slip ramps" as a means of eventually connecting the South Burlington portion. However, this would provide access only into and out of Burlington. If built, the South Burlington section attached by slip ramps would not provide access to the Interstate. All traffic on Route 7 would still have to pass through the impacted area south of the overpass in order to attain the Interstate. Under this proposal, an extension of the connector, would not serve South Burlington residents, nor would it serve motorists using our business district.

3. The proposed southbound off ramp terminates on Queen City Park Road (a South Burlington Street) at a point opposite the side entrance to the Burlington Plaza shopping complex. Southbound traffic will either (4) traverse the parking lot, which is private property, or traverse Queen City Park Road to reach Route 7. This juncture is again at the point of highest traffic density.

4. Not mentioned in the preliminary D.E.I.S., but a part of the September 20th draft, is a proposal by the Highway Department to dump "125,000 cubic yards of oil soaked muck" into a quarry adjacent to the Champlain Water District Plant in South Burlington. Fortunately, the quarry will (5) not be available since it is part of the processing system of the Water District. Were it available, however, the Highway Department saw no need to assess the environmental impact of a muck dump adjacent to a South Burlington residential neighborhood, nor did it mention possible seepage into Lake Champlain. Again, the quarry is across that line on the map.

In summation, I am appalled that an Environmental Impact Statement on a new highway and a major interchange will not address impact even one foot across a line drawn on a map. It has the same effect as saying that a new hydro-electric dam has impact only on the dam site, and that there is no impact on the land which would be inundated by the waters backing up to the dam.

Respectfully submitted,

Catherine M. Neubert

CC: Ronald Chrisman
David B. Kelley
C. Harry Behney
Sen. Robert Stafford
Sen. Patrick Leahy
Con. James Jeffords
Arthur Rock

City of South Burlington - Catherine Neubert

1. Refer to Page 57.

2. Refer to Page 63.

3. Several methods for connecting the Burlington Southern Connector with the South Burlington project are being studied by the South Burlington Citizens Committee and Agency of Transportation Planning Division personnel. Final design will be accomplished to assure compatibility of these two projects.

4. Refer to Page 117.

5. Refer to Page 104.

F.H.W.A.

STATE OF VERMONT

AGENCY OF DEVELOPMENT AND COMMUNITY AFFAIRS

OFFICE OF THE SECRETARY (802) 828-3211 MONTPELIER, VERMONT 05602

DEPARTMENTS OF:
Economic Development 828-3221
Housing & Community Affairs 828-3217

DIVISIONS OF:
Administration 828-3231
Historic Preservation 828-3226
Vermont Travel Division 828-3236
Vermont Life Magazine 828-3241
Outdoor Advertising 828-3215

MEMORANDUM

TO: Arthur Aldrich, Location Engineer
Department of Highways

FROM: William B. Pinney, State Historic Preservation Officer
Division for Historic Preservation WBP

DATE: November 22, 1977

SUBJECT: Burlington Southern Connector - Project M 5000(1)
Potential Adverse Impact on Archeological Sites
from Waste Disposal and Fill Procurement Operations

We appreciate the opportunity to review the draft EIS on the above project; we would have commented sooner, but the draft was just received.

(1) In the discussion of Construction Impacts on page 127, the use of fill and waste disposal areas is indicated, and on page 132, the potential fill and waste disposal areas are outlined: the unused quarry hole on Queen City Park Road (for waste), and gravel pits in Hinesburg and north of Winooski (for fill). Because these areas have been extensively disturbed, we can reasonably assume that use of these areas will have no effect on archeological or historical resources. We would like to recommend, however, that the Division be given the opportunity to review alternative fill and disposal areas selected by the contractor. Our concern with fill and disposal areas is more extensively discussed in the attached copy of our memorandum on Route Vt. 127 (Project M 5000(3).

WBP/cjd

Attachment

A. D. A.

STATE OF VERMONT

AGENCY OF DEVELOPMENT AND COMMUNITY AFFAIRS

OFFICE OF THE SECRETARY (802) 828-3211 MONTPELIER, VERMONT 05602

DEPARTMENTS OF:
Economic Development 828-3221
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DIVISIONS OF:
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Outdoor Advertising 828-3215

MEMORANDUM

TO: Arthur Aldrich, Location Engineer
Department of Highways

FROM: William B. Pinney, State Historic Preservation Officer
Division for Historic Preservation WBP

DATE: November 22, 1977

SUBJECT: Route Vt. 127, Burlington-Colchester Project M 5000(3)
Potential Adverse Impact on Archeological Sites from
Waste Disposal and Fill Procurement Operations

We appreciate the opportunity to review the draft EIS on the above project, we would have commented sooner but the draft was just received.

When the Division assisted the Highway Department this summer in conducting a first-phase reconnaisance level archeological survey, no attempt was made to examine the borrow areas delineated on page 119 of the draft EIS. Aside from the preliminary survey which we conducted for the Highway Department, additional archeological survey in the Winooski Valley area indicated that the entire drainage, especially between the City of Winooski and the Lake, is an extremely sensitive archeological area. The three borrow areas illustrated in the EIS thus have a strong potential for destroying significant archeological sites. A visit to the Pine Island area demonstrates the potential devastation that occurs when millions of cubic yards of fill are removed.

Although we understand that the selection of borrow areas is the responsibility of the contractor, in a major action such as this, it is imperative that the Highway Department consider the potential effect of borrow areas on archeological resources and contract to have these areas surveyed at the earliest stages of planning.

As Giovanna Neudorfer recently indicated to you, survey of the borrow areas (even prior to final selection of the alternative) as soon as possible is recommended since this would provide sufficient time to mitigate affects on the sites if any are found. While avoidance of sites is the preferred mitigation plan, data retrieval may perhaps be necessary. In many cases, this is a time consuming operation; thus, advance planning is most desirable.

Although we have previously recommended that intensive archeological survey be conducted on the final alternative, we wish to point out again that all areas of impact should be subject to this kind of intensive survey. For example, page 118 of the draft EIS indicates that the contractors will be required to develop a system of haul roads. Early attempts to identify these areas will facilitate a prompt scheduling of the archeological surveys and will ensure that construction not be delayed, especially if mitigation of resources becomes necessary.

The reason we are requesting more in-depth archeological surveys in this instance than will usually be called for is because our studies disclosed that this section of the Winooski Valley is one of the most archeologically sensitive yet encountered in the state.

Although the Highway Department will have to contract out the survey, the Division can assist you in preparing the scope of work.

WBP/cjd

Agency of Development and Community Affairs

1. The quarry hole on Queen City Park Road has been determined unavailable for disposal. Waste will be disposed of on the project, or at the City of Burlington Sanitary Landfill off Manhattan Drive. It is anticipated that the gravel pits in Hinesburg or Winooski will be used for fill. If at the time of construction alternate fill and disposal areas are selected, an opportunity to reivew these areas will be made.

OFFICE OF THE CITY CLERK
BURLINGTON, VERMONT 05401
802-862-5710 802-862-5719

Frank L. Wagner
City Clerk

November 30, 1977

Ronald E. W. Crisman
Secretary, Agency of Transportation
Montpelier, Vermont 05602

Dear Secretary Crisman:

This is to notify you that at their meeting held Monday, November 28, 1977 the Burlington Board of Aldermen voted unanimously to support the Aldermanic Committee's report regarding Phase Five, North End Connector and the Southern Connector. Enclosed please find a copy of the Aldermanic Committee's report.

The Board also directed me to inform you that they unanimously recommend the adoption of Alternate No. 7 for Phase Five and Alternate No. 3 for the Southern Connector.

Very truly yours,

Frank L. Wagner

Frank L. Wagner
City Clerk

FLW:lmb

Encl: 1

cc:Arthur Goss
Arthur J. Rock, Jr.
James L. Barngrove, Jr.
William T. Costa, Jr.
Henry O. Angell
Howard E. Brush
George H. Paine
Merton R. Snow

November 28, 1977

Mr. Paul Fisher, Chairman
Board of Aldermen
City of Burlington
Burlington, Vermont 05401

RE: Phase Five, North End Connector

After carefully considering the various alternates on this project, your committee recommends that the Burlington Board of Aldermen recommend to the Vermont State Transportation Board the adoption of ALTERNATE #7 -- New Alternate for this project. Alternate #7 has been previously favored by both the Burlington and Colchester Planning Commissions, and no strong opposition to this choice came to our attention.

RE: Southern Connector

To agree to a recommendation on this project we had to consider the following:

1. Report of Citizens' Advisory Committee. This committee held numerous meetings, listened to many reports, and voted as follows:

Pine Street Alternate	670	37%
New Location	610	33%
No Build	530	30%
	1,810	100%

We commend this committee for its hard work, and it's unfortunate the results are not too conclusive.

2. Report of Waterfront Committee. This committee recommended adoption of the Pine Street Alternate, and we understand their voting for one or the other was based on its relation to the Waterfront itself. We feel this is too restricted, and the alternate should be selected considering its effect on the Waterfront, the City of Burlington, Chittenden County, etc.

3. Report of the Burlington Planning Commission. This committee met Tuesday, November 22nd, and after a lengthy meeting voted 5 for and 1 against recommending adoption of the Alternate #3 - New Location or Western Alternate.

Based on the above, and the following, your committee recommends that the Burlington Board of Aldermen recommend to the Vermont State Transportation Board the adoption of Alternate #3--New Location Alternate for this project.

Reasons for recommendation of Alternate #3 -- New Location:

1. Cost. Not enough difference (10.2 million vs. 9.6 million) to influence choice.

2. Utilities. Greatly reduces cost and inconvenience of utility re-location.

3. Access to Downtown. No question that Alternate #3 provides best downtown access.

4. Relieve Traffic Congestion on Shelburne Road. Alternate #3 less 40% -- Pine S treet Alternate less 15%.

5. Relieves Traffic Congestion on Pine Street. Alternate #3, less 50% -- Pine Street Alternate plus 20%.

6. Champlain School. Alternate #3 eliminates busy intersection practically in front of Champlain School. Reduces at this intersection 1995 average daily traffic from 18,080 down to 7,170.

7. Left-Hand Turns against Traffic. Exist now and with Pine Stree Alternate. Alternate #3, limited access road. Access to road controlled by traffic lights at selected intersections.

South End Connector Committee
Phase Five Committee

Robert D. Paterson

Brian Brennan

Terrance O'Brien

Robert M. Wilson
276 COLLEGE STREET • BURLINGTON, VERMONT 05401

November 18,1977

Hon. Ronald E. W. Crisman
Secretary of Transportation
Administration Building
State Street
Montpelier, Vermont 05602

Dear Ron:

I would appreciate it tremendously if you would incorporate this letter into the hearing proceedings as a citizen commentary on the Burlington southern connector.

I believe this connector is vital to provide access to the south Burlington industrial area and to the city center from the south, the east and the north. In fact, I believe that this project should be your agency's number one priority in northwestern Vermont and that every effort must be made to expedite construction on the fastest possible schedule.

Further, it is my judgment that the new location alternative is superior. Rebuilding and using a portion of Pine Street may seem to some people to be a better solution right now, but in the long run it is certainly far less satisfactory for all.

While much of the citizen committee work was super, I must say that I am very critical of their "scoring" of the alternatives. How they could possibly give equal weight to each of their ten criteria is beyond me! I think the methodology lacks common sense and that, therefore, their conclusion is not credible.

My own score would favor the new location alternate by a wide margin.

Sincerely,

cc: R. J. Nicholls
Highway Planning Engineer

Public Involvement in Project Development

Numerous meetings with Federal, State and Local Officials and the general public have been held. In addition to those already mentioned under the Project History and Present Status Chapter of this Statement, the most significant points of coordination are summarized as follows:

Approximately 25 letters explaining the contemplated project were sent to various agencies for the purpose of soliciting early input. Responses were received from the following and are on file at the Agency of Transportation Office.

Vermont Aeronautics Commission
Vermont Agency of Development and Community Affairs
Vermont Agency of Environmental Conservation
Vermont Department of Agriculture
Burlington Electric Light Department
Burlington Park Department
Burlington School Superintendent
State Historic Preservation Officer
US Department of Agriculture, Soil Conservation Service

The Vermont Highway Department Planning Division sponsored a Public Informational Office January 3, through 7, 1977 at the Burlington Square Mall, in Burlington. The display consisted of Alternate layouts, maps, air photos, typical sections, traffic data, cost estimates, etc. for both the Burlington Southern Connector project as well as the Phase V project in the northern area of Burlington.

Since the action will involve stream modifications, coordination was made with the U.S. Fish and Wildlife Service, as well as the Vermont Agency

of Environmental Conservation.

Due to the close proximity of the project to the Barge Basin and the Battery Street Historic District, and possible archaeological concerns; consultations have taken place with the State Historic Preservation Office.

Coordination has been made with the Federal Agencies of the Department of Housing and Urban Development, the Department of Interior and the Department of Agriculture. Their comments have been discussed elsewhere in this statement.

Burlington's Waterfront Board has completed a study and made recommendationson the most desirable approach for planning and coordinating the development of Burlington's Lakefront. Meetings and coordination will continue in that regard by the Citizens' Committee, the Waterfront Board, the Consultant, and the Agency of Transportation.

On October 24, 1977 to October 28, 1977 a Public Information Office was held at the Burlington Square Mall.

On November 10, 1977, a Corridor Hearing was held in Burlington. For comments on this hearing, refer to pages 113 to 117.

Bibliography

Accident Data, Burlington, Pine Street, Shelburne Street and St. Paul Street - from the files of the Planning Research Section, Highway Planning Division, Agency of Transportation.

Action Plan - Revision No. 1, March 26, 1976 published and on file with the Agency of Transportation.

Air Quality Manual (Volume 1 through 8), 1972, published by the California Department of Public Works.

Alternate 2, Mass Transit - 1976, presentation of Ralph Cramer, Chittenden County Transportation Authority, at Citizen's Committee Meeting.

Workbook of Atmospheric Dispersion Estimates, 1970, D. Bruce Turner, Environmental Protection Agency

Guidelines for Air Quality Maintenance Planning and Analysis, Volume 9: Evaluating Indirect Soutces, 1975, published by the Environmental Protection Agency.

Air Pollution Computer Programs Mobile-1 and Caline-1, on file with the computer Section, Agency of Transportation

Burlington Master Plan 1960, City of Burlington, Vermont.

Burlington Comprehensive Master Plan, 1973, City of Burlington, Vermont

Burlington Directory 1971-1972 - publisher H.A. Manning Company, Greenfield, Massachusetts.

Burlington Directory, 1974, publisher H. A. Manning Company, Greenfield, Massachusetts.

Burlington Sanborn Maps 1942, (with Corrections to 1961, publisher Sanborn Map Company, New York.

Greater Burlington Urban Area Highway Plan, 1965, Vermont Agency of Transportation.

The Comprehensive Plan for Outdoor Recreation in Vermont, Interagency Committee on Natural Resources, 1967.

Design Standards for Highway and Bridge Construction, 1972, Vermont Agency of Transportation.

Vermont Director of Manufacturers 1974-1975, Vermont Agency of Development and Community Affairs.

Economic Analysis for Highways, Robley Wingier, International Textbook Company, 1969.

Economic Analysis, Burlington M 5000(1), from the files of the Social-Economic Section, Highway Planning Division, Vermont Agency of Transportation.

Engineering and Environmental Analysis, Burlington M 5000(1), from the files, Vermont Agency of Transportation.

Effect of Deicing Salts on Roadside Soil and Vegetation, Virginia Polytechnic Institute Research Division.

Effects of Road Salt on Vermont Stream, Samuel H. Kunkle, Journal American Water Works Association, May 1972

Environmental Impact of Highway Deicing, U.S. Environmental Protection Agency, Water Quality Research, June 1971.

Environmental/Section 4(f) Statement, Draft, Action, Concord, Lincoln and Lexington, 1972, (Mass), Howard, Needle, Tammen and Bugendoff, Consulting Engineers.

Environmental Statement, 1976, Milton-Colchester - (Vermont), Vermont Agency of Transportation.

Federal Register, Volume 36, No. 107: Volume 39, Numbers 34, 44, 64, 89, 128, 152, and 171; Volume 40, numbers 24, 48, 63, 88 and 127; Volume 41, Numbers 28 and 130. The National Register of Historic Places listing for Vermont are found in these documents.

General Population Characteristics - Vermont, 1970 Census of Population, U. S. Department of Commerce, Bureau of the Census, (Also other census publications).

Highway Capacity Manual, 1965, National Academy of Sciences, publication 1328, Washington, D. C.

Guide for Highway Landscape and Environmental Design, 1970, American Association of State Highway Officials.

The Influence of Salts Applied to Highways on the Levels of Sodium and Chloride Ions Present in Water and Solid Samples- F. E. Hutchinson, Project A007-ME, funded by U. S. Department of Interior, Office of Water Resources.

Intersection Capacity Analysis Charts and Procedures, published by the Traffic Institute, Northwestern University.

Low Cost Urban Transportation Alternatives, 1973, U. S. Department of Transportation.

Natural Areas in Vermont, 1969, by H. Vogelman, University of Vermont for Central Planning Office, Interagency Committee on Natural Resources.

Noise Pollution Computer Program, on file with the Highway Computer Section, Vermont Agency of Transportation.

A Policy on Geometric Design of Rural Highways, American Association of State Highway Officials, 1965.

A Policy on Design of Urban Highways and Arterial Streets, 1973, American Association of State Highway Officials.

Guide for Bicycle Routes, American Association of State Highway and Transportation Officials, 1974.

Federal-aid Highway Program Manual 7-7-2 dated December 30, 1974; 6-73 dated May 29, 1974; 7-7-5 dated December 30, 1974; 7-7-3 dated May 14, 1976; 7-7-9 dated November 26, 1974 and other interim Federal Highway regulations. All of these are on file in the Planning Division, Vermont Agency of Transportation.

Right-of-Way Analysis, Burlington M 500(1), on file at the Vermont Agency of Transportation.

Route Logs and Progress Chart, Vermont Agency of Transportation.

Sodium and Chloride Ion Levels in Soils Adjacent to Vermont 108, Vermont Agency of Transportation.

Vermont School Data 1971-1972, Vermont Department of Education.

South Burlington Comprehensive Plan, 1969.

Standard Specifications for Highway and Bridge Construction, Vermont Agency of Transportation, 1976.

State of Vermont, Implementation Plan for the Achievement of National Air Quality Standards, Agency of Environmental Conservation, State of Vermont, 1971.

Vermont Statutes Annotated and Resolutions, Public State Laws.

Technical Memorandum #1, #2 and #3, 1976 Greater Burlington Urban Area Transportation Study - prepared and published by the Chittenden Regional Planning Commission.

Traffic Analysis, Burlington M5000(1), on file in the Traffic Research Section, Planning Division, Agency of Transportation.

Regression Analysis for Traffic Projection, (several issues), on file inthe Traffic Research Section, Planning Division, Agency of Transportation.

Automatic Traffic Recorder Report, (several issues), on file in the Traffic Research Section, Planning Division, Agency of Transportation.

Traffic Origin and Destination Survey Records, on file in the Traffic Research Section, Planning Division, Agency of Transportation.

Traffic Projections - Computer Programs 542, 543, 544, 546 and 553, on file in the Highway Computer Section, Agency of Transportation.

TOPICS, Traffic Operations Program to Increase Capacity and Safety, 1971, prepared by Bruce Campbell and Associates, Inc., Inc., Consultants on file in Agency of Transportation.

U. S. Army Corps of Engineers Environmental Reconnaissance Survey of the State of Vermont, prepared for the Department of the Army, Office of the Chief of Engineers, by the Engineer Agency for Resources Inventories, March, 1973.

United States Geological Survey Topographical Maps, 7 1/2 Minute Series; Burlington and Colchester Quadrangle, United States Department of the Interior, Geological Survey.

Vermont Facts and Figures, 1972 and 1973, Vermont Department of Budget and Management.

Vermont's Fish and Game Annual, 1970, 1971, 1972, Vermont Fish and Game Department, Agency of Environmental Conservation.

Vermont Interim Land Capability Plan, Vermont State Planning Office, Walter Blucher, Consultant, 1972.

Vermont Land Capability Plan Maps, Vermont State Planning Office, 1972

Vermont Land Use Plan, List of Historic Places, Agency of Development and Community Affairs, Historic Sites Office.

Vermont Land Use Plan - Vermont Natural Areas, Inventory, Agency of Development and Community Affairs.

Vermont State Comprehensive Outdoor Recreation Plan, 1973, Agency of Environmental Conservation, Division of Planning.

Vermont Yearbook, 1973, National Survey, Chester, Vermont.

Vermont Yearbook, 1976, National Survey, Chester, Vermont.

Vision and Choice, Vermont's Future, 1968, The Vermont Planning Council and Central Planning Office.

United States Code, Public Laws. Especially Title 42, section 4332 and related references.

WATER - Waterfront Analysis of Transportation and Environmental Resources National Science Foundation Student Originated Study. Civil Engineering Department, University of Vermont, Burlington, Vermont, 1972.

Treatment of Soft Foundations for Highway Embankments, Transportation Research Board, N. C. H. R. D. #29

APPENDICES

OFFICE OF THE MAYOR
BURLINGTON, VERMONT 05401

GORDON H. PAQUETTE
MAYOR

RECEIVED
SEP 10 1975
CHITTENDEN COUNTY REGIONAL
PLANNING COMMISSION

September 8, 1975

Mr. Arthur R. Hogan
Executive Director
Chittenden County Regional Planning Commission
Essex Junction, Vermont

Dear Art:

In compliance with your request for written support of the "Southern Connector" and the connector to the transportation terminal as Burlington's first priority for use of Urban Systems funds, I wish to emphasize the following:

As we advised your office on May 27, 1975 in a letter from the Burlington Planning Office, the first priority for the City of Burlington under the Urban Systems program is our Southern Connector and the connector to the transportation terminal.

This is a four-lane urban typical, on grade arterial connecting I-189 to Battery Street at Main Street. The road is generally located in the following area: It would begin at the present US 7 and I-189 interchange and extend as a continuation of I-189 in a westerly direction to a point on Pine Street just north of the Queen City Park Road. It would then curve in a northerly direction behind the residences on South Crest Drive utilizing as much of the vacant land as possible adjoining the Vermont Railway. It would continue northerly just west of and parallel to Batchelder Street, and slightly east of but including all of Briggs Street to Flynn Avenue. Thence it would curve across primarily vacant lands and proceed through the old grade school building to Pine Street just south of Sears Lane. Pine Street would be widened and improved from this point northerly to Marble Avenue. Thence the new connector street

would proceed north-westerly across the lands of the Burlington Street Department, Haigh Lumber Company and the Vermont Railway to the southerly end of Battery Street. Battery Street would thence be widened and improved to complete the tie into the recent improvements north of Main Street.

I believe that this road could be phased in construction and the first phase might be ready for construction by the end of this fiscal year.

The estimated construction costs may be in the magnitude of $11 million. After sufficient information and data have been accumulated, we are prepared to develop the fifteen percent local dollar matching requirement.

Sincerely,

Gordon H. Paquette

Gordon H. Paquette, Mayor

Burlington DATE

APPENDIX A

APPLICATION FOR FEDERAL AID PROJECT
(URBAN SYSTEM)

Application is hereby made to the State Highway Board, or its successors, of the State of ermont by the Mayor, of the City of Burlington for a Federal id Project on said South End Connector from College Street to Interstate 189.

In connection with this proposed project, the Mayor of the City of Burlington agree that they will enter into the following agreements or such project within one (1) year after the date project plans are submitted to the City of Burlington:

Right-of-Way Agreement
Maintenance Agreement

It is further agreed that they will furnish the right-of-way for the construction of he project within one (1) year after the date project plans are submitted to the City of Burlington. It is understood that all acquisition of rights-of-way ill be in compliance with the "Uniform Relocation Assistance and Real Property Acquisition olicies Act of 1970."

It is understood that the municipality will provide 15% of the cost of this project.

ITNESSES: [signatures]

BY: ______________________

[signature]
Mayor

ITNESSES: Margaret S. Moon
Phyllis M. Brunig

BY: E. H. Stedsney
Chief Engineer

ITNESSES: [signature]

APPROVED BY: STATE HIGHWAY BOARD OR ITS SUCCESSO

BY: [signature]

Goss

R.J.

OFFICE OF THE CITY CLERK
BURLINGTON, VERMONT 05401
802-862-5710 802-862-5719

Frank L. Wagner
City Clerk

June 23, 1977

Arthur J. Goss
Assistant Highway Planning Engineer
State of Vermont
Department of Highways
Montpelier, Vermont 05602

Dear Mr. Goss:

In reply to your letter dated June 13, 1977 regarding State and Federal Funds for our Southern Conn. (Pine Street), the voters of the City of Burlington approved the local portion of the cost for the project at the Annual City Meeting held March 1, 1977.

Sorry for the delay in our response.

Sincerely,

Frank L. Wagner

Frank L. Wagner
City Clerk

FLW:lmb

Aldrich

JLA

A. J.

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
1 Burlington Sq., Suite 205, Burlington, Vermont 05401

January 4, 1977

Mr. Arthur J. Goss
Asst. Highway Planning Engineer
State of Vermont
Department of Highways
Montpelier, Vermont 05602

Dear Mr. Goss:

This is in response to your letter of December 27, 1976 requesting assistance in identifying prime or unique farmlands. The two (2) highway projects are in Burlington, Vermont. They are identified as Burlington Southern Connector and an improvement to Vermont 127 in the North end of Burlington.

Both highway projects will transverse urban-built-up areas and therefore will not impact upon prime or unique farmlands in the area.

Sincerely,

Robert R. Shaw

Robert R. Shaw
State Conservationist

A.D.A.C. APPENDIX C

JLA

J.N.

UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
Concord Field Office
55 Pleasant Street
P. O. Box 1518
Concord, NH 03301

RECEIVED
JUN 29 1977
STATE H'WAY
DEPT

June 28, 1977

Highway Planning Engineer
State of Vermont
Department of Highways
Montpelier, Vermont 05602

Dear Sir:

This is in response to Mr. Arthur Goss' letter of May 4, 1977, requesting information on the impact on fish and wildlife resulting from the "Burlington Southern Connector".

From the information in your letter and from communication with the Vermont Fish and Game Department, we can offer some projected impacts from your project. Initial information indicates the impacts on Potash Brook may be limited. The Brook is limited in terms of fishery resources, probably because of its small size and low flows during summer. Without knowing the details of your plans, however, we cannot go into any great detail yet on the impacts. We will mention the major topics we would look for when we review the Environmental Impact Statement to aid you in its preparation.

Two concerns we would have with this particular highway would be the culvert crossings and channel relocation. The former, if not placed correctly, can result in streambed scouring and impede fish passage by altering the rate of flow of the stream. The latter destroys terrestrial habitat, and disrupts aquatic habitat, usually replacing it with habitat of a lesser quality. There can also be an increase in the temperature of the stream as a result of removal of the streambank vegetation during relocation. Mitigating measures to offset these impacts would include placing boulders and gravel in the new channel to create pools and riffle areas for fish and to revegetate the streambank as soon as possible. For your information, I am enclosing a copy of our unofficial guidelines for stream alterations. Although focussed on stream channelization, the guidelines contain information on impacts which apply to stream relocation as well.

Other impacts which should be covered in the EIS include sedimentation resulting from construction, information on the location and content of the borrow pits, if any, discussion on the expected change in flows of the brook, location and disposal of excavated material, and any mitigation measures to compensate for habitat losses.

It appears that the Pine Street alternative may be more environmentally acceptable than the New Location alternative. The information we have on the area, although perhaps outdated, indicates the New Location may impact wetlands along Lake Champlain. In any case, because of runoff from the highway and possible impacts on the lake from construction-related activities, we favor the Pine Street alternative.

Hopefully, the information we have provided will be of some help. Please keep in touch as this project develops, and if you have further questions feel free to contact us.

Sincerely yours,

Fred C Benson, Jr.

Fred C. Benson, Jr.
Acting Field Supervisor, CFO

Enclosure

State of Vermont

AGENCY OF ENVIRONMENTAL CONSERVATIO

Montpelier, Vermont 05602
OFFICE OF THE SECRETARY

Department of Fish and Game
Department of Forests, Parks, and Recreation
Department of Water Resources
Environmental Board
Division of Environmental Engineering
Division of Environmental Protection
Natural Resources Conservation Council

August 24, 1976

Mr. R.J. Nicholls, Highway Planning Engineer
Vermont Agency of Transportation
Department of Highways
Montpelier, Vermont 05602

RE: Burlington M 5000(1)

Dear Mr. Nicholls:

The "Burlington Southern Connector" alternate locations map has been reviewed by representatives of the Departments of Fish and Game, Forests and Parks, and Water Resources, with particular input from our Environmental Advisor Russell Reay. In our view, the route designated by the yellow line (new location alternate) would appear to be the best route. Our reasoning is as follows:

> Switching the alternate route away from Pine Street would help preserve the latter's commercial district character and viability by permitting it to continue two way traffic. In addition, one way ingress into downtown Burlington in effect creates a freeway. The speeds and traffic volumes on the connector would certainly conflict with the traffic pattern characteristic of an active commercial district.

Finally, the newly located alternate route passes through a generally unpaved area. Roadside plantings would be easier and less expensive to establish in such an area.

I hope you will find this input valuable.

Respectfully,

Edward J. Koenemann, Director
Division of Planning

EJK:kaj

cc: Russell Reay

APPENDIX D

A.D.A. Aldrich Goss

State of Vermont

AGENCY OF ENVIRONMENTAL CONSERVATION

Department of Fish and Game
Department of Forest, Parks, and Recreation
Department of Water Resources
Environmental Board
Division of Environmental Engineering
Division of Environmental Protection
Natural Resources Conservation Council

Montpelier, Vermont 05602
Department of Water Resources
WATER QUALITY DIVISION

JLA

MEMORANDUM

TO: John Armstrong, Urban Transportation Engineer

FROM: Richard M. Czaplinski, Water Resources Planner

RE: Water Quality Implications of the Burlington Southern Connector.

DATE: May 12, 1977

In response to our telephone conversation of April 27 concerning the water quality implications of the planned Burlington Southern Connector, I would like to present the following comments and observations.

During construction the main concern would be with controlling erosion and sediment transport. This responsibility must be accepted by those involved with the project at the time of construction. Some examples of effective and economic control of runoff erosion and sediment transport are:

1. Limiting the areal extent and exposure time when bare ground is most susceptible to erosion by surface water runoff. Coupled with this is limiting construction to periods during the year when minimum precipitation is normal.

2. Diverting runoff water around the exposed surface area to greatly reduce the amount of runoff crossing the erosion-vulnerable ground.

3. Utilizing sediment basins to reduce runoff velocity and trap the suspended sediments.

4. Providing a design that will prevent outflow velocities great enough to cause erosion downstream.

5. Including debris retention devices to prevent clogging of streambeds at bridges and culverts, thus assuring that the flow will be retained within the banks, avoiding more erosion-susceptible areas outside the streambed.

6. Slope banks to facilitate revegetation and retard erosion, or hold rip-rapping.

7. Follow the natural channel contours, especially in steeply sloping topography.

8. Seeding banks and revegetating in natural trees and shrubs for erosion and thermal protection.

9. Shape spoil and berms to facilitate revegetation and prevent erosion.

10. Grassed waterways and sediment traps to protect water quality.

11. Minimum widening of channel to prevent thermal pollution.

12. Easements to protect channels and wetlands.

Sediment controls enumerated above will also effectively control transport of adsorbed pollutants, such as pesticides, herbicides, nutrients, pathogenic microorganisms and other organic and inorganic pollutants.

Stream channelization and wetland drainage projects, because of their far-ranging effects, will require detailed and close evaluation on a case-by-case basis, unless they are very minor in scope. The acknowledgment of the extreme importance of remaining wetlands as essential nurseries for nature's use has accentuated the need for their retention in most situations.

After construction is completed other concerns come to mind. The application of salt on the highway during the winter is an obvious change which can be expected to produce higher chloride levels in the surrounding groundwater and surface water. Various products of combustion, oil, residues from tires and brake linings for example, can also be expected to be washed from the road surface.

The existing drainage network within and downstream of a project site has been developed naturally over a period of time, to handle the storm flows experienced. Any project which increases peak flows will cause an increase in the channel carrying capacity through erosion unless Best Management Practices are applied. Stormwater management regulates the release of this runoff by various means. Flow may be retarded by the use of storage facilities, or the volume of surface flow may be reduced by improving the infiltration capacity of soils by, for example, contour benching the slopes. Modifying the new drainage patterns to lengthen flow distances will increase the time of travel of the runoff, reducing its velocity, and sediment-transporting capability. Another practice is to leave suitably vegetated strips of adequate width within the project

site to intercept the overland runoff and trap much of the erosion-produced sediment and debris. Facilities for stormwater management should be designed with an operating life equal to that of the hydrologic modification project.

I hope the comments above are helpful and at the very least, I hope they demonstrate our concern with the effects on water quality from a large construction activity such as the Burlington Connector project.

RMC/TW/rh

AGENCY OF DEVELOPMENT
AND COMMUNITY AFFAIRS
MONTPELIER

MEMORANDUM

To: Arthur D. Aldrich, Location Engineer
Date: 2 February, 1977
From: William B. Pinney, State Historic Preservation Officer WBP.
Subject: Urban System Projects, Burlington
North End M5000 (3) and Southern Connector M5000 (1)

Following are my comments concerning review of these projects for historic and architectural resources:

North End M5000 (3)

On North Avenue, the old Thayer School Building is eligible for inclusion in the National Register of Historic Places and is within the area of impact.

A review of the plans as submitted for the following listed Study Lines indicates that the area of the undertaking's potential environmental impact contains no properties of historic or architectural significance which are included in or eligible for inclusion in the National Register of Historic Places:

1) Study Line 23
2) Study Line 10 and the Macrae Road Extension
3) Study Line 05 and the Connector Road

Southern Connector M5000 (1)

The Battery Street Historic District nominated to the National Register of Historic Places, extends easterly from the waterfront to St. Paul Street and southerly from Main Street to the rear property lines of the buildings on the south side of Maple Street.

Other properties considered eligible for inclusion in the National Register of Historic Places which are in the area of the undertaking's potential environmental impact are:

The former Rutland Railroad (now Vermont Railway) Roundhouse on the waterfront at the foot of Battery Street.

The old barge terminal on the waterfront at the foot of South Champlain Street which Giovanna Neudorfer, our State Archeologist, has already indicated is also an important archeological resource.

The General Electric plant on Lakeside Avenue and the 19th century housing development on Lakeside, Wright, Harrison, Conger and Central Streets.

Floral and Mechanics Hall, the sole surviving building of the Vermont State Fair grounds and the Chittenden County Fair at Flynn Avenue and the Vermont Railway tracks.

Champlain School on Pine Street

St. Anthony's Catholic Church and Rectory on Flynn Avenue

A review of proposed rights of way indicates that the Champlain School is the only one of the above properties which may be adversely affected.

WBP/sn

APPENDIX E

STATE OF VERMONT

A.D.A.

AGENCY OF DEVELOPMENT AND COMMUNITY AFFAIRS

OFFICE OF THE SECRETARY (802) 828-3211 MONTPELIER, VERMONT 05602

DEPARTMENTS OF:
Economic Development 828-3221
Housing & Community Affairs 828-3217

DIVISIONS OF:
Administration 828-3231
Historic Preservation 828-3226
Vermont Travel Division 828-3236
Vermont Life Magazine 828-3241
Outdoor Advertising 828-3215

MEMORANDUM

TO: Arthur D. Aldrich, Location Engineer
Department of Highways

FROM: William B. Pinney, Director
Vermont Division for Historic Preservation

DATE: July 21, 1977

SUBJECT: Burlington Southern Connector - M 5000(1)

We have reviewed the preliminary alignment attached to your Memo of July 18 and it is our opinion that it would not adversely affect the Champlain School property. This is based upon the fact that construction of a highway on that location would not impose any conditions which are not already existing within the environs of the school building.

It is further our opinion that a small portion taken from the rear corner of the school property should not be in conflict with section 4F of the Department of Transportation Act because of its remoteness from the building and because the taking would be a result of project planning for the express purpose of preserving the school building.

If the existing Pine Street alternate is eventually decided upon, there will still remain the decision between the alternates of taking the Noyes Tire Company property or the Champlain School property. In this eventuality, it appears obvious that serious consideration would have to be given to the economic impact on the Noyse property vs. the historic preservation impact on the School property.

WBP/sf

STATE OF VERMONT

A.D.A.

AGENCY OF DEVELOPMENT AND COMMUNITY AFFAIRS

OFFICE OF THE SECRETARY (802) 828-3211 MONTPELIER, VERMONT 05602

DEPARTMENTS OF:
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Housing & Community Affairs 828-3217

DIVISIONS OF:
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Historic Preservation 828-3226
Vermont Travel Division 828-3236
Vermont Life Magazine 828-3241
Outdoor Advertising 828-3215

MEMORANDUM

TO: Arthur D. Aldrich, Location Engineer
Department of Highways

FROM: William B. Pinney, Director
Division for Historic Preservation

DATE: September 20, 1977

SUBJECT: Burlington Southern Connector M 5000(1)

A final review of the completed plans for the reconstruction of Battery Street through the Battery Street National Register District indicates that, although the street will be widened, the proposed curbings and grass areas will effectively eliminate truck parking that now occurs in the area. This will enhance the qualities of the environment for pedestrians which will fit in with the preservation development that is now occuring in the District and encourage the further rehabilitation of this neighborhood. Thus, the Division for Historic Preservation finds that the proposed construction will not have an adverse effect on the qualities that make this area eligible for inclusion in the National Register of Historic Places.

In addition, planned relocation of construction near the Barge Basin will result in the elimination of any potential effect on historic archeology in that area.

WBP/cjd

APPENDIX F
aldrich
Armstrong
JLA

United States Department of the Interior

NATIONAL PARK SERVICE

NORTH ATLANTIC REGION
150 CAUSEWAY STREET
BOSTON, MA. 02114

IN REPLY REFER TO:
L-7619-NAR-(PE)
ER-77/567

July 6, 1977

A.J.G.

Mr. Arthur J. Goss
Assistant Highway Planning Engineer
Vermont Department of Highways
Montpelier, Vermont 05602

Dear Mr. Goss:

As indicated in a letter of June 13 from the Director, Office of Environmental Project Review, we are herewith providing technical assistance comments upon our review of your preliminary working draft of a draft environmental statement for I-189, Project M 5000(1), Chittenden County, Vermont, also known as the Burlington Southern Connector.

You should understand that these comments emanate solely from the National Park Service and do not speak for any other bureau nor do they predispose the Department's position upon official review of the environmental impact statement at a later date.

Cultural resources protection is of a primary concern to the National Park Service. We note on pages 23 and 63 reference to two historic sites subject to impact by this highway project and reported as being eligible for listing on the National Register of Historic Places. These are respectively, the Battery Street Historic District and the Old Champlain School. We also note the Burlington City Planner questions the historic significance of the school.

Our first recommendation is that you consult the National Register of Historic Places (published in the Federal Register, February 1, 1977, with updatings the first Tuesday of each month) to determine if there are any other listed sites subject to impact by the project. Then consult with the State Historic Preservation Officer to secure his commentary on any other sites being considered for nomination to the National Register. A final determination of eligibility can and should be secured by request to the Chief, Office of Archeology and Historic Preservation, National Park Service, Washington, D. C. 20240 for any sites not so listed or included in the Federal Register updatings. For ready understanding by all readers of the environmental impact statement, the National Register and eligible sites should be shown on a composite map of the overall project area.

AMERICAN REVOLUTION BICENTENNIAL 1776-1976

Following this, you would be ready to follow the procedures of the Advisory Council on Historic Preservation published in 36 CFR 800 as mentioned on page 63. At this time, having checked with local authorities for the identification of historic sites of local interest, there would be a clear understanding as to the need for a section 4(f) statement based on an historic site. While it does appear to us that there is an historic site basis for a section 4(f) for the specific sites mentioned, these procedural steps should be reflected in discussing cultural resources protection to substantiate such a statement.

Another critical, yet often difficult to determine, aspect of cultural resource values is that of archeology. While this project appears to be in a rather highly developed area, the nature of the project could encounter undisturbed archeological material. We suggest a qualified archeologist such as Margery Power (Department of Anthropology, University of Vermont, Burlington, Vermont 05401) be consulted for a determination of the probability of archeological material in the area and for advice as to appropriate protective measures. Should there be a high probability of significant archeological values to be affected by the project, it may be necessary to perform detailed site investigations and determine National Register status eligibility preferably before final project design is completed but certainly before construction commences.

We feel the environmental impact statement should display and thoroughly discuss the State Historic Preservation Officer's and qualified archeologist's commentaries. Those two parties and the Advisory Council on Historic Preservation should be given the opportunity to review and comment on the draft environmental statement.

We are very pleased with this early opportunity to review and comment on this project and would be glad to offer further technical assistance to the extent we are able upon your request.

Sincerely yours,

Jack E. Stark

Jack E. Stark
Regional Director

A.D.A.
DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
AREA OFFICE
NORRIS COTTON FEDERAL BUILDING
275 CHESTNUT STREET
MANCHESTER, NEW HAMPSHIRE 03103

REGION I
Room 800
John F. Kennedy Federal Building
Boston, Massachusetts 02203

Aldrich

R. J. N.

IN REPLY REFER TO:

1.3SS

June 27, 1977

Mr. R. J. Nicholls
Highway Planning Engineer
Vermont Department of Highways
Montpelier, Vermont 05602

Dear Mr. Nicholls:

We have reviewed the draft/working copy of the proposed Draft Environmental Impact Statement for project M 5000(1), which involves highway improvement between I-189 and downtown Burlington.

As a result of this review process, we have determined that neither of the principal alternatives under consideration would impact any HUD assisted housing or community development projects and programs. Additionally, we have reviewed the proposed action with reference to the Old Champlain School and wish to advise that HUD has provided no assistance in any form for this facility, under either current programs or former categorical programs.

Thank you for the opportunity to review this proposal.

Should you have any questions, please contact Mr. Sieminski, my staff Environmental Officer, at (603) 666-7788 or 7789.

Sincerely,

Crosley S. Buchanan

Crosley S. Buchanan
Area Director

Urban Fills
APPENDIX H
A.D.A.
JLA

STATE OF VERMONT

AGENCY OF DEVELOPMENT AND COMMUNITY AFFAIRS

OFFICE OF THE SECRETARY (802) 828-3211 MONTPELIER, VERMONT 05602

DEPARTMENTS OF:
Economic Development 828-3221
Housing & Community Affairs 828-3217

DIVISIONS OF:
Administration 828-3231
Historic Preservation 828-3226
Vermont Travel Division 828-3236
Vermont Life Magazine 828-3241
Outdoor Advertising 828-3215

MEMORANDUM

TO: Arthur Aldrich, Location Section

FROM: Giovanna Neudorfer, State Archeologist
Division for Historic Preservation

DATE: July 18, 1977

SUBJECT: Reconnaisance Level Archeological Survey of Burlington-South Burlington, South End Interchange and Burlington-Colchester Project (M5000-3). Conducted by Division for Historic Preservation.

South End Interchange

The area was laid out in terms of a 1 km^2 unit; pedestrian survey was conducted along 10 1000M transects, supplemented by subsurface testing (30cm x 30cm x 75cm units) every 150 M along the transects. No archeological sites were located in the course of the survey.

Burlington-Colchester Project M5000 (3).

Line 23: Pedestrian survey supplemented by subsurface testing in undeveloped areas indicated that no archeological sites will be affected by this line.

Line 6: This line was investigated via pedestrian survey along N-S, E-W transects and subsurface testing at 100M intervals along the transects. No archeological sites were discovered. A large section of Line 6 was not surveyed due to the landowner's (Mr. Howe) refusal to permit the survey crew to examine his hay and corn fields. (This unsurveyed section is delineated on Map 2.)

Line 27: The line was included within a km^2 unit which was surveyed along 1000M transects with subsurface testing every 150M (see map 1, Unit I). No archeological sites were discovered.

RD #2
Middlebury, Vermont 05753
June 1, 1977

Mr. Arthur Aldrich
Highway Department
Montpelier, Vermont 05601

Dear Art:

The accompanying botanical reports on Projects M 5000 (1) and M 5000 (3) in Burlington, Vermont, were prepared after going over them on May 26 and 27.

There exists no botanical reason why any of them should not be built with the exception of Alternate #6 which has Yellow Ladies' Slipper, Cypripedium Calceolus or Cypripedium parviflorum, depending on which authority you use. Ladies' Slipper is an Orchid, and the entire Orchid family is on the Vermont list of endangered plants.

Sincerely,

Elwin F. Leysath
Consulting Botanist

Note: This portion of Mr. Leysath's statement does not apply to this Action.

1737 Cherry Lane Drive
Traverse City, MI 49684
January 30, 1978

Mr. L. C. Jones
Transportation Design Engineer
Dept. of Highways
Montpelier, Vermont 05602

Dear Mr. Jones:

I just got your letter today. Undoubtedly it was held up by the largish storm we had here the latter part of last week.

In response to your letter, I doubt that either Scirpus Longii or S. ancistrochaetus are present on the right-of-way of Burlington's M 5000 (1) Alternate #3 route. My references list S. ancistrochaetus as "rare and local", and give a location in Bellows Falls as the known station in Vermont (in July, 1960).

S. Longii, on the other hand, is listed as "uncommon", and my references indicate that it occurs only in Massachusetts and Connecticut, not Vermont.

Actually, the only members I observed in the Cyperaceae were in the genera Carex and Cyperus.

Sincerely yours,

Elwin F. Leysath

Elwin F. Leysath

City of Burlington, Vermont

Citizen's Advisory Committee on the Southern Connector

RESPONSIBILITIES AND DUTIES OF THE COMMITTEE

The Citizen's Advisory Committee on the Southern Connector (CACSC) is a temporary group formed to insure early public input into the evaluation of effects and consideration of alternatives with regard to this highway project. The Committee has eight members; appointed by the Mayor. The Committee will report to the Mayor for transmittal of its findings to the Department of Transportation. The Mayor has appointed a Chairman for the Committee; who will facilitate the CACSC's efforts by leading the discussion and providing guidance as to the role of the Committee. In addition, the Committee will have some access to the professional staff of the Burlington Planning Commission.

The responsibility of the Committee is directed specifically to the proposed Southern Connector from I-189 to Battery Street. Since the Committee's work is an important early step in the decision process for such a project, it is important to maintain the focus of discussion on the proposed project; its feasible and pertinent alternative corridors and any effects.

Generally, the purpose of the Committee's work is to assist the city and the Vermont Department of Transportation in assuring that all possible economic, social, and environmental effects which relate to the project are fully considered in the decision process. Early identification of these effects will be analyzed for consideration while alternates are being formulated and evaluated. More specifically, the duties of the Committee will include:

(A) To identify and evaluate any possible location constraints within the general corridor of the proposed Southern Connector.

  (1) Review any environmental significant features brought to the attention of the Committee.

(B) Evaluate the following socio-economic characteristics for each alternative:

  (1) The effects of each alternate upon individual residents and properties within the general corridor.

  (2) Future social, economic and environmental impacts (beneficial or detrimental) in the immediate vicinity of each alternate.

  (3) Potential aesthetic effects of each alternate.

  (4) Detrimental and/or beneficial effects upon community and public institutions.

(C) Review right-of-way cost estimate for each alternate.

(D) Review the required Relocation Impact Study, the Relocation Program Plan and the Relocation Cost Estimates for each alternate.

(E) Review all analysis, recommendations, and materials generated by the "Environmental Core Staff" identified in the Action Plan developed by the Vermont Highway Department.

(F) Review any Data Analysis for Alternate proposals.

(G) Review and Comment on Corridor Location Studies.

(H) Review and Comment on the Draft and the Final Environmental Impact Statements.

(I) Review and evaluate the generalized noise level analysis for each alternate.

(J) Evaluate and Monitor efforts to provide the public with information concerning the project.

(K) Review and evaluate comments, offered as the Corridor Location Hearing, on each alternate.

BURLINGTON SOUTHERN CONNECTOR

GOALS - Construction of Southern Connector, an urban typical city street, as soon as possible.

OBJECTIVES

1) Relieve traffic from US 7 Burlington with destination in the CBD.
2) Provide for the safe and convenient movement of traffic from the CBD to the south, southeast and east of Burlington, utilizing the most feasible alternative in the Pine Street Corridor.
3) Construct a roadway at minimum acceptable geometry consistent with Federal and State standards for an urban typical street.
4) Consider the traffic circulation effects of any improvement on adjacent streets.
5) Minimize the right-of-way needs.
6) Disrupt the least number of existing properties, buildings; assess the needs of Relocation Assistance.
7) Minimize construction and/or relocation of utilities.
8) Provide alternative access to properties reduce the interference with the major flow of traffic.
9) Evaluate the construction and right-of-way costs.
10) Evaluate the environmental and social impacts.
11) Consider the impact on Historic Sites and Districts.
12) Improve travel time and cost, increase safety, improve potential development patterns.
13) Provide access to major intersecting streets and minimize the number of streets closed.
14) Encourage the reduction of through traffic on city streets.

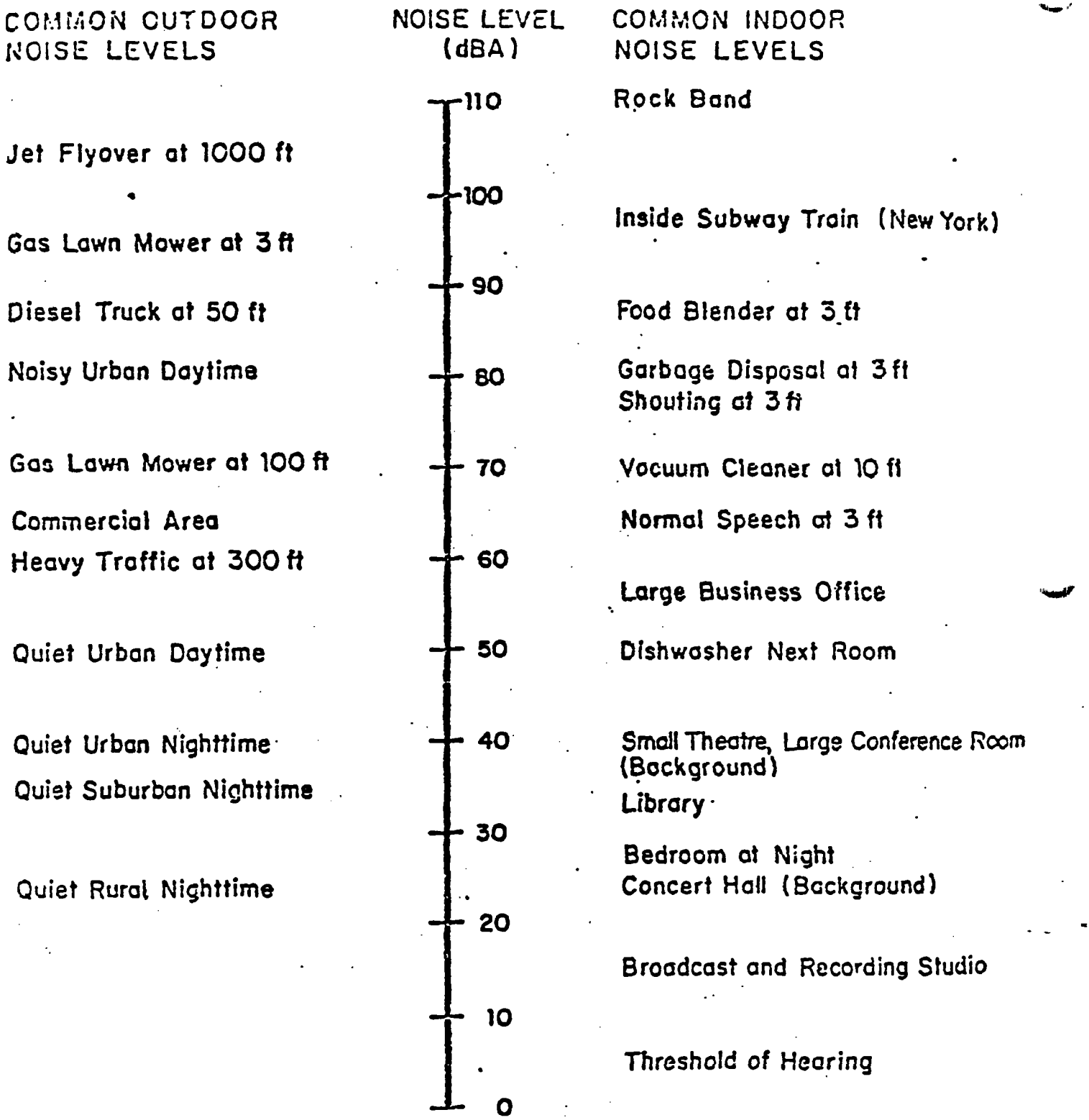
NOISE ANALYSIS

BACKGROUND DATA

As a matter of general information, the common definition of noise is "unwanted sound". Its most widely used method of measurement is the decibel. The reference level is 0 decibels, which represents the weakest sound that can be heard by a person with very good hearing in an extremely quiet place. In order to give the reader a better "handle" on sound measurement, the chart on the following page relates common sounds in terms of decibel level.

It should be apparent from the chart that the measurement of sound intensity on the decibel scale is not linear. For instance, the impact upon the listener in a position 300' from heavy traffic is obviously more than twice as great as that sensed in a library. Sound measurement in decibels is based on a logarithmic scale. In interpreting traffic noise levels in dBA, one should realize that an increase of 10 dBA corresponds to an apparent (subjective) doubling of the loudness of the sound. In other words, a sound judged to be twice as loud as another would have a sound pressure level rating approximately 10 dBA greater than the first sound.

All traffic noise levels measured or calculated, cited in this report are based on the "A" weighted scale, which equalizes the apparent intensity of sounds, regardless of their frequency. Noise levels are reported, therefore in "dBA".



COMMON INDOOR AND OUTDOOR NOISE LEVELS.

The Federal Highway Administration has established Design Noise Levels for various land use categories, which represent the upper limit of acceptable traffic noise conditions. These levels are used to determine the degree of impact of traffic noise on human activities.

DESIGN NOISE LEVEL/LAND USE RELATIONSHIPS

Land Use Category	Design Noise Level	Description of Land Use Category
A	60 dBA (Exterior)	Tracts of lands in which serenity and quiet are of extraordinary significance and serve an important public need, and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose. Such areas could include amphitheaters, particular parks or portions of parks or open spaces which are dedicated or recognized by appropriate local officials for activities requiring special qualities of serenity and quiet.
B	70 dBA (Exterior)	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals, picnic areas, recreation areas, playgrounds, active sport areas, and parks.
C	75 dBA (Exterior)	Developed lands, properties or activities not included in categories A and B above.
D	---	For requirements on undeveloped lands see paragraphs 5a(5) and (6), this PPM
E	55 dBA (Interior)	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals and auditoriums.

The maximum recommended noise levels cited above are L10 values, I.E. the sound level that is exceeded 10% of the time.

Study Methodology

Currently used methods for the calculation of present and projected traffic noise levels are the product of continuing experience in this field, and are still in the process of refinement. The accuracy of the computations made, relevant to Project M 5000(1) will depend to a large extent upon the reliability of Traffic Research Data and the continued use of the internal combustion engine as the power plant for the automobile of the future.

All estimated present, and projected future traffic noise levels were computed with the Michigan Noise Predictor Program H 539. In order to establish the reliability of this calculated data, actual measurements of noise levels were taken in the field (A Bruel & Kjaer Sound Level Meter, Type 2205 was used for this purpose) then the field conditions were duplicated in the mathematical model and the results compared. Field measurements were taken at 21 sites along existing Routes. These locations, and the comparability of data taken at them, are described in the "Noise Study Report" available from the Vermont Department of Highways, Planning Division, 133 State Street, Montpelier, Vermont 05602.

ENVIRONMENTAL PROTECTION DURING CONSTRUCTION OPERATIONS

All Contract Construction work performed under the direction of the Vermont Department of Highways is controlled by the provisions of the Standard Specifications for Highway and Bridge Construction. The current specifications were adapted in March 1976 in compliance with Section 4 of Title 19, Vermont Statutes Annotated.

Portions of the General Provisions of these specifications, which relate to Environmental Protection and Pollution Control on the part of the contractor, are reproduced below. These include parts of Section 104, Scope of Work; Section 105, Control of Work; and Section 107, Legal Relations and Responsibility to the Public.

Portions of the Standard Specifications, Division 200, 400, and 600, which relate to Environmental Protection and Pollution Control on the part of the Contractor, are also reproduced below:

104.01 INTENT OF CONTRACT. The intent of the contract is to provide for the construction and completion in every detail of the work described. The Contractor shall furnish all labor, materials, equipment, tools, transportation and supplies required to complete the work in accordance with the plans, specifications and terms of the contract.

104.02 ALTERATION OF PLANS OR CHARACTER OF WORK. The Engineer may, without notice to the sureties on the contractor's bonds, make alterations: (a) in the design; (b) in type of materials; (c) in the quantities or character of the work or materials required; (d) in the cross-sections; (e) in dimensions of structures; (f) in locations to suit conditions disclosed as the work progresses. Such alterations shall not constitute a change in contract specifications nor a waiver of any condition of the contract nor invalidate any of the provisions thereof.

When such changes or alterations result in an increase or decrease of not more than 25 percent of the total original contract amount, the Contractor shall accept payment at contract unit prices, otherwise the compensation to be made to the Contractor for such changes shall be as provided in subsection 109.04.

No claim shall be made by the Contractor for any loss of anticipated profits because of any such alteration, or by reason of any variation between the approximate quantities and the quantities of work as done.

Payment for work occasioned by changes or alterations will be made in accordance with the provisions set forth under subsection 109.04. If the altered or added work is of sufficient magnitude as to require additional time in which to complete the project, such time adjustment may be made in accordance with the provisions of subsection 108.10.

104.03 INCREASE OR DECREASE IN LENGTH OF PROJECT. The State reserves the right to increase or decrease the quantities in the contract so as to extend or shorten the project. The contract shall not obligate the Contractor to perform at original contract prices, changes generating a total in dollars or in miles of more than 25 percent of the original contract.

104.04 EXTRA WORK. The Contractor shall perform unforeseen work or extra work, for which there is no quantity and price included in the contract whenever, to complete fully the work as contemplated, it is deemed necessary or desirable; and such extra work shall be done in accordance with the specifications therefor or in the best workmanlike manner as directed. This extra work will be paid for at a unit price, or prices, or lump sum to be agreed upon previously in writing by the Contractor and Commissioner, or, where such a price or sum cannot be agreed upon by both parties, or where this method of payment is impracticable, the Engineer may order the Contractor to do such work on a force account basis, in accordance with procedures outlined in subsection 109.05.

104.05 MAINTENANCE OF TRAFFIC. All roadways to be used by the travelling public, including such temporary highways, bridges and approaches as may be necessary to accommodate the traffic diverted from the roadway undergoing improvements, shall be provided and maintained, in a safe and passable condition by the Contractor.

All portions of the project shall have a minimum width that will accommodate two lanes of traffic except at intervals when one-way traffic is necessary. When the Contractor is placing underground utilities, he shall provide a minimum width of 14 feet over or around the installation.

Detours necessary for public travel, which are not adjacent or contiguous to the work, shall be designated by the Department unless otherwise provided. When adjacent or contiguous to the work, they shall be constructed and maintained by the Contractor and no compensation will be made except as provided in the plans and contract. If the Contractor elects to construct a temporary bridge on detours adjacent or contiguous to the work, over which traffic is to be maintained while a culvert or bridge is being constructed, this temporary bridge shall be constructed in accordance with "Temporary Bridge", Section 638. The expense of the construction, maintenance and removal of this temporary bridge and its approaches and all incidental work pertaining thereto shall be included in the cost of items involved in the structure whenever "Maintenance of Traffic for Bridge Project". Section 637, or "Temporary Bridge", Section 638 is not included as a bid item in the contract. The Contractor is completely responsible to the public for the structural adequacy and safety of these structures and approaches. The Contractor shall provide, erect and maintain all necessary barricades, lights, signs, signals and flagmen required in accordance with subsections 107.09 and 107.10.

If conditions on projects not closed down for the winter are such that snow plowing, sanding or salting of the highway including temporary highways, detours and bridges are necessary, the Contractor shall perform such snow plowing, sanding and salting. The costs for snow plowing, and sanding shall be paid for under "Roadway Patrol Maintenance", Section 607, and salting shall be paid for under "Dust and Ice Control with Calcium Chloride", Section 609.

When a project is closed down for the winter season, the Contractor shall leave the project in a satisfactory condition for the travelling public and in a condition suitable for satisfactory winter maintenance. There shall be the full depth of subbase placed over portions of the road under construction and used by the travelling public unless otherwise indicated on the plans or ordered by the Engineer. During the period that the project is officially closed down for the winter season, the State, a political subdivision thereof or other properly designated agency will assume responsibility for snow plowing, salting and sanding, but this in no way relieves the Contractor of his other responsibilities regarding public convenience and safety as described under this section, or from his liabilities as outlined under subsection 107.13, or as indicated elsewhere in this contract. In the event that unsatisfactory travel conditions or ruts develop in the travelled way, or other construction defects, or conditions dangerous to the travelling public, whether arising from the execution or non-execution of the work, the Contractor may be directed to return to the site and carry out the necessary measures to satisfactorily remedy the situation, the cost for said work being included as part of the cost of the items in the contract, with no additional payment therefore, or in the event that the Contractor fails to carry out the necessary measures to satisfactorily remedy the situation immediately, then the Engineer may cause the work to be performed and deduct the cost for same from any monies due or to become due to the Contractor.

When a project is closed down for the winter season or for any other period of time, the Contractor shall erect and maintain temporary guard rail, guide posts, barricades and warning signs, adequate to protect traffic throughout the length of the project and as directed by the Engineer. They shall be removed and disposed of by the Contractor when they are no longer needed and it is so indicated by the Engineer. The costs for furnishing of the material for temporary guard rail, guide posts, barricades and warning signs, and their erection, maintenance and disposal shall be included in the unit prices bid for the items involved in the contract and no additional compensation shall be made therefore.

In the event that construction is suspended before the completion, final acceptance and termination of the Contractor's responsibility as defined under subsection 108.14, whether the suspension is due to delays, material shortages, suspension by the Engineer, weather conditions or routine suspension during the winter months or due to any other cause, the project shall be under the responsibility of the Contractor for precaution against injury or damage to the work and for reinstallation of damaged work as specified under subsection 107.17.

104.06 REMOVAL AND DISPOSAL OF STRUCTURES AND OBSTRUCTIONS. The Contractor shall remove any existing structure, part of structure, or other encumbrances which interfere in any way with the new construction or which is indicated on the plans to be removed.

Unless otherwise provided, all salvageable material of whatever nature being removed shall become the property of the Contractor and shall be disposed of by him off the highway.

104.07 USE OF MATERIALS FOUND IN THE ROADWAY. The Contractor, with the written approval of the Engineer, may use on the project such stone, gravel, sand or other materials as may be found in the excavation, for other construction items providing the materials meet specifications requirements.

He shall be paid for the removal of such materials at the proper contract unit price for items of excavation.

Whenever material is removed from excavation and used in the construction of other items in the contract, the total quantity measured for payment of these items shall be multiplied by a factor of 1.15 and the resulting quantity deducted from the total quantity of "Granular Borrow", Section 203, if an item in the contract and, if not, then from the total quantity of "Earth Borrow", Section 203.

Whenever material meeting the requirements of "Granular Borrow" is taken from excavation on the project and used as "Granular Borrow," Section 203, its removal and use shall both be considered as compensated by the single payment under the appropriate Excavation item, Section 203.

The Contractor shall not excavate or remove any material which is not within the excavation as indicated on the plans, slope and grade lines, without written authorization from the Engineer.

104.08 FINAL CLEANING UP FOLLOWING COMPLETION OF PROJECT. Upon completion of the work and before acceptance and final payment shall be made, the Contractor shall satisfactorily and completely clean and remove from the right-of-way and grounds occupied by him in connection with the work all equipment, falsework, surplus and discarded materials, rubbish, temporary structures, buildings, tools, lumber, refuse, and other unsightly material.

The Contractor shall, as required, mow such areas that would normally be a continuing function of maintenance.

He shall restore in an acceptable manner all property, both public or private, which has been damaged during the prosecution of the work, replace or renew any fences damaged, and shall leave the waterways unobstructed and the roadway in a neat and presentable condition, satisfactory to the Engineer, throughout the entire length of the work under contract.

Surfaces and slopes of pits from which any materials are obtained shall be left in a neat and presentable condition unless otherwise provided in the special provisions. All refuse, stumps, roots, and other combustible material, shall be completely burned or otherwise satisfactorily disposed of and the pits shall be graded to prevent pondage of water.

The slopes of pits shall not be left steeper than 1 on 1½ and the tops shall be neatly rounded.

With the exception of those gravel and sand pits which were open for commercial use prior to commencement of work on the project, the slopes and surfaces of pits and banks shall be seeded with the standard seed formula designated for the project and mulched to the satisfaction of the Engineer. Any costs involved shall be considered as included in the unit price bid for the item concerned.

104.09 PRESERVATION OF THE BEDS OF STREAMS AND BODIES OF WATER. The Contractor or any of his employees, agents, or subcontractors, will not be permitted to purchase, remove or use existing material from any stream bed or stream bank within the State of Vermont for any of the work contemplated, or for any change of design or supplemental agreement that may be entered into between the State of Vermont, Department of Highways and the Contractor, except for such work as is required on the plans to construct the project.

104.10 EROSION AND SILTATION CONTROL. Every reasonable precaution during construction shall be exercised to prevent silting of rivers, streams, lakes, reservoirs and impoundments.

The construction of drainage facilities and other construction contributing to the control of siltation shall be carried out in conjunction with earthwork operations or following as soon as practicable.

The exposure of uncompleted cut slopes and embankments to the elements should be as short as practicable. Seeding, mulching or other designed treatment should be initiated, promptly, and concurrently with the other work.

If and when conditions develop that will suspend construction operations for any appreciable length of time, the excavation and embankment areas shall be shaped in such a manner that the runoff of water may be intercepted and diverted to points where least erosion shall result. Slope drains shall be installed as soon as possible to assist in carrying this runoff. If these preventative measures should fail and an appreciable amount of material begins to erode into a river, stream or impoundment, the Contractor shall act immediately to correct and prevent further erosion.

Erosion control measures shall be continued until the permanent drainage facilities have been constructed and until grass on seeded slopes is established sufficiently to be an effective deterrent against erosion.

Unless otherwise approved in writing, mechanized equipment shall not be operated in live streams except as may be required to construct changes in channel and permanent or temporary structures. Rivers, streams and impoundments shall, as soon as construction will allow, be cleared of all falsework, piling and debris caused by the construction operations.

The Engineer shall approve the location of borrow pits and work roads to insure that erosion of the borrow pits and work roads will not result in water contamination during or after completion of the work.

104.11 POLLUTION CONTROL. The Contractor shall not proceed with any work over, under or adjacent to the waters of the state without the written permission of the Engineer.

During the construction period, the Contractor shall exercise every reasonable precaution to prevent pollution of the waters of the state. Pollutants such as chemicals, paints, fuels, lubricants, bitumens, raw sewage, and other harmful waste shall not be discharged into or alongside these waters or into natural or man-made channels leading thereto. Applicable statutes and regulations of the Department of Fish and Game and Department of Water Resources relating to the prevention and abatement of pollution shall be complied with.

When bridge painting operations are in progress over waters of the state, the Contractor shall erect tarpaulins, platforms, or other devices to retain all debris which might be dropped thereon during painting and cleaning operations. The edges of the drop cloth or platform shall extend beyond the work area a sufficient distance to intercept all dropped material, but never less than one foot. In cases where it is impractical to erect drop clothes or platforms, the Contractor may devise other acceptable methods subject to the approval of the Engineer, after consultation with the Department of Water Resources.

Suitably designed and approved enclosures may be utilized to reduce the possibility of pollution from spray painting operations. Unless such enclosures are used, spray painting shall be done only at times and under conditions when, as determined by the Engineer, a pollution hazard does not exist.

The Contractor shall employ standard methods to minimize noise and air pollution occurring in conjunction with and as a result of construction operations such as but not necessarily limited to clearing, grubbing, drilling, blasting, excavation and hauling operations. These methods shall be acceptable to the Engineer and compatible with the location of the work.

103.07 COOPERATION WITH UTILITIES. The Department will notify all utility companies, all pipe line owners, or other known parties affected and endeavor to have all necessary adjustments of the public or private utility fixtures pipe lines, and other appurtenances within or adjacent to the limits of construction, made as soon as practicable.

Water lines, gas lines, wire lines, service connections, water and gas meter boxes, water and gas valve boxes, light standards, cableways, signals, and all other utility appurtenances within the limits of the proposed construction which are to be relocated or adjusted are to be moved by the owners at their expense, unless otherwise provided in the contract.

It is understood and agreed that the Contractor has considered in his bid all of the permanent and temporary utility appurtenances in their present or relocated positions as shown on the plans and as evident on the site and that no additional compensation will be allowed for any reasonable delays, inconvenience or damage sustained by him due to any interference from said utility, appurtenances, or the operation of moving them.

Should the Contractor desire temporary changes of location for his convenience of any utility appurtenances, he shall satisfy the Department that the proposed relocation does not interfere with his or other Contractors' operations or the requirements of the work and does not cause an obstruction or a hazard to traffic. The Contractor shall make his own request to the utility or other parties affected by such relocation work. Such relocation work shall be made solely at the Contractor's expense.

103.10 AUTHORITY AND DUTIES OF RESIDENT ENGINEER. As the direct representative of the Chief Engineer, the Resident Engineer has immediate charge of the engineering details of each construction project. He is responsible for the administration and satisfactory completion of the project for which he has been delegated commensurate authority. The Resident Engineer has the authority to reject defective material and to suspend any work that is being improperly performed and withhold payment until defective work has been corrected.

103.16 LOAD RESTRICTIONS. The Contractor shall comply with all legal load restrictions in the hauling of equipment or material on public roads beyond the limits of the project. The application and obtaining of a hauling permit will not relieve the Contractor of liability for damage which may result from the moving of equipment.

The operation of equipment of such weight or so loaded as to cause damage to structures or the roadway or to any other type of construction will not be permitted. Hauling of materials over the base course or surface course under construction shall be limited as directed. No loads will be permitted on a concrete pavement, base or structure before the expiration of the curing period. In no case shall legal load limits be exceeded unless permitted in writing. The maximum gross load allowed for a 3-axle straight truck is 55,000 lb. and the maximum total gross load for any type vehicle is 73,280 lb. The Contractor shall be responsible for all damage done by his hauling equipment.

The speed of travel over structures shall not exceed 10 miles per hour prior to placing of the final wearing surface.

103.23 ENVIRONMENTAL PROTECTION. The Contractor shall carry out his operations in such manner as to give adequate protection to the environment, its rivers, streams, impoundments and State and National Forests.

At the preconstruction conference or prior to the start of applicable construction, the Contractor shall submit for acceptance his schedules for accomplishment of erosion control work as are applicable for clearing and grubbing, grading, bridges and other structures at watercourses and paving. He shall also submit for acceptance his proposed methods of erosion control on haul roads and material supply and disposal areas. No work shall be started until the erosion control schedules and methods of operations have been accepted by the Engineer.

103.24 CONTROL OF EROSION. The Engineer has the authority to limit the surface area of erodible earth material exposed by excavation, borrow and fill operations and to direct the Contractor to provide immediate permanent or temporary pollution control measures to prevent contamination of adjacent streams or other watercourses, lakes, ponds or other areas of water impoundment. Such work may involve the construction of temporary berms, dikes, dams, sediment basins, slope drains and use of temporary mulches, mats, seeding or other control devices or methods as necessary to control erosion. As the excavation proceeds, cut slopes shall be seeded and mulched to the extent considered desirable and practicable.

The Contractor will be required to incorporate all permanent erosion control features into the project at the earliest practicable time as outlined in his accepted schedule. Temporary pollution control measures will be used to correct conditions that develop during construction that were not foreseen during the design stage; that are needed prior to installation of permanent pollution control features; or that are needed temporarily to control erosion that develops during normal construction operations, but are not associated with permanent control features on the project and may include work outside the right-of-way where such work is necessary as a result of roadway construction.

The erosion control features installed by the Contractor shall be acceptably maintained by the Contractor during the life of the contract.

Where erosion is likely to be a problem, clearing and grubbing operations should be so scheduled and performed that grading operations and permanent erosion control features can follow immediately thereafter if the project conditions permit; otherwise temporary erosion control measures may be required between successive construction stages. Under no conditions shall the surface area of erodible earth material exposed at one time by clearing and grubbing, exceed 750,000 square feet without approval by the Engineer.

The Engineer will limit the area of excavation, borrow and embankment operations in progress commensurate with the Contractor's capability and progress in keeping the finish grading, mulching, seeding and other such permanent pollution control measures current in accordance with the accepted schedule. Should seasonal limitations make such coordination unrealistic, temporary erosion control measures shall be taken immediately to the extent feasible and justified.

105.25

Under no conditions shall the amount of surface area of erodible earth material exposed at one time by excavation, borrow or fill within the right-of-way exceed 750,000 square feet without prior approval by the Engineer.

The Engineer may increase or decrease the amount of surface area of erodible earth material to be exposed at one time by clearing and grubbing, excavation, borrow and fill operations as determined by his analysis of project conditions.

In the event of conflict between these requirements and pollution control laws, rules or regulations or other Federal or State or local agencies, the more restrictive laws, rules or regulations shall apply.

105.25 CONTROL OF MATERIAL SUPPLY AND DISPOSAL AREAS. Material supply areas for a project are considered to be all borrow pits, gravel pits, operating quarries, sand pits and similar sources for materials to be used in the construction of the project. Material disposal areas, whether within the highway right-of-way or outside the highway right-of-way, are those areas where excess materials unsuitable for use as a construction item are to be placed for disposal.

Such material supply areas and disposal areas are considered to be necessary adjuncts to the Department of Highways application for permit under the Environmental Control Act. Consequently, these material supply areas and disposal areas are under the purview of the Department, and the Contractor prior to opening a pit or establishing a disposal area or commencing any other work related to the opening and operation of material supply areas and disposal areas shall receive the written approval of the Engineer for each specific material supply area or disposal area. Such approval shall be subject to the advice and concurrence of the Environmental Advisor and/or District Coordinator. The Contractor shall be required to obtain a permit in accordance with Title 10, VSA Chapter 151, if applicable, prior to the opening of each new quarry.

105.26 OPENING MATERIAL SUPPLY AND DISPOSAL AREAS. The Engineer, prior to issuing approval, shall satisfy himself that the area and its operation shall be consistent with the following requirements:

1. Will not seriously hurt or impair the rights of any adjacent property owner.
2. Will not result in undue water or air pollution.
3. That the final shape, slope and contour of the land in and about the area will not be undesirable from an esthetic and a drainage point of view.
4. Will not cause unreasonable soil erosion or reduction in the capacity of the surrounding land to hold water so that a dangerous or unhealthy condition may result.
5. Will not have an undue, adverse effect on the scenic or natural beauty of the areas, esthetics, historic sites or rare and irreplaceable natural areas.
6. Is not consistent with any duly adopted development plan, land use plan or land capability plan whether it be individual, local or regional.
7. In the case of a quarry site, the Contractor shall make his quarry entrance at such angle or perspective as to be the least undesirable from any nearby highways, residences and the like.

105.27 MAINTAINING MATERIAL SUPPLY AND DISPOSAL AREAS.—The Contractor shall conduct the area operations in such manner as to maintain a minimum of air pollution. He will keep the portions of the area where a pit or pits have been opened reasonably tidy and in a presentable manner and maintain his haul roads with sufficient dust control to not offend adjacent properties and property owners. Area operations will be restricted to normal working hours except by the express written approval of the Engineer. The Contractor will maintain on the site of each area a clearly legible sign indicating the identity of the area with the project name and number and the Contractor's name. All words on the sign shall be legible at a distance of at least 100 feet.

The Contractor shall remove, stockpile and preserve topsoil, sod and other suitable material stripped from the surface of the area prior to proceeding with his other operations.

105.28 CLOSING MATERIAL SUPPLY AND DISPOSAL AREAS. Prior to abandoning any area on which the Contractor has completed his operations, the Contractor shall landscape the slopes and surface of the entire area and leave the banks in a neat and presentable condition, properly and thoroughly graded and drained. All stones, boulders, stumps and debris shall be removed or satisfactorily disposed of. Slopes shall not be left steeper than 1 on 1½. The tops of slopes and the toes of slopes shall be neatly rounded. After grading the slopes and surfaces of the area, the stockpiled sod, topsoil and other stripped material shall be evenly spread over the surface of the area. The complete area shall be seeded with the standard seed formula designated for the project and mulch shall be applied in accordance with Section 651 - Turf Establishment. The Contractor shall place screens of vegetation or trees or berms or embankments where necessary to conceal the undesirable features of a quarry.

The Contractor shall have the written approval of the Engineer prior to completely abandoning the area site. Such approval shall be subject to the advice and concurrence of the Environmental Advisor and/or District Coordinator.

105.29 PAYMENT FOR EROSION CONTROL MEASURES. In the event that temporary erosion and pollution control measures are required due to the Contractor's negligence, carelessness or failure to install permanent controls as a part of the scheduled work and as ordered by the Engineer, such work shall be performed by the Contractor at his own expense. Temporary erosion and pollution control work required, which is not attributable to the Contractor's negligence, carelessness or failure to install permanent controls, will be performed as ordered by the Engineer. If such work falls within the specifications for a work item with a contract price, the units of work shall be paid for at the proper contract price. Should the work not be comparable to the project work under the applicable contract items, the Contractor shall be ordered to perform the work on a force account basis, or by unit prices arrived at through supplemental agreement.

In case of repeated failures on the part of the Contractor to control erosion, pollution and/or siltation, the Engineer reserves the right to employ outside assistance or to use his own forces to provide the necessary corrective measures. Such incurred direct costs plus project engineering costs will be charged to the contract and appropriate deductions made from any money or moneys to become due the Contractor.

All environmental control work in connection with the opening, maintaining and closing of material supply and disposal areas and the like shall be done by the Contractor at no additional cost to the State. This work shall be considered as subsidiary work pertaining to the project as a whole and the cost thereof shall be included in the unit prices bid for the various items involved in the contract. Any costs for damages to the owners of such areas or to adjacent property owners shall be the responsibility of the Contractor.

107.01 LAWS TO BE OBSERVED. The Contractor at all times shall observe and comply with all Federal and State laws and local by-laws, ordinances and regulations in any manner affecting the conduct of the work and the action or operation of those engaged upon the work, and all such orders or decrees as exist at present and those which may be enacted later, by bodies or tribunals having any jurisdiction or authority over the work, and shall indemnify and save harmless the State and all its officers, agents and employees against any claim or liability arising from or based on the violation of any such law, by-laws, ordinances, regulations, order or decree, whether by himself or his employees.

If the Contractor should discover any provisions in the contract that are contrary to or inconsistent with any law, ordinance, regulation, order, or decree, he shall immediately report it to the Engineer in writing.

It is expressly brought to the Contractor's attention that, when any section of a relocation is opened for public travel, all of the Contractor's motor vehicles continued in use on the relocation must comply with Motor Vehicle Laws of the State of Vermont.

Any burning of tires or any similar manufactured products in connection with highway construction is prohibited under this contract.

The Contractor's attention is directed to the various regulations promulgated and enforced by the Occupational Safety and Health Administration and the Environmental Protection Agencies.

107.06 SANITARY PROVISIONS. The Contractor shall provide and maintain, at his own expense, in a neat and sanitary condition, such accommodations for the use of his employees as may be necessary to comply with the requirements and regulations of the State or local Board of Health.

107.12 USE OF EXPLOSIVES.

(a) General. When the use of explosives is necessary for the prosecution of the work, the Contractor shall use the utmost care so as not to endanger life, property or structures and, whenever directed, the number and size of the charges shall be reduced. The Contractor shall notify each person, company, corporation or public utility owning, leasing or occupying property or structures in proximity to the site of the work, of his intention to use explosives and such notice shall be given sufficiently in advance to enable the parties of interest to take such steps as they may deem necessary to protect their property or structure from injury. Such notice shall not relieve the Contractor of responsibility for any damage resulting from his blasting operations. All persons within the danger zone of blasting operations shall be warned, and no blasting shall be done until the zone is cleared. Sufficient flagmen shall be stationed outside the danger zone to stop all approaching traffic during blasting operations. Explosives shall be used only during daylight hours, shall be handled only by competent workmen, and particular care shall be taken to insure that no unexploded charges remain in the work unattended or when construction operations cease for the day, holiday, the weekend or the season. All explosives shall be stored in a secure manner and all such storage places shall be marked clearly "DANGEROUS-EXPLOSIVES" and shall be under competent supervision at all times. All explosives and highly flammable materials shall be stored and used in strict conformity with all Federal, State and local laws, rules and regulations.

Each of the insurance policies required for a project shall include coverage for injury to or destruction of any property arising out of blasting or explosion, collapse and underground property hazards.

The Contractor and not the State of Vermont shall assume full liability for any and all damage or injury to persons or property caused either directly or indirectly by the use of explosives by the said Contractor. The liability of the Contractor shall apply equally to damages or injury to persons or property whether said injury or damage occurs within or outside of the right-of-way lines. The Contractor in defending any claim that may arise under this section shall not, without obtaining the express advance permission of the Attorney General's office, raise or impose any defense involving the jurisdiction of the tribunal before which said claim is pending, immunity of State of Vermont, governmental nature of the State, or the provision of statutes respecting suits against the said State of Vermont. The cost of precautionary measures shall not be paid for directly, but all costs therefor shall be included in the bid prices for the pay items under the contract.

107.12 USE OF EXPLOSIVES.

(b) Radio Frequency. The Contractor or his agents are hereby advised that there is a potential hazard of a premature explosion due to propagation of radio frequency energy by transmitters of radio and the related radio-services such as television and radar and the effect of such energy to electric blasting caps individually or when they are connected into a circuit. Mobile and fixed radio, radar, television and related transmitters are in general use in the State of Vermont by, but not limited to, police departments, fire departments, political subdivisions, utility companies, commercial carriers, private and public enterprises and individuals.

The Contractor or his agents shall take all precautions necessary to prevent premature explosions of electric blasting caps individually or when they are connected into a circuit, with all parties of interest.

Whenever blasting operations are in progress in any area in which the use of short-wave radio equipment is possible or probable, the person responsible for or in charge of such blasting operations shall cause to be posted: "Warning Signs." Such signs shall be located in prominent positions not less than 500 feet from the point of blasting and visible to any person approaching such point. Warning signs shall contain the words "Blasting Ahead" — "Shut Off Radio Transmitters," written in letters not less than 6 inches in height and with a 1 inch stroke.

Payment for furnishing, erecting and maintaining such special signs shall not be paid for directly, but all costs therefore shall be included in the bid prices for pay items under the contract.

Attention is directed to subsection 106.08.

107.13 PROTECTION AND RESTORATION OF PROPERTY. The Contractor shall not enter upon private property for any purpose without obtaining written permission and he shall be responsible for the preservation of all public and private property along and adjacent to the work and shall use every precaution necessary to prevent damage or injury thereto. The Contractor shall protect carefully from disturbance or damage all land monuments and property marks until an authorized agent has witnessed or otherwise referenced their location and shall not move them until directed. The Contractor shall protect from damage by construction operations all trees, shrubs, or plants, not marked by the Engineer for removal.

It shall be the Contractor's responsibility to see that any portions of the existing roadway and existing structures which are to be retained for public travel are left in as good condition as when the Contractor commenced his work. The Contractor shall not move or use any equipment on any pavement or structure in such manner as to cause damage to the pavement or structure when such pavement or structure is to be retained for use. Attention is directed to the requirements of subsections 107.01 and 105.16.

The Contractor shall be responsible for all claims involving damages or injury to property of any character during the prosecution of the work, resulting from any act, omission, neglect or misconduct of his manner or method of executing said work satisfactorily, or due to his non-execution of said work, or at any time due to defective work, or materials, and said responsibility shall not be released until the work shall have been completed and accepted.

When or where any direct or indirect damage or injury is done to public or private property by or on account of any act, omission, neglect, or misconduct in the execution of the work, or in consequence of the non-execution thereof on the part of the Contractor, he shall restore, at his own expense, such property to a condition similar or equal to that existing before such damage or injury was done by repairing or rebuilding, or otherwise restoring, as may be directed, or he shall make good such damage or injury in an acceptable manner.

The Contractor shall take proper precaution during construction to avoid damage to public or private services so it is necessary that these services be maintained.

Attention is invited to the various public or private services which include but are not limited to: gas, water, sewer and drainage pipes, springs and wells, septic tanks and cesspools, telephone, telegraph and electrical services, and railroads, the may be located on or adjacent to the project, above, on or under the ground, as whether or not shown on the plans.

When construction of the project commences or is resumed, the Contractor shall notify the owners, operators, occupants or lessees of all the aforesaid public or private services and the Chief Engineer of the railroad or railroads of any work to be done on, over, under, adjacent or in proximity to said services during the construction of the project. Further, the Contractor shall again notify the aforesaid parties of interest of his intention to start work on, over, under, adjacent, or in proximity to said services and such notice shall be given sufficiently in advance to enable the parties of interest to take such steps as they may deem necessary to protect their property or structures from damage. Such notice shall not relieve the Contractor of responsibility for any damages resulting from his work.

The Contractor shall cooperate with the owners of any of the aforementioned services in their removal and rearrangement operations in order that these operations may progress in a reasonable manner and that duplication of rearrangement work be reduced to a minimum and that services rendered by these parties concerned will not be unnecessarily interrupted.

In the event of interruption of any of the aforementioned services in connection with the work, the Contractor shall make temporary repairs at once and promptly notify the owner or his authorized representative and cooperate with the said owner in the prompt restoration of service. In no case shall interruption to water service be allowed to exist outside of normal working hours without the substituting of an alternate water supply.

The Contractor shall be held liable for all damage done, because of his construction, to these aforementioned services from the beginning of construction to the satisfactory completion of the project.

The Contractor and not the State of Vermont, shall assume full liability for all damages to water supplies and sewage systems which includes, but is not limited to, springs and wells, septic tanks, cess pools, and underground

The Department will receive and investigate all complaints relating to damage to springs, wells, and water supply systems. If it is determined that the damage is the responsibility of the State, the Contractor shall be so notified, his liability for such damage shall thereupon cease, and he shall be reimbursed by the State for expenses incurred in providing a temporary water supply and repairing the damage.

The Contractor in defending any claim that may arise under this section shall not, without obtaining the express advance permission of the Attorney General's office, through the Chief Engineer's office, raise or impose any defense involving in any way the jurisdiction of the tribunal before which said claim is pending, immunity of the State of Vermont, governmental nature of the State, or the provisions of any statutes respecting suits against the said State of Vermont.

When the Contractor's excavating operations encounter remains of prehistoric people's dwelling sites or artifacts of historical or archeological significance, the operations shall be temporarily discontinued. The Engineer will contact archeological authorities to determine the disposition thereof. When directed by the Engineer, the Contractor shall excavate the site in such a manner as to preserve the artifacts encountered and shall remove them for delivery to the custody of the proper state authorities. Such excavation will be considered and paid for as extra work.

In case of the failure on the part of the Contractor to restore such property, or to make good such damage or injury, the Engineer may, upon 48 hours notice proceed to repair, rebuild or otherwise restore such property as may be deemed necessary and the cost thereof will be deducted from any monies due or which may become due the Contractor under this contract.

107.14 FOREST PROTECTION. In carrying out work within or adjacent to forests or other growth, the Contractor shall satisfactorily burn or otherwise dispose of all valueless trees and logs, all stumps, roots, brush, weeds, grass and other objectionable material, said disposal to be in conformity with all the laws of the State of Vermont pertaining thereto or other authority having jurisdiction governing the protection of forests in carrying out work within forests. In carrying out work within or adjacent to the National Forest land, the Contractor shall comply with the requirements set forth in the Forest Service Special Use Permit included in the special provisions for the specific project. Before any fires are kindled on or adjacent to the project, the Contractor shall obtain a permit from the Town Fire Warden or the authorized Fire Warden or Forest Official for the particular forest area affected.

Disposal of brush and debris by the "chipping method" shall be used if set forth in the special provisions for the project. The term "chipping" herein referred to shall mean the reduction of the woody waste material from clearing to small chips which may be spread on the slopes outside of the ditch line or may be blown and left in adjoining woodlands.

All rubbish and refuse shall be removed to such location or locations not visible from the highways as shall be approved by the Engineer and without injury to the adjoining property.

The Contractor shall observe all sanitary laws and regulations with respect to the performance of the work in forest areas. He shall keep the areas in an orderly condition, obtain permits for the construction and maintenance of all construction camps, stores, warehouses, residences, latrines, cesspools, septic tanks and other structures in accordance with the requirements of the Forest Supervisor.

The Contractor shall take all reasonable precaution to prevent and suppress forest fires and shall require his employees and subcontractors, both independently and at the request of forest officials, to do all reasonably within their power to prevent and suppress and to assist in preventing and suppressing forest fires and make every possible effort to notify a forest official at the earliest possible moment of the location and extent of any fire seen by them and to extinguish the same if nearby and practicable.

Fire fighting equipment shall be maintained on the project by the Contractor.

When required, fires must either be thoroughly wet down when construction operations are suspended for the particular day or attended during the night by a watchman.

The Contractor shall reimburse the political subdivisions for all expenses of suppressing any forest fire caused by his operations and shall settle with each landowner for any and all damage caused by the fire.

SECTION 201 - CLEARING AND GRUBBING

201.01 DESCRIPTION. This work shall consist of the performance of all clearing and grubbing operations within the limits of the project in accordance with these specifications or as ordered by the Engineer as follows:

(a) Clearing. Clearing shall consist of cutting and disposing of all trees, down timber, stubs, brush, bushes and debris from all areas extending from the center line to 10 feet beyond the top limits of all cut sections or from the centerline to 10 feet outside the toes of slopes in all fill sections, but in no case beyond applicable right-of-way limits, unless otherwise directed by the Engineer. It shall include any other areas so designated on the plans or in the special provisions.

Where bridges are being constructed, clearing shall include the area within the bridge limits. The lateral limits shall provide a clear distance of 20 feet beyond the outside of the bridge.

Any trees designated on the plans or in the special provisions or indicated by the Engineer for removal under another item are excepted from this work. Any trees or shrubs which are designated to be saved either on the plans or in the special provisions or as may be directed by the Engineer are excepted from this work.

(b) Grubbing. Grubbing shall consist of the removal and disposal of all stumps, roots, duff, grass, turf, debris or other objectionable material within excavation lines and within fill lines where the

CONSTRUCTION REQUIREMENTS

201.02 GENERAL. The Contractor shall carefully protect and guard all trees, shrubs and vegetation, within or adjacent to the roadway, that the Engineer shall direct him to save, and shall take every precaution to avoid any damage to public utility lines, buildings or other property. If it is deemed impractical to fell the tree as a whole, it shall be removed in sections according to standard practices of professional tree removal. No machine or appliance shall be used on any part of the work that shall in any manner injure, scar or kill trees and shrubs, within or adjacent to the roadway, that have been designated to be saved, or are outside the area above described for clearing and grubbing. With the preceeding exceptions, all trees and shrubs within the limits as defined under Subsection 201.01 shall be removed before grading operations commence.

201.03 CLEARING. All trees, down timber, stubs, brush, and other objectionable material shall be removed and disposed of from within the areas designated in subsection 201.01

The Engineer will designate trees, shrubs and other vegetation to be preserved.

In areas where embankments are to be constructed more than 5 feet in depth measured below subgrade, all stumps shall be cut off as close to the ground as is practicable, but not to exceed 6 inches above the ground surface at the base of stump. Stumps located outside of the construction limits of cut and embankment areas shall be cut flush with or below the surface of the ground or as directed by the Engineer.

All merchantable timber and wood which is to be removed within the clearing area, unless otherwise provided, shall become the property of the Contractor.

In the interest of conservation, the Contractor shall make every effort possible to salvage marketable timber produced as a result of clearing operations, provided the amount of timber is great enough to make the hauling practical and the species of wood is desirable. In general, marketable timber is construed to mean logs 8' to 16' in length, plus appropriate trimming allowance, having a diameter inside the bark, at the small end, of approximately 10".

Any wood that is cut up in firewood lengths or other marketable lengths may be neatly piled outside of the construction limits by the Contractor, but shall be removed prior to completion of the contract.

In the event that the Contractor is not successful in salvaging marketable timber, he shall advise the Engineer of his efforts to salvage and indicate the reasons why the timber could not be salvaged.

Branches of trees extending into and over the roadway shall be carefully trimmed as directed by the Engineer and, unless otherwise ordered by him, all branches of trees overhanging the roadbed shall be carefully removed to a minimum height of 20 feet above the finished grade.

Clearing operations shall be done in a manner so that the present growth will blend with the limits of construction and a natural appearance will be attained.

Where trees which are left standing are trimmed or become scarred by Contractor's operations, the cuts or scars shall be repaired by properly cutting, smoothing the wood if necessary, and painting with asphalt base paint prepared especially for tree surgery. Any repairing or painting required shall be considered incidental to the lump sum price for Clearing and Grubbing.

201.04 GRUBBING. Grubbing of the designated areas shall progress in such a manner that erosion will be minimized as required in subsection 104.10.

All stumps, roots, duff, grass, turf, debris and other objectionable material shall be excavated and removed from the areas where embankments are to be constructed not more than 5 feet in depth measured below subgrade and any other areas designated on the plans to be grubbed.

The excavated section left below the subgrade by removals shall be backfilled with approved excavated material or borrow and compacted to conform with the surrounding area.

201.05 DISPOSAL. The Contractor shall satisfactorily burn or otherwise dispose of all trees, stumps, logs, protruding roots, brush, duff, weeds, shrubs, debris, rubbish and other objectionable material, said disposal to be in conformity with all the laws of the State of Vermont.

Burying of trees, stumps and debris will be permitted at locations designated on the plans. Additional areas within the Right-of-Way will require written permission of the Engineer.

On National Forest land, the Contractor shall comply with the requirements set forth in the "Forest Service Special Use Permit" included in the special provisions for the specific project and in accordance with subsection 107.14.

Before any fires are kindled on or adjacent to the project, the Contractor shall obtain a permit from the Town Fire Warden or the authorized Fire Warden or Forest Official for the particular forest area affected.

Whenever elm trees are cut or removed, all portions of the trees shall be disposed of by burning or burying. If disposal is by burying, the cover material shall provide a cover of at least 12 inches.

The Contractor will be held responsible for any damage caused by fires in accordance with subsections 107.13 and 107.14.

204.04 PRESERVATION OF CHANNEL. Unless otherwise indicated on the plans or ordered by the Engineer, the Contractor in making excavation for structures shall confine his excavating operations to within bounds of the site of the proposed structure and within the limits of cofferdams or caissons if used. The natural streambed shall not be disturbed without permission of the Engineer. Materials from foundation or other excavation, shall not be deposited within a stream area.

406.04 BITUMINOUS MIXING PLANT AND TESTING. Sufficient storage space shall be provided for each size of aggregate. The different aggregate sizes shall be kept separated until they have been delivered to the cold storage bins. The storage yard shall be maintained neat and orderly and the separate stockpiles shall be readily accessible for sampling.

All existing plants shall be inspected each construction season by an authorized representative of the Department of Highways, prior to their operation. Proper notification shall be given for any plant which has not been inspected so that an authorized representative of the Department of Highways may inspect and approve said plant prior to any mixing operation.

Drier. The drier shall be capable of heating and drying the mineral aggregates, to specification requirements, without leaving any visible unburned oil or carbon residue on the aggregate when it is discharged from the drier. Black smoke from the exhaust stack shall not be permitted. Drying shall continue for a sufficient time to reduce the average moisture content of the aggregate to not more than 0.5 percent. If unusually wet aggregate is being used, the input to the drier shall be reduced to that amount which the drier is capable of drying to the required moisture content.

SECTION 409 - DUST AND ICE CONTROL

409.01 DESCRIPTION. This work shall consist of treating the highway to control dust or reduce ice hazard on the project in accordance with these specifications and to the satisfaction of the Engineer.

409.02 MATERIALS. Materials shall meet the requirements of the following subsections of Division 700 - Materials.

Water	743.01
Calcium Chloride	744.01
Sodium Chloride	747.01

CONSTRUCTION REQUIREMENTS

409.03 DUST CONTROL WITH WATER. Water shall be applied to such sections of the highway as the Engineer may designate. The number of applications and the amount of water used shall be based upon field and weather conditions and as ordered in writing by the Engineer.

The equipment for water application shall be equipped with an adequate shut-off valve control in the cab and shall be approved by the Engineer. The equipment shall be available at all times in readiness to perform the work at any time including Sundays and Holidays upon written order of the Engineer.

409.04 DUST AND ICE CONTROL WITH CALCIUM CHLORIDE. Calcium chloride shall be applied in such a manner and by such devices that uniform distribution is obtained over the entire area on which it is ordered in writing by the Engineer.

Unless otherwise ordered in writing by the Engineer, 0.5 pound of calcium chloride shall be applied per square yard for dust control.

In general, calcium chloride shall be used on roadways under construction. It shall not be used on surfaces on which bituminous material will be applied, unless directed by the Engineer.

Sodium chloride may be substituted for calcium chloride in ice control when approved in writing by the Engineer.

409.05 METHOD OF MEASUREMENT. The quantity to be measured for payment will be the number of thousand gallons of water actually used in Dust Control with Water. The Contractor shall provide equipment meeting the approval of the Engineer for measuring the quantity of water applied.

The quantity to be measured for payment will be the number of tons (2,000 pounds) of calcium chloride actually used for Dust and Ice Control with Calcium Chloride. The total weight will be determined as the product of the number of containers used and the net weight of each container. When calcium or sodium chloride is delivered in bulk the quantity will be determined from weight tickets.

SPECIAL PROVISIONS

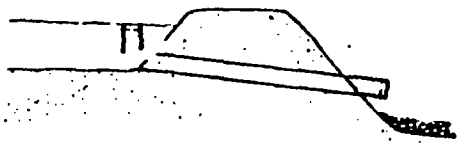
When it is anticipated that temporary erosion control measures may be necessary, for a specific project, the following special provision is included in the contract:

Erosion Control - The contractor's attention is directed to the provisions of Subsection 105.24 as set forth in the General Provisions. Temporary erosion control measures will be used when and where ordered by the Engineer, and will be measured and paid for in accordance with the specification for the applicable temporary erosion control pay items shown on the plans.

The construction of major drainage facilities such as culverts, special ditches, and channel relocations shall be completed in a continuous manner, including the incorporation of all design features and permanent erosion control items and such temporary erosion control measures as may be ordered by the Engineer.

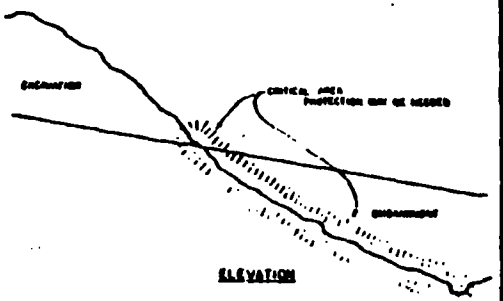
STANDARDS T-1 AND T-2

LARGE – PERMANENT INSTALLATION
PIPE RISER – STONE OUTLET

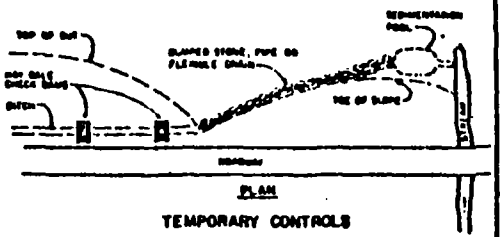


SMALL – TEMPORARY INSTALLATION
ACCM PIPE WITH RISER – STONE OUTLET

SEDIMENT DAMS

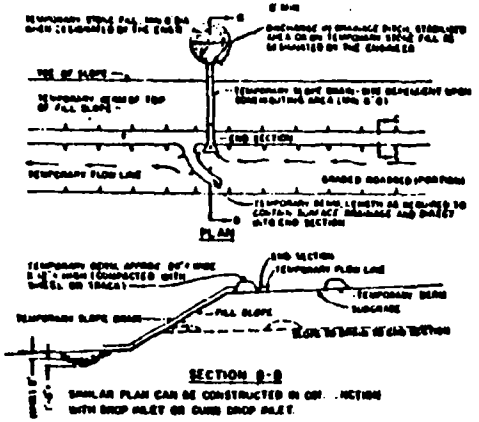


ELEVATION



PLAN

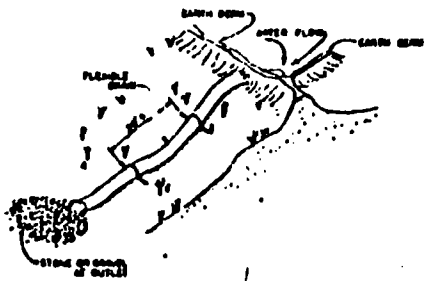
TEMPORARY CONTROLS
CUT TO FILL SLOPE



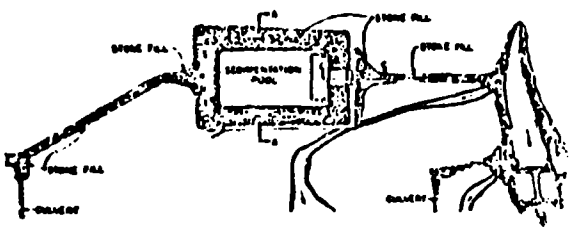
SECTION B-B

SECTION C-C

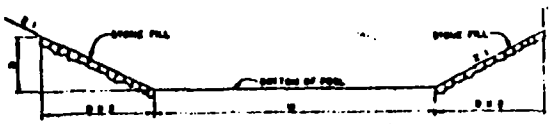
TEMPORARY BERMS AND SLOPE DRAINS
FOR FILL SLOPES



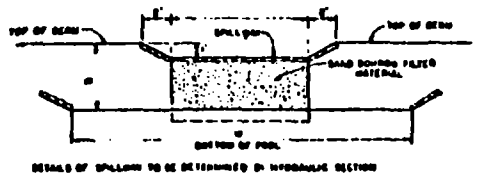
TEMPORARY FLEXIBLE SLOPE DRAIN



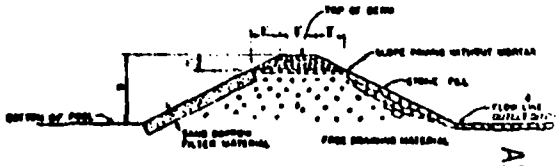
SEDIMENTATION POOL



SECTION A-A



SECTION B-B



SECTION C-C

APPENDIX L

DIRECTIONS & REVISIONS

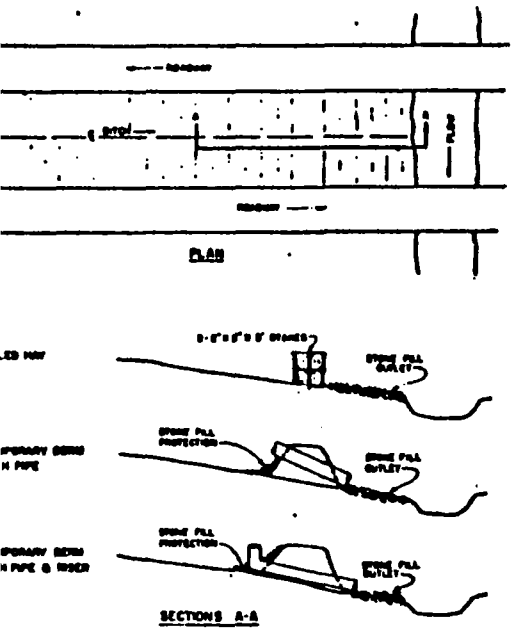
APPROVED

DATE July 5, 1972

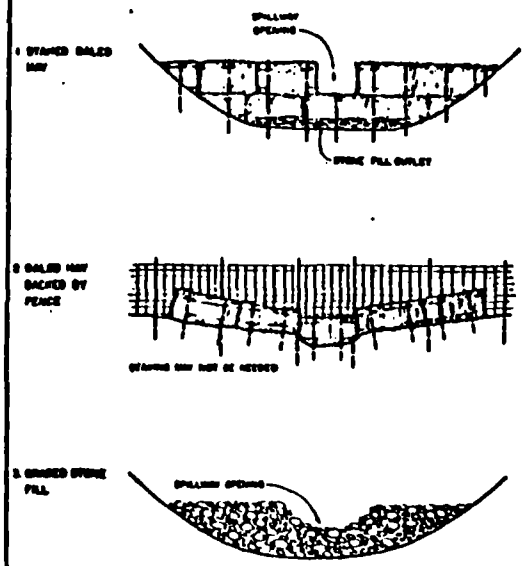
CHIEF ENGINEER

TEMPORARY EROSION CONTROL DETAILS

VERMONT
DEPARTMENT
OF HIGHWAYS

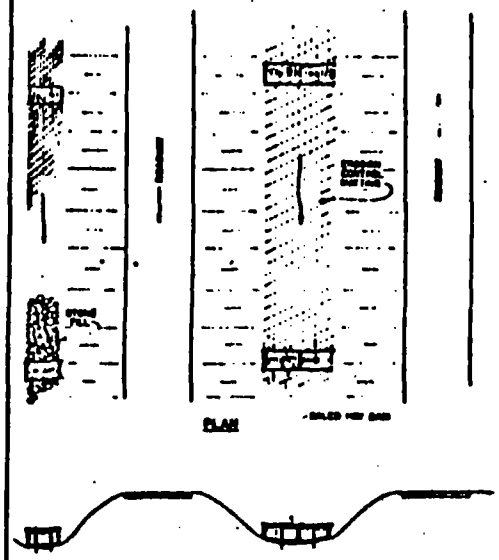


PROTECTION AT STREAM CROSSING
MEDIAN AND SIDE DITCHES

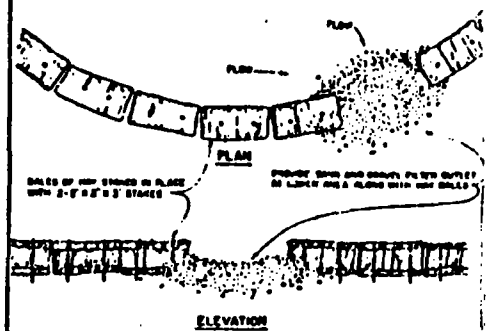


TYPES OF TEMPORARY DAMS

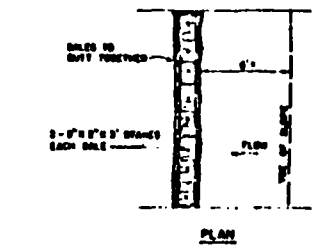
DAMS SHOULD EXTEND FAR ENOUGH UP DITCH SIDE SLOPES TO EFFECTIVELY POND THE RUNOFF AND PREVENT EROSION AND WASHOUT.



BALED HAY DAMS USED IN DITCHES

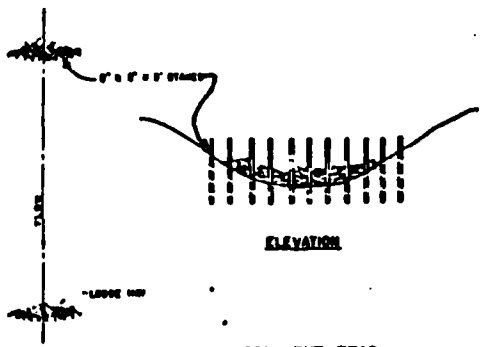


BALED HAY DAMS ALONG TOE OF SLOPE

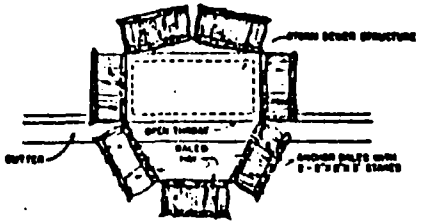


TO BE USED WHERE THE EXISTING GROUND SLOPES AWAY FROM THE HIGHWAY EMBANKMENT.

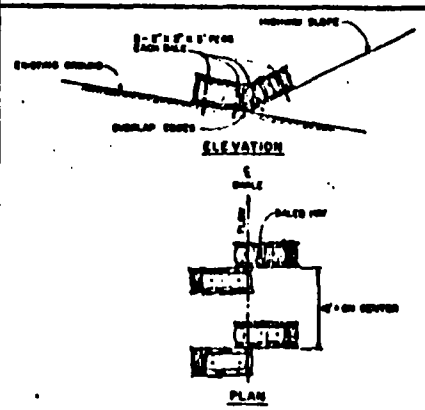
BALED HAY EROSION CHECKS



SEDIMENT TRAP
LOOSE HAY BACKED BY STAKES



INLET PROTECTION
TEMPORARY BARRIER - HAY BALES



TO BE USED IN LOCATIONS WHERE THE EXISTING GROUND SLOPES IN TOWARD THE EMBANKMENT.
BALES WILL BE ALLOWED TO REST IN PLACE.

BALED HAY EROSION CHECKS

CORRECTIONS & REVISIONS

APPROVED: July 5, 1972
DATE
CHIEF ENGINEER

ASST. CHIEF ENGINEER

TEMPORARY EROSION CONTROL DETAILS

VERMONT DEPARTMENT OF HIGHWAYS
STANDARD

APPENDIX L

T - 2

State of Vermont

AGENCY OF ENVIRONMENTAL CONSERVATION
Air and Solid Waste Programs, State Office Bld
Montpelier, Vermont 05602

DIVISION OF ENVIRONMENTAL ENGINEERING

Department of Fish and Game
Department of Forests, Parks, and Recreation
Department of Water Resources
Environmental Board
Division of Environmental Engineering
Division of Environmental Protection
Natural Resources Conservation Council

November 8, 1978

Mr. Ronald E. W. Crisman
Secretary
Agency of Transportation
State Office Building
Montpelier, Vermont 05602

Dear Mr. Crisman:

The Burlington Southern Connector has been reviewed by the Agency of Environmental Conservation to determine the project's consistency with the Vermont State Implementation Plan (SIP) for Attainment of the National Ambient Air Quality Standards (NAAQS). The project was reviewed on the basis of the following criteria:

1. That the project would neither cause nor exacerbate a violation of NAAQS for the pollutants carbon monoxide (CO), nitrogen oxides (NO_x), and total suspended particulate (TSP).

2. That the project has been reviewed for its impact on the regional oxidant problem by estimating its expected hydrocarbon contribution.

3. That all reasonable hydrocarbon emission reduction strategies have been incorporated in the project's design.

A. NO_x. Based upon figures submitted by the Highway Department, the NO_x burden in 1995 will be 44 kg/day if the new location alternate is built and 31 kg/day in a no build situation. Since there is no model currently available to assess the ambient impact of automotive NO_x emissions and because there is presently no short term ambient standard for NO_x, it is not possible to make a determinatio of the project's impact on the NAAQS. The difference between projected emissions between the build and no build situations are not significant enough in light of the overall reductions projected to justify a determination of inconsistency on that basis.

TSP. The purpose of the Southern Connector is to handle existing and growth traffic more efficiently. As a consequence of this, the vehicle miles travelled (VMT) generated as a result of this project should not differ significantly from the no build situation. The current SIP does not include a control strategy to deal with particulate generated by mobile source activity. However since there will be no increase in overall vehicle activity as a result of this project, no

exacerbation of the current nonattainment status is anticipated. The revision of the SIP currently being developed will address the issue of nontraditional sources of TSP such as automotive TSP. The concepts delineated in this revision will be applied to the Chittenden County nonattainment area in general and this project specifically.

Carbon Monoxide. The greater Burlington area is currently designated non-attainment for carbon monoxide. This office has reviewed submissions from the applicant concerning both mesocale and microscale carbon monoxide burdens. Due to the opportunity provided by this project to utilize modern design principles to move traffic more efficiently and with less congestion, the overall effect of the project will be to reduce CO emissions on an areawide scale within a specific and delineated urban area.

A microscale analysis performed upon locations impacted by this project has determined that no violations of NAAQS would be expected to result from this project. Location impacted by the project is defined as any intersection where the traffic volume is increased by 15% or more to the proposed project. The current SIP proposes achievement of NAAQS by enforcement of existing state air pollution control regulations. By this criteria the project is consistent with the Plan.

B. Area Hydrocarbon Burden. Hydrocarbon emissions like carbon monoxide increase with reduced speed. Since the new project will speed the flow of traffic, reducing congestion, while generating no additional traffic, the project will have a beneficial effect upon the regional hydrocarbon burden. This goes beyond the scope of the SIP which proposed no ambient standard for hydrocarbon. The Chittenden County Area, however, is nonattainment for photochemical oxidants, of which automotive hydrocarbons are a precursor. The Southern Connector will reduce the amount of hydrocarbon precursors available for this reaction.

C. The Air Pollution Control Section of the Agency of Environmental Conservation has projected a reduction in hydrocarbon emissions sufficient to satisfy the Reasonable Future Progress requirements of the Clean Air Act. This reduction would be achieved by the requirement of controls for large industrial hydrocarbon sources and by the decrease in automotive emissions due to tighter Federal automotive emissions standards. It is anticipated that this approach would be adequate to insure improvement toward attainment of the oxidant standard and that the construction of this project will be an additional step towards this goal. Consequently no other hydrocarbon reduction strategies are deemed necessary.

It is the opinion of the Agency of Environmental Conservation that the proposed Burlington Southern Connector is consistent with the current Vermont State Implementa Plan and with strategies for the reduction of oxidants by control of automotive hydrocarbon emissions.

It should be noted that this consistency determination on the draft Environmental Impact Statement should not be construed as meeting the preconstruction permit requirements contained in Sections 5-407 and 5-430 of the air pollution control regulations. Although the Air Pollution Control Section does not anticipate

any additional information and data needed for our review, it is a separate and distinct permit process.

Sincerely,

Richard A. Valentinetti

Richard A. Valentinetti
Chief, Air and Solid Waste Programs

RAV:lah

Enclosure

A.D.A.

A Aldrich

APPENDIX N

Montpelier, Vermont 05602

November 16, 1978

M 5000(1) Burlington
Southern Connector

Mr. Ronald E. W. Crisman, Secretary
Agency of Transportation
Montpelier, Vermont 05602

Dear Mr. Crisman:

This is in response to a telephone request from M. Jennings of your Location Division with respect to the air quality section of the Draft Environmental Impact Statement on the above noted project.

Page 111 of the Draft EIS advised that the Vermont Air Pollution Control Agency reserved final judgement regarding air quality impact since an estimate of 8 hour CO_2 concentrations had not been made due to the unavailability at this stage of detailed traffic flow and intersection control parameters. The Environmental Protection Agency's review of the air quality section of the Draft EIS stated, "current FHWA regulations require that an indirect source analysis be performed for preferred alternates prior to submittal of the Final EIS." If FHWA considers the future CO review by the State of Vermont to constitute the indirect source analysis required by 23 CRF 770, the findings should be included in the Final EIS. If there is no such formal review process for CO hot spot identification, the Final should still contain any subsequent comments made by the State Air Agency regarding updated or more detailed air quality analysis."

It is our determination that FHWA considers the future CO review, as suggested on page 111 of the Draft EIS, to constitute the indirect source analysis required by 23 CRF 770. We anticipate the findings resulting from this analysis will be included in the Final EIS.

Sincerely yours,

David B. Kelley
Division Administrator

A. P. BARROWS

By: A. P. Barrows
Engineering Coordinator

Distribution: Sec. ✓, Dir. Adm. ✓, Ch. ✓, Ch. ..., Maint., Hwy. Engr. ✓, Plan., Con. Adm., Const., Bridge, Prov. Adm., Mat., Fin., Traffic ✓, Utilities ✓, Liaison, C. Files ✓

SURVEY OF REPLACEMENT PROPERTIES

1. (a) A survey of available decent, safe, and sanitary housing was obtained from local brokers, realtors, and the M.L.S. in the project area.

A partial list of decent, safe, and sanitary housing follows:

Realtor	Location	Dwelling	Bedrooms	Price
M.L.S.	Glenwood Lane, Burlington	Single Family	3	$ 37,900
M.L.S.	Hinesburg Road, South Burlington	Single Family	3	42,900
M.L.S.	Spruce Street, Burlington	Single Family	3	39,500
M.L.S.	Lyman Avenue, Burlington	Single Family	4	36,500
M.L.S.	North Avenue, Burlington	Single Family	3	28,800
M.L.S.	Matthew Avenue, Burlington	Single Family	3	35,900
M.L.S.	Forest Street, Burlington	Single Family	3	37,900
M.L.S.	Foster Street, Burlington	Single Family	1	23,500
M.L.S.	Marshall Drive, Burlington	Single Family	3	37,500
M.L.S.	So. Winooski Avenue, Burlington	Single Family	5	43,900
M.L.S.	Morgan Street, Burlington	Single Family	3	27,900
M.L.S.	Tracy Drive, Burlington	Single Family	4	33,900
M.L.S.	Birchwood Lane, Burlington	Single Family	3	42,500
M.L.S.	Sandra Circle, Burlington	Single Family	3	32,900
M.L.S.	Curtis Avenue, Burlington	Single Family	3	35,000
M.L.S.	LaFountain Street, Burlington	Single Family	5	27,900
M.L.S.	Monroe Street, Burlington	Single Family	3	32,500
M.L.S.	Lakewood Parkway, Burlington	Single Family	4	55,900
M.L.S.	Blodgett Street, Burlington	Single Family	4	30,500
M.L.S.	Home Avenue, Burlington	Single Family	5	47,500
M.L.S.	Spruce Court, Burlington	Single Family	3	31,000
M.L.S.	Spern Street, Burlington	Single Family	4	38,900
M.L.S.	Curtis Avenue, Burlington	Single Family	5	38,900

Realtor	Location	Dwelling	Bedrooms	Price
M.L.S.	Elmwood Avenue, Burlington	Single Family	3	$ 21,900
M.L.S.	Pennington Drive, Burlington	Single Family	3	39,300
M.L.S.	North Avenue, Burlington	Single Family	5	34,900
M.L.S.	Hardy Avenue, Burlington	Single Family	5	33,900
M.L.S.	Conger Avenue, Burlington	Single Family	3	23,500
M.L.S.	Crombie Street, Burlington	Single Family	4	31,000
M.L.S.	Loaldo Drive, Burlington	Single Family	3	33,900
M.L.S.	King Street, Burlington	Single Family	4	21,900
M.L.S.	Lyman Avenue, Burlington	Single Family	3	29,900
Hickok & Boardman	Foster Street, Burlington	Single Family	3	31,900
Hickok & Boardman	Perrota Court, Burlington	Single Family	3	41,900
Hickok & Boardman	Bitter Sweet Lane, Burlington	Single Family	4	42,000
Hickok & Boardman	Merrium Street, Burlington	Single Family	3	49,900
Burns Real Estate	St. Paul Street, Burlington	Two-Family	--	33,900
Smith & Bell	Queen City Park, Burlington	Single Family	2	23,900

BURLINGTON SOUTHERN CONNECTOR M 5000 (1)

ROADWAY SALT AND WATER QUALITY

The major concern of a highway system on water quality in Vermont seems to be the amount of deicing material which enters any water source. Vermont maintains a bare roads policy and with that does use a significant amount of salt during the winter months.

Two streams pass through the project area. These are Potash Brook and an unnamed brook just north of Flynn Avenue, which flows through Englsby's Ravine. Potash Brook is the more significant of the two as it does support a limited fishery. The other brook has too low a flow to serve any purpose other than a drainage collector. Neither is used as a water supply or source for any purpose.

This study predicts salt concentration increases in the two streams in the project area. These are increases due to the new highway and do not include any salt which may presently be in the water from any sources, natural or manmade. Table 1 gives the salt application rates used for these predictions.

Table #1

Salt Application Rates

I 189	39.1	ton/2-lane mile
Burlington Beltline (VT 127)	27.1	" " " "
New 4-lane Connector	40	" " " "
One-way Ramps	30	ton/lane mile

These figures are estimates based on salt application rates for existing highways in the areas from 1970-1977. These rates were obtained from the Vermont Highway Maintenance Division.

Table #2 shows the highways and mileages considered in the study of the two drainage basins.

Table #2

Highways and Mileages

1. Potash Brook

   Existing - 6800' 1-lane highway (I 189 & ramps)

   Proposed Both Alternates - 6000' 1-lane highway (ramps) & 5800' 4-lane highway (I 189 & So. Connector)

2. Englsby's Ravine

   New Alternate - 4300' 4-lane highway

   Pine Street Alternate - 4500' 4-lane highway

The salt increase draining into Potash Brook is the difference between that used for both alternates and the existing. This is computed this way because of the relocating of ramps within the I 189 - Shelburne Street Interchange area.

Three different methods were used to arrive at an approximate concentration of sodium chloride (roadway salt) in this area.

Method 1 assumed the salt would be dissolved uniformly over a 12-month period. The average annual daily flow was used to give an average concentration in the stream while the minimum daily flow rate was used to give an extremely conservative maximum concentration. In reality, the minimum flow will occur during months which actually will have less than an average amount of salt in the stream. This is included, however, to give a highest probable expected value.

Method 2 assumed all the salt is diluted during the winter months of December through April. For this case minimum annual daily flow and average daily flow for just these months were used.

Method 3 was based on Kunkle's report of maximum concentration appearing during the low flow summer months of August and September. For this case it was assumed that 20% of the total salt spread during the winter would infiltrate into the water table and then flow into the stream during these two months (minimum annual daily flow for August-September was used for a dilution rate).

Table 3 shows the values for the various flows used in the computations of salt concentrations in the two brooks.

Table #3

Stream Flows

	Potash Brook	Englsby's Ravine
Average Annual Daily Flow	10 cfs.	1 cfs.
Minimum Annual Daily Flow	3 cfs.	0.3 cfs.
Average Daily Flow, Dec.-April	13 cfs.	1.3 cfs.
Minimum Daily Flow, Aug.-Sept.	4 cfs.	0.4 cfs.
Drainage Basin	7.13 sq. mi.	0.85 sq. mi.

The values shown in Table 4 are for sodium chloride as a compound. Chloride produces about 60% of that total with sodium contributing the rest. Sodium, though considered by some to be a problem in drinking water, does not appear in heavy concentration as chloride does.

Table #4

Salt Concentration Increases Expected Due to Burlington Southern Connector

	Potash Brook		Englsby's Ravine	
Method 1 Salt Diluted Uniformly through the year	New Alt.	Pine St. Alt.	New Alt.	Pine St. Alt
Based on Minimum monthly flow	29/mg/1	29/mg/1	222 mg/1	232 mg/1
Based on Average yearly flow	9/mg/1	9/mg/1	67 mg/1	70 mg/1

	Potash Brook		Englsby's Ravine	
	New Alt.	Pine St. Alt.	New Alt.	Pine St. Alt.
Method 2 Salt Diluted Dec.-April				
Based on Minimum monthly flow	69 mg/1	69/mg/1	535 mg/1	559 mg/1
Based on Average Dec. April flow	16 mg/1	16 mg/1	124 mg/1	129 mg/1
Method 3 Salt Diluted Aug-Sept. low flow				
Based on Average Aug- Sept flow	26 mg/1	26 mg/1	199 mg/1	208 mg/1

Drainage to Potash Brook includes roadway runoff from Sta. 0+00-35+00 (both alternates)

Drainage to Englsby's Ravine includes roadway runoff from Sta. 35+00-78+00 (new alternate) 35+00 - 80+00 (Pine St. Alternate)

The positively charged sodium ions are attracted to the negatively charged soil particles and usually stay in the soil rather than flowing freely into a stream. It should be emphasized these values shown in Table 3 are approximations based on theoretical methods of calculations and should be very conservative due to the use of average flows in the process. Instantaneous peak flows, although not lasting very long, serve to pass more of the salt out of the system than these calculations show, due to a substantial flushing effect. Most actual measurements performed on streams show lower concentrations of sodium chloride than predicted by these theoretical methods.

Table 5 gives suggested levels for chloride and sodium concentrations in water and as can be seen from Table 5, the predicted values in Potash Brook are well below these recommended upper limits in all cases. The brook through Englsby's Ravine may become heavily diluted with roadway salt and this could become most apparent during the low flow summer

any use of this stream. However if a concern does surface, the roadway drainage system might be able to be designed to lessen these concentrations.

Highway runoff into Lake Champlain is not felt to be a problem because of the large amount of water available for dilution. Local increases in concentrations of salt might be measurable but these will be small and of short duration. If drainage into any wetlands may create adverse effects, these systems could be channeled or carried directly to the lake.

In summary, the effects on water quality due to roadway salting appear minimal. The only potential problem area is the small brook in Englsby's Ravine and drainage could be designed to diminish this effect.

Table #5

Water Quality Criteria For Various Elements

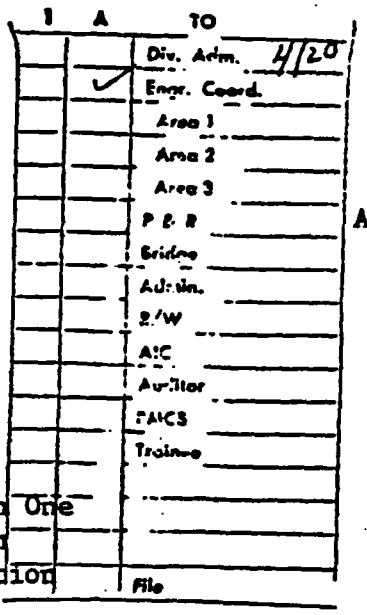
	Beneficial Use	Permissible Level	Comments
1. Sodium			
	Municipal	10 mg/l	Desirable limit.
	Industrial	50 mg/l	Causes foaming i boilers.
	Stock & Wild-life	2000 mg/l	Threshold for livestock
	Fish & Aquatic Life	<85 mg/l	95% of waters su ing good fish fa below this leve
2. Sodium Chloride			
	Municipal	200-900 mg/l	Taste threshold
	"	1000-1500 mg/l	Renders drinkin water unpalatab
	Stock & Wild-life	<1025 mg/l	Usually causes adverse effects
	Irrigation	The effects of NaCl on plants with species, individual plan climatic and environmental co tions. Each crop will withst certain salt level, but in ge all crops affected by a NaCl centration of 15,000 mg/l	
	Fish & Aquatic Life	5850 mg/l	Not harmful to eggs.
	"	2000 mg/l	Recommended per ble limit in fr waters.
3. Chloride			
	Municipal	250 mg/l	USPHS 1962 Drin Water Standards
	Industrial	30 mg/l	Dairy industry.

Water Quality Criteria For Various Elements

	Beneficial Use	Permissible Level	Comments
3. Chloride(Con't)	Stock & Wild-life	1500 mg/l	Safe level for ca cheep, swine, and chickens.
	Irrigation	100-1500 mg/l	Harmful to most
	Fish & Aquatic Life	400 mg/l	Harmful to t
	"	4000 mg/l	Harmful to bass, and perch.

This table condensed from: U.S. Department of Transportation, Federa Highway Administration, Water Quality Manual, Vol. V, pp. 5-1-58, 59, 60, & 68.

Advisory Council on
Historic Preservation
1522 K Street N.W.
Washington, D.C. 20005



April 18, 1978

Mr. David B. Kelley
Division Administrator, Region One
Federal Highway Administration
U.S. Department of Transportation
P.O. Box 568
Montpelier, Vermont 05602

Ltr'd.

Dear Mr. Kelley:

On March 22 the Council received a determination from the Federal Highway Administration that construction of the Burlington Southern Connector, Project M 5000(1), would not adversely affect the Battery Street Historic District, Burlington, Vermont, a property included in the National Register of Historic Places. The Executive Director does not object to your determination.

A copy of your determination of no adverse effect, along with supporting documentation and this concurrence, should be included in any assessment or statement prepared for this undertaking in compliance with the National Environmental Policy Act and should be kept in your records as evidence of your compliance with Section 106 of the National Historic Preservation Act of 1966 (16 U.S.C. 470f, as amended, 90 Stat. 1320).

We appreciate your continued cooperation.

Sincerely yours,

Myra F. Harrison

Myra F. Harrison
Assistant Director
Office of Review and Compliance

DOCUMENTATION FOR A DETERMINATION OF NO ADVERSE EFFECT

BURLINGTON - SOUTHERN CONNECTOR M 5000(1)

Project Burlington M 5000(1) comprises construction of 2.3 miles of highway known as the Southern Connector in the City of Burlington, Chittenden County, Vermont. The proposed project begins at the intersection of I 189 and US 7 (Shelburne Street) and extends westerly and northerly to the intersection of Battery Street and King Street in the Burlington Central Business District.

From the southern end of Battery Street to the intersection of Battery Street and King Street, a distance of 570 feet, this project is within the Battery Street Historic District. This District was placed on the National Register of Historic Places on November 2, 1977.

As described in the attached Nomination Forms, prepared by the Vermont Division for Historic Preservation, the Battery Street Historic District comprises the area of earliest settlement in the City of Burlington. It includes within its limits 120 buildings which reflect the industrial and commercial beginnings and growth of Burlington from the 1790's to the 1930's. These buildings include at least one outstanding example of each major architectural style of the 19th century and early 20th century.

The Battery Street frontage contiguous to Project 5000(1) comprises 11 structures, four of which are considered to be of outstanding architectural and historic merit. The majority of these buildings are in industrial-commercial use at the present time.

The present width of Battery Street, from Maple Street to King Street, is 40 feet. An additional area on both sides, varying in width, is used for parking. South of Maple Street, the roadway is approximately 46 feet wide with on-street parking on one side. A railroad siding extends north from the end of Battery Street for about 300 feet on the eastern side of the street. This siding is used by the Vermont Fruit Company about 15 to 20 times a year.

The proposed project would be 50 feet wide, curb-to-curb, with no change in grade. It would be generally centered in the present six rod (99 foot) right-of-way. No on-street parking would be allowed, and the railroad siding would be removed.

A review of the proposed construction against the criteria listed in 36 CFR 800.9 indicates that the project would have no adverse effect on the qualitites which make the area eligible for the National Register of Historic Places.

(a) Destruction of alteration of all or part of a property - No destruction or alteration of property within the Historic District will occur with the building of this project.

(b) Isolation from or alteration of its surrounding environment - The reconstruction of Battery Street will not isolate the Historic District from its surrounding environment; but will, in fact, more closely integrate the area by eliminating truck parking, and truck and train loading operations. Neither the street nor the buildings were originally intended for these uses. Restoration work in the Historic District is changing the building usage from industrial-warehouse to business-commercial. Alteration of the environment,

which will occur with the implementation of this project, will help promote the return of the area to its designed use.

(c) Introduction of visual, audible or atmospheric elements that are out of character with the property or alter its setting - No visual, audible, or atmospheric elements will be introduced into the area that are out of character with the property or alter its setting.

By eliminating railroad switching movements and limiting truck facilities, changes in building usage may occur. With no on-street parking, Battery Street should be visually more appealing. Noise levels and air pollution should decrease with a decrease in truck traffic. Although there will be an increase in traffic with the building of the proposed project, this will be through traffic, for the most part, not the start-stop traffic now prevalent in the area.

(d) Transfer or sale of a federally owned property without adequate conditions or restrictions regarding preservation, maintenance, or use - Transfer or sale of federally owned property will not occur with this project. At the present time, right-of-way on Battery Street is six rods (99 feet), which will allow for the 50 foot roadway section and additional width for grass strips or sidewalks as deemed necessary.

(e) Neglect of a property resulting in its deterioration or destruction - No deterioration or destruction of property as the consequence of neglect will result from this construction. As previously stated, the Historic District is now in the process of being restored. Implementation of this project should help promote this restoration.

Also, the proposed project has been reviewed by the State Historic Preservation Officer. He has indicated in a Memorandum dated September 20, 1977 that the proposed project will not have an adverse effect on the Battery Street Historic District.

STATE OF VERMONT

AGENCY OF DEVELOPMENT AND COMMUNITY AFFAIRS

OFFICE OF THE SECRETARY (802) 828-3211 MONTPELIER, VERMONT 0...

DEPARTMENTS OF:
Economic Development 828-3221
Housing & Community Affairs 828-3217

DIVISIONS OF:
Administration 828-3231
Historic Preservation 828-3226
Vermont Travel Division 828-3236
Vermont Life Magazine 828-3241
Outdoor Advertising 828-3215

MEMORANDUM

TO: Arthur D. Aldrich, Location Engineer
Department of Highways

FROM: William B. Pinney, Director
Division for Historic Preservation

DATE: September 20, 1977

SUBJECT: Burlington Southern Connector M 5000(1)

A final review of the completed plans for the reconstruction of Battery Street through the Battery Street National Register District indicates that, although the street will be widened, the proposed curbings and grass areas will effectively eliminate truck parking that now occurs in the area. This will enhance the qualities of the environment for pedestrians which will fit in with the preservation development that is now occuring in the District and encourage the further rehabilitation of this neighborhood. Thus, the Division for Historic Preservation finds that the proposed construction will not have an adverse effect on the qualities that make this area eligible for inclusion in the National Register of Historic Places.

In addition, planned relocation of construction near the Barge Basin will result in the elimination of any potential effect on historic archeology in that area.

WBP/cjd

State of Vermont

AGENCY OF ENVIRONMENTAL CONSERVATION

Montpelier, Vermont 05602

OFFICE OF THE SECRETARY

Department of Fish and Game
Department of Forests, Parks, and Recreation
Department of Water Resources
Environmental Board
Division of Environmental Engineering
Division of Environmental Protection
Natural Resources Conservation Council

November 22, 1978

MEMORANDUM

TO: Arthur Goss, Chief of Design Section

FROM: Edward J. Koenemann, Director of Planning

SUBJECT: Burlington Southern Connector M5000(1)
Fish and Wildlife and other Environmental Impacts

Sorry for the delay in responding in the format you desired a year ago and again this past spring regarding the Burlington Southern Connector. I hope the results of our meeting on the 21st will help reduce confusion and expedite responses on future projects.

The wetland and old barge basin is a valuable resource. Even though it is a small one, it is the only one in the Burlington area. Even though it has been abused, it is still very important to fish and wildlife. It has value for waterfowl, marsh birds, furbearers and fish. It is a nesting area and wintering area for waterfowl and supports a family of beaver and muskrat. In addition, it is a spawning area in the spring which contributes to the creation of a walleye fishery in that area of the lake. Additional spawning resources are being lost on another part of this project as a result of the ¼ mile culverting of Potash Brook.

In the designated corridor, some wetlands will be directly lost through filling, and some degradation of remaining wetlands will occur through disturbance (traffic) and possibly runoff from the pavement. To mitigate these losses, we would recommend that the remaining wetlands receive a "clean up" - removal of trash, debris and junk - to increase productivity of the remaining wetland area. In addition, some slope contouring around the perimeter is recommended, as well as a "screen" of trees or suitable shrubbery along the roadway to alleviate the disturbance factor from increased traffic.

It is understood, based on past contacts between the Agency of Transportation and the Agency of Environmental Conservation, that every precaution will be taken to ensure that when disturbing the oil sludge dumped in this area from the old gas plant, the water quality in the remainder of the wetland and barge basin will not be effected. In addition, an equalizer pipe will be placed under the roadway between the barge basin and the wetland south of the G.E. northern access road.

EJK:jcg
cc: Brendan Whittaker
John Malter
Tom Myers
Jon Anderson
Edward Kehoe
James Wilkinson
Reginald LaRosa
Angie Incerpi
Ben Day
Tom Willard

COMMENTS FROM

AND

RESPONSES TO

CORRIDOR HEARING