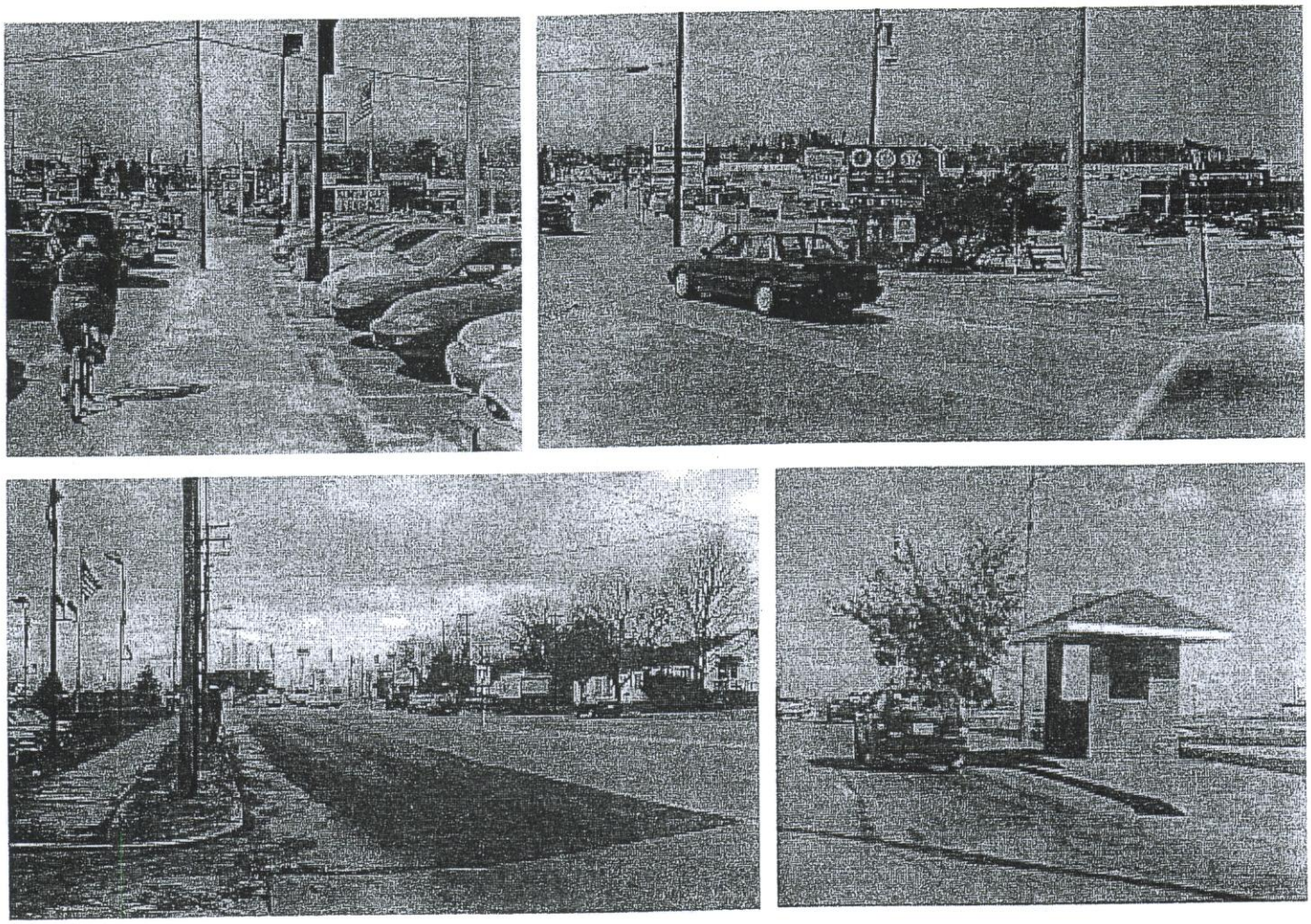
# BRIGHTON AVENUE / MAIN STREET CORRIDOR TRAFFIC AND STREETSCAPE STUDY

## PORTLAND AREA COMPREHENSIVE TRANSPORTATION COMMITTEE



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DECEMBER 7, 1999

# BRIGHTON AVENUE / MAIN STREET CORRIDOR TRAFFIC AND STREETSCAPE STUDY

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*December 7, 1999*

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# Introduction

The firm of Gorrill-Palmer Consulting Engineers, Inc., in association with Terrence J. DeWan & Associates, and Kevin Hooper Associates, was retained by the Portland Area of Comprehensive Transportation Committee (PACTS) to complete an evaluation of the Brighton Avenue/Main Street corridor in Portland and Westbrook. This study was undertaken to address concerns expressed by residents and businesses along the corridor about streetscape conditions and pedestrian and traffic safety. In addition, both cities sought to upgrade the appearance of this corridor, which serves as a significant entry way or gateway to each community. The Greater Portland Council of Governments coordinated the public process and developed land use forecasts for this study

## Background

In 1998, Portland citizens raised many issues regarding pending development proposals and the impact of these projects on the integrity of the neighborhoods located along the Brighton Avenue Corridor. At the same time, the City of Westbrook was receiving numerous inquiries about rezoning and developing vacant land in the vicinity of Maine Turnpike Authority's proposed interchange. The new turnpike interchange is to be located at the extension of Rand Road in Portland with a bridge connecting into the Westbrook Arterial extension. Both cities came together in a unique collaboration to address the future development and redevelopment opportunities across municipal boundaries. A joint task force was formed with citizens from both communities and these volunteers guided the entire planning process. Funds from PACTS were obtained to hire the consultant team to develop traffic and streetscape improvements for the corridor. The Greater Portland Council of Governments (GPCOG) facilitated the joint task force meetings and coordinated the public process for both communities. COG developed the land use forecasts contained in this report in conjunction with the joint task force and city staff members. This Gateway Study is the product of a unique and successful collaboration of two cities and their citizens, two regional organizations, and professional consultants.

Brighton Avenue/Main Street is a significant travel route serving the needs of adjoining neighborhoods and commuters. Portions of Brighton Avenue/Main Street carry traffic volumes in excess of 31,000 vehicles per day making it one of the more heavily traveled arterials in the Greater Portland area. Between Rosemont Corner in Portland and York Street in Westbrook, the corridor consists primarily of two through lanes in each direction with auxiliary turn lanes at several major signalized intersections including Riverside Street which provides access to Exit 8 of the Maine Turnpike. There are generally sidewalks on both sides of the street with few streetscape enhancements.

The corridor is characterized by commercial development between Nason's Corner and Westbrook's City Hall. The Pine Tree Shopping Center was the first shopping center constructed in Portland in the 1950's. The area has developed as a business district, which is known as the Exit 8 area. The frontage along the corridor is heavily developed with numerous driveways, particularly at the western end of the corridor, Main Street in Westbrook. The frontage lots are mainly retail in nature. There have been recent proposals in both Portland and Westbrook for redevelopment along this corridor and a number of new buildings have been built, including Rite Aid and Applebee's.

Although there are few visual cues to the commuter, there are extensive neighborhoods off Brighton Avenue. There are school walking routes that cross Brighton Avenue for the Hall Elementary School, which is located off Warwick and Orono Street and the Breakwater School is located at the corner of Capisic Street and Brighton. In addition, the Barron Center, Loring House, and Sagamore Village provide

housing for families, senior citizens, and physically handicapped individuals. These residential facilities, primarily located on the northerly side of the corridor, generate a pedestrian demand to cross the street for business destinations on the south side of Brighton Avenue. Currently there are limited opportunities for these crossings to occur. A similar dilemma arises in Westbrook where the residents of Larrabee Road Campus off Lisa Harmon Drive have difficulty crossing Larrabee Road and Main Street to travel to the Bradlees shopping center and other local businesses. On either side of the commercial district in both Portland and Westbrook the development pattern becomes residential, with homes directly fronting on Brighton Avenue and Main Street.

The City of Portland is currently addressing the outdated traffic signal system along Brighton Avenue through a Congestion Mitigation Air Quality (CMAQ) grant. This project will replace the signal system from Nason's Corner to the Barron Center with new vehicle detention loops, new pedestrian heads (which will be push button activated), new controllers and cabinets, and a system to coordinate the traffic signals. These improvements will improve traffic flow and increase pedestrian safety at signalized intersections. While these improvements will result in substantial capacity and safety benefits, additional improvements are required to address pedestrian, bicycle, bus and gateway/streetscape issues which are the focus of this report.

## Study Area

The primary study area, which is the focus of this study, extends from Nason's Corner (the intersection of Brighton Avenue and Capisic Street) in Portland to the intersection of Main and York Streets at Westbrook City Hall. It is bounded to the north by Warren Avenue in Westbrook and on the south by the proposed Rand Road interchange.

A secondary study area, which is treated with a broad brush approach in this study, extends from Nason's Corner southeast to Stevens Avenue in Portland and from City Hall to the Presumpscot River in Westbrook. It is bounded on the north by Warren Avenue and on the south by Stroudwater/Westbrook Street.

## Study Purpose

The goal of this study is to determine what improvements should be made to upgrade the existing transportation and streetscape conditions over the next 10 to 20 years.

This document is designed to be used for justification of potential improvements and as a tool to prioritize Brighton Avenue / Main Street projects among the other regional projects.

# 1. Analysis of Existing Conditions

A complete understanding of existing traffic and streetscape conditions along the corridor is necessary to develop recommendations for Brighton Avenue and Main Street. This section presents a description of the corridor, describes the existing traffic and streetscape conditions, evaluates existing operations, and identifies current safety problems.

## Project Mapping

The base mapping for the project was developed on the computer utilizing 1995 aerial photography from GPCOG at a scale of 1" = 50'. Property boundary information was imported into the computer by translating files from Westbrook and Portland. Where property boundary information did not appear to coincide with the physical features of the corridor it was adjusted as appropriate. It is important to realize that the property lines shown are approximate and that the mapping should only be used as a planning tool.

## Description of the Corridor

Brighton Avenue and Main Street are generally oriented in a east-west direction from Stevens Avenue to the Presumpscot River in Westbrook. Both Brighton Avenue and Main Street are designated as Route 25. Brighton Avenue is also designated as an emergency route to Maine Medical Center. The roadway alignment is very straight and the frontage is heavily developed. The road is posted for 35 mph. The length of the primary study area from Nason's Corner to Westbrook City Hall is approximately 1.14 miles. The lengths of the secondary study areas from Stevens Avenue to Nason's Corner and from Westbrook City Hall to the Presumpscot River are 1.06 and 0.72 miles respectively.

The Brighton Avenue /Main Street corridor is utilized heavily by commuters to and from Portland and Westbrook as well as areas to the east such as Gorham. For the purpose of this study, there are three distinct sections:

- the secondary study area from Stevens Avenue to Nason's Corner
- the primary study area between Nason's Corner and Westbrook City Hall
- the secondary study area from Westbrook City Hall to the Presumpscot River.

Each of these sections are described below.

### Brighton Avenue between Stevens Avenue and Nason's Corner

This portion of the corridor has a single lane in each direction between Stevens Avenue and Woodford Street. Multiple turning lanes exist on the Brighton Avenue approaches at the signalized intersection of Brighton Avenue/ Woodford Street/Colonial Road and Columbia Road, one of the most significant along the corridor. This part of Brighton Avenue is mixed use with residential, business, and commercial. Brighton Avenue between Woodford Street and Nason's Corner (Capisic Street intersection) consists of four lanes, two in each direction. There are sidewalks along both sides of the roadway and the overhead utility poles are located immediately behind or in the sidewalk. The land use in this section is residential with numerous side streets into residential neighborhoods. Because this portion is residential, traffic patterns are characterized by fewer turning movements than other sections of the corridor.

The streetscape is characterized by mature deciduous street trees in a narrow grass esplanade, bituminous sidewalks, and granite curbing. In general there are no pedestrian amenities or street furnishings such as benches, trash receptacles, or bus shelters.

### Brighton Avenue/Main Street between Nason's Corner and Westbrook City Hall

The majority of the primary study area has two lanes of traffic in each direction with no shoulders. The roadway transitions from four lanes to two lanes west of Larrabee Road. Sidewalks are generally found on both sides of the roadway with many of the utility poles in the sidewalk. The westerly portion of the corridor from Rand Road to Riverside Street is channelized with islands that provide access control and some refuge for pedestrians. There are seven signalized intersections along the corridor:

- Brighton Avenue/Capisic Street (Nason's Corner)
- Brighton Avenue/Rowe Avenue/Warwick Street
- Brighton Avenue/Rand Road/Cabot Street
- Brighton Avenue/Taft Avenue
- Brighton Avenue/Barron Center Exit
- Brighton Avenue/Riverside Street
- Main Street/Larrabee Road.

In addition to these signalized intersections, the corridor has numerous curb cuts that access abutting uses. The Maine Turnpike Authority is planning a new interchange just north of Stroudwater Street. The interchange will intersect with a planned roadway from the end of Rand Road to the Westbrook Arterial. The connection to the arterial will occur south of the "S–curves" in the arterial before it intersects Main Street.

Land use uses abutting Brighton Avenue/Main Street in this inner study area are primarily commercial and include uses such as Rite Aid which was recently constructed, Pine Tree Shopping Center, Forest City Chevrolet, Rowe Ford, Blue Rock, Bradley's Plaza, and other local businesses. There are significant residential neighborhoods that are located on either side of Brighton Avenue behind the commercial uses, which use the corridor for access to their neighborhood and as their local business area for purchasing goods and services. The level of vehicle and pedestrian traffic to businesses in this commercial district is significant. Many of the pedestrians are from nearby residential institutions, such Sagamore Village, Barron Center, Loring House, and Larrabee Village. In addition to the business uses, there are a number of destination points that generate significant pedestrian traffic, such as Hall Elementary School off Warwick Street, Breakwater School at Nason's Corner, and the Fore River Sanctuary off Rand Road.

The character of the streetscape is heavily influenced by the commercial uses and the function of Brighton Avenue. Street trees are found in random patterns throughout the primary study area, but do not form the continuous canopy typical in the secondary study areas. Sidewalks vary in condition, width, and appearance. In some areas pedestrian traffic is channeled into worn tracks in the grass. In other more commercial areas the lot has been completely paved, with no distinction between parking, driveway, sidewalk, or esplanade. Asphalt is the predominant material used for sidewalks, with the exception of a small remnant patch of brick at Nason's Corner.

Several bus shelters have been installed at key locations to provide a place for patrons to wait in a somewhat more protected environment. The shelters vary in character, from brick bunkers to generic aluminum and plexiglas models. The overall effect is a strictly utilitarian, automobile- oriented landscape, with little or no attempt to introduce pedestrian scale with street furnishings, artwork, plantings, or lighting.

### Main Street between Westbrook City Hall and Cumberland Street

The Westbrook section of the secondary study area consists of one lane of travel in each direction and shoulders of varying width. Sidewalks have been installed along most of Main Street. This section is primarily residential in nature with significantly fewer turning

movements. There is one traffic signal located within this section at Forest Street. Flashing warning lights are located at the Warren Avenue/Main Street intersection.

Mature trees line the street and create an effective transition zone between the commercial district east of City Hall and the riverfront.

## Public Comment

A series of meetings were held throughout the study process with the Portland and Westbrook Task forces (both jointly and individually), the Staff from both cities, the Maine Turnpike Authority, and the public. In addition, meetings were held with three focus groups – Schools and Institutions, Transportation and Conservation, and Business and Industry – drawn from residential and business interests throughout the corridor. The purpose of these meetings was to give all those interested the opportunity to participate in the process, to express their opinions, and to offer their input on alternatives to be explored. Notes are included in the Appendix for the following meetings:

- Three Focus Groups that met on Friday, February 26, 1999 at Vallee's Restaurant in Portland:
  - Schools and Institutions
  - Transportation and Conservation Organizations
  - Business and Industry Representatives.
- Joint Westbrook-Portland Planning Task forces meeting on April 8, 1999 at the Westbrook City Hall Annex. The consultants presented their finding and recommendations for the primary study area. The meeting was open to the public.
- Joint Westbrook-Portland Planning Task forces meeting on June 2, 1999 at the Westbrook City Hall Annex. The consultants completed presenting the recommendations for both the primary and secondary study areas.
- Public meeting on June 30, 1999 at The Barron Center in Portland. The consultants presented their findings for the Portland portion of the corridor to the public.
- Final public meeting in Westbrook. This meeting will be held prior to completion of the final report.

## PACTS Regional Bicycle and Interim Pedestrian Plan

The PACTS Regional Bicycle and Interim Pedestrian Plan published in April 1995 recommended that sidewalks be maintained on both sides of the Brighton Avenue/Main Street corridor. The study also recommended the following bicycle facilities in the corridor:

- Stevens Avenue to Woodford Street: bike lanes
- Woodford Street to Larrabee Road: wide curb lanes
- Larrabee Road to Warren Road: paved shoulders.

## Existing Bus Routes

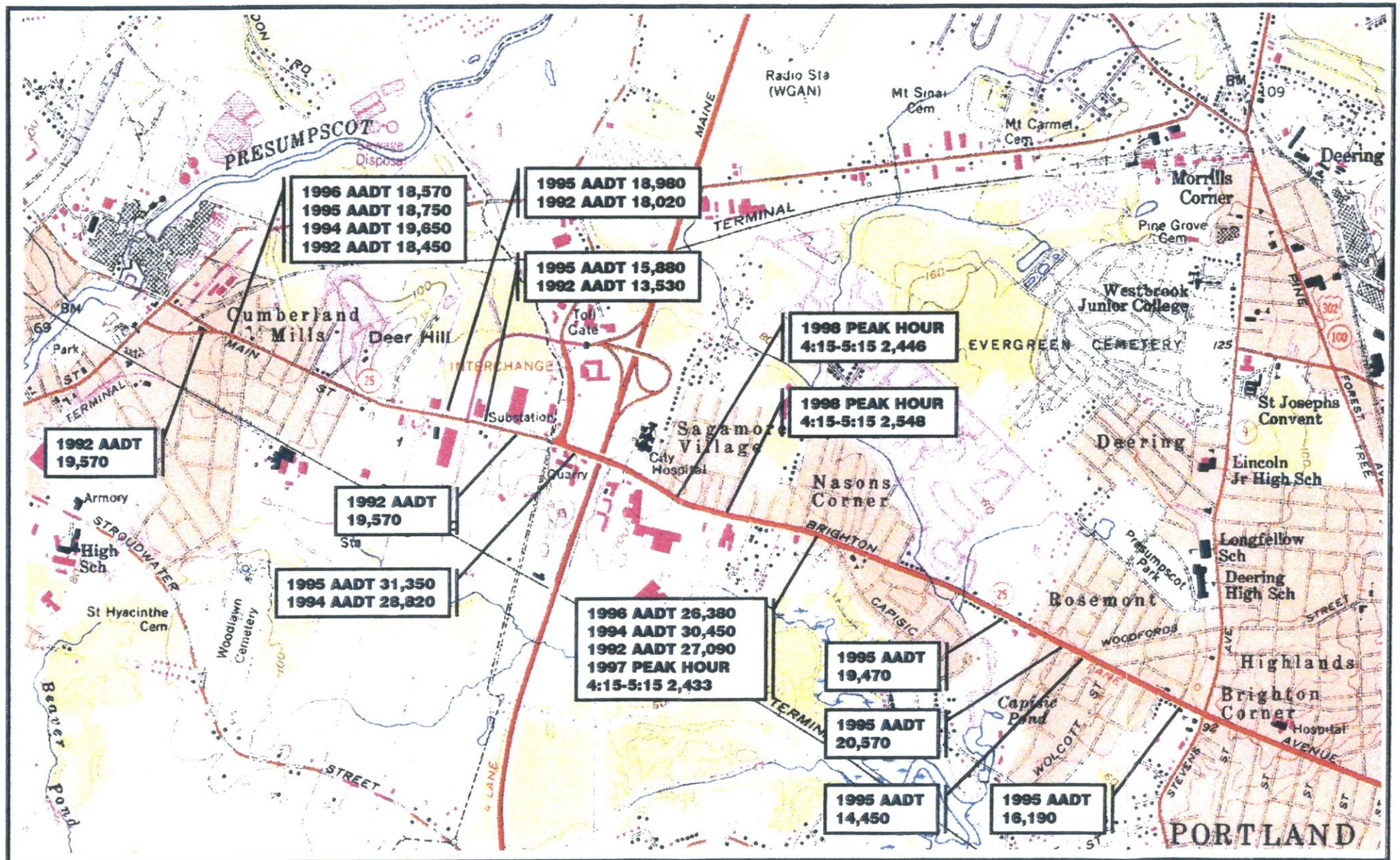
METRO has two bus routes on Brighton Avenue, one serving downtown Westbrook (Route 4) and a second serving the MTA/MDOT park and ride lot at Bradleys. The result is Brighton Avenue has the most frequent bus service in Portland, with 10-15 minute headways at times. There are several bus stops and shelters along the corridor.

## Existing Traffic Volumes

Existing traffic volumes were determined based on two sources:

- Surveillance counts from the Maine Department of Transportation
- PACTS trips model

These volumes are illustrated in Figure 1, Existing and Past Traffic Volumes.




| | | | |
|---|---|---|---|
| Design TLG | Date December 1998 | Gorrill-Palmer Consulting Engineers, Inc. | Drawing Name: Existing and Past Traffic Volumes |
| Drawn LAN | Scale Not to Scale | *Traffic and Civil Engineering Services* | Project: LOWER MAIN STREET / OUTER BRIGHTON AVE. STUDY |
| Check | Job No. 98053 | P.O. Box 1237, 22 Shaker Rd., Gray, ME 04039 — 207-657-6910, FAX 207-657-6912, E-Mail Gor-PalCE@MSN.com | Figure: 1 |

## Safety Analysis of Existing Conditions

The accident analysis for the corridor was based on data obtained from the Maine Department of Transportation for the period 1995-1997. The following table summarizes the total number of accidents for the 2.78 mile primary and secondary study area:

| | |
|---|---|
| At Intersections | 423 |
| Between Intersections | 180 |
| Total for Study Area | 603 |

None of the accidents in this three-year period involved fatalities. There was a fatality in 1999 involving a vehicle on Brighton Avenue which struck a light pole.

In order to evaluate whether a location has an accident problem, MDOT uses two criteria to define High Accident Locations (HAL). Both criteria must be met to be classified as an HAL.

1. A critical rate factor of 1.00 or more for a three-year period. Critical Rate Factor (CRF) compares the actual accident rate to the rate of similar intersections in the State. A CRF of less than 1.00 indicates a rate less than average, and
2. A minimum of 8 accidents over a three-year period.

The overall critical rate factor for the corridor is 1.73. A summary of various accident statistics for the corridor is presented below:

### Listing of Specific High Accident Locations 1995-1997

| Municipality | Location | Total Accidents | Percent Injury | Critical Rate Factor |
|---|---|---|---|---|
| Westbrook | Main/Lamb | 26 | 42.3 | 1.84 |
| Westbrook | Main/Larrabee | 65 | 41.5 | 1.38 |
| Portland | Brighton/Capisic | 21 | 33 | 1.36 |
| Westbrook | Between Larrabee/ Liza Harmon Drive | 20 | 25 | 1.85 |
| Portland | Between Woodford/ Fleetwood | 9 | 44 | 3.66 |

Collision diagrams were prepared for these HAL's and are included on the Appendix to the report.

Gorrill-Palmer Consulting Engineers, Inc. also compiled information for other non HAL's that had a significant number of accidents.

### Non High Accident Locations of Interest

| Municipality | Location | Total Accidents | Percent Injury | Critical Rate Factor |
|---|---|---|---|---|
| Portland | Brighton/Taft | 33 | 48.5 | 0.77 |
| Portland | Brighton/Rand | 26 | 34.6 | 0.54 |
| Portland | Brighton/Rowe | 13 | 30.8 | 0.31 |
| Portland | Brighton/ Warwick | 0 | 0 | 0 |
| Portland | Brighton / Colonial/ Woodford | 25 | 48 | 0.74 |
| Portland | Brighton / Stevens | 44 | 38.6 | 0.97 |

**The intersection of Main Street and Larrabee Road** has a Critical Rate Factor (CRF) of 1.38 with 65 accidents over the 3-year period. The collision diagram shows that 34 were rear end collisions and 23 were angle collisions. The rest were lane change or right turning collisions with through vehicles. Sixteen of the rear end collisions occurred in the right turn slip lanes from the Westbrook connector onto Main Street or from Larrabee onto Main Street. Rear end accidents are typical of right turn slip lanes with large radii, as vehicles second in line looking to the left collide with the vehicle ahead of them. Posting of stop versus yield signs does not seem to influence the pattern significantly. Reducing the radius will generally reduce these collisions. The rear end collisions on Larrabee Road and the Westbrook arterial approaches are common at traffic signals although it could be caused by detector placement. The angular collisions may be caused by the view of the left turning traffic of the through vehicles being shielded by the opposing left turn, and may indicate the need for a left turn lane, particularly for northbound traffic.

**The intersection of Main Street, Cumberland Street and Lamb Street**. Examination of the collision diagram shows the majority of the collisions are rear end. These are occurring where vehicles stop to make a left turn from Cumberland onto Lamb Street.

The intersection of Brighton and Capisic Street in Portland has 21 collisions over the three-year period with a critical rate factor of 1.36. Twelve of the collisions were rear end involving eastbound vehicles on Brighton Avenue. The remaining accidents were scattered without a definable pattern.

**The section of Main Street between Larrabee Road and Liza Harmon Drive** has 20 accidents with a critical rate factor of 1.85. Examination of the collision diagram shows the majority of these are rear end collisions involving right turning traffic into the McDonalds' driveway.

**The section of Brighton Avenue between Fleetwood and Woodford Street** had 9 accidents with a critical rate factor of 3.66. However, one of the collisions attributed to this roadway segment occurred at the intersection of Woodford Street and Brighton Avenue and so the total accidents is reduced to 8. Four of the collisions involved rear end collisions probably associated with vehicles turning into adjacent land uses.

High Accident Loctions for the corridor are presented Figure 2, High Accident Locations 1995-1997.

Occurrences of accidents by year, months and time of day are summarized below:

## Summary of Accidents by Years

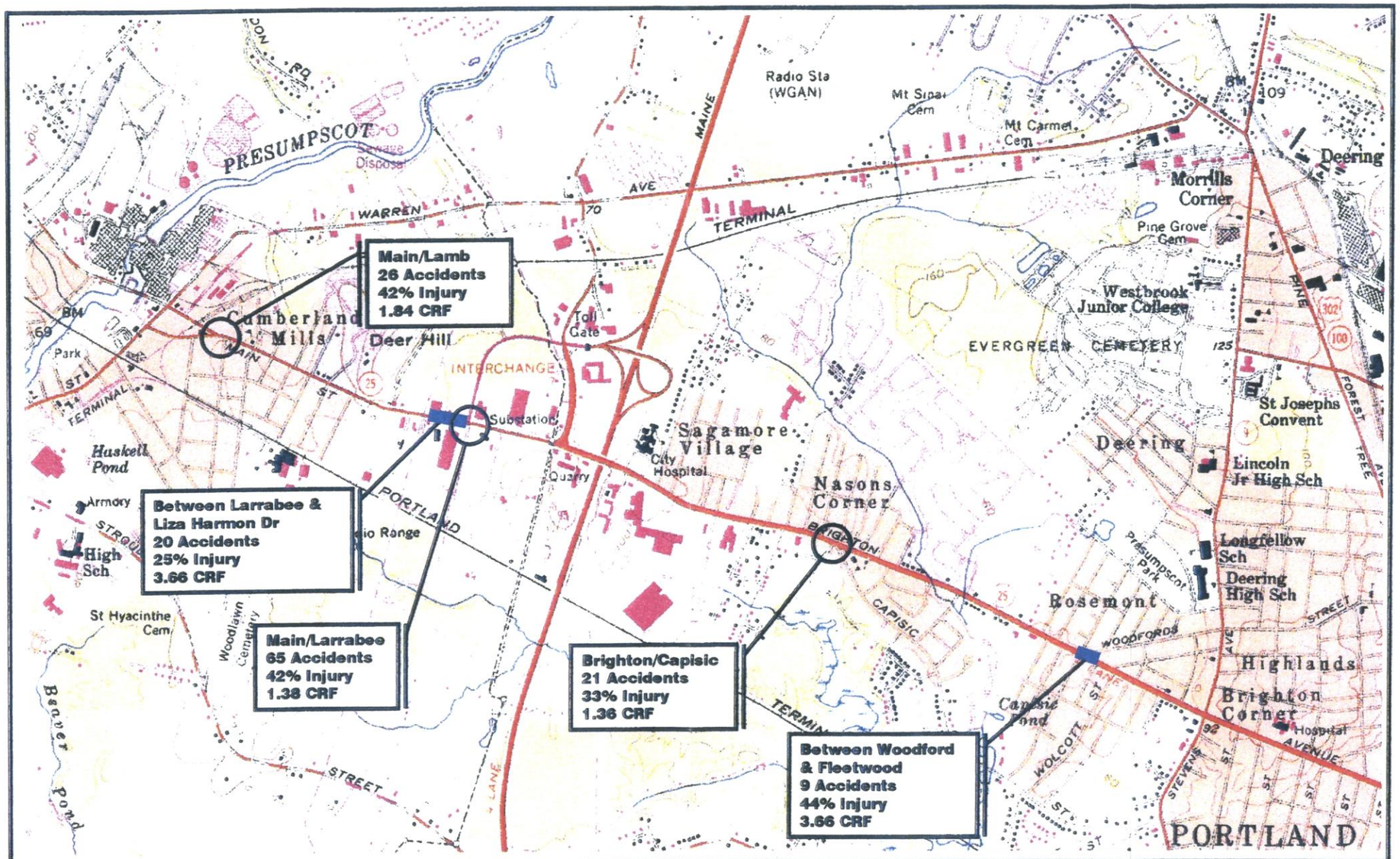
1995 . . . . . 182
1996 . . . . . 188
1997 . . . . . 233

## Summary of Accidents by Month

January. . . . . 44
February. . . . . 46
March. . . . . 53
April. . . . . 34
May. . . . . 39
June. . . . . 50
July. . . . . 55
August. . . . . 56
September. . . . . 41
October. . . . . 64
November. . . . . .64
December. . . . . 57

## Summary of Accidents by Day

Monday. . . . . 49
Tuesday. . . . . .96
Wednesday. . . . . .85
Thursday. . . . . .98
Friday. . . . . 84
Saturday. . . . . 122
Sunday. . . . . 69


Main/Lamb
26 Accidents
42% Injury
1.84 CRF
Between Larrabee & Liza Harmon Dr
20 Accidents
25% Injury
3.66 CRF
Main/Larrabee
65 Accidents
42% Injury
1.38 CRF
Brighton/Capisic
21 Accidents
33% Injury
1.36 CRF
Between Woodford & Fleetwood
9 Accidents
44% Injury
3.66 CRF
PRESUMPSCOT
WARREN AVE
TERMINAL
MAINE
Radio Sta (WGAN)
Mt Sinai Cem
Mt Carmel Cem
Morrills Corner
Deering
Pine Grove Cem
Westbrook Junior College
EVERGREEN CEMETERY
St Josephs Convent
Lincoln Jr High Sch
Longfellow Sch
Deering High Sch
Cumberland Mills
Deer Hill
Toll Gate
INTERCHANGE
Substation
Sagamore Village
City Hospital
Quarry
Nasons Corner
BRIGHTON
Rosemont
Presumpscot Park
CAPISIC
WOODFORDS
Highlands
Brighton Corner
Hospital
AVENUE
Capisic Pond
WOLCOTT
STEVENS
Haskell Pond
Armory
High Sch
St Hyacinthe Cem
Woodlawn Cemetery
Beaver Pond
PORTLAND
Design TLG
Drawn LAN
Check
Date December 1998
Scale Not to Scale
Job No. 98053
Gorrill-Palmer Consulting Engineers, Inc.
Traffic and Civil Engineering Services
P.O. Box 1237, 22 Shaker Rd., Gray, ME 04039
207-657-6910
FAX 207-657-6912
E-Mail Cor-Pal CE@MSN.com
Drawing Name
High Accident Locations 1995-1997
Project
LOWER MAIN STREET / OUTER BRIGHTON AVE. STUDY
Figure
2

The accidents involving pedestrians and bicyclists are summarized in the following tables:

### Accidents involving Pedestrian

| | |
|---|---|
| At intersections | 1 |
| Between intersections | 2 |
| Total | 3 |

### Accidents involving Bicycles

| | |
|---|---|
| At intersections | 6 |
| Between intersections | 2 |
| At Driveways | 1 |
| **Total** | 9 |

## Compliance with ADA

Alpha One completed a field walk to identify overall issues with regard to accessibility. Their findings are summarized in the Appendix.

## Summary of Existing Conditions

The review of the existing conditions along the corridor identified numerous opportunities to improve the existing transportation and streetscape conditions:

- Access Management: The corridor has numerous access points to businesses off both Brighton Avenue and Main Street which contribute to safety concerns for both vehicles and pedestrians.
- Pedestrian Safety: The level of pedestrian traffic to businesses in the area is significant. While sidewalks exist along the majority of the area they vary in condition, width, and appearance. In many areas, there is little distinction between pedestrian and vehicular facilities.
- The corridor has some street trees but they are found in random patterns and do not form a continuous canopy.
- The bus shelters are strictly utilitarian and lack pedestrian scale or amenity.
- The accident data shows the following high accident locations:

### Portland

Brighton/Capisic
Between Woodford/Fleetwood

### Westbrook

Main/Lamb
Main/Larrabee
Between Larrabee and Liza Harmon Dr.

# 2. Future Conditions

## Land Use Scenarios

### Overview

Planning staff from Westbrook, Portland and the Greater Portland Council of Governments (GPCOG) developed land use scenarios upon which future forecasts of traffic on the Outer Brighton Avenue/Lower Main Street corridor in the two cities can be based. Five different future land use scenarios ( two for Portland and three for Westbrook) resulted from the process to help conceptualize how the future volume and daily distribution of traffic on the Brighton Avenue/Main Street corridor might be variously affected. These are summarized below. Putting together the two cities' five individual scenarios produces a range of six combined overall scenarios for the Study Area as a whole.

### Vacant Land

The proposed Rand Road/Turnpike Interchange will be the most powerful agent for future land use change within the Study Area. Land use impacts from a new Rand Road Interchange will be concentrated on vacant land on both sides of the interchange. On the Portland side, this will involve about 105 acres, some vacant, some partially built-out, in and around the Snyder and Emery-Waterhouse Tracts abutting Rand Road. The Snyder Tract was the parcel the US Post Office studied in 1998 as a possible site for a regional distribution facility but ended-up not purchasing. The Westbrook side involves about 126 acres of vacant land mostly south of the existing Westbrook Arterial in and around Randall's Farm. See Joint Gateway Land Use Existing Conditions Map.

### Assumptions

Planning staff forecasted land use changes in the Rand Road interchange-access areas on both sides of the Turnpike for a 20 year period (2000 to 2020) in order to provide enough time to encompass impacts from several long-term development projects that could affect traffic movements on the Brighton/Main St. corridor. For the purpose of the land use projections, the existing zoning in Westbrook and Portland in the study area is held the same over the 20 year planning period. This was felt to be reasonable because Westbrook changed the zoning of its Interchange area in 1998 to Mixed Use to be in a better position to accommodate new commercial development anticipated to be generated by the new interchange. Likewise, the existing Portland zoning is a set of mixed-use industrial, office park, and retail zones in its existing Rand Road commercial area.

### Potential Future Proposals

In addition to the Rand Road and Jetport Turnpike Interchanges, there are a number of other long-term proposals that could affect the Study Area. These include a toll-free Portland ring road linking together the Turnpike, I-295 and I-95 around the city, a new commuter bus transfer hub near the Rand Road Interchange, or other alternative modes or routing of traffic on Warren Avenue, along a railroad right of way. However, it is important to note that the Land Use Forecast Tables are based solely on the vacant and partially built-out land to be opened up by the proposed new Rand Road/ Turnpike Interchange.

It must also be emphasized that the further out into the future that a land use or traffic projection is made, the less reliable that projection will be. Therefore, the Land Use Forecast Tables should be regarded as only one possible scenario among many possible scenarios for the pattern of future development, especially for the period beyond 2005 when other long-term trends and projects may have profound effects

on the Study Area. However, since long-term (beyond 2005) traffic volumes need to be generated for this study, the Land Use Tables use the long-term historic trend of the Maine Mall area for a 20 year trend for the Rand Road Interchange area.

## Maine Mall Experience

It seems reasonable to use the 38 year experience from 1960 to 1998 of the Maine Mall area as a real-life example of how the vacant land around a new Rand Road Interchange in Westbrook might develop. The period from 1960–1998 encompasses both boom and recession periods. Therefore the long-term growth rate of the Maine Mall area realistically encompasses the natural ups and downs that may be expected for the local economy over the next 20 years to 2020. For its first 10 years, the Maine Mall area experienced 16% of build-out. After 20 years, the Maine Mall area was 36% built out; after 30 years it was 82% built out, based upon an assumption that the actual build-out will be somewhat less that the theoretical number. Parking requirements often constrain the actual FAR to less than zoning would theoretically allow.

Because the Maine Mall area, within practical terms, is largely built out, Westbrook planners are reporting increasing inquiries from developers about locating new stores and offices in the Rand Road Interchange area after the interchange is actually built.

## Forecasting Methodology

GPCOG staff followed a seven step forecasting process to develop the five land use scenarios.

Step 1: Determine gross vacant land within the Study Area available for development in Westbrook and Portland.

Step 2: Subtract out wetlands, other unbuildable land, and roads from total vacant land to yield net available land.

Step 3: Develop scenarios to provide a range of reasonable future land use patterns for the net available land. List on a table the major land use categories of the zoning districts within the study area for each of the scenarios.

Step 4: From the zoning requirements in each city determine the average square footage of floor area to be expected from each acre of land (FAR = floor to area ratio) within each zoning district in the Study Area. For the vacant land on the Westbrook side, the 1998 FAR of the Maine Mall area is used as a surrogate. Estimate floor square footage for the vacant and partially built-out commercial lots and the small residential lots of record on the Portland side.

Step 5: Calculate the build-out square footage in each zoning district for the scenarios.

Step 6: Use the historic rate of growth of the Maine Mall area as a template to calculate the future rate of build-out for the vacant land in the study area on the Westbrook side. On the Portland side, use the judgments of the Portland Planning Staff to project the future rate of build-out.

Step 7: Submit Land Use Forecast Tables to Westbrook and Portland planning staffs for final review and acceptance. Deliver to consultant for calculation of traffic projections.

## Maine Mall Area Template

GPCOG staff used the historic build-out trend of the Maine Mall area as a template for projecting the future build-out rate for the Rand Road Interchange Area.

**Assumptions**

1. For purposes of the land use forecasting tables, it is assumed that Exit 7 did not induce any development in the Maine Mall area until 1965.

2. The total tabulated floor area of 5,059,044 SF in the Maine Mall in 1998 is assumed, for planning purposes, to be fairly close to the total build-out amount of square feet, which equals 32% FAR. It should be noted, however, that a September 1999 report by the City of South Portland estimates that there is one million square feet of developable floor space in the vicinity of the Maine Mall.

3. Therefore the rate of change of the Maine Mall area for the periods 1960–1969, 1970–1979, 1980–1989 and 1990–1998 is a reasonable surrogate for forecasting the rate of change for the Larrabee Road vacant land adjacent to the proposed Rand Road Interchange in Westbrook.

4. Percentages of build-out for the Maine Mall area were calculated for the following years, based upon the total tabulated floor area of 5,059,044 SF in the Maine Mall in 1998:

   1969: 788,130 SF = 16% of build-out. Corresponds to year 2005 for Rand Road interchange area

   1979: 1,806,032 SF = 36% of build-out. Corresponds to year 2015 for Rand Road interchange area

   1989: 4,167,288 SF = 82% of build-out. Corresponds to year 2025 for Rand Road interchange area.

5. Assume the following correspondences for rates of change of total square feet of floor area between the Maine Mall area and the Larrabee Road area:

| | Maine Mall | | Larrabee Road |
|---|---|---|---|
| (1) | 1965 - 1970 | ===> | 2000 - 2005 |
| (2) | 1971 - 1980 | ===> | 2006 - 2015 |
| (3) | 1981 - 1990 | ===> | 2016 - 2025 |

6. Calculate:

   (1) Total floor area for Larrabee Road area for year 2005: **16% of build-out in 2005**

   (2) Total floor area for Larrabee Road area for year 2010:

   % Build-out 2015 - % Bld-out 2005 = [Æ Bld-out/year] x 5 years = Æ Bld-out by 2010 + Bld-out in 2005 = Build-out in 2010 10 years

   35.7% - 15.6% = [+ 2.01%/year] x 5 years = + 10.05% by 2010 + 15.6 % Build-out in 2005 = 25.7% of Build-out by 2010 10 years

   **26% of build-out in 2010**

   (3) Total floor area for Larrabee Road area for year 2020:

   % Build-out 2025 - % Bld-out 2015 = [Æ Bld-out/year] x 5 years = Æ Bld-out by 2020 + Bld-out in 2015 = Build-out in 2020 10 years

   82.4% - 35.7% = [+ 4.67%/year] x 5 years = + 23.4% by 2020 + 35.7% Build-out in 2015 = 59.1% of Build-out by 2010 10 years

   **60% of build-out in 2020**

## Land Use Scenarios

All scenarios assume that the proposed Rand Road and Jetport Interchanges of the Turnpike will be built and operating by 2005. The Jetport Interchange opened in September 1999.

## Portland Scenarios

- **Scenario #1: MODERATE GROWTH** Current market trends from recent site plans submitted to the Portland Planning

## Capacity Analyses

Gorrill-Palmer Consulting Engineers, Inc. completed capacity analyses for the following major intersections along Brighton Avenue / Main Street Corridor for the AM and PM peak hour based on forecast conditions for the years 2005, 2010, and 2020 for the four different development scenarios described above:

- Main Street / Larrabee Road
- Brighton Avenue / Riverside Street
- Brighton Avenue / Rowe Street / Warwick Street
- Brighton Avenue / Capisic Street
- Brighton Avenue / Pine Tree Shopping Center

These analyses were performed on Synchro as a coordinated system based on the signalization upgrade planned by the City of Portland. The analyses for each of these intersections are based on the existing roadway configuration unless otherwise noted. The results of these analyses are included in the Appendix.

In general, the capacity analyses show that the Brighton Avenue / Main Street corridor can accommodate the traffic forecast to be generated by any of the three scenarios provided the intersection improvements outlined in the next chapter at Rand Road, Capisic Street, and Main Street which were found to be deficient are implemented.

Gorrill-Palmer Consulting Engineers, Inc. also completed an operational analysis to compare three and four lane alternatives for Brighton Avenue between Nasons Corner and Woodford Street. These analyses were completed using the Synchro and Corsim computer programs. The analyses showed a potential increase in side street delay with a three lane section. This analysis is further discussed in Chapter 3. A copy of the model was furnished to PACTS.

# GATEWAY PROJECT

Scenario #1

## Land Use Forecasts -- Portland

| | | | Moderate Growth | | Percent of Build-Out | | |
|---|---|---|---|---|---|---|---|
| Zones | New or Proposed Land Use | Total Acres | Square Feet of Floor From Plan or Zoning | Build-Out (Square Feet) | 2005 | 2010 | 2020 |
| Scenario #1<br>Portland Business B-1; Retail Sales Service (No Gas Sales or Drive-Throughs) | (A) Rite-Aid | 1.3 | 11, 180 (48 parking spaces) | 11,180 | 100% | | |
| B-1 or B-2 (Business B-2) | (B) Holden Insurance Lot | 2.1 | 5,000 restaurant | 5,000 | 100% | | |
| Business B-2; Retail | (C) Forest City | 6.24 | + 2,900 | 2,900 | 100% | | |
| Community Business B-2 Zone Pine Tree Shopping Center | (D) Applebee's Restaurant | 18 | 5,000 sq. ft. | 5,000 sq. ft. | 100% | | |
| Office Park O-P (possible rezoning from R-2) | (E) Union Water Power | 11.2 | 40,000 | 40,000 | 100% | | |
| Office Park O-P (rezoned from IM) | (F) Office Development (former U.S. Post Office Site) | 15 developable acres | 225,000 | 225,000 | 25% | 50% | 75% |
| IL Zone: Low Impact (Contract zone from R-3 to Low Impact IL Zone) | (G) Industrial Warehouse | 1.4 | 16, 800 (Two l. buildings and one house on 9,000 acres) | 16,800 | 100% | | |
| IM: Moderate Impact Industrial Zone | (H) Allen & Coles Warehouse/Office | 18.5 acres | 39,000 sq. ft. warehouse/ 5,000 sq. ft. | 44,000 sq. ft. | 100% | | |
| IM & B2 Zones | (I) Emery-Waterhouse (Half of lot is available) | 30 | 1/2 commercial | 116,500 | 50% | 100% | |
| | | | 1/2 warehouse | 116,500 | 50% | 100% | |
| Schools: E-Secondary Zone and R-3 Zone | (J) Breakwater School | ? | +12,000 | 12,000 | 100% | | |
| R-3 Medium Density SDUs | (K) Livia Road vacant house lots, sewered (min. lot size per D.U. = 6,500 sq. ft.) | NA | NA | 37 SDUs (assume average of 2.5 bedrooms /D.U.?) | + 8 Dus | + 8DUs (16 total) | + 16DUs (32 total) |

*Source: Portland Planning Department*

# GATEWAY PROJECT

Scenario #2

## Land Use Forecasts -- Portland

**Intensive Commercial Growth** — Percent of Build-Out

| Zones | New or Proposed Land Use | Total Acres | Square Feet of Floor From Plan or Zoning | Build-Out (Square Feet) | 2005 | 2010 | 2020 |
|---|---|---|---|---|---|---|---|
| Scenario #2<br>Portland Business B-1; Retail Sales Service (No Gas Sales or Drive-Throughs) | (A) Rite-Aid | 1.3 | 11, 180 (48 parking spaces) | 11,180 | 100% | | |
| B-1 or B-2 (Business B-2) | (B) Holden Insurance Lot | 2.1 | 10,000 Retail Store | 10,000 | 100% | | |
| Business B-2; Retail | (C) Forest City | 6.24 | + 2,900 | 2,900 | 100% | | |
| Community Business B-2 Zone Pine Tree Shopping Center | (D) Applebee's Restaurant plus Addition to Pine Tree Center | 18 | 5,000 sq. ft. (Applebees)<br>+75,000 (Shopping Center Addition) | 80,000 | 100% for Applebees<br>50 % for Shopping Center Additions | 100 % for Shopping Additions | |
| Office Park O-P (possible rezoning from R-2) | (E) Union Water Power | 11.2 | 40,000 | 60,000 | 100% | | |
| Office Park O-P (rezoned from IM) | (F) Office Development (former U.S. Post Office Site) | 15 developable acres | 225,000 | 225,000 | 25% | 50% | 75% |
| IL Zone: Low Impact (Contract zone from R-3 to Low Impact IL Zone) | (G) Industrial Warehouse | 1.4 | 16, 800 (Two in I. buildings and one house on 9,000 acres) | 16,800 | 100% | | |
| IM: Moderate Impact Industrial Zone | (H) Allen & Coles Warehouse/Office | 18.5 acres | 39,000 sq. ft. warehouse/ 5,000 sq. ft. office | 44,000 sq. ft. | 100% | | |
| IM & B2 Zones | (I) Emery-Waterhouse | 30 | Commercial | 200,000 | 50% | 100% | |
| Schools: E-Secondary Zone and R-3 Zone | (J) Breakwater School | ? | +12,000 | 12,000 | 100% | | |
| R-3 Medium Density SDUs | (K) Livia Road vacant house lots, sewered (min. lot size per D.U. = 6,500 sq. ft.) | NA | NA | 37 SDUs (assume average of 2.5 bedrooms /D.U.?) | + 8 DUs | + 8 Dus (16 total) | +16 Dus (32 total) |

*Source: Portland Planning Department*

# GATEWAY PROJECT

Table #1

## Land Use Forecasts -- Westbrook

**Scenario # 1**

### Office Oriented

Percentage of Build-Out

| Zones | New or Proposed Land Use | Total Acres | Square Feet of Floor From Plan or Zoning | Build-Out (Square Feet) | 2005 | 2010 | 2020 |
|---|---|---|---|---|---|---|---|
| SCENARIO # 1 | | Net Buildable Acres | 45% Maximum-Lot Coverage By Zoning | Based on FAR = 32 % | | | |
| MU = Mixed Use Zone | (L) Professional and Business Office Buildings | 69<br>55 % of total | 1,352,538 | 961,805 | 16% | 26% | 60% |
| Assumptions: | (L) Distribution Facilities and Accessible Warehousing | 19<br>60 % of total | 372,438 | 264,845 | 16% | 26% | 60% |
| (1) Net Developable Land = 225 acres total: - 30% for wetlands = 158 net developable acres; - 20% for roads = 126 net developable acres | (L) Hotels | 10 acres<br>7.5% of total | 196,020 | 139,392 | 16% | 26% | 60% |
| | (L )Restaurants (non drive thru) | 6 acres<br>5% of total | 117,612 | 83,635 | 16% | 26% | 60% |
| (2) Build Out = Maine Mall FAR in 1998 = 32% | (L) Indoor Recreational Facilities | 6 acres<br>5 % of total | 117,612 | 83,635 | 16% | 26% | 60% |
| | (L) Retail Businesses | 13 acres<br>10% of total | 254,826 | 181,210 | 16% | 26% | 60% |
| | (L) Business Services | 0 | 0 | 0 | | | |
| | (L) Financial Services | 3 acres<br>2.5 % of total | 58,806 | 41,818 | 16% | 26% | 60% |
| | (L) Public/Private Utilities and Accessory Warehousing | 0 | 0 | 0 | | | |
| BH = Business Highway Zone | Bradlees Shopping Center | NA | 0 | 0 | | | |
| | **Totals** | **126 acres** | **2,469,852** | **1,756,340** | **16%** | **26%** | **60%** |

*Assume that some buildings would be only two stories or three stories high, instead of four stories.

# GATEWAY PROJECT

Table #1

## Land Use Forecasts -- Westbrook

**Scenario # 2**

### Warehouse and Distribution Oriented

| Zones | New or Proposed Land Use | Total Acres | Square Feet of Floor From Plan or Zoning | Build-Out (Square Feet) | Percentage of Build-Out 2005 | 2010 | 2020 |
|---|---|---|---|---|---|---|---|
| SCENARIO # 2 | | Net Buildable Acres | 45% Maximum-Lot Coverage | Based on FAR = 32 % | | | |
| MU = Mixed Use Zone | (L) Professional and Business Office Buildings | 19<br>15 % of total | 372,438 | 264,845 | 16% | 26% | 60% |
| Assumptions: | (L) Distribution Facilities and Accessible Warehousing | 76<br>60 % of total | 1,489,752 | 1,059,379 | 16% | 26% | 60% |
| (1) Net Developable Land = 225 acres total: 30% for wetlands = 158 net developable acres; - 20% for roads = 126 net acres. | Hotels | 0 | 0 | 0 | | | |
| | Restaurants | 0 | 0 | 0 | | | |
| (2) Build Out = Maine Mall FAR in 1998 = 32% | Indoor Recreational Facilities | 0 | 0 | 0 | | | |
| | (L) Retail Businesses | 3<br>2.5 % of total | 58,806 | 41,818 | 16% | 26% | 60% |
| | (L) Business Services | 19<br>15 % of total | 372,438 | 264,845 | 16% | 26% | 60% |
| | (L) Financial Services | 3<br>2.5 % of total | 58,806 | 41,818 | 16% | 26% | 60% |
| | (L) Public/Private Utilities and Accessory Warehousing | 6<br>5 % of total | 117,612 | 83,635 | 16% | 26% | 60% |
| BH = Business Highway Zone | Bradlees Shopping Center | NA | 0 | 0 | | | |
| | **Totals** | **126 acres** | **2,469,852** | **1,756,340** | **16%** | **26%** | **60%** |

*Assume that some buildings would be only two stories or three stories high, instead of four stories.

# GATEWAY PROJECT

Table #1

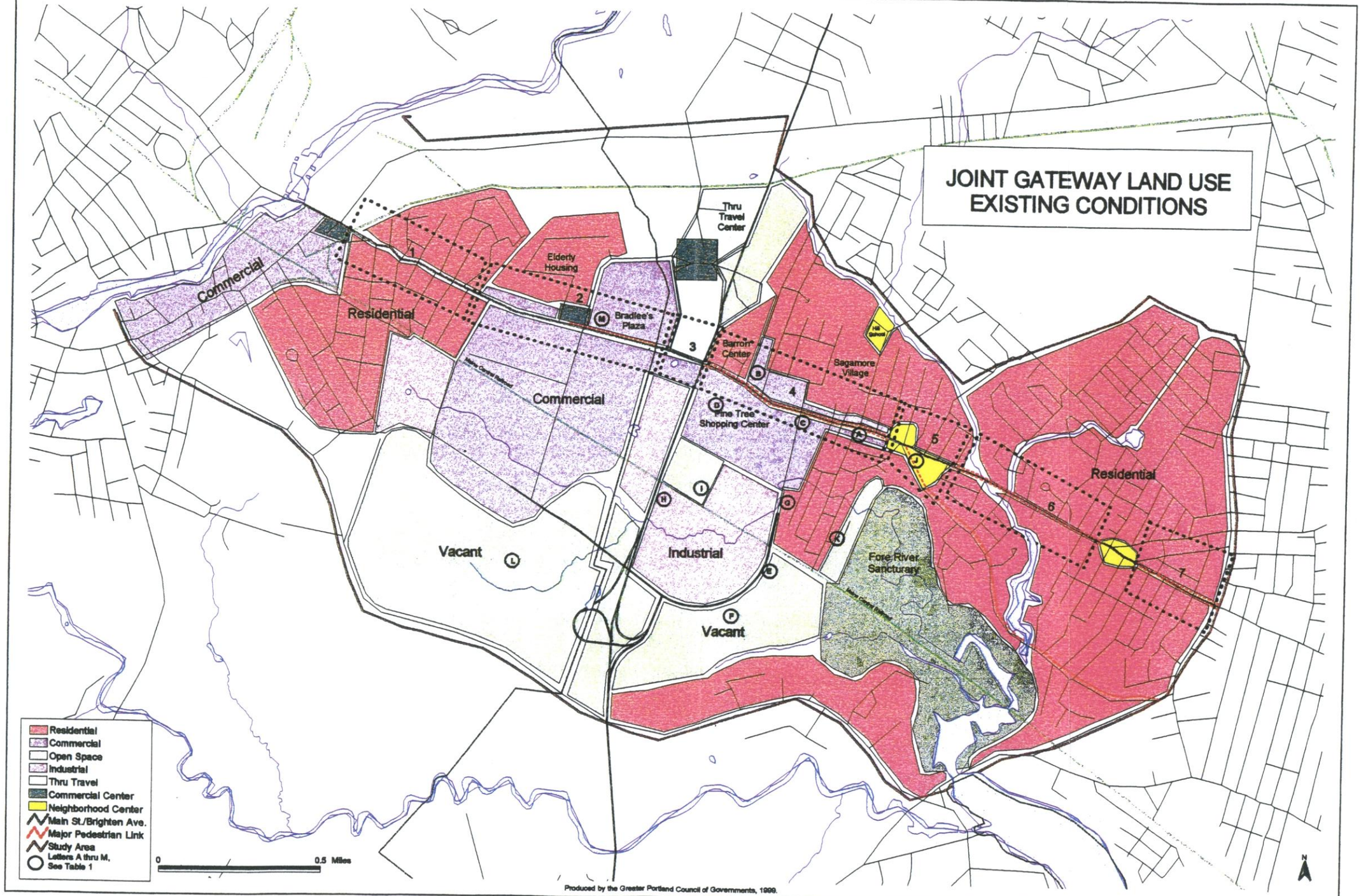
## Land Use Forecasts -- Westbrook

**Scenario # 3**

### Retail Focus

| Zones | New or Proposed Land Use | Total Acres | Square Feet of Floor From Plan or Zoning | Build-Out (Square Feet) FAR = 32% | Percentage of Build-Out 2005 | 2010 | 2020 |
|---|---|---|---|---|---|---|---|
| SCENARIO # 3 | | Net Buildable Acres | 45% Maximum-Lot Coverage By Zoning | | | | |
| MU = Mixed Use Zone | (L) Professional and Business Office Buildings | 19 | 372,438 | 264,845 | 16% | 26% | 60% |
| Assumptions: | | 15% of total | | | | | |
| | (L) Distribution Facilities and Accessible Warehousing | 13 | 254,826 | 181,210 | 16% | 26% | 60% |
| (1) Net Developable | | 10% of total | | | | | |
| Land = 225 acres total:- 30% for wetlands | (L) Hotels | 6 acres | 117,612 | 83,635 | 6% | 26% | 60% |
| = 158 net developable | | 5% of total | | | | | |
| acres; - 20% for roads = 126 net developable | (L )Restaurants | 6 acres | 117,612 | 83,635 | 16% | 26% | 60% |
| acres | | 5% of total | | | | | |
| (2) Build Out = Maine Mall FAR in 1998 = 32% | (L) Indoor Recreational Facilities | 0 | 0 | 0 | | | |
| | (L) Retail Businesses | 76 acres | 1,489,752 | 1,059,379 | 16% | 26% | 60% |
| | | 60% of total | | | | | |
| | (L) Business Services | 3 acres | 58,806 | 41,818 | 16% | 26% | 60% |
| | | 2.5% of total | | | | | |
| | (L) Financial Services | 3 acres | 58,806 | 41,818 | 16% | 26% | 60% |
| | | 2.5 % of total | | | | | |
| BH = Business Highway Zone | (L) Public/Private Utilities and Accessory Warehousing | 0 | 0 | 0 | | | |
| | (M) Bradlees Shopping Center | NA | +75,000 sq. ft. addition | 75,000 sq. ft. | 100% | | |
| | **Totals** | **126 acres** | **2,544,852** | **1,831,340** | **19%** | **30%** | **63%** |

*Assume that some buildings would be only two stories or three stories high, instead of four stories.


JOINT GATEWAY LAND USE
EXISTING CONDITIONS
Commercial
Residential
Elderly Housing
Thru Travel Center
Bradlee's Plaza
Barron Center
Hill School
Sagamore Village
Commercial
Pine Tree Shopping Center
Residential
Vacant
Industrial
Fore River Sanctuary
Vacant
Residential
Commercial
Open Space
Industrial
Thru Travel
Commercial Center
Neighborhood Center
Main St./Brighten Ave.
Major Pedestrian Link
Study Area
Letters A thru M, See Table 1
0
0.5 Miles
N
Produced by the Greater Portland Council of Governments, 1999.

# 3. PRIMARY STUDY AREA RECOMMENDATIONS

The Primary Study Area extends from Nason's Corner (Brighton Avenue and Capisic Street) to Westbrook City Hall on Main Street. It is subdivided into planning units that are defined by major intersections or other significant landmarks. The design team followed several guiding principles in the plan's development:

- **Access management.** The plan explores ways to limit the number of access points onto Brighton Avenue through reduction or relocation of curb cuts, adjustments to intersection geometry, and refinement of driveway locations. The intent is to create a smoother flow of traffic along Brighton Avenue while improving pedestrian safety.

- **Reinforce community identity.** Much of the commercial development throughout the study area is not visually related to the surrounding residential neighborhoods. There are no special treatments for gateway locations. The study recommends infill development on several corners to reduce the visibility of parking lots. Design guidelines are recommended as a way of ensuring a level of architectural and site design that is more responsive to community identity.

- **Streetscape Improvements.** The primary study area is virtually devoid of any pedestrian amenities or elements that enrich the streetscape. The plan provides recommendations for sidewalks improvements, landscaping, lighting, street furnishings, and artwork.

- **Improve Pedestrian Safety**. All crosswalks within the primary study area – both formal and informal– have been evaluated for visibility, safety, and location. In several instances islands have been added or widened to provide mid-street pedestrian refuges. Where possible grass esplanades have been recommended to separate the pedestrian from vehicular traffic.

This chapter includes recommendations for tree planting, center islands, signage, artwork, crosswalks, bus shelters, gateways, bicycle routes, and design guidelines for the primary study area. The recommendations are illustrated in concept on Drawings 3 through 7 at the end of this chapter. More detail is provided in Chapter 5 General Study Area Recommendations for issues that apply throughout the whole corridor.

## PORTLAND

### Nason's Corner: Dennett to Devon Streets

Nason's Corner is one of the recognized neighborhood hubs along Brighton Avenue. The recommendations outlined below are designed to improve traffic flow and pedestrian movement and to reestablish a stronger pedestrian atmosphere to the community.

#### Traffic Improvements

- Capisic Street approach. Restripe the pavement to provide for two lanes of traffic entering the intersection. Extend painted lane markers to Brighton to guide turning movements. Most of the traffic will be turning left onto Brighton.
- Brighton Avenue eastbound. Maintain two lanes of traffic eastbound. Eliminate the right turn arrow for right turns from Capisic onto Brighton since it is facing a through / right turn lane.
- Brighton Avenue westbound. Maintain

two lanes of traffic westbound.
- Southeast corner. Reset and extend granite curbing in front of the appliance repair store to shorten the distance that pedestrians have to cross both Capisic Street and Brighton Avenue.
- Southwest corner. Reset and extend granite curbing to reduce speed of right-turning vehicles from Brighton Avenue onto Capisic Street.

### Crosswalks

- Maintain the existing locations for crosswalks at Nason's Corner.
- See Chapter 5 for additional guidelines for crosswalks.

### Access Management

- Consolidate access to the businesses (gas station, convenience store, recycling center) on the north side of Brighton Avenue between Kent and Dennett Streets. These establishments now have virtually unlimited access from three sides. Eliminate access from Brighton Avenue and re-route internal traffic flow onto the side streets (Dennett, Essex, and Kent Streets).
- Install granite curbing and landscaped islands along Brighton Avenue. Continue sidewalk in keeping with existing patterns.
- Work with business establishments to improve signage, traffic flow, and on-site parking.

### Streetscape Improvements

#### *Sidewalks*

- Provide a clearly defined sidewalk on both sides of Brighton Avenue to separate pedestrians from the parked cars on the north and vehicular traffic on the south.
- Materials used for the sidewalks should complement the varied nature of the neighborhood. Choices for materials should include: brick, interlocking concrete blocks in a brick pattern, stamped asphalt in a brick pattern, or concrete with brick banding.

#### *Lighting*

- Emphasize the pedestrian nature of the corner with distinctive pedestrian-scaled fixtures that complement the varied architectural styles.
- Provide additional illumination at the crosswalks.

#### *Street Trees*

- Install deciduous shade trees in the esplanade on the north side of the street between Dennett and Kent Streets once the curb cuts have been eliminated.
- Plant shade trees on the south side of the street east of Capisic Street to maintain the rhythm of trees along Brighton Avenue.
- Protect the large shade tree on the southwest corner from street encroachment.

#### *Grass Esplanade*

- Provide a grass esplanade (minimum width of two feet) between the curb and the sidewalk.
- Plant colorful, hardy perennials (e.g., daylilies) in key locations – such as the esplanade and on prominent corners – to provide seasonal interest and to direct pedestrian traffic.

## *Devon Street to Wessex and Webb Streets*

### Traffic Improvements

- Maintain two lanes of traffic in both directions.

- See Rand Road Intersection concept shown on the plans at the end of this section for detailed description of new lane configurations which may extend as far east as Wessex and Webb Streets.

### Crosswalks: Warwick/Rowe/Brighton

- Maintain the existing locations for crosswalks at the Rowe and Warwick intersection with Brighton Avenue, **which is a crossing location for a designated school walking route to Hall Elementary School.**
- See Chapter 5 for additional guidelines for crosswalks. These are of particular importance due to the proximity of Hall School and the school walking route.

### Pedestrian Lighting

- Emphasize the street corners with distinctive pedestrian-scaled fixtures.
- Provide additional illumination at the crosswalks.

### Access Management

- Work with the business owner (dry cleaner) on the south side of Brighton Avenue, between Rowe and Terrace Avenues, to provide access from the side streets.
- Eliminate the curb cuts along Brighton Avenue designated on the attached plan and replace with sidewalks, grass esplanade, and street trees.
- Work with the property owner (a storage garage) on the north side of Brighton Avenue just west of Lomond Street to provide access from the side street.
- Continue to monitor the traffic movements at the new Rite Aid Pharmacy.

### Streetscape Improvements

- Provide a colorful sign directing people to the Hall School off Warwick Street.
- Consider the installation of bus shelters on both sides of the street.
- Work with Rite Aid to add visual interest to the pedestrian environment in the form of additional trees, flowering shrubs, and perennials.

## *Rand Road Intersection*

### Traffic Improvements

- Rand Road northbound. Provide two travel lanes for 550 feet approaching the intersection. The left lane should be designated for through (minimal movement into Cabot Street) and left turns onto Brighton Avenue. Provide one right turn lane. There is sufficient right-of-way to accommodate a second turning lane if it is warranted in the future.
- Rand Road southbound. Provide two travel lanes for the first 550 feet of Rand Road. Design should accommodate large volume of truck traffic.
- Brighton Avenue eastbound. Maintain three lanes of traffic eastbound: left lane – turns into Cabot Street; middle lane – through traffic; right lane – through and right onto Rand Road.
- Brighton Avenue westbound. Realign the current configuration to provide four lanes of traffic at the intersection: right two lanes – through traffic (right lane for right turns onto Cabot Street); left two lanes – left turns onto Rand Road. This will require shifting the eastbound approach to the south (toward the Pine Tree Shopping Center). This will also require acquiring right of way from Forest City Chevrolet.
- Adjust the locations and width of islands as indicated on the drawings.

### Crosswalks

- Maintain the existing crosswalks on the south and west sides of the intersection.

- Coordinate the crosswalks with the design of the planting islands on both Brighton Avenue and Rand Road to provide a place of pedestrian refuge at the mid points.

### Pedestrian Lighting

- Coordinate the design of the crosswalk and gateway treatment with distinctive pedestrian light fixtures.
- Install low level lighting in the pedestrian plazas. Uplighting on the flowering trees would be a way of emphasizing the uniqueness of this intersection.
- Provide ample lighting within and surrounding the bus shelter to make it a welcoming beacon for transit users.

### Access Management

- The Brighton Avenue access into Forest City Chevrolet may have to be relocated to the east to avoid conflicts with vehicles stacked to turn left onto Rand Road.
- Work with owner of the Pine Tree Shopping Center to eliminate the curb cut that feeds into Brighton Avenue just west of the bus shelter. The widening of the eastbound approach will necessitate the elimination of this curb cut.

### Infill Potential

- Encourage the development of a free-standing building on an outparcel at the northeast corner of the Pine Tree Shopping Center. A one or two story building in this location would help screen the parking lot and strengthen the corner as a gateway into the Rand Road industrial / commercial area.
- The building should be designed to follow design guidelines for Brighton Avenue (see below). Due to its exposed location, all faces should be well detailed.
- Service facilities (e.g., loading bays, trash receptacles, etc.) should be integrated into the design of the site and the building.
- The site design for the building should be coordinated with the design of the gateway landscaping at the intersection.

### Streetscape Improvements

- Treat the intersection as a gateway into the Rand Road commercial / industrial park. The design of all site improvements should consist of high quality materials that set a positive tone to Rand Road. The new Congress Street entrance to the Jetport is a good model to use.
- The design should consist of paved plazas, low stone walls, distinctive graphics, flowering trees, and beds of perennials and ornamental grasses.
- The bus shelter on the west side of the intersection should be replaced with a more contemporary structure that will complement the gateway plazas.
- Landscaping on the east side of the intersection should be designed with the possibility of a second right turn lane exiting Rand Road onto Brighton Avenue.
- Install additional street trees along Brighton Avenue to fill in existing gaps and maintain the rhythm of vertical elements along the roadway.
- The plaza and area surrounding the bus shelter is a rich opportunity to incorporate place-making art into the landscape.

## *Rand Road Improvements*

### Traffic Improvements

- See Rand Road Intersection for description of improvements at the intersection.
- Provide a tapered landscaped island, approximately 300 feet in length, to separate traffic approaching Brighton Avenue.
- Install a center turning lane where feasible to facilitate turning into commercial properties along Rand Road.

- Provide landscaped islands at the southern end, with breaks as necessary, to allow access into commercial properties.
- Provide bike lanes on both side of Rand Road.

### Crosswalks

- Upgrade the existing crosswalks on Brighton (west side of intersection) and Rand Road (south side) as described above (Rand Road Intersection).
- Provide a new crosswalk at the southern end of Rand Road to facilitate access to the Portland Trails' trail system.
- Incorporated the crosswalk into the design of the landscaped islands at the southern end of the road.

### Access Management

- Provide breaks in the center islands as necessary for access to commercial properties.
- Work with property owners to consolidate existing access points where possible.
- Encourage consolidated or shared access points where possible in new developments.
- Study radii on all driveways entering Rand Road to minimize excess pavement and reduce length of crosswalks.

### Streetscape Improvements

- Install sidewalks on both sides of Rand Road to encourage pedestrian movement between Brighton Avenue and the sanctuary land.
- Install large street trees on both sides of the road to provide shade and scale to sidewalks. Space the trees closer together near the Brighton Avenue intersection.
- Provide sitting areas every 500'± to encourage people of all ages and abilities to use the walkway.
- Install lighting, coordinated with the tree plantings, to create a boulevard effect along the length of Rand Road.
- Plant a grass esplanade between the curb and the sidewalk to provide some measure of psychological separation between the pedestrian and the traffic.
- Install distinctive landscaping in the islands, consisting of low maintenance groundcovers, large flowering trees, flowering shrubs, ornamental grasses, and integrated artwork.
- All landscape materials should be selected to provide year-round color in bold masses
- Extend the landscape theme to the traffic island that separates the right and left turning lanes at the north end of Rand Road.
- Select landscape materials that will not interfere with truckers' and motorists' visibility along Rand Road.

### Pedestrian Connections to Portland Trails

- Provide well marked crosswalks leading to entrance to Portland Trails' pathway system at the south end of Rand Road.
- Create a high visibility trailhead by incorporating signage, landscaping, and sitting areas at the entrance to the trail.
- Install clear, highly visible signage at Brighton Avenue directing people to trailhead.

## *Pine Tree Shopping Center: Brighton Avenue from Rand Road to Holm Avenue*

### Traffic Improvements

- Maintain two travel lanes in both directions.
- Maintain left turn lane into Pine Tree Shopping Center east of Applebee's.
- Move southerly curb where possible and still maintain two eastbound travel lanes.

- Additional roadway width should be used to widen the center island.
- Improve easterly access into Shopping Center by removing the small westerly island, extending the center island, and decreasing the radius for east-bound entering traffic.
- Remove what appears to be a pedestrian pass-through in median strip between Wendy's and Applebee's. Reconstruct island with groundcover and trees.
- Maintain two travel lanes between Taft and Holm Avenues. Narrow the travel lanes and use addition roadway width to widen the center island in this section.

### Crosswalks

- Upgrade the existing crosswalk on the east side of the Taft Avenue intersection with Brighton Avenue.

### Pedestrian Lighting

- Install pedestrian scaled lighting along the front of the shopping center as another element to provide separation between parked cars and the sidewalk.
- Emphasize the street corners with distinctive pedestrian-scaled fixtures. Provide additional illumination at crosswalks and entrances into the shopping center.

### Streetscape Improvements

- Work with Portland Housing Authority to remove the guardrail on Brighton Avenue and the vestigial roadway that extends from parking lot on west side of Cabot Street.
- Work with the Pine Tree Shopping Center to install a major landscaped esplanade that will help separate the entire parking area from the sidewalk on Brighton Avenue.
- Develop a special planting detail to install trees in tight situations in parking lots.
- Plant trees as necessary to establish the same rhythm of mature trees that are found along the eastern part of Brighton Avenue.
- Install a grass esplanade (minimum width of two foot) along the entire length of this section to provide some additional separation between pedestrians and vehicular traffic.
- Plant street trees adjacent to the new sidewalk west of the main entrance to Pine Tree Shopping Center (opposite Taft Avenue). The guardrail is another opportunity to work with artists to add identity and vitality to a commercial landscape.

## *Portland West: Holm Avenue to Westbrook City Line*

### Traffic Improvements

- Maintain the smooth flow of traffic into Westbrook with two travel lanes in each direction.
- Maintain left turn lanes in their current location.

### Crosswalks

- Upgrade the existing crosswalk at the Barron Center by the bus shelter.
- Coordinate crosswalk improvements with landscape plan for Barron Center and new design for bus shelter.
- Locate a new crosswalk on the west side of the Riverside Street intersection.
- Install painted crosswalks (with reflective paint) throughout this segment of Brighton Avenue at all commercial drives.

### Access Management

- Eliminate the access from Brighton Avenue into the Barron Center parking lot on the west side of Holm Avenue.

the crosswalk with bold white blocks to make it highly visible to motorists.
- Coordinate the detailing of the crosswalk with the location and design of new bus shelters on both sides of Main Street.

## Access Management

- Encourage the owners of the Bradlees Shopping Center to develop a master plan for upgrading their facility. The plan should address improvements to internal circulation patterns, pedestrian movement, primary and secondary access points, visibility and condition of the entrances, and interconnections with adjacent properties.
- The plan should include provisions for new external signage to facilitate wayfinding for both motorists and pedestrians.
- Discontinue the access to the shopping center on Main Street closest to near Riverside Street.

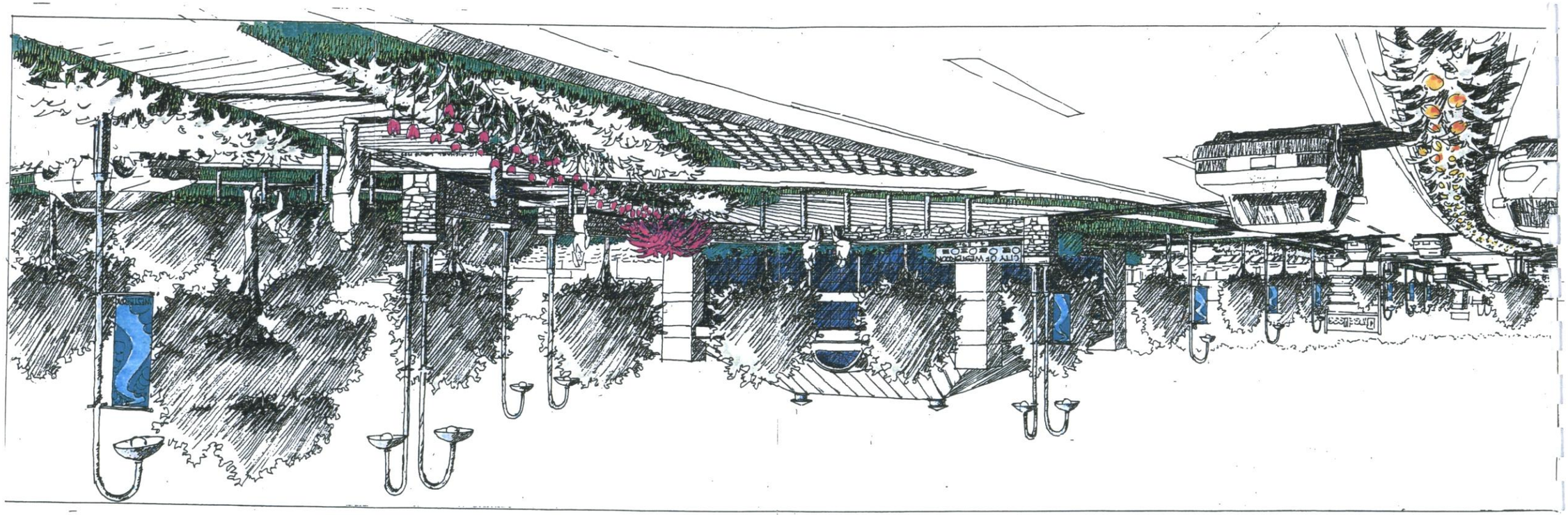
## Streetscape Improvements

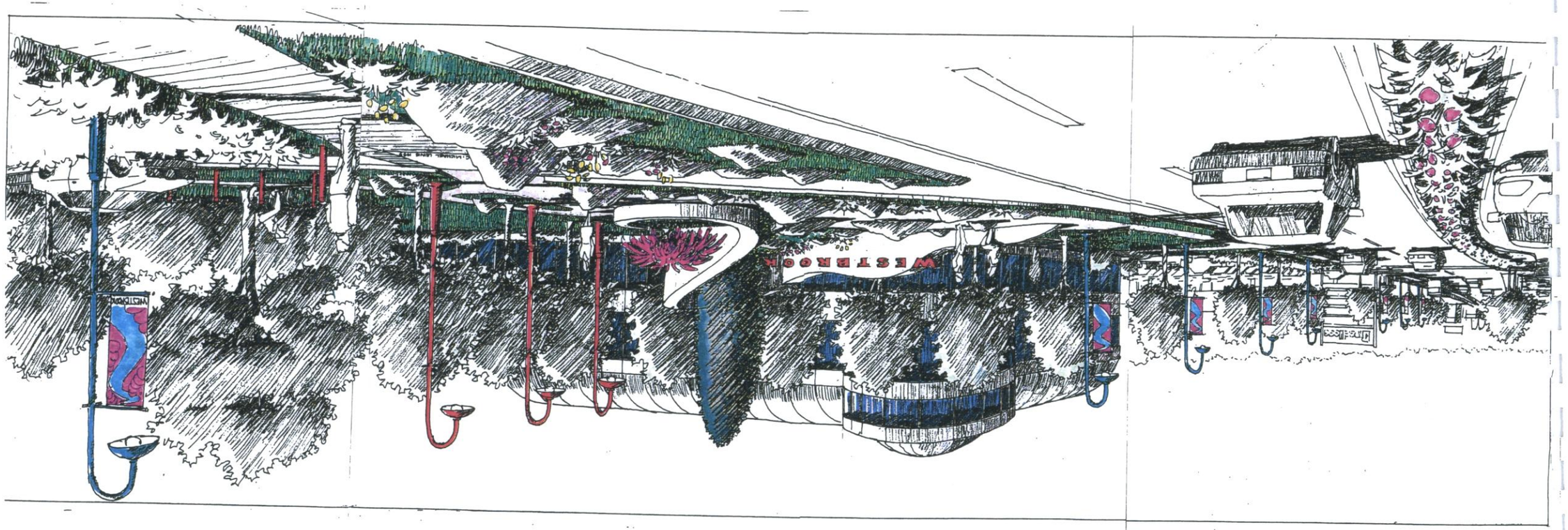
The City should develop a comprehensive streetscape plan for all property within the right-of-way between Riverside Street and City Hall.

- Coordinate the plan with the ongoing design studies for the Westbrook Riverfront.
- Select lighting fixtures that will create a distinctive look to Main Street while providing an adequate amount of illumination for both pedestrians and motorists.
- Replace the existing bus stop with a distinctive, contemporary shelter that reinforces the new image for Westbrook and extends the recommended improvements to the shopping center.
- Plant large deciduous trees at regular intervals along the length of Main Street that will ultimately create a boulevard effect.
- Establish a grass esplanade to separate the sidewalk from the travel lane on north side of Main Street. The land for the esplanade should be able to be gained by moving the existing curbline toward the center median and reducing the overall width of the street.
- Coordinate streetscape improvements with a master plan for the Bradlees Shopping Center. These should include extending the base of the grass slope toward Dunkin' Donuts, upgrades to the quality and placement of signage, improved lighting fixtures, storage corrals for shopping carts, and additional landscaping in the parking lot.
- Encourage the shopping center to install screening around the delivery area that faces Main Street on the north side of Dunkin' Donuts. This could take the form of architectural walls, evergreen trees and shrubs, and/or fencing.
- Remove the pavement on the islands between Blue Rock and the shopping center and replace with low-maintenance, hardy shrubs, ornamental grasses, and perennials.
- Consolidate street signs wherever possible to reduce the number of vertical elements and visual clutter.

## Gateway Improvements

- Westbrook should improve their physical image, starting at the City line at Riverside Street. A series of sketches by C. Michael Lewis have been developed to show possible gateway treatments that incorporates bold signage, artwork, and distinctive landscaping and buildings to create a new, more positive image.
- The first impression of the City should be a very positive one with a minimum of distracting elements. The current corner contains a random assortment of miscellaneous signs, worn-out benches, utility poles of various heights, overgrown landscaping, and general clutter.

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WESTBROOK PLAZA
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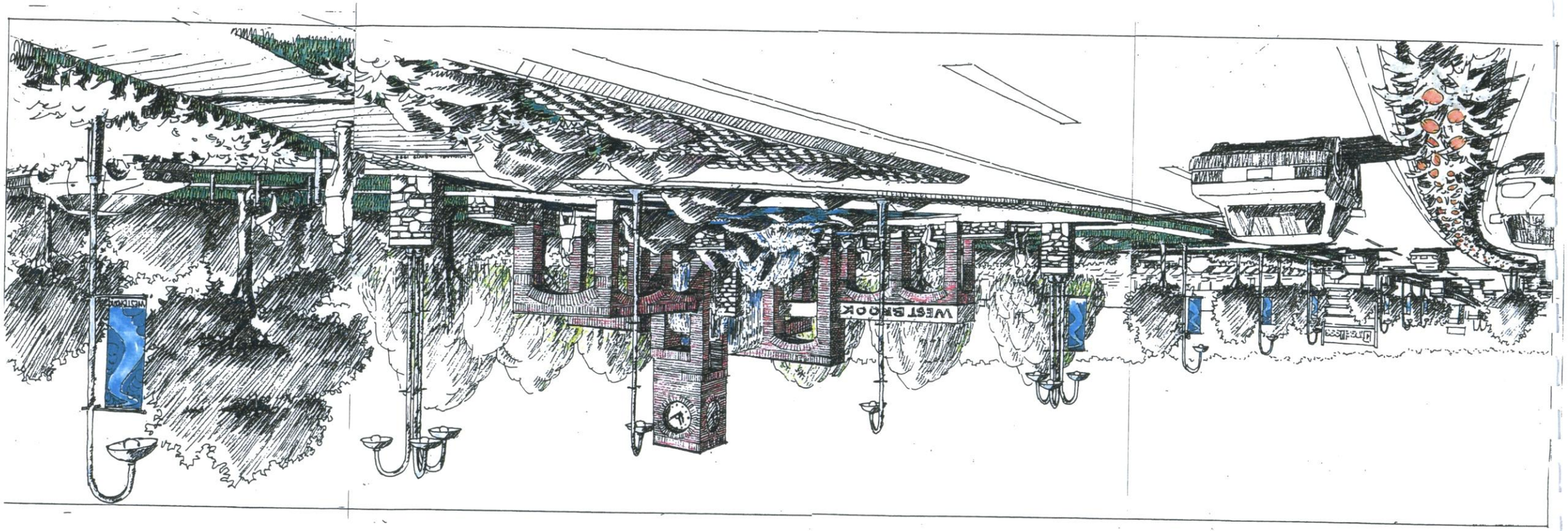
WEST BROOK

- Signage should be consolidated wherever possible. The current gateway contains signs from many of the area's service organizations which are unreadable at 35 MPH and contribute to the sense of clutter.
- The entrance landscaping should be centered around a simple plaza defined by stone wall or other three-dimensional element. This space will primarily be a visual experience, since few people are expected to walk through it or to site and admire the traffic flow. Nonetheless, there should be some elements of human scale – e.g., sitting walls and plantings – to provide life to the plaza.
- The City should work with abutting property owners and the shopping center to instill a sense of civic pride in this prime gateway location.
- The master improvement plan for the shopping center should include plans for improving this corner. As noted above, the City should encourage the shopping center to upgrade facades, improve the appearance and functionality of the parking lot, and make improvements to landscaping, signage, lighting, and other elements of the streetscape. All improvements should follow a set of design guidelines established by the City.

### Infill Potential

- Plans for renovations to the shopping center should include the development of a notable new building at the southeast corner of the existing parking lot, on the site of a former service station. This building should be sited to help enclose and define the parking lot, which would help to screen it from Main Street.
- The design of new buildings along Main Street should be attractive on all visible sides. The infill building in the parking lot should contain a noteworthy design element, such as a clock tower, that will act as a focal point and reinforce the corner as the gateway into Westbrook.
- The building should be at least a two-story structure that takes advantage of the sloping topography and highly visible location.
- The corner building should be extended to the north to form a continuous set of structures to encourage walking within the plaza.
- New buildings, as well as the existing structures that should be renovated, should feature design elements such as canopies that encourage pedestrian use.

## *Larrabee Road / Main Street Intersection*

### Traffic Improvements

- Main Street/westbound approach: three lanes: right/through, through, dedicated left.
- Main Street/eastbound approach: three lanes: right/through, through, dedicated left.
- Larrabee Road / northbound approach: explore the feasibility of widening to provide a separate left turn lane.
- Larrabee Road / southbound approach: reconfigure intersection, remove island/slip lane, and increase radius to facilitate right turn movement. This will increase the distance from the right turn and the McDonalds' driveway.

### Crosswalks

- Maintain the crosswalk on the north side of the intersection.

### Streetscape Improvements

- Install large deciduous street trees in a regular pattern to continue the boulevard established at the Gateway (Riverside Street). This may involve reclaiming portions of the right-of-way that have

been used for commercial purposes (e.g., auto display).

- When traffic improvements are made to the McDonalds' corner, use the space that is gained for distinctive landscaping. Install flowering trees, hardy groundcovers, and ornamental grasses in simple patterns to enliven the space. Construct a stone wall, low fencing, and/or earth berms to screen the McDonalds' parking lot without blocking visibility.
- Pay careful attention to all detailing to create a space that is in keeping with the gateway theme established at Riverside Street.

## *Larrabee Road to City Hall*

### Traffic Improvements

- Taper the westbound traffic from Larrabee Road to one travel lane.
- Continue to provide three lanes eastbound at Larrabee Road: left lane – dedicated left; center – through only; right lane – through and right turn.
- Provide a center turning lane for access into businesses and side streets, starting at City Hall.
- Increase the width of the existing island west of McDonalds as indicated on the plan. Replace the paved surface with low-maintenance landscaping wherever possible.
- Install an additional landscaped traffic island opposite the banquet center.
- Provide a paved shoulder throughout for bicyclists.

### Crosswalks

- Maintain the existing crosswalk at the bowling alley.
- Maintain the painted crosswalks at all commercial driveways perpendicular to Main Street.

### Access Management

- Work with commercial property owners to consolidate access points along Main Street between Larrabee Road and Kentucky Fried Chicken.
- Move the entrance to the commercial properties on the south side of Main Street to the west to gain additional distance from Larrabee Road.
- Relocate the westerly access to the WestPort bowling alley to Liza Harmon Drive to reduce number of curb cuts on Brighton Avenue and minimize conflicts with the existing crosswalk.
- Shift the easterly access to the bowling alley to the west to align with redesigned center island.
- Relocate the easterly access into the medical clinic to Liza Harmon Drive to eliminate another curb cut on Main Street.

### Streetscape Improvements

The City should develop a comprehensive plan for upgrading the streetscape from Riverside Street to City Hall. Specific elements of the plan should include:

- Install grass esplanades between the sidewalk and curb where possible, especially where driveways have been relocated to side streets.
- Plant landscaped divider strips between the sidewalk and front parking lots where possible.
- Work with property owners to reduce proliferation of signs, advertising features, and other visually distracting elements in an effort to simplify the visual landscape.
- Replace the temporary signboard on City Hall's green with a permanent sign for changeable messages. The design of the new sign should complement the architecture of City Hall with particular attention paid to detailing and the surrounding landscape.

# 4. Secondary Study Area Recommendations

## Traffic Improvements

- Maintain four travel lanes between Nason's Corner and Woodford Street (two lanes in each direction). See discussion on Two-Way Center Turning Lane on following pages.
- Restripe Brighton Avenue from Woodford Street to Steven Avenue to provide a designated bike lane as recommended in the PACTS Regional Bicycle and Interim Pedestrian Plan.
- Maintain two travel lanes (one in each direction) with wide shoulder on Main Street west of City Hall.

## Crosswalks

- Crosswalks should be treated in the same manner as those found in the primary study area to maintain continuity throughout Brighton Avenue and to reinforce the importance of pedestrian safety.
- Provide permanent concrete crosswalks, with broom finish and natural color to maximize the color contrast with the roadway surface. The use of brick, interlocking concrete blocks, or stamped asphalt or concrete is not recommended for crosswalks in high traffic volumes.
- Apply reflective paint in bold rectangles to the crosswalks to make them more visible after dark.
- Actively discourage mid-block pedestrian crossing by installing either coarse cobbles (which are difficult to walk on) or dense scratchy plantings (such as Rosa rugosa or junipers). Raise the curbs that form the center island to make them more difficult to mount.
- Coordinate crosswalk improvements with plans for lighting upgrades, landscape improvements, bus shelter replacements, and other physical changes to the streetscape.

## Access Management

- Consolidate driveways into commercial properties wherever possible to minimize the number of curb cuts along Brighton Avenue and Main Street.
- Reduce the width of existing street openings to the minimum required for safe access and egress.
- Encourage property owners to examine their internal circulation routes in their parking lots and driveways to determine if more efficient patterns can be designed.

## Streetscape Improvements

- Maintain trees throughout the corridor through periodic pruning and feeding by trained arborists.
- Plant street trees wherever a gap appears in the existing streetscape to maintain the current rhythm of trees every 40-60 feet.
- Continue to maintain the grass esplanade between the curb and the sidewalk. In places the strip has become raised above the level of the walk and should be regraded to allow water to sheet flow. In areas where the soil has been compacted to a point where grass no longer flourishes the soil should be aerated and fertilized to restore vigor to the esplanade.
- Develop a continuous sidewalk on both sides of Brighton Avenue / Main Street. Incorporate art pieces into the streetscape to add vitality and richness to Brighton Avenue and Main Street.

## *Two-Way Center Left Turning Lane*

One of the options the Portland taskforce wanted evaluated was to determine if the portion of Brighton Avenue between Nason's Corner and Woodford Street could be reduced from four lanes to three. Currently there are two lanes in each direction. Some members of the Committee would like to reduce it to a single lane in each direction with the third lane utilized as a two way center left turn lane (TWLTL) with traffic turning left from both directions. There are typically several advantages associated with a three-lane roadway with a TWLTL[1].

1. Reduces frequency of rear-end and angle accidents associated with left-turn maneuvers.
2. Provides spatial separation between opposing lanes to reduce head on accidents.
3. Reduces delay to through vehicles by left-turning vehicles.
4. Increases operational flexibility.

Generally there are three disadvantages to their installation[2]

1. The installation of a TWLTL provides a wider pavement for pedestrians to cross without providing a refuge area in the medium.
2. The increased pavement width needed for a TWLTL may require elimination of a full shoulder, which might offset some of the accident reduction gained from the TWLTL.
3. The installation of a TWLTL may encourage strip commercial development.

None of these disadvantages are relative to this portion of Brighton Avenue since it will be no wider for pedestrians to cross, and by reducing the number lanes additional width would be available for a shoulder. The land use along this section is residential zoned R-3, R-5 and would require a zone change before commercial development could occur.

There are two primary factors to consider when evaluating whether or not to implement a two lane TWLTL. Each of these factors are discussed below:

- **Volume of through traffic.** The Annual Average Daily Traffic Volume (AADT) on Brighton Avenue between Woodford Street and Capisic Street in 1995 was approximately 20,000 vehicles per day and is estimated at over 22,000 today. Three lane sections have not been evaluated extensively by transportation professionals. A 1995 study[3] concluded that this alternative is most appropriate on roadways with volumes ranging from 5,000 vpd to 12,000 vpd. A 1978 study[4] of a three lane TWLTL found it to be effective with a traffic volume of 13,000 to 14,000 vpd. Two studies have been done examining the conversion of four lane roadways to three lanes with TWLTL.[4&5] The study with the larger volume of 16,000 found an increase in delay due to the reduction in through lanes. The study concluded that side street access to the roadway was improved at the price of increased delay to through traffic.

  Another study with less volume found no significant increase in delay. Locally, for comparison purposes, Route 1 in Falmouth is a three-lane roadway with an AADT of approximately 14,000 vehicles per day.

  Based on this information, the volume of through traffic on Brighton Avenue in this section is well in excess of volumes where three lane roadways have been utilized.

- **Number, Location, and width of driveways.** A proposed TWLTL needs to be carefully evaluated to be sure that opposing left turns do not overlap (which could occur depending on the location of driveways on opposite sides of the street). This section of Brighton Avenue is limited to residential streets and is laid out such that a TWLTL would be effective.

  Gorrill-Palmer Consulting Engineers, Inc. utilized the computer model Corsim to simulate the traffic flow, which would

occur if this section of Brighton Avenue were converted to three lanes. The analysis clearly showed that the delay to through traffic would increase. Instead of vehicles traveling side by side in two lanes the traffic flow was merged into one lane creating a long line of traffic with few openings for side streets. While side streets can use the center lane to merge, increased delays will occur. The three-lane roadway would reduce the crossing distance for pedestrians, however the reduction in gaps would minimize this benefit.

In summary, although three lane roadways have many benefits over four lane roadways, it is possible that at this location the traffic volumes are too high for it to operate effectively. Therefore the recommendation is to either keep with the four lane section, or to implement the three lane section within the existing curb to curb width and monitor the traffic conditions that result. Lane changes using lane marking (paint) can be installed and revised at reasonable cost.

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[1] Transportation Research Board "National Cooperative Highway Research Program" Report 330, Effective Utilization of Street width on Urban Arterials, August 1990.

[2] Harwood, D.W., "Multilane Design Alternatives for Improving Suburban Highways", NCHRP Report 282, Transportation Research Board March 1986.

[3] Walton, C.M., et al., "Accident and Operational Guidelines for Continuous Two-Way Left-Turn Median Lanes" Transportation Research Record 923 (1983).

[4] Nemeth, Z.A., "Two-Way Left Turn Lanes: State-of-the-Art Overview and Implementation Guide" Transportation Research Record 681 (1978).

[5] Jomini, P., City of Billings, Montana, Traffic Division, unpublished report, 1981.


NOTES:

1. PROPERTY LINES AND RIGHT-OF-WAY ARE FROM MUNICIPAL TAX MAPS AND THEREFORE ARE GRAPHICAL IN NATURE.
2. AERIAL PHOTOS TAKEN BY JAMES W. SEWALL COMPANY OF OLD TOWN, MAINE, DATED APRIL 1995.

GRAPHIC SCALE

( IN FEET )
1 inch = 100 ft.

# CONCEPTUAL IMPROVEMENT PLAN
# BRIGHTON AVENUE/MAIN STREET CORRIDOR STUDY

Portland and Westbrook, Maine

October 27, 1999

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In Association With:
Kevin Hooper and Associates
Terrence J. DeWan Associates

Drawing No.
1


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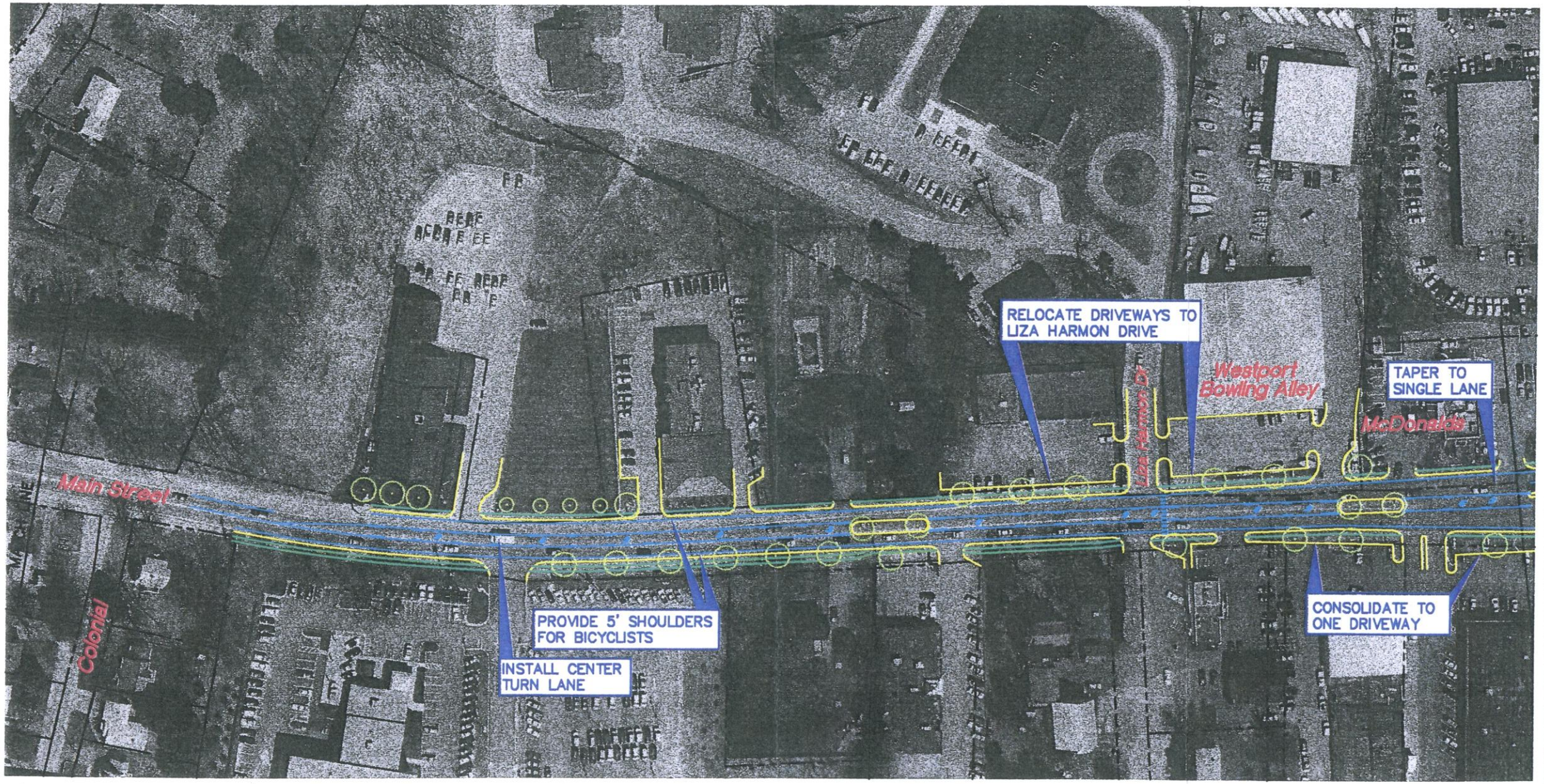


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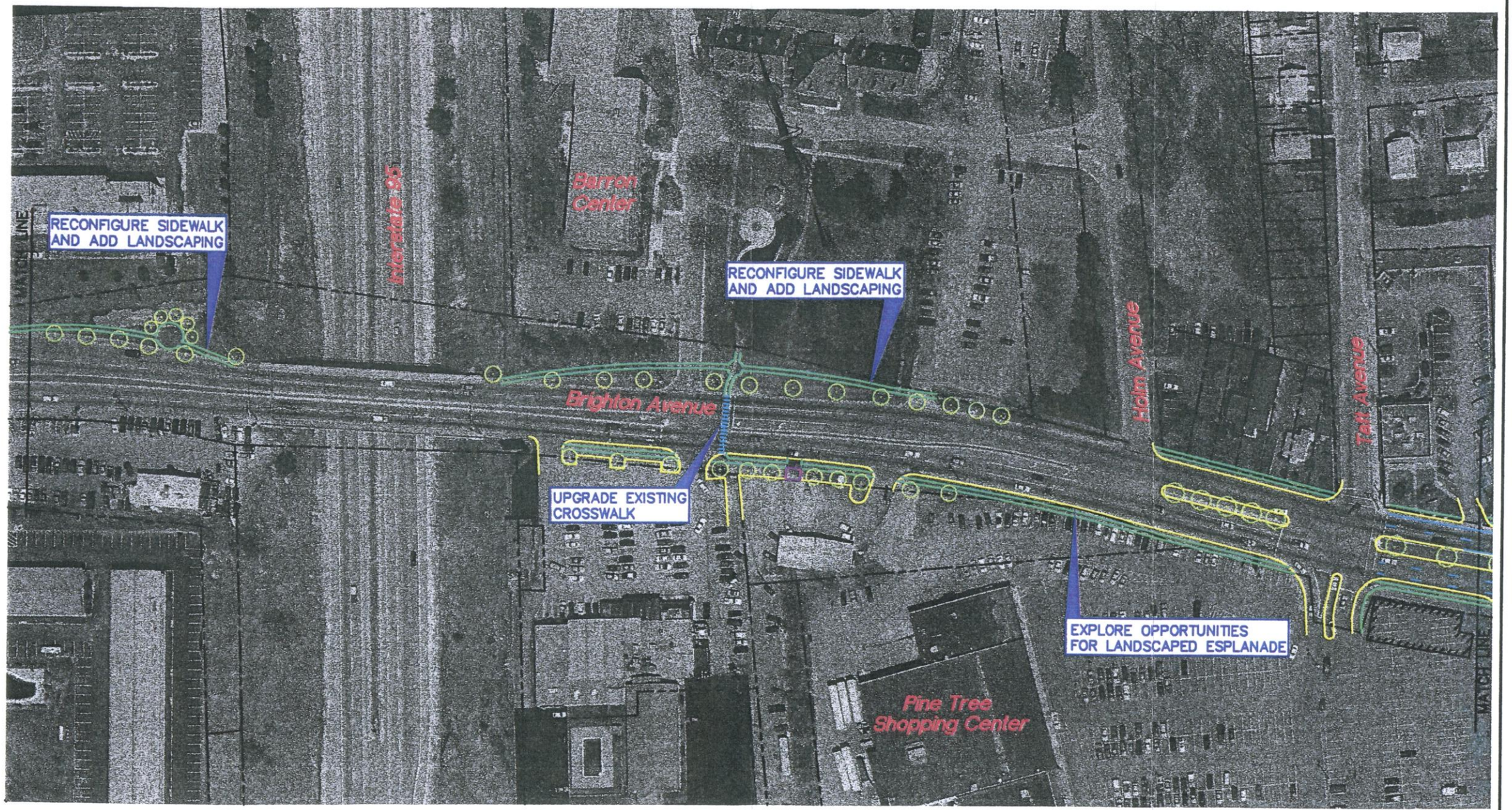


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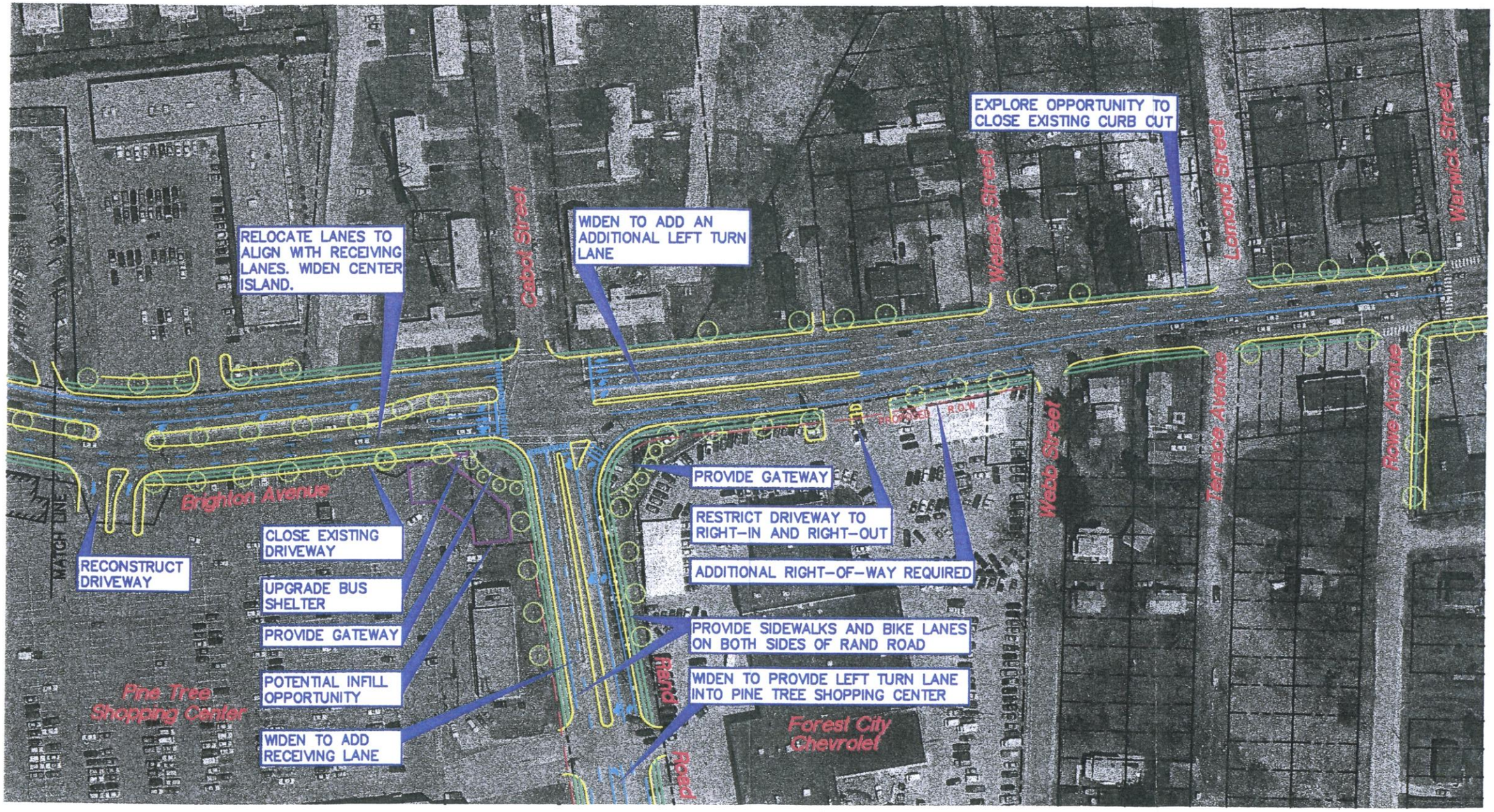


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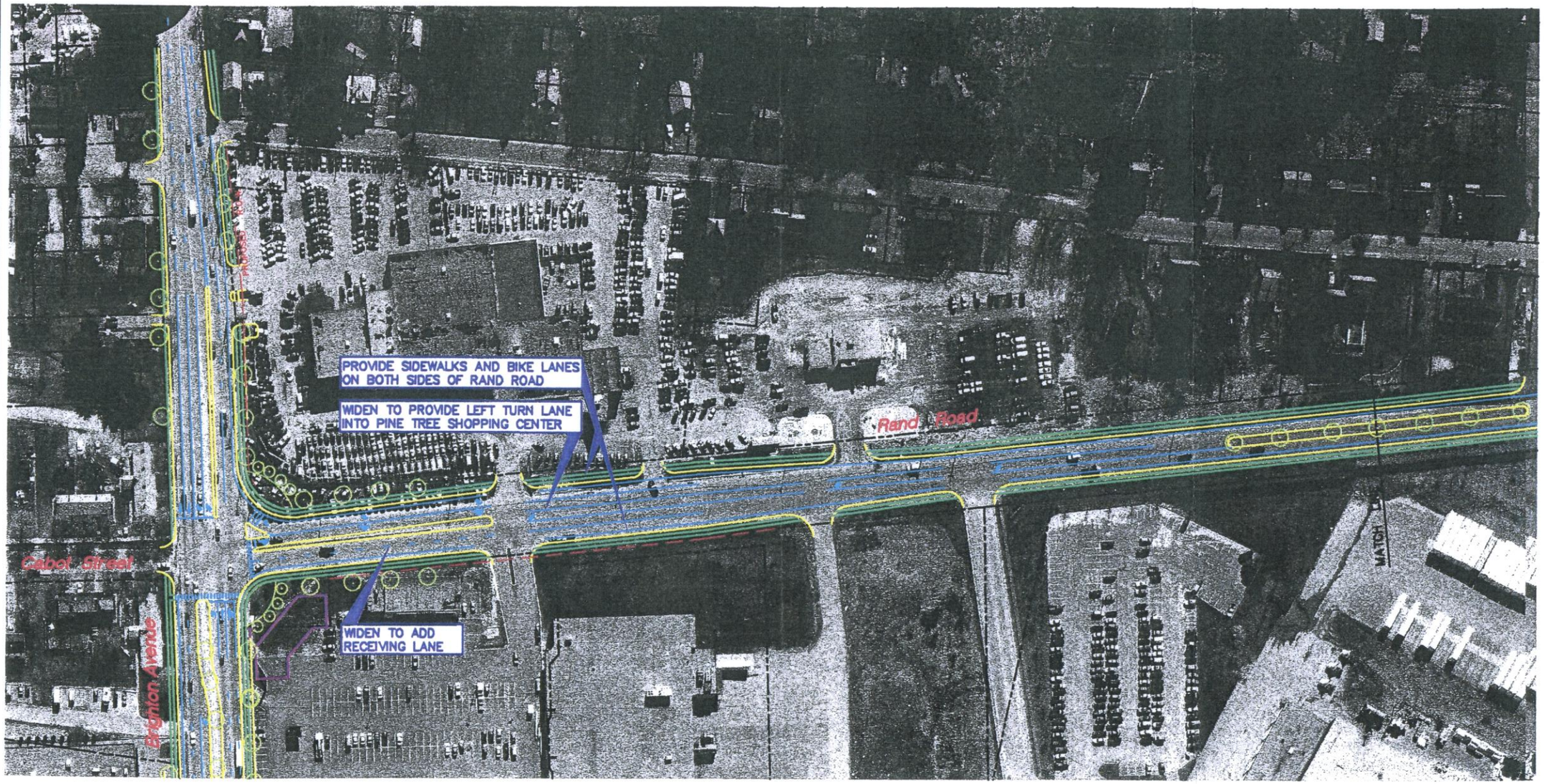


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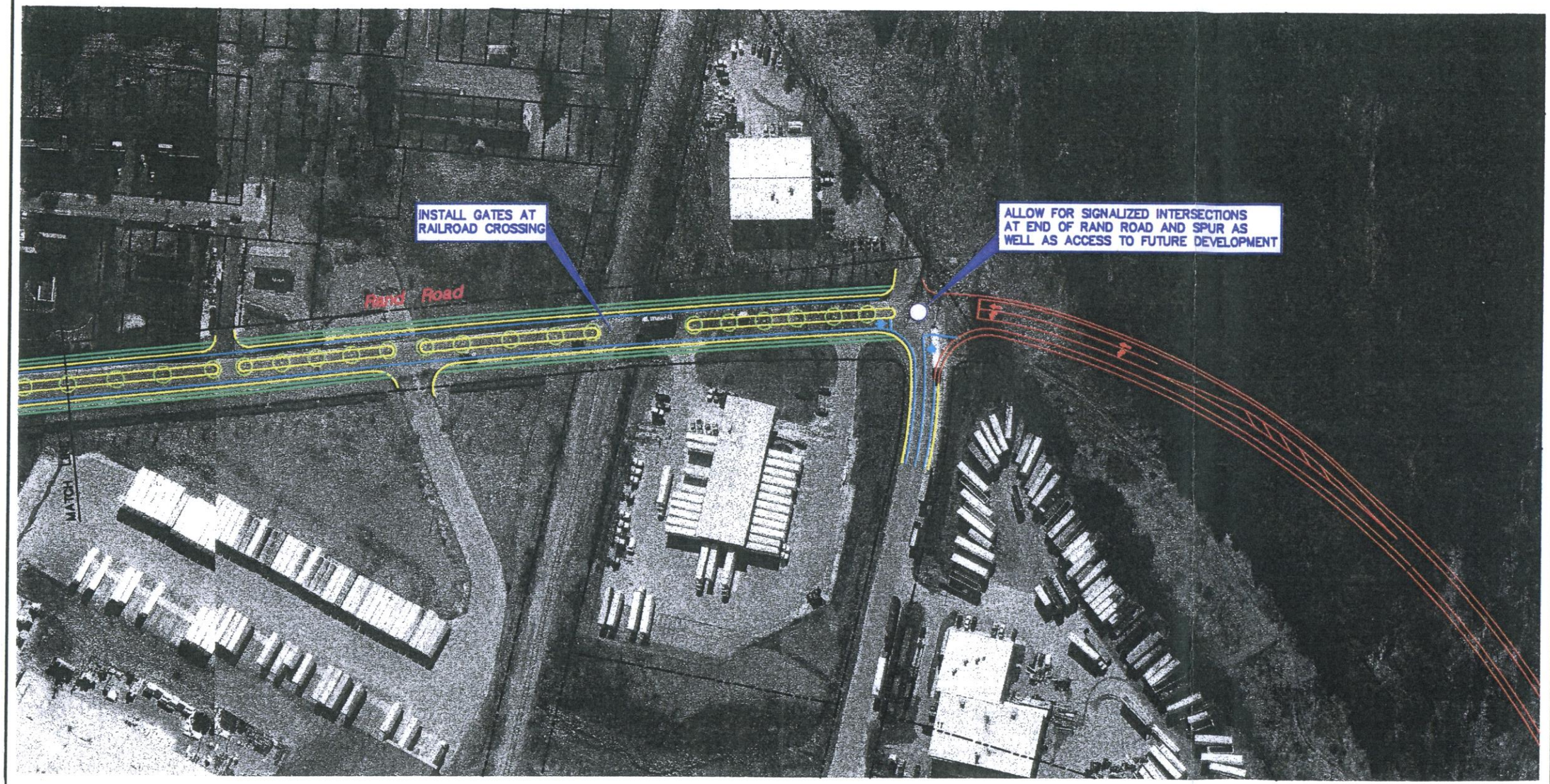


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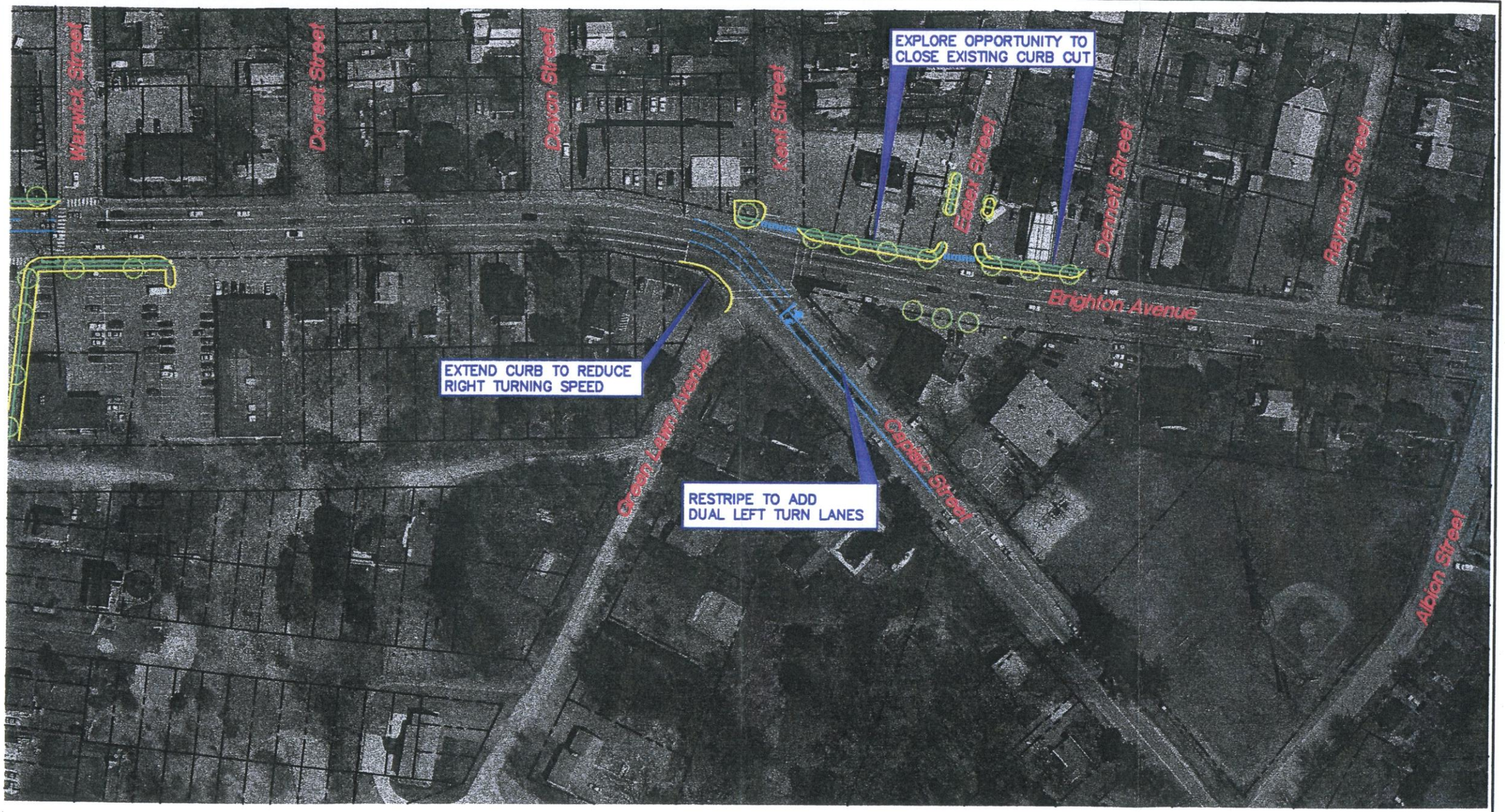


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*Traffic and Civil Engineering Services*
207-657-6910
FAX: 207-657-6912
E-Mail: Gor-PalCE@MSN.com

*In Association With:*
*Kevin Hooper and Associates*
*Terrence J. DeWan Associates*


*Drawing No.*
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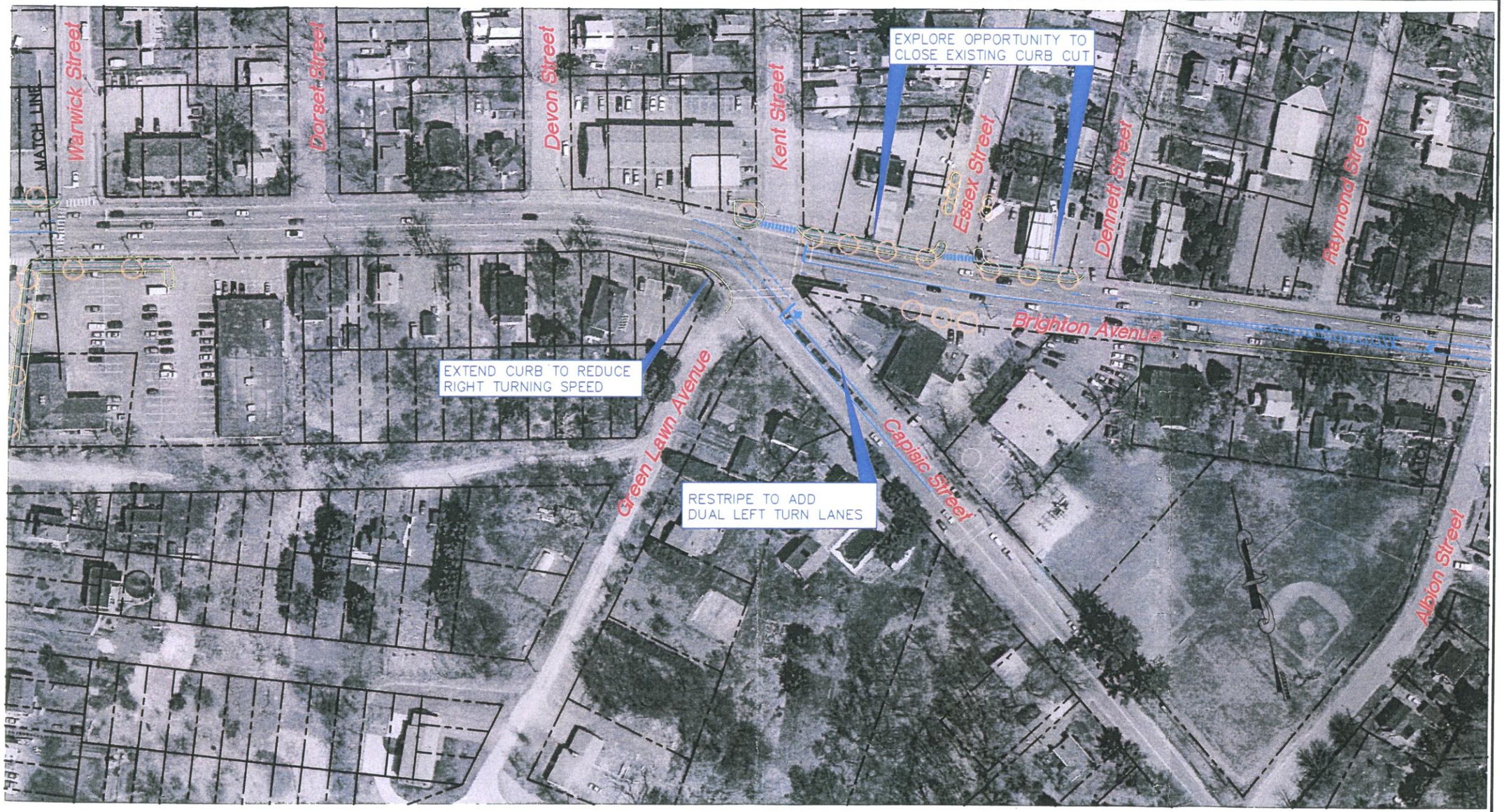


NOTES:

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2. AERIAL PHOTOS TAKEN BY JAMES W. SEWALL COMPANY OF OLD TOWN, MAINE, DATED APRIL 1995.

GRAPHIC SCALE

( IN FEET )
1 inch = 100 ft.

# CONCEPTUAL IMPROVEMENT PLAN
# BRIGHTON AVENUE/MAIN STREET
# CORRIDOR STUDY

*Portland and Westbrook, Maine*

*June 2000*


By:
GP Gorrill-Palmer Consulting Engineers, Inc.
PO Box 1237
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# CONCEPTUAL IMPROVEMENT PLAN
# BRIGHTON AVENUE/MAIN STREET CORRIDOR STUDY

*Portland and Westbrook, Maine*

*October 27, 1999*

By:
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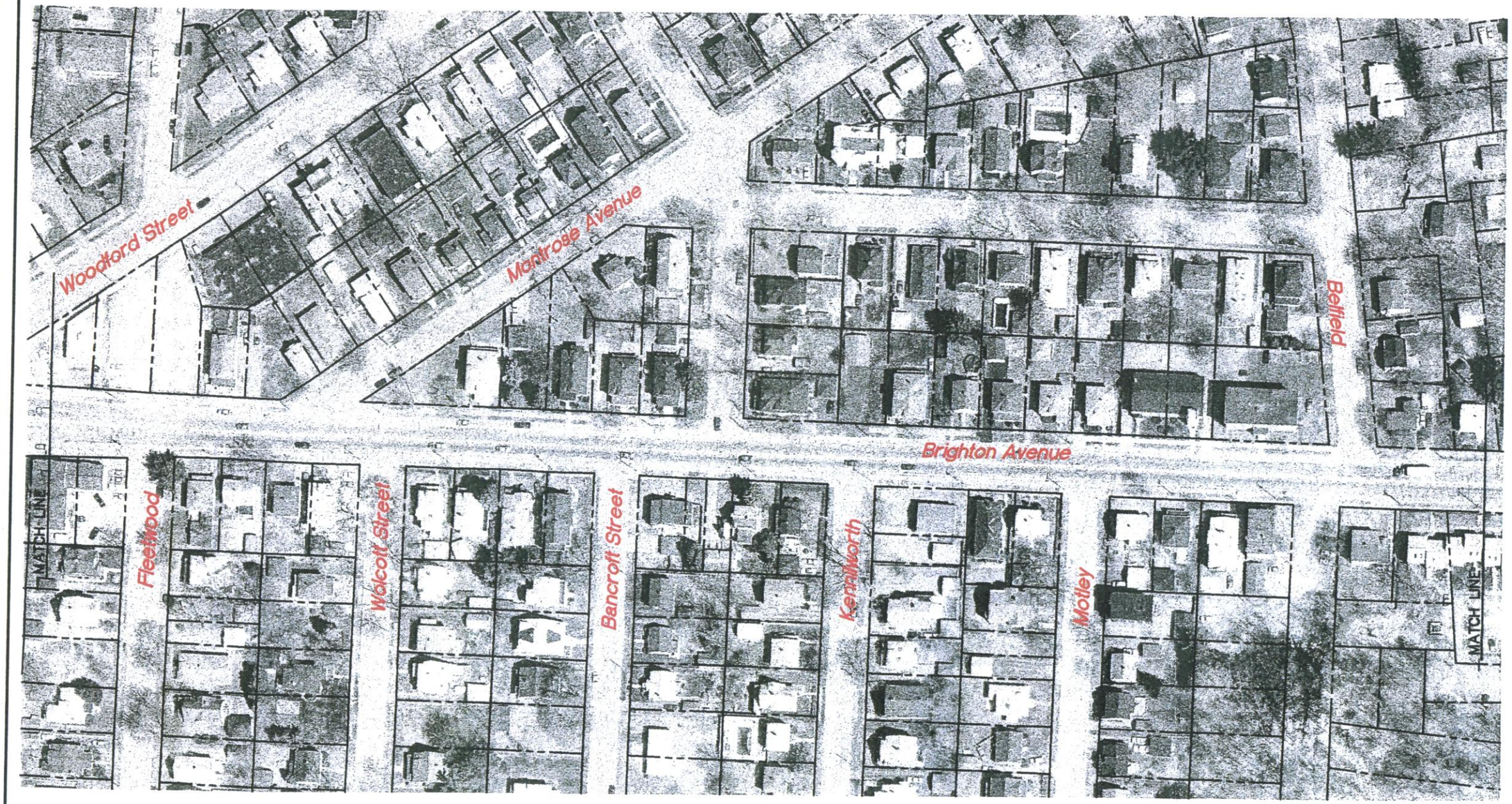


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*Drawing No.*
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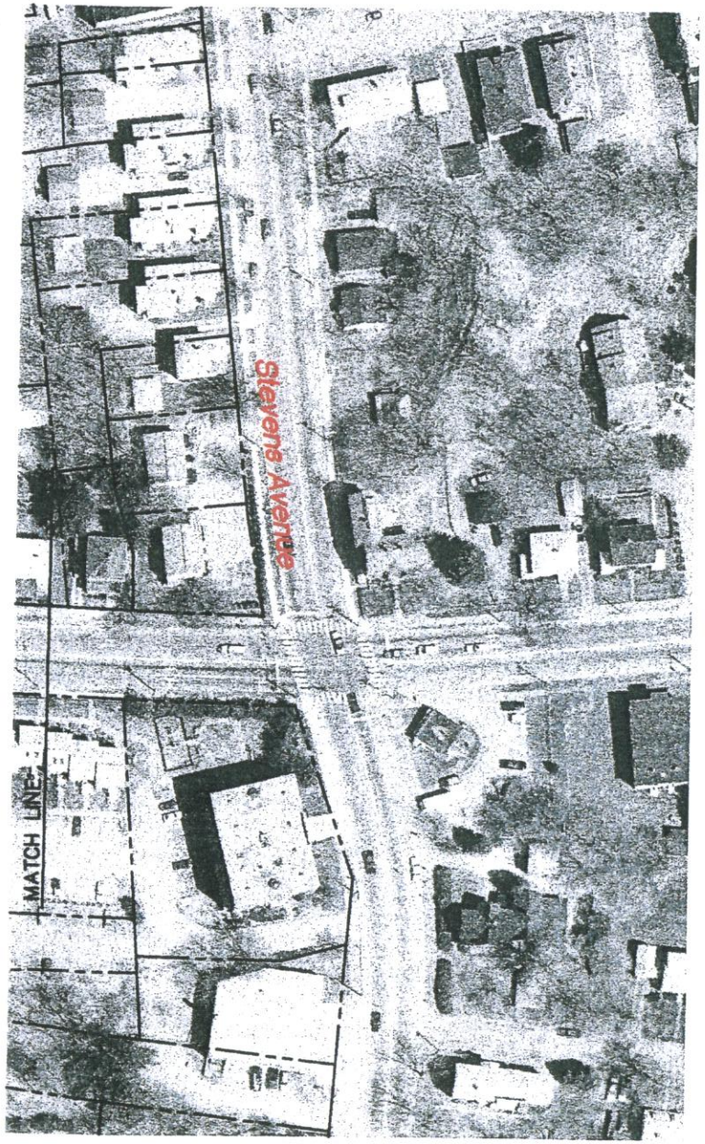


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11

# 5. General Recommendations

## Tree Planting

Many parts of Brighton Avenue and Main Street are characterized by beautiful rows of Norway maples and other mature street trees that provide shade, define the edge of the roadway, and visually separate the traffic from the neighborhoods. This plan envisions a continuation of the plantings to produce a continuous boulevard effect.

- Work with the City Arborist to select tree species that will tolerate extreme urban conditions, i.e., road salt, high wind, exhaust fumes, dogs, etc.
- Pay particular attention to the preparation of the planting pit to provide adequate room and growing medium for the trees to grow and thrive, and not merely survive.
- Avoid monoculture (single species) planting schemes. Select trees that will provide shade, an overhead canopy, and seasonal interest with minimum of care.
- Encourage property owners along Brighton Avenue / Main Street to participate in a tree planting program. Provide private landowners with a maintenance guide to tree care once they have been installed.
- The City Arborist should inspect trees on a regular basis and perform periodic tree care as necessary. Replace trees that have been lost to maintain the rhythm that provides continuity to the street.
- Protect all trees during construction activity. Require developers, Public Works, and others involved in construction activity to provide a plan showing how trees will be protected from bark damage, root compaction, or other injuries.

## Center Islands

Most of the traffic islands in the study area are simple black-topped median strips that provide functional separation without contributing to the aesthetics of the road. The islands should be regarded as places to plant small trees, low flowering shrubs, colorful perennials, and ornamental grasses that can add scale and visual interest to the roadway.

- Replace the paved surfaces of the center islands with low-maintenance landscaping to create a more attractive appearance throughout the study area.
- Develop site specific plans for each island to impart an individual character to each block.
- Plant material should be selected for its ability to tolerate urban conditions, especially snow piles during winter months.
- Install very coarse granite cobblestones or precast concrete cobbles with a similar texture to actively discourage pedestrians from taking mid-block short cuts.

## Signage

There is really nothing about the study area now that sets it apart from other major highways in Portland and Westbrook. Environmental graphics can help make Brighton Avenue and Main Street more memorable places. This is an opportunity for both cities to set the standard for graphics and streetscape design in general through their treatment of public places.

- Develop distinctive graphics for placemaker signs: Nason's Corner, gateways (Westbrook and Portland City lines), Rand Road industrial park, etc.
- Evaluate all municipal signage along the study area for condition, legibility, and appropriateness. Remove signs that are no long required or are needlessly duplicative. Where possible, mount signs on

other vertical elements to minimize the number of poles in the streetscape.
- Develop design guidelines (see below) that address the design and placement of signs for commercial properties.

## Artwork

Art is a way of enriching the environment and involving more people in the design of the street. Many communities across the country have realized the value of arts programs to put more meaning back into their neighborhoods in the face of increasing homogenization.

Art can be incorporated into many facets of the community streetscape:

- Interpretive exhibits showing the development of Brighton Avenue
- Quotes from long-time residents embedded into the pavement
- Fencing that delights the eye as well as it separates the body from danger
- Etched images from the early days of the City incorporated into the design of the bus shelters
- Benches in unique and sometimes fanciful forms that reflect the individuality of each neighborhood
- Wall murals depicting events that have shaped this end of the community.

Long-term plans for Brighton Avenue and Main Street should provide a mechanism to incorporate art into all new street improvements. The process should start at the early stages of planning to ensure a successful collaboration between the engineers, landscape architects, and artists. Artwork should be an integral part of the design solutions, and not be thought of as an 'add alternate'.

## Crosswalks

- Provide permanent concrete crosswalks, with broom finish and natural color to maximize the color contrast with the roadway surface. The use of brick, interlocking concrete blocks, or stamped asphalt or concrete is not recommended for crosswalks in high traffic volumes.
- Apply reflective paint in bold rectangles to the crosswalks to make them more visible after dark.
- Actively discourage mid-block pedestrian crossing by installing either coarse cobbles (which are difficult to walk on) or dense scratchy plantings (such as Rosa rugosa or junipers). Raise the curbs that form the center island to make them more difficult to mount.

## Bus Shelters

The shelters that are currently found along Brighton Avenue and Main Street are a diverse collection of forms dating back several generations. While most provide the basic necessities of shelter and a place to sit, none are positive additions to the life of the street.

- A local architect familiar with vernacular detailing small structure should design a prototype bus shelter to replace those currently found along the primary study area. The design should reinforce the pedestrian scale of the street while providing a comfortable, safe, well-lit place to wait for a ride.
- While each shelter should be basically the same design, an effort should be made to distinguish each by subtle changes in color, graphics, or detailing.
- The shelter should incorporate artwork to add a note of distinction and reinforce its placement in a particular neighborhood.

In order to maintain a smooth flow of traffic in both directions, bus pull-out areas should be considered as part of the reconstruction of the streetscape. These areas should be large enough for a METRO bus to safely maneuver to pick up and discharge passengers. Pull-outs should be signed for "No Parking" to assure that they are always available for buses.

## Gateways

At the present time there is little to distinguish the cities of Westbrook and Portland at their boundaries on Brighton Avenue. While there are signs, they tend to get lost in the hodge-podge of utility poles, parking lots, guardrails, and other signs.
The plan calls for a gateway treatment at Riverside Street to make it very clear that a boundary has been crossed. Illustrations are provided for a gateway treatment that should provide a new dynamic image for both communities.

The final design of these areas should reflect the thinking of community leaders, property owners, local residents, design professionals, artists, and City officials. The design should be a classic image that will still convey a positive image after several generations of use and wear.

## Bicycle Routes through Study Area

The plans for Brighton Avenue propose leaving the curbline in place and making some adjustments to the striping to create a wide outside lane to accommodate the experienced cyclist. Throughout most of the primary study area, there is not enough room to create a separate bike lane or paved shoulder without moving the curbline and removing the grass esplanade and the trees that now line Brighton Avenue.

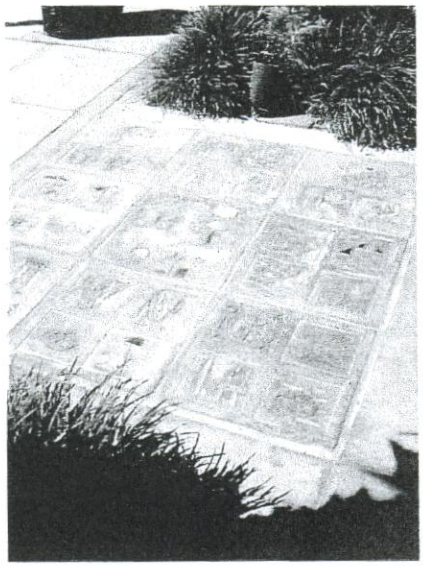
While it may be highly desirable to have a dedicated bicycle facility, it would result in a severe change in community character. In addition, the volume of traffic on the roadway, coupled with the number of side streets and driveways, makes Brighton Avenue a less than desirable place to cycle.

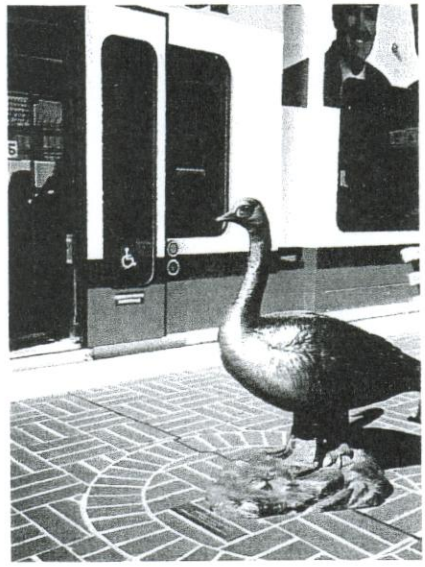
Nonetheless, as improvements are made to the roadway, the City should make every effort to accommodate the experienced cyclist. Grades should be adjusted to avoid sudden drops. Bicycle-friendly stormwater grates should be used throughout the City.

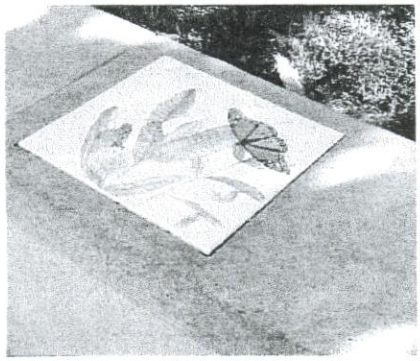
## Design Guidelines

Both cities should develop design guidelines for the Brighton Avenue corridor to address architectural design, site planning, landscaping, signage, and lighting. There are a number of models in Maine that have been developed in the last few years. Falmouth has developed guidelines that have set the standard for consistent quality in all aspects of Site Plan applications. Yarmouth has just recently completed design guidelines for their section of Route One. Brunswick is in the process of writing guidelines for Cook's Corner. Windham is beginning the process for Route 302 in North Windham.

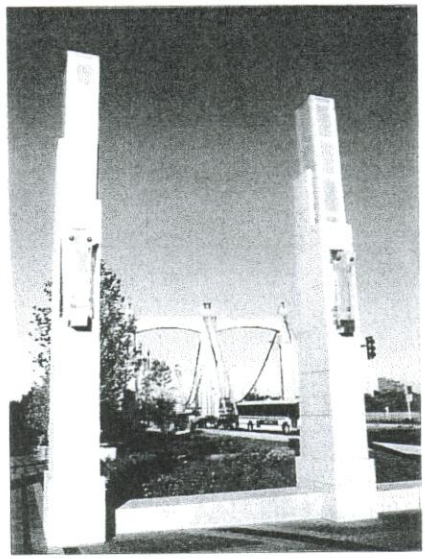
Other communities throughout the country have been successful in establishing a vision for their neighborhood commercial districts. For example, Portland, Oregon has published Community Design Guideline that sets the tone for rehabilitation and infill development, based upon urban planning criteria.

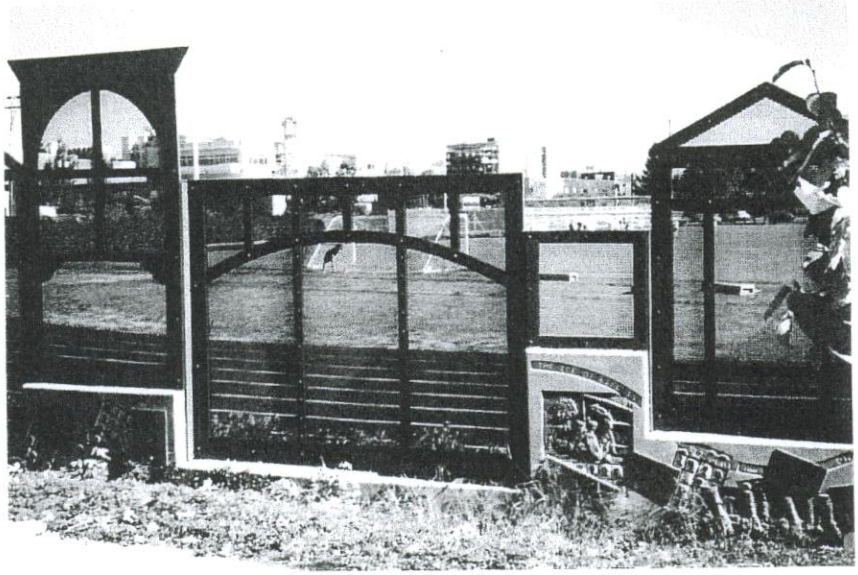


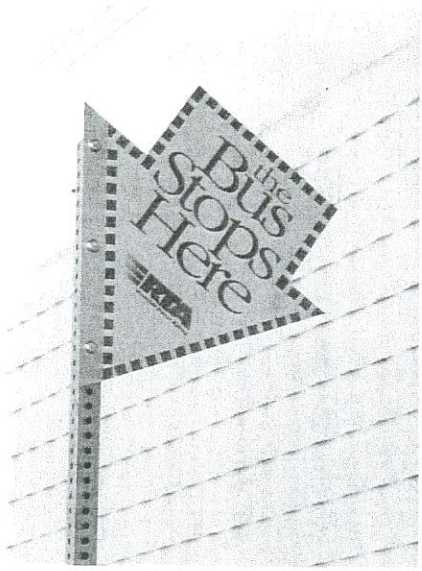




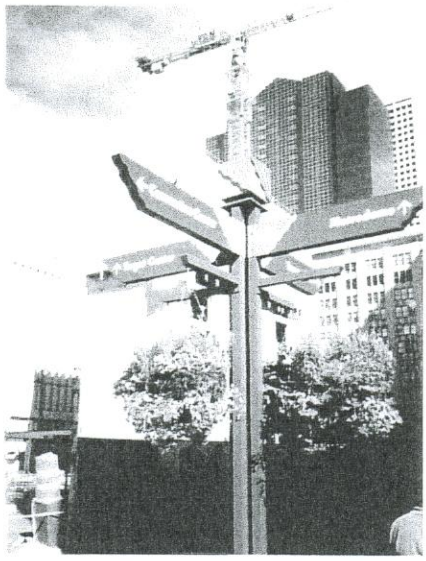
Artwork can be an effective way to enliven the street and instill pride along the corridor.



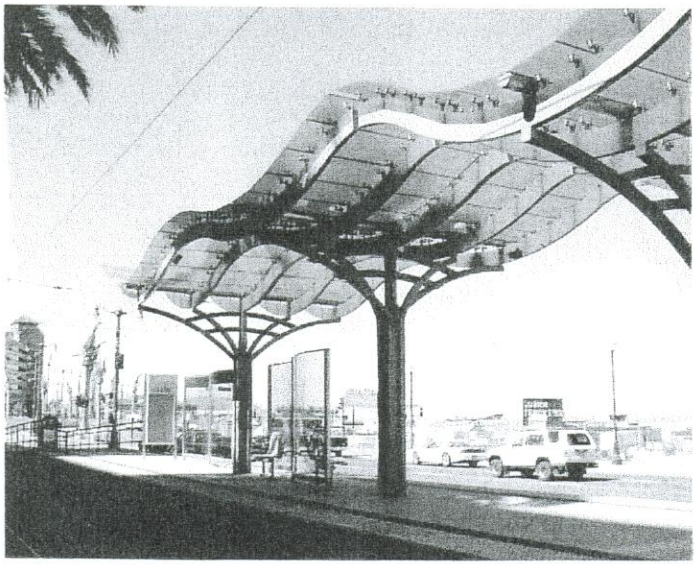








High quality signage, street furnishings, and bus shelters should be used throughout the corridor to create a better pedestrian environment.



# APPENDICES

## Brighton Avenue/Lower Main Street Focus Groups
## Public Comments*

**Held:** Friday, February 26, 1999, Vallee's Restaurant, Portland
**Sponsored by:** Portland and Westbrook Joint Task Force for the Gateway Study
**Consultants:** Tom Gorrill, Gorrill-Palmer Consulting Engineers, Inc. and Terrence DeWan, Terrence DeWan Associates

* Comments listed below are not verbatim and are summarized from notes taken at the meetings.

9:00 a.m. - Schools and Institutions

- Rosemont Corner is a high accident intersection. Is there a pattern to the accidents and will we be looking at this? Consultant response: Consultants and Task Force will be looking at collision diagrams.
- There is a bottleneck at the Stevens Avenue and Brighton Avenue intersection with the turning movements. Traffic seeking to go straight through is backed up.
- Headmaster of Breakwater School noted that they have a 30 car parking area at the school, but that it is very difficult for people to turn left into the lot. The traffic traveling toward Portland on Brighton Avenue are going very fast, 50 mph. The drop-off location for the school is on Capisic Street. Breakwater School has an enrollment of 180 students.
- Taking a left anywhere along Brighton Avenue is a scary experience.
- Nason's Corner is a very dangerous intersection. There is never a time when there isn't traffic moving. It is very hard to use the crosswalk with traffic turning right on red.
- Lighting is needed at the pedestrian level, especially at crosswalks, along Brighton Avenue.
- Consultant question: Is Nason's Corner a neighborhood Center? Citizen response: It is too dangerous to walk around there. Someone always has the right-of-way. There is no Brighton Avenue crossing at this corner.
- Travel speeds onto Capisic Street are too fast, particularly the right turn from Brighton. If is very dangerous. Is there a way to slow down turning traffic? Consultant response: Options could include better marking of school zone, raised crosswalks, pedestrian lighting, contrasting materials like stamped asphalt, and other design considerations.
- At theWarwick Street intersection, bring presence of Hall School to Brighton Avenue with a sign.
- Concerned that the Rite Aid will generate too much traffic. The bus stop for Middle School and High School students is on the Rite Aid corner. Is there a need for a bus shelter and/or better street crossing? It is a school crossing route and it is a critical intersection.
- Esplanade should be preserved along Brighton Avenue, so snow doesn't block the sidewalk and there is some separation between pedestrians and traffic.
- There is support for street trees.
- Consultant question: Should we consider narrow travel lanes and create a 2 or 3 foot wide bike lane, usually try to have 4-5 feet. Citizen response: Don't think about it on Brighton Avenue, it is too dangerous. Have bicyclists use the sidewalk.
- It is not safe enough to be there, not along Brighton Avenue. Improve the sidewalks so the sidewalks can be used for bicycles. We don't want younger or in-experienced riders on Brighton Avenue.
- Consultant comment: Narrow lanes can slow down traffic. Trees, landscaping, and lights can help psychologically narrow the street and slow traffic.
- People from Sagamore Village cross Brighton Avenue to shop at Shaw's. They get to the middle of the street and things start to happen. There is always moving traffic.

- Carefully scrutinize Rand Road, which does not have any sidewalks, and where crosswalks are needed along Brighton Avenue.
- Consultant question: There is a large median near the shopping center, should landscaping be included within the median? Citizen response: Concerned that landscaping will block view of children taking the natural path or shortest route.
- Consultant question: Should there be more a barricade to channel pedestrians to designated crossings. Citizen response: The barriers along Spring Street do not stop people from crossing at other spots along the street. People will take the shortest route.
- May need two crosswalks in the vicinity of shopping center and the bus shelter is used a lot.
- Is a raised crosswalk, an overpass, appropriate in this area?
- There is a lot of traffic leaving the shopping center at the intersection of Taft and Brighton Avenues and there are near accidents due to opposing left turns.
- Crosswalk in front of Barron center is difficult for people to cross. They are slow and need more time.
- Bradlees is a high accident point.

10:15 a.m. - Transportation and Conservation

- Hillcrest Avenue is an unofficial entrance for the Fore River Sanctuary. The Maine Audubon does not own some of the parcels people cross and it is not maintained.
- Jewell's Fall is in this area.
- The official parking area for Maine Audubon is at the end of Rowe Avenue.
- Rand Road development, the status of the Snyder property, the CMP project, and the MTA interchange will have impacts on this area. Consultant response: The MTA is designing the interchange now and there may be intersection improvements at Rand Road and Brighton Avenue. Areial photographs could be used to develop alternatives. The consultant and the City should meet with the MTA to review the plans for the interchange.
- Important to buffer the new interchange, both visually and a sound barrier, from conservation use in the area.
- Portland Trails and Maine Audubon are considering trails through the CMP property to Snyder property and then down to the Stroudwater River. There is a possibility of extending a trail out to Westbrook or to Westbrook Street and connect with the Stroudwater trail.
- The bridge needs a bike lane. It was suggested that the functions of the new interchange be limited to exits only and entrances only at Exit 8. Concerned of influence of new interchange on MTA.
- There is a need to consider school bus access and a turnaround at the end of Rowe Avenue for the Fore River Sanctuary.
- Portland Trails is looking for a crossing at Lucas Street, which is the entrance of Capisic Pond and there are plans for trail connections on the other side of Brighton Avenue.
- Some design guidelines may be helpful.
- Rand Road needs to be signed better , particularly for trucks.
- There are a lot of elderly pedestrians in the vicinity of the Larrabee road area. Should consider crossing behind the island on Larrabee.
- There is a lot of short cut traffic through Lee's parking lot.
- Traffic often uses the area west of Westbrook City Hall as two lane westbound. Consultant should look at excess pavement in this area. Would the State allow narrowing?
- Consultant should review a previous study, which made recommendations regarding the configuration of the traffic island at Main and Cumberland.

11:30 a.m. - Business and Industry

- We do not want trees in front Forest City Chevrolet. They are planning to upgrade their entrance.
- Brighton Avenue is a major commercial thoroughfare. Scares me to think you would try to accommodate little kids on bikes. We need to accept and deal with it as a major arterial.
- Zones for higher density to support mass transit and redefine it.
- I see more wheelchairs in the road than bikes. No regard for wheel chairs.
- Rand Road intersection - HNTB could look at configuration at Brighton Ave. and Rand Rd. Rand Road should have sidewalks.
- NET recently repaved the parking lot and and made circulation changes at the Pine Tree Shopping Center. NET does not envision new development ( no more out parcel development) in the Pine Tree Shopping Center. The leases require a certain level of parking and visibility.
- How effective are separations? Consultant response: Try to channelize cross-walks stripe well, do something along curb line, cross at designated area.
- Could utilities be underground or consolidated.
- Concerned about trees in the center and the impact on trucks.
- There is a no left turn sign into the shopping center, but people try.
- Handicapped sign, but no cross-walk there.
- 10 to 50 cars turn around in the Holden Insurance parking lot. They turn around to go back to Barron Center. They don't know they can get to the back of Barron Center off Holm Ave.
- 18 wheelers have also turned around in the Holden lot. They do not recall this happening until the dividers were put in along Brighton Avenue.
- A guard rail has been installed between the NET property and the glass shop. People in wheelchairs were going down the steep hillside.
- No arrow into Vallee's anymore. Hard to take a left. The arrows were removed when the dividers were installed.
- Rand road has a short cycle for a left turn into Rand Road. There is insufficient time and a lot of stacking of vehicles.
- Exit 8 is one area without community distinctions. It feels like one commercial area. It is perceivable as a commercial district and the recognition of this commercial is of a certain magnitude.
- The Gateway into Portland- may want to put it somewhere else. This area is a tremendous commercial mix. It is what it is. Most look at it as one area. The gateway doesn't have to made in the commercial area
- Exit 8 is a commercial area with an identity. MTA needs to deal with numbering system. What is this number going to be for the interchange. A lot of money has been invested in Exit 8 as a commercial identity.
- Commercial area goes beyond Brighton Avenue and extends to Warren Avenue. The area has depth and is not just linear.
- Mr. Holden stated his property is the only piece zoned B-1. Everyone else is B-2. He wants his property rezoned to B-2. Applebee contacted him, but did not pursue it. He is looking to get more flexibility for his site. He doesn't think the site will generate traffic flow to negatively impact Brighton Avenue.
- Don't want architectural requirements.
- Consultant question: What if any regulatory requirements? Citizen response: Define boundaries. We have to co-exist. There is tension between groups. Nobody has confidence that his or her interests will be respected. Borders between uses need protections.

## Brighton Avenue -A Plan For Our Neighborhood
## June 30, 1999 at the Barron Center
## Public Comments

### Questions and Comments

- Dennett St. Vehicles exit from the business onto the street at a 45 degree angle. Feel using side streets could be a problem.
- There are two curb cuts for the redemption center on Brighton Ave. Owner needs the curb cuts.
- Why two lanes on Capisic Street? This would increase traffic on Capisic.
- Tony Armstrong - Opportunity to put a bicycle lane in the plans for connections to Westbrook. Looking at Rand Road - sufficient right-of-way and opportunity.
- Don Hoffses- re: Rand Rd. Why don't you put a sidewalk on one side and a bike lane on the other side.
- [When Terry suggested in-fill development of a store or restaurant- many people in the audience shook their heads and made negative remarks.]
- Consider installing bike lanes and relocating utilities underground. Make it a true Main Street. Even though it is expensive, it is an alternative to look at (technology is getting cheaper).
- Trees slow them down- how? I live on Brighton Ave. and traffic is unbelievable.
- Lois Winter Like - a) reducing curb cuts - great idea; and b) like idea of more trees
  But - a) Wonder if going far enough - it seems too tame.
  b) Rand Rd. interchange - what will the zoning be? The interchange will increase the sprawl and bring it into my neighborhood. Good old boy network will change it.
  c)I don't care about traffic near Pine Tree Shopping Center - do care about traffic in residential area and an increase in traffic. Expected to see 50 feet of Pine Tree Shopping center taken for green space along street.
  d) Applebees -should be the last bad thing - building crap.
  e)Want to see Brighton Ave. more like Falmouth with more green. Street is being designed for cars, not for people. Make Brighton Ave. less convenient- why make it more convenient for people in burbs.
- Is there anything that is going to limit business development in residential areas?
- If rebuilding road, utilities should be underground - that is an excellent idea.
- Two times a day Brighton Ave. is a parking lot as buses stop to pick up or drop off people. Include cut-outs for buses, so they are out of travel lanes.
- Signs are an issue, example - atrocities like Applebees and Rite Aid. Need smaller signs.
- Traffic and speed - not an engineering solution, but a police issue. No speed bumps- Stevens Ave. is terrible, it was a Boulevard. Use signs indicating your speed like in Connecticut. Drivers speed or drag to next light. Time lights at prescribed speed.
- Not against trees, but businesses will go berserk. Where does snow go if have trees?
- Disagree with redevelopment scenario of office and retail uses. Area near interchange is a prime opportunity for industrial and trucking operations. A total of 7.5 acres of wetland will be impacted with installation of interchange ramp. Large impact on wildlife

corridors. Keep green belt. Delete interchange ramp. Keep Westbrook portion, takes care of traffic from west, protects valuable tremendous ecological resource, and protects neighborhood.

- Concerned about Warwick St. and Brighton Ave., which is a major school crossing route over to Hall School. Concerned about intersection.
- Don't think ramp will mitigate traffic, but rather will aggravate. Don't see any benefits of the plan.
- Do this in Brownfields where access to highway. Impacts will be great in this neighborhood.
- [Idea of three lanes versus four lanes was presented. Used example of Falmouth. " No" was voiced by many people in the audience.]
- Steady back-up of traffic. Too much traffic on Brighton Avenue for three lanes. Difficult getting out of side streets now. Wouldn't be able to get out of side streets.
- Rosemont Corner- merging 5 streets into Rosemont. Needs to stay 4 lanes between Rosemont and Nasons.
- D. Hoffses- wait ten minutes not to get out. Would take longer. Wants the 4 lanes.
- Decision to go to 4 lanes happened a long time ago. Can't reverse the clock. Concerned about accidents/speed/need more enforcement. Speed is the problem and surveillance is needed. When I bring this up in the past, I'm told traffic has to move through there.
- D. Hoffses See radar on Woodfords Street. Never on Brighton Ave.
- Take traffic off Brighton Avenue with a bypass.
- Slow traffic down in the vicinity of Wayside. Too fast - skid marks on the road

**Responses to Question: What do you like about this proposal?**

- Nothing. Didn't like a thing. Creating more traffic for Brighton Ave. Capisic Street is going to need traffic lights at the end of neighborhood streets, so people can get out. Creating more traffic.
- Brighton Avenue will be a highway and property values will be less. Don't like it at all. Rite Aid- dangerous area.
- Trees along Brighton Avenue - great. Beautification cannot solve the problem. No solution for Brighton between Rosemont and Nason's and adding more traffic. How can they make it better.
- Reactive piece of the puzzle. Way to reduce traffic load on Brighton Avenue are needed and then plan o.k.
- Riverside Street was a pastoral area. Now nothing there except car dealerships, junk etc. Put in the interchange and this area is going to end up looking like it. No to the Exit. Like beautification.
- Interchange is what really has to be looked at. Brighton Ave. is a major divider. Make it more efficient and more suitable for the neighborhood. No to the turnpike interchange. The interchange defeats the whole purpose of this plan. It destroys the quality of life. Not a good legacy. Incorporate removal of utilities. Yes to beautification.
- Not going out of the square with this plan. Do something radical.
- Agree with trees. Concerned with Capisic -two lanes out taking a left. Capisic Street should have been notified. Encourage use of arterials.

- Green stuff great. Question the plan to connect Rand Road with Westbrook. Take out interchange.
- By who's authority (reaction to statement that interchange will be built next yr) Can there be a hearing at City Council? Don't understand the value of Rand Rd.. extension. What is the reason for the interchange?
- Need highway to take traffic away from neighborhoods.
- Where Brighton Avenue is wider the traffic is fast paced. With just 4 lanes, still fast. Come back to needing surveillance. Ticketing and speed not priority of police. Need to be more forward in our thinking. Look at numbers of cars versus 9 and 30 years ago. Population growing. Recognize riding through neighborhood multi-use area. Requires surveillance.
- If no interchange- will this affect federal funds? Want to illuminate and educate council on neighborhood concerns. Not sure interchange makes economic sense.
- What do we do to protect our neighborhood?
- Feel interchange is encroaching on back yard. Don't see how we can mitigate the impact of the interchange. Wildlife corridor is a priceless piece of property in urban area. The interchange will really detract and take true green away from the city. Brighton Avenue corridor - concerned about impacts of interchange. Protect as much of Snyder tract as possible. Know it must be frustrating to have planned interchange for many years and neighborhood now opposes it. I would feel better if I trusted in the past planning efforts. If I could hear one good reason for the doing it and that is wouldn't harm my neighborhood.
- Build Westbrook section. Circular corridor- diverting traffic off Brighton Ave.

**Comments received over the phone before the meeting**

- Jane Griffin- lives at Glenridge Condo's. She is excited about the idea of improving Brighton Ave. It is very difficult to get out of Jeanne Street. There is never a break in traffic, so unable to take a left. Have to go up Jeanne St, then Ludlow. There have been three accidents.
- Resident Mayer Road - Need a stop light or have bus stops on both sides of Brighton Avenue, so a rider does not have to cross Brighton Ave. Friends have been hit when crossing. They ride the bus into Portland because the stop is on their side of Brighton. They will not take a bus home because they have to cross the street.

## LEGEND

XX - YEAR 2005
(XX) - YEAR 2010
[XX] - YEAR 2020
——— EXISTING ROAD
— — — PROPOSED ROAD

| No. | Date | Revision |
|---|---|---|
| - | - | - |

Design: TLG
Drawn: LAN
Checked: DER
Scale: NTS
Date: MARCH 1999
Job No.: 98053

Gorrill-Palmer Consulting Engineers, Inc.
Traffic and Civil Engineering Services
PO Box 1237
31 Main Street
Gray, ME 04039
207-657-6910
FAX: 207-657-6912
E-Mail: Gpe-Traffic@GPEngSvcs.com

Drawing Name:

AM Peak Hour -Base

Project:

BRIGHTON AVENUE/MAIN STREET CORRIDOR STUDY

Figure No.

1

| Rev | Date | Revision |
|---|---|---|
| - | | |
| - | | |

Design: TLG | Date: MARCH 1998
Drawn: LAN | Job No.: 98033
Checked: DER | Scale: NTS


GP Gorrill-Palmer Consulting Engineers, Inc.
Traffic and Civil Engineering Services
PO Box 1237
31 Main Street
Gray, ME 04039
207-657-6910
FAX 207-657-6912
E-Mail: Gor-Palm@GWSH.com


Drawing Name:

AM Peak Hour -Moderate Office

Project:

BRIGHTON AVENUE/MAIN STREET CORRIDOR STUDY

Figure No.

2

| Rev. | Date | Revision |
|---|---|---|
| - | | |
| - | | |

| | | | |
|---|---|---|---|
| Design: | TJG | Date: | MARCH 1999 |
| Draft: | LAN | Job No.: | 98053 |
| Checked: | GER | Scale: | NTS |


Gorrill-Palmer Consulting Engineers, Inc.
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E-Mail: Gor-Pal@GWI.Net


Drawing Name: AM Peak Hour - Intensive Wholesale

Project: BRIGHTON AVENUE/MAIN STREET CORRIDOR STUDY

Figure No. 3

| Rev | Date | Revision |
|---|---|---|
| - | - | - |

| | | | |
|---|---|---|---|
| Design: | TLG | Date: | MARCH 1999 |
| Draft: | LAN | Job No.: | 98053 |
| Checked: | GER | Scale: | NTS |


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PO Box 1237
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207-657-6910
FAX: 207-657-6912
E-Mail: GPraymcbsn.com


Drawing Name: AM Peak Hour - Intensive Retail

Project: BRIGHTON AVENUE/MAIN STREET CORRIDOR STUDY

Figure No. 4

| Rev. | Date | Revision |
|---|---|---|
| - | - | - |

| | | | |
|---|---|---|---|
| Design: | TLG | Date: | MARCH 1999 |
| Drafti | LAN | Job No: | 98053 |
| Checked: | DER | Scale: | NTS |


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Drawing Name:

PM Peak Hour -Base

Project:

BRIGHTON AVENUE/MAIN STREET CORRIDOR STUDY

Figure No.

5

LEGEND

XX - YEAR 2005
(XX) - YEAR 2010
[XX] - YEAR 2020

EXISTING ROAD

PROPOSED ROAD

| Rev. | Date | Revision |
|---|---|---|
| - | - | |

Design: TLG Date: MARCH 1999
Drawn: LAN Job No.: 98033
Checked: DER Scale: NTS


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Drawing Name:

PM Peak Hour -Moderate Office

Project:

BRIGHTON AVENUE/MAIN STREET CORRIDOR STUDY

Figure No.

6

| Rev. | Date | Revision |
|---|---|---|
| - | - | - |

| | | | |
|---|---|---|---|
| Design: | TLG | Date: | MARCH 1999 |
| Drafft: | LAN | Job No.: | 98043 |
| Checked: | DER | Scale: | NTS |


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E-Mail: Gor-Pal@GWSN.com


Drawing Name:

PM Peak Hour - Intensive Wholesale

Project:

BRIGHTON AVENUE/MAIN STREET CORRIDOR STUDY

Figure N

7

## LEGEND

XX - YEAR 2005
(XX) - YEAR 2010
[XX] - YEAR 2020

EXISTING ROAD
PROPOSED ROAD

| Rev. | Date | Revision |
|---|---|---|
| - | - | - |

Design: TLG | Date: MARCH 1999
Drafr: LAN | Job No.: 98053
Checked: DER | Scale: NTS


GP Gorrill-Palmer Consulting Engineers, Inc.
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207-657-6910
FAX: 207-657-6912
E-Mail: Gorrill@GPCON.com


Drawing Name: PM Peak Hour - Intensive Retail

Project: BRIGHTON AVENUE/MAIN STREET CORRIDOR STUDY

Figure

## *Intense Retail*

| Intersection | Approach | 2005 AM LOS | 2020 AM LOS | 2005 PM LOS | 2020 PM LOS |
|---|---|---|---|---|---|
| Brighton/Larabee | | | | | |
| | Northbound | D | C | B | C |
| | Southbound | B | B | B | B |
| | Westbound | B | C | B | D |
| | Eastbound | B | C | B | D |
| Brighton/Riverside | | | | | |
| | Northbound | B | B | B | C |
| | Southbound | B | B | B | C |
| | Westbound | B | B | A | C |
| | Eastbound | A | A | B | B |
| Brighton/Rand | | | | | |
| | Northbound | A | A | B | B |
| | Southbound | D | D | C | C |
| | Westbound | C | C | B | C |
| | Eastbound | C | C | C | D |
| Brighton/Warwick | | | | | |
| | Northbound | D | C | D | D |
| | Southbound | D | D | D | E |
| | Westbound | A | A | A | A |
| | Eastbound | A | A | A | A |
| Brighton/Capisic | | | | | |
| | Northbound | D | D | D | D |
| | Southbound | D | D | D | D |
| | Westbound | A | A | B | B |
| | Eastbound | A | B | B | B |

## *Intense Wholesale*

| Intersection | Approach | 2005 AM LOS | 2020 AM LOS | 2005 PM LOS | 2020 PM LOS |
|---|---|---|---|---|---|
| Brighton/Larabee | | | | | |
| | Northbound | B | C | B | B |
| | Southbound | B | B | B | B |
| | Westbound | B | C | B | B |
| | Eastbound | B | B | B | B |
| Brighton/Riverside | | | | | |
| | Northbound | B | B | B | B |
| | Southbound | B | B | B | B |
| | Westbound | A | A | B | A |
| | Eastbound | A | A | B | B |
| Brighton/Rand | | | | | |
| | Northbound | A | A | B | B |
| | Southbound | C | C | C | C |
| | Westbound | B | B | B | C |
| | Eastbound | B | B | C | D |
| Brighton/Warwick | | | | | |
| | Northbound | C | D | D | D |
| | Southbound | D | D | D | E |
| | Westbound | A | A | A | A |
| | Eastbound | A | A | A | B |
| Brighton/Capisic | | | | | |
| | Northbound | D | D | D | D |
| | Southbound | D | D | C | D |
| | Westbound | A | A | A | B |
| | Eastbound | A | A | A | B |

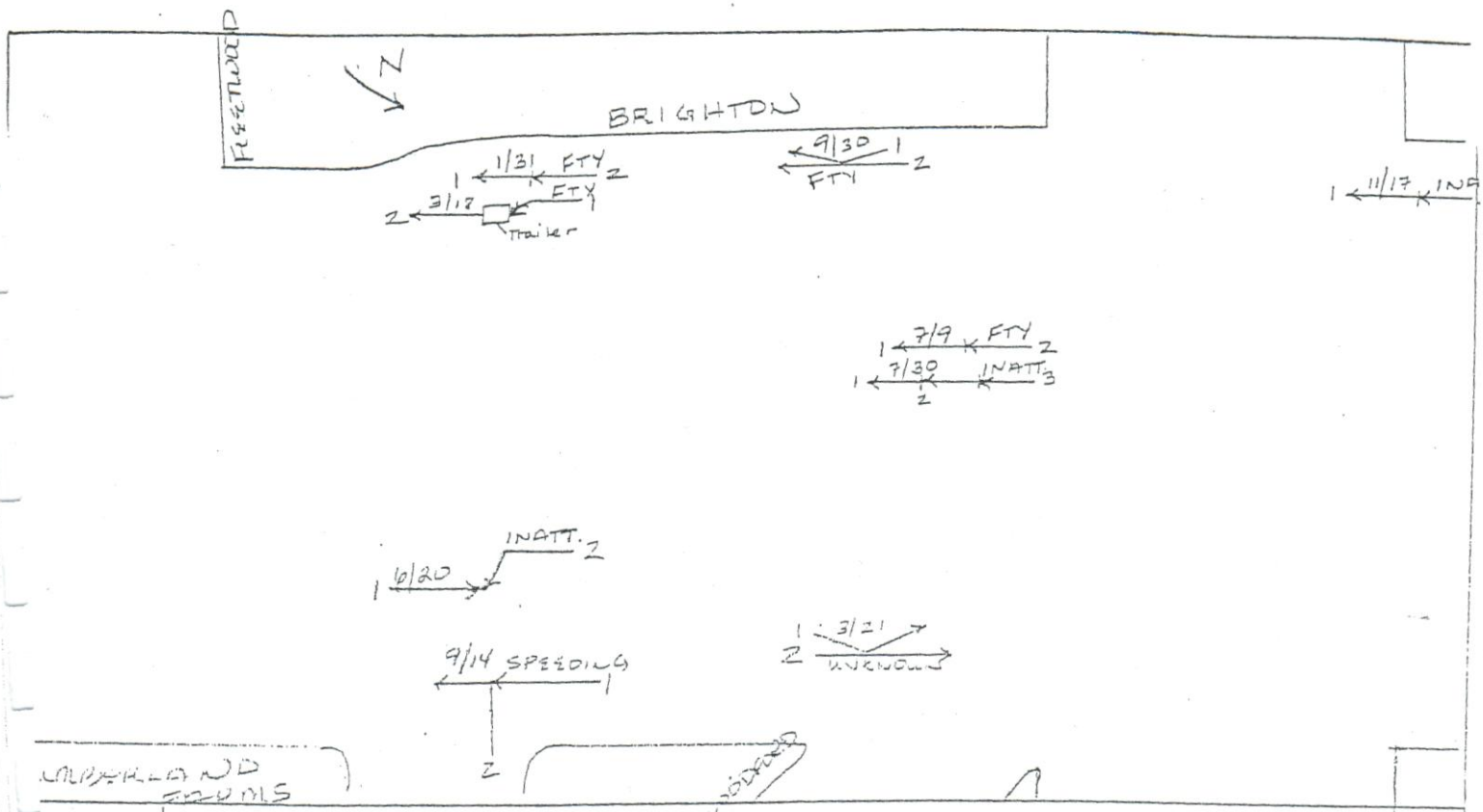
# COLLISION DIAGRAM

SHEET 1 OF 2

LOCATION BRIGHTON/WOODFORDS/COLONIAL/FLEETWOOD

TOWN PORTLAND (MDOT) NODE NO(S) 03287 & 03393

YEAR(S) REVIEWED 95-97 DATE PREPARED 1/22/99 DMP




CRITICAL RATE FACTOR _____ EQUIV. PROP. DAMAGE ACC/YEAR _____ ACC/MEV _____

LIGHT
1. DAWN (MORNING) 2. DAYLIGHT 3. DUSK (EVENING)
4. DARK (ST. LIGHTS ON) 5. DARK (NO ST. LIGHTS) 6. DARK (ST. LIGHTS OFF)
7. OTHER

ROAD SURFACE
1. DRY 2. WET 3. SNOW/SLUSH-SANDED
4. ICE/PACKED SNOW-SANDED 5. MUDDY 6. DEBRIS
7. ICY 8. SNOW/SLUSH-NOT SANDED 9. ICE/PKD. SNOW-NOT SANDED
10. OTHER

APPARENT CONTRIBUTING FACTORS - HUMAN
1. IMPROPER ACTION 2. FAIL TO YLD. RIGHT OF WAY 3. ILLEGAL UNSAFE SPEED
4. FOLLOW TOO CLOSE 5. DISREGARD TRAFFIC CONTROL DEVICE
6. DRIVING LEFT OF CENTER - NO PASSING 7. IMPROPER PASS-OVERTAKING
8. UNSAFE LANE CHANGE 9. IMP. PARKING START/STOP 10. IMPROPER TURN
11. UNSAFE BACKING 12. NO SIGNAL OR IMP. SIGNAL 13. IMPEDING TRAFFIC
14. DRIVER INATTENTION - DISTRACTION 15. DRIVER INEXPERIENCE
16. MISDEST. VIOLATION ERROR 17. PHYSICAL IMPAIRMENT 18. VISION OBSCURED -
WINDSHIELD GLASS 19. VISION OBSCURED - SUN/HEADLIGHTS
20. OTHER VISION OBSCUREMENT 30. OTHER HUMAN VIOLATION FACTOR
40. HIT AND RUN 51. UNKNOWN

VEHICULAR
41. DEFECTIVE BRAKES 42. DEFECTIVE TIRE/FAILURE 43. DEFECTIVE LIGHTS
44. DEFECTIVE SUSPENSION 45. DEFECTIVE STEERING 50. OTHER VEHICLE DEFECT
TRACTOR 51. UNKNOWN

SYMBOLS

| | | | |
|---|---|---|---|
| ANGLE | PEDESTRIAN (P) | FATAL ACCIDENT | |
| BACKING | REAR END | | |
| FIXED OBJECT | SIDE SWIPE | VEHICLE (MOVING) | |
| HEAD ON | TURNING MOVE | BICYCLE (B) | |
| OVERTURN | CHANGE LANE | ANIMAL (A) | |
| PARKED VEHICLE | OUT OF CONTROL | SLED (S) | |

WEATHER
C = CLEAR F = FOG R = RAIN
SL = SLEET S = SNOW CL = CLOUDY
XW = CROSS WINDS

INJURIES
K = FATAL B = NON-INCAPACITATING
A = INCAPACITATING C = POSSIBLE INJURY

| ACC'T NO. | DATE | TIME | INJURIES K | A | B | C | LIGHT | ROAD SURFACE | ACF | OTHER |
|---|---|---|---|---|---|---|---|---|---|---|
| 1993 | 1/31/97 | 20:08 | | | | | 2 | 3 | 1,2/1,4 | FAIL TO YEILD |
| 121 | 3/18/97 | 17:56 | | | | | 4 | 1 | 2,1/2,1 | FAIL TO YEILD |
| 153 | 7/9/97 | 15:00 | | | | | 2 | 2 | 2,1 | FAIL TO YEILD |
| 154 | 7/30/97 | 18:09 | | | | | 2 | 1 | 14,1/4 | INATTEN |
| 278 | 9/14/97 | 13:40 | | | A | B | 2 | 1 | 3,1/51 | SPEEDIN |
| 192 | 9/30/97 | 13:45 | | | | | 2 | 1 | 2,1 | FAIL TO YEILD |
| 164 | 11/17/97 | 11:35 | | | | C | 2 | 1 | 1,14 | INATTEN |

# COLLISION DIAGRAM

SHEET ____ OF ____

LOCATION _____

TOWN _____ NODE NO(S) _____

YEAR(S) REVIEWED _____ DATE PREPARED _____

| REPORT NO. | DATE | TIME | INJURIES K | A | B | C | LIGHT | ROAD SURFACE | ACF | OTHER |
|---|---|---|---|---|---|---|---|---|---|---|
| 21392 | 6/20/96 | 07:50 | | | | C | 2 | 1 | 1, 14 | INATTENT. |
| 10342 | 3/21/95 | 19:20 | | | | | 4 | 2 | 51, 51/51 | UNKNOWN |

# COLLISION DIAGRAM

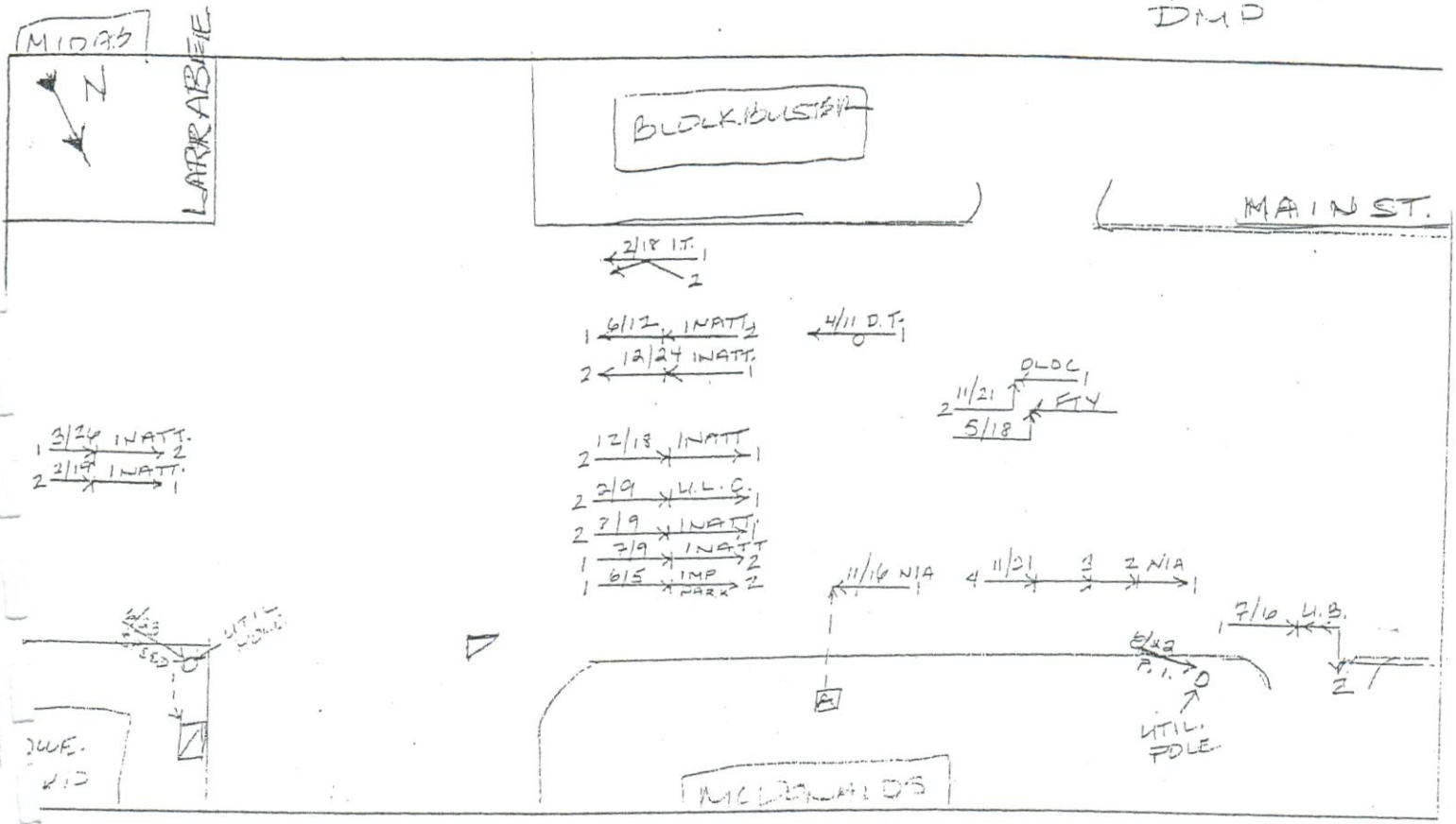
SHEET 1 OF

LOCATION MAIN ST / LARRABEE

TOWN WESTBROOK NODE NO(S) 5476 & 8867

YEAR(S) REVIEWED 95 - 97 DATE PREPARED 1/28/99

DMD




CRITICAL RATE FACTOR _____ EQUIV. PROP. DAMAGE ACC/YEAR _____ ACC/MEV _____

LIGHT
1. DAWN ( MORNING )
2. DAYLIGHT
3. DUSK ( EVENING )
4. DARK ( ST. LIGHTS ON )
5. DARK ( NO ST. LIGHTS )
6. DARK ( ST. LIGHTS OFF )
7. OTHER

ROAD SURFACE
1. DRY
2. WET
3. SNOW/SLUSH-SANDED
4. ICE/PACKED SNOW-SANDED
5. MUDDY
6. DEBRIS
7. OIL
8. SNOW/SLUSH-NOT SANDED
9. ICE/PKD. SNOW-NOT SANDED
10. OTHER

APPARENT CONTRIBUTING FACTORS - HUMAN
1. IMPROPER ACTION
2. FAIL TO YLD. RIGHT OF WAY
3. ILLEGAL UNSAFE SPEED
4. FOLLOW TOO CLOSE
5. DISREGARD TRAFFIC CONTROL DEVICE
6. DRIVING LEFT OF CENTER - NO PASSING
7. IMPROPER PASS-OVERTAKING
8. UNSAFE LANE CHANGE
9. IMP. PARKING START/STOP
10. IMPROPER TURN
11. UNSAFE BACKING
12. NO SIGNAL OR IMP. SIGNAL
13. IMPEDING TRAFFIC
14. OVER INATTENTION - DISTRACTION
15. DRIVER INEXPERIENCE
16. MEDIST. VIOLATION ERROR
17. PHYSICAL IMPAIRMENT
18. VISION OBSCURED -
19. WINDSHIELD GLASS
19. VISION OBSCURED - SUN/HEADLIGHTS
20. OTHER VISION OBSCUREMENT
30. OTHER HUMAN VIOLATION FACTOR
31. HIT AND RUN
51. UNKNOWN

VEHICULAR
42. DEFECTIVE TIRE/FAILURE
43. DEFECTIVE LIGHTS
44. DEFECTIVE SUSPENSION
45. DEFECTIVE STEERING
50. OTHER VEHICLE DEFECT
51. UNKNOWN

SYMBOLS

| | | | |
|---|---|---|---|
| ANGLE | PEDESTRIAN | P | FATAL ACCIDENT |
| BACKING | REAR END | | |
| FIXED OBJECT | SIDE SWIPE | | VEHICLE ( MOVING ) |
| HEAD ON | TURNING MOVE | | BICYCLE 3 |
| OVERTURN | CHANGE LANE | | ANIMAL 4 |
| PARKED VEHICLE | OUT OF CONTROL | | SLED 5 |

WEATHER
C = CLEAR
F = FOG
R = RAIN
SL = SLEET
S = SNOW
CL = CLOUDY
XW = CROSS WINDS

INJURIES
K = FATAL
B = NON-INCAPACITATING
A = INCAPACITATING
C = POSSIBLE INJURY

| ACCT NO. | DATE | TIME | INJURIES K | A | B | C | LIGHT | ROAD SURFACE | ACF | OTHER |
|---|---|---|---|---|---|---|---|---|---|---|
| 420 | 12/18/96 | 10:40 | | | | | 2 | 1 | 1, 14 | INATTENT |
| 1-6 | 11/2/19 | 7:44 | | | | | 2 | 1 | 1, 6, 21, 30 | LEFT OF CENTER |
| 3-59 | 5/2/96 | 15:45 | | | | C | 2 | 1 | 8, 1 | UNSAFE LANE CHANGE |
| 389 | 3/19/95 | 9:05 | | | | | 2 | 1 | 1, 14 | INATTENT |
| 576 | 11/16/95 | 7:40 | | | | | 4 | 1 | 1, 1 | NO IMPROPER ACTION |
| 571 | 11/21/95 | 12:30 | | | | C | 2 | 1 | 1, 1 | NO IMPROPER |
| 82 | 5/12/95 | 16:00 | | | | | 2 | 1 | 2, 1/20 | FAIL TO |

# COLLISION DIAGRAM

SHEET 2 OF 2

LOCATION MAIN ST/

TOWN WESTBROOK

NODE NO(S) 5476 + 8867

YEAR(S) REVIEWED 95 - 97

DATE PREPARED 1/22/99

| REPORT NO. | DATE | TIME | INJURIES K | A | B | C | LIGHT | ROAD SURFACE | ACF | OTHER |
|---|---|---|---|---|---|---|---|---|---|---|
| 21037 | 7/4/95 | 12:30 | | | | — | 2 | 1 | 1, 11 | UNSAFE BACKING |
| 36678 | 10/20/97 | 15:20 | | | | — | 2 | 2 | 30, 1 | OTHER VIOLATION |
| 25642 | 7/9/97 | 16:20 | | | | — | 2 | 2 | 14, 1 | INATTENT. |
| 48568 | 12/24/97 | 13:45 | | | B | 1 | 2 | 2 | 14, 1 | INATTENT. |
| 21023 | 6/22/97 | 5:36 | | | B | — | 2 | 1 | 17/14 | PHYSICAL IMPAIR |
| 21920 | 6/25/97 | 20:30 | | | | — | 4 | 1 | 3/8 | SPEEDING |
| 30523 | 6/12/97 | 10:58 | | | | — | 2 | 1 | 1, 14 | INATTENT. |
| 19474 | 6/5/97 | 15:53 | | | | — | 2 | 1 | 1, 9 | IMPROPER PASS |
| 5439 | 4/2-/97 | 16:35 | | | | — | 2 | 1 | 15, 1/30 | INEXPERIE. |
| 3228 | 4/11/97 | 20:40 | | | B | — | 5 | 1 | 42 | DEFECTIVE TIRE |
| 21 32 | 3/26/97 | 7:40 | | | | — | 4 | 1 | 14, 1 | INATTENT. |
| 7336 | 2/10/97 | 12:25 | | | | — | 2 | 1 | 1, 14 | INATTENT. |
| 7029 | 2/13/97 | 11:45 | | | | — | 2 | 1 | 1, 10 | IMPROPER TURN |

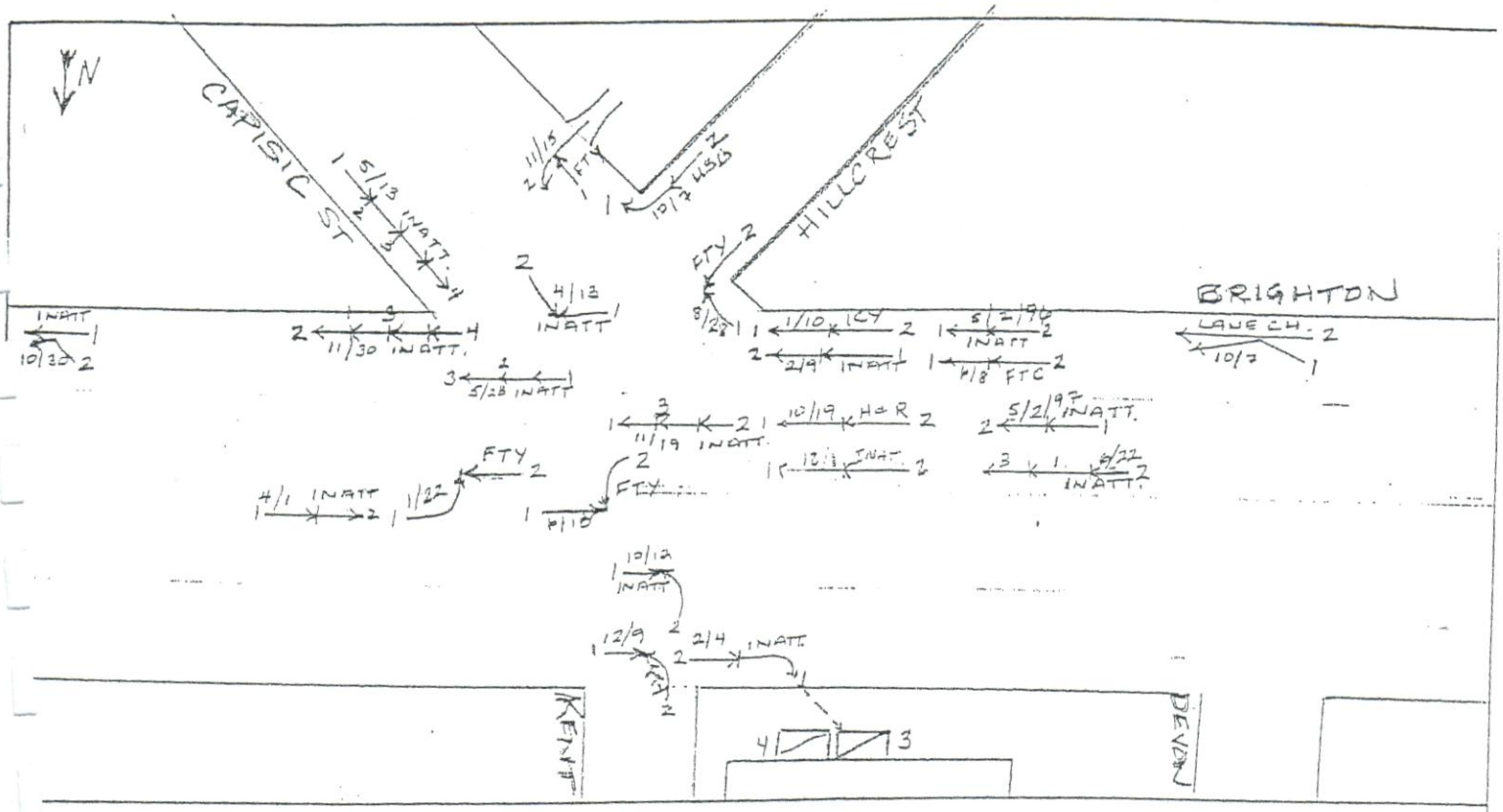
COLLISION DIAGRAM SHEET 1 OF 2

LOCATION BRIGHTON / CAPISIC / KENT / HILLCREST

TOWN PORTLAND NODE NO(S) 3455

YEAR(S) REVIEWED 95-97 DATE PREPARED 1/5/99

DMP




CRITICAL RATE FACTOR EQUIV. PROP. DAMAGE ACC/YEAR ACC/MEV

LIGHT
DAWN (MORNING) 2. DAYLIGHT 3. DUSK (EVENING)
DARK (ST. LIGHTS ON) 5. DARK (NO ST. LIGHTS) 6. DARK (ST. LIGHTS OFF)
OTHER

ROAD SURFACE
DRY 2. WET 3. SNOW/SLUSH-SANDED
ICE/PACKED SNOW-SANDED 5. MUDDY 6. DEBRIS
OILY 8. SNOW/SLUSH-NOT SANDED 9. ICE/PKD. SNOW-NOT SANDED
OTHER

APPARENT CONTRIBUTING FACTORS - HUMAN
NO IMPROPER ACTION 2. FAIL TO YLD. RIGHT OF WAY 3. ILLEGAL UNSAFE SPEED
FOLLOW TOO CLOSE 5. DISREGARD TRAFFIC CONTROL DEVICE
DRIVING LEFT OF CENTER - NO PASSING 7. IMPROPER PASS-OVERTAKING
UNSAFE LANE CHANGE 9. IMP. PARKING START/STOP 10. IMPROPER TURN
UNSAFE BACKING 12. NO SIGNAL OR IMP. SIGNAL 13. IMPEDING TRAFFIC
DRIVER INATTENTION - DISTRACTION 15. DRIVER INEXPERIENCE
PEDEST. VIOLATION ERROR 17. PHYSICAL IMPAIRMENT 18. VISION OBSCURED -
WINDSHIELD GLASS 19. VISION OBSCURED - SUN/HEADLIGHTS
OTHER VISION OBSCUREMENT 30. OTHER HUMAN VIOLATION FACTOR
HIT AND RUN 51. UNKNOWN

VEHICULAR
DEFECTIVE BRAKES 42. DEFECTIVE TIRE/FAILURE 43. DEFECTIVE LIGHTS
DEFECTIVE SUSPENSION 45. DEFECTIVE STEERING 50. OTHER VEHICLE DEFECT
FACTOR 51. UNKNOWN

SYMBOLS

| | | | |
|---|---|---|---|
| ANGLE | PEDESTRIAN (P) | FATAL ACCIDENT | |
| BACKING | REAR END | | |
| FIXED OBJECT | SIDE SWIPE | VEHICLE (MOVING) | |
| HEAD ON | TURNING MOVE | BICYCLE (B) | |
| OVERTURN | CHANGE LANE | ANIMAL (A) | |
| PARKED VEHICLE | OUT OF CONTROL | SLED (S) | |

WEATHER
C = CLEAR F = FOG R = RAIN
SL = SLEET S = SNOW CL = CLOUDY
XW = CROSS WINDS

INJURIES
K = FATAL B = NON-INCAPACITATING
A = INCAPACITATING C = POSSIBLE INJURY

| RT NO. | DATE | TIME | INJURIES K | A | B | C | LIGHT | ROAD SURFACE | ACF | OTHER |
|---|---|---|---|---|---|---|---|---|---|---|
| 335 | 12/1/97 | 2:00 | | | | | 2 | 2 | 1/14 | INATT |
| 225 | 10/19/93 | 16:12 | | | | | 2 | 1 | 1/31 | HIT/RUN |
| 704 | 6/26/97 | 16:35 | / | / | / | C | 2 | 1 | 1/14 | INATT |
| 503 | 5/2/97 | 15:37 | | | | | 2 | 1 | 1/14 | INATT |
| 724 | 1/10/97 | 10:20 | | | | | 2 | 4 | 1/3 | ICY ROAD |
| 55 | 11/22/97 | 16:10 | / | A | B | / | 2 | 1 | 2/1 | FTY |
| 33 | 2/4/97 | 11:00 | | | B | | 2 | 1 | 1/14 1/15 | INATT |

# COLLISION DIAGRAM

SHEET 2 OF 2

LOCATION BRIGHTON / CADISIC / KENT

TOWN PORTLAND NODE NO(S) 3455

YEAR(S) REVIEWED 95 - 97 DATE PREPARED 1/5/99

| REPORT NO. | DATE | TIME | INJURIES K | A | B | C | LIGHT | ROAD SURFACE | ACF | OTHER |
|---|---|---|---|---|---|---|---|---|---|---|
| 45998 | 12/9/97 | 11:50 | | | | C | 2 | 1 | 1/2/20 | F.T.Y. |
| 39802 | 11/19/96 | 14:30 | | | | | 2 | 2 | 1/14 | INATT |
| 39155 | 11/15/96 | 17:51 | | | | | 4 | 1 | 1/2 | F.T.Y |
| 29439 | 8/28/96 | 17:19 | | | | | 2 | 8 | 2/1 | F.T.Y. |
| 21158 | 6/18/96 | 16:55 | | | | | 2 | 1 | 1/2 | F.T.Y |
| 4674 | 10/12/96 | 09:42 | | | | | 2 | 1 | 1/14 | INATT. |
| 6107 | 5/2/96 | 11:50 | | | | C | 2 | 1 | 1/4/14 | INATT |
| 4489 | 4/12/96 | 13:20 | | | | | 2 | 1 | 5/1/14/51 | INATT |
| 3848 | 5/20/96 | 13:00 | | | | | 2 | 1 | 4/1 | F.T. CLOSE |
| 8052 | 2/9/96 | 15:41 | | | | | 2 | 8 | 14/1/15 | INATT. |
| 6894 | 10/30/96 | 10:55 | | | | | 2 | 2 | 1/14/20 | INATT |
| 165 | 4/1/95 | 10:03 | | | | C | 2 | 1 | 1/14 | INATT. |
| 614 | 10/7/95 | 21:48 | | | | | 4 | 8 | 1/11 | UNSAFE TALKING |
| 7628 | 6/8/95 | 17:00 | | | | | 2 | 8 | 1/4/15 | TOO CLOSE |
| 052 | 5/13/95 | 14:45 | | | | C | 2 | 8 | 1/14 | INATT |
| 300 | 11/30/95 | 10:00 | | | | | 2 | 1 | 1/14 | INATT. |
| 540 | 10/7/95 | 21:46 | | | | | 4 | 8 | 1/8 | IMP. LANE CHANGE |

# COLLISION DIAGRAM

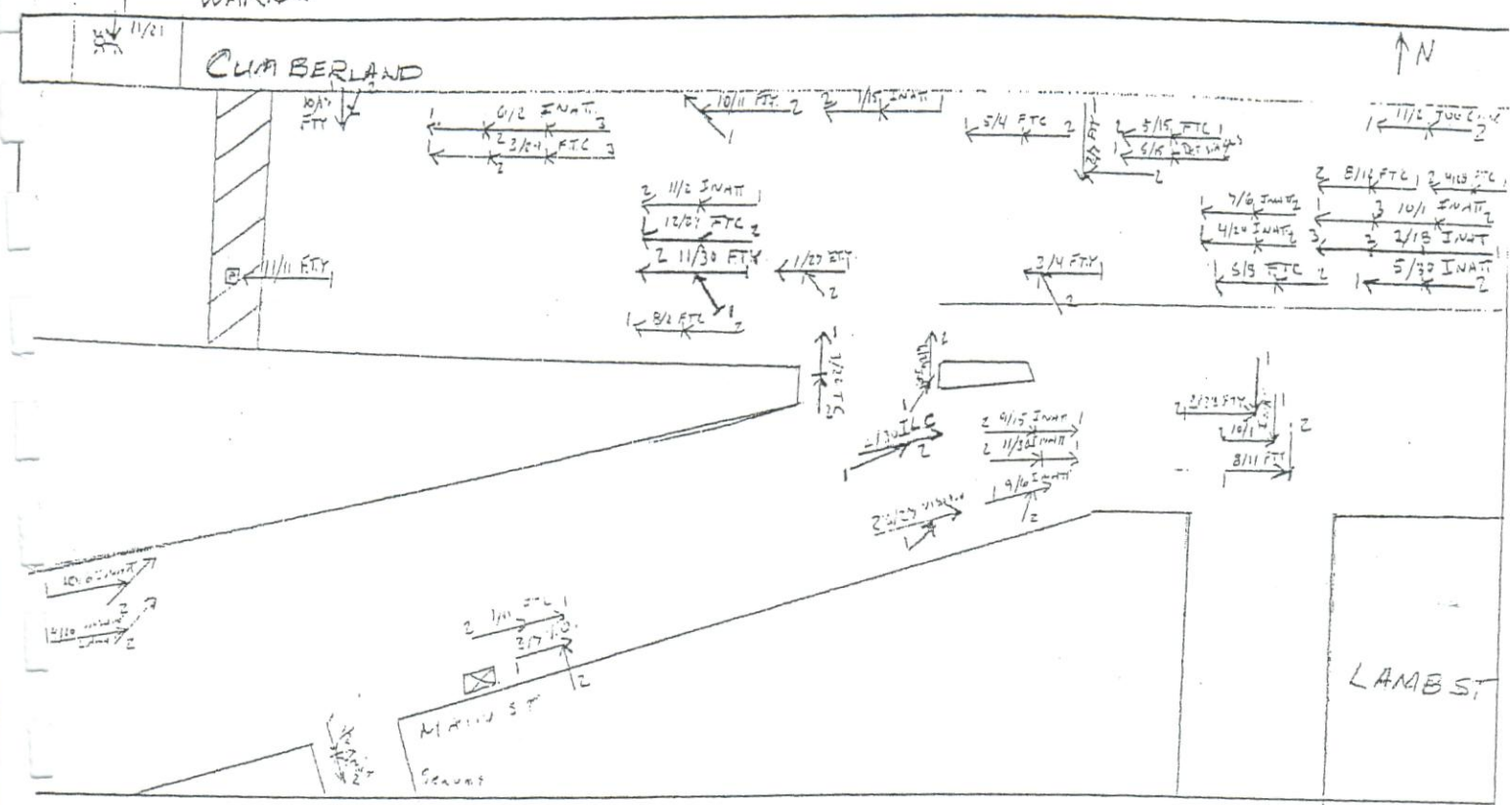
SHEET 1 OF 2

LOCATION MAIN ST / CUMBERLAND

TOWN WESTBROOK NODE NO(S) 5486 + 5487

YEAR(S) REVIEWED 95-97 DATE PREPARED 1/5/99

DSP




RITICAL RATE FACTOR _____ EQUIV. PROP. DAMAGE ACC/YEAR _____ ACC/MEV _____

HT
WN ( MORNING ) 2. DAYLIGHT 3. DUSK ( EVENING )
DARK ( ST. LIGHTS ON ) 5. DARK ( NO ST. LIGHTS ) 6. DARK ( ST. LIGHTS OFF )
OTHER

AD SURFACE
2. WET 3. SNOW/SLUSH-SANDED
C/PACKED SNOW-SANDED 5. MUDDY 6. DEBRIS
Y 8. SNOW/SLUSH-NOT SANDED 9. ICE/PKD. SNOW-NOT SANDED
OTHER

PARENT CONTRIBUTING FACTORS - HUMAN
0. IMPROPER ACTION 2. FAIL TO YLD. RIGHT OF WAY 3. ILLEGAL UNSAFE SPEED
LOW TOO CLOSE 5. DISREGARD TRAFFIC CONTROL DEVICE
ING LEFT OF CENTER - NO PASSING 7. IMPROPER PASS-OVERTAKING
UNSAFE LANE CHANGE 9. IMP. PARKING START/STOP 10. IMPROPER TURN
NSAFE BACKING 12. NO SIGNAL OR IMP. SIGNAL 13. IMPEDING TRAFFIC
RIVER INATTENTION - DISTRACTION 15. DRIVER INEXPERIENCE
EDEST. VIOLATION ERROR 17. PHYSICAL IMPAIRMENT 18. VISION OBSCURED -
HIELD GLASS 19. VISION OBSCURED - SUN/HEADLIGHTS
ER VISION OBSCUREMENT 30. OTHER HUMAN VIOLATION FACTOR
AND RUN 51. UNKNOWN

HICULAR
EFECTIVE BRAKES 42. DEFECTIVE TIRE/FAILURE 43. DEFECTIVE LIGHTS
EFECTIVE SUSPENSION 45. DEFECTIVE STEERING 50. OTHER VEHICLE DEFECT
TOR 51. UNKNOWN

SYMBOLS

| | | | | | |
|---|---|---|---|---|---|
| ANGLE | | PEDESTRIAN | P | FATAL ACCIDENT | |
| BACKING | | REAR END | | | |
| FIXED OBJECT | | SIDE SWIPE | | VEHICLE ( MOVING ) | |
| HEAD ON | | TURNING MOVE | | BICYCLE | B |
| OVERTURN | | CHANGE LANE | | ANIMAL | A |
| PARKED VEHICLE | | OUT OF CONTROL | | SLED | S |

WEATHER
C = CLEAR F = FOG R = RAIN
SL = SLEET S = SNOW CY = CLOUDY
XW = CROSS WINDS

INJURIES
K = FATAL B = NON-INCAPACITATING
A = INCAPACITATING C = POSSIBLE INJURY

| ORT NO. | DATE | TIME | INJURIES K | A | B | C | LIGHT | ROAD SURFACE | ACF | OTHER |
|---|---|---|---|---|---|---|---|---|---|---|
| [illegible] | 11/2, 97 | [illegible] | | | | | 3 | 2 | 1/4 | [illegible] |
| 967 | 3/30/97 | 1520 | | | | | 2 | 1 | 1/14 | INATTENT... |
| 652 | 2/16/97 | 1445 | | | X | X | 4 | 1 | 14/1/1 | INATTENT... |
| 078 | 3/26/97 | 1445 | | | | | 2 | 1 | 1/4 | FOLLOWING ... |
| 101 | 11/30/97 | 2055 | | | | X | 4 | 2 | 2/1 | FAIL TO YIELD |
| 383 | 3/30/97 | 1149 | | | | | 2 | 1 | 8/8 | [illegible] |
| 457 | 11/11/97 | 1532 | | X | | | 2 | 1 | 14/30 | [illegible] |

# COLLISION DIAGRAM

SHEET 2 OF 2

LOCATION MAIN ST / CUMBERLAND

TOWN WESTBROOK

NODE NO(S) 5486 - 5487

YEAR(S) REVIEWED 95 - 97

DATE PREPARED 1/5/99

| REPORT NO. | DATE | TIME | INJURIES K | A | B | C | LIGHT | ROAD SURFACE | ACF | OTHER |
|---|---|---|---|---|---|---|---|---|---|---|
| 19320 | 6/2/97 | 1727 | | | | X | 2 | 1 | 1/11/14 | INATTENTIVE |
| 34532 | 8/11/96 | 1740 | | | | | 2 | 1 | 1/10 | FAILURE TO YIELD |
| 33183 | 10/1/96 | 1445 | | | X | | 2 | 1 | 1/14 | INATTENTIVE |
| 20036 | 5/3/96 | 930 | | | | | 7 | 1 | 1/4 | FOLLOWED CLOSE |
| 13464 | 4/21/96 | 1610 | | | | X | 2 | 1 | 1/14 | INATTENTIVE. |
| 12513 | 3/28/96 | 1530 | | | | X | 2 | 1 | 2/1 | |
| 12451 | 3/27/96 | 655 | | | | | 1 | 1 | 9/1 | |
| 04076 | 1/15/96 | 2030 | | | | | 4 | 1 | 14/1 | |
| C9687 | 3/4/96 | 1130 | | | | | 2 | 1 | 1/2 | F.T.Y. |
| 20829 | 5/4/96 | 940 | | | | | 2 | 1 | 9/4 | |
| 22116 | 6/26/96 | 1600 | | | | | 2 | 1 | 7/1 | |
| 45667 | 12/30/96 | 1439 | | X | | | 2 | 2 | 1/6 | |
| 35297 | 10/17/96 | 1559 | | | | | 2 | 1 | 2/2 | FTY |
| 43065 | 11/21/96 | 1635 | | | | | 4 | 1 | 1 | DEER |
| 2677 | 3/29/96 | 1548 | | | X | X | 2 | 1 | 1/1/14 | |
| 38828 | 8/17/95 | 1555 | | | | | 2 | 2 | 1/20 | |
| 1908 | 1/11/95 | 1655 | | | | X | 4 | 1 | 1/4 | |
| 35252 | 9/12/95 | 1725 | | | | X | 2 | 1 | 4/1 | |
| 1036 | 7/6/95 | 620 | | | | | 2 | 1 | 1/14 | |
| 157 | 5/1?/95 | 1555 | | | | X | 7 | 2 | 4/1 | |
| 35155 | 5/15/95 | 1215 | | | | X | 2 | 2 | 1/41 | |
| 35255 | 4/29/95 | 1945 | | | X | | 2 | 2 | 4/1 | |
| 1175 | 2/7/95 | 1130 | | | | | 2 | 1 | 2/1 | |
| 0552 | 1/27/95 | 1000 | | | | | 2 | 1 | 1/2 | |
| 136 | 9/15/95 | 950 | | | | | 2 | 1 | 1/9,14 | |
| 37766 | 11/3/95 | 1415 | | | | | 2 | 2 | 1/14 | |
| 0341 | 9/15/95 | 1550 | | | | | 2 | 1 | 1/14 | |
| 30332 | 10/11/95 | 715 | | | | | 2 | 1 | 1/2 | |
| 0594 | 11/3/95 | 1440 | | | | | 2 | 2 | 14/1 | |
| 0345 | 9/?/95 | 1320 | | | X | | 2 | 1 | 1/4 | |
| 3?5 | 1/?/95 | 1220 | | | | | 2 | 9 | 1/14 | |
| 057 | 10/?/95 | 1210 | | | | | 2 | 2 | 1/14 | |
| 322 | 4/?/95 | 1330 | | | | | 2 | 1 | 1/8 | |

# COLLISION DIAGRAM

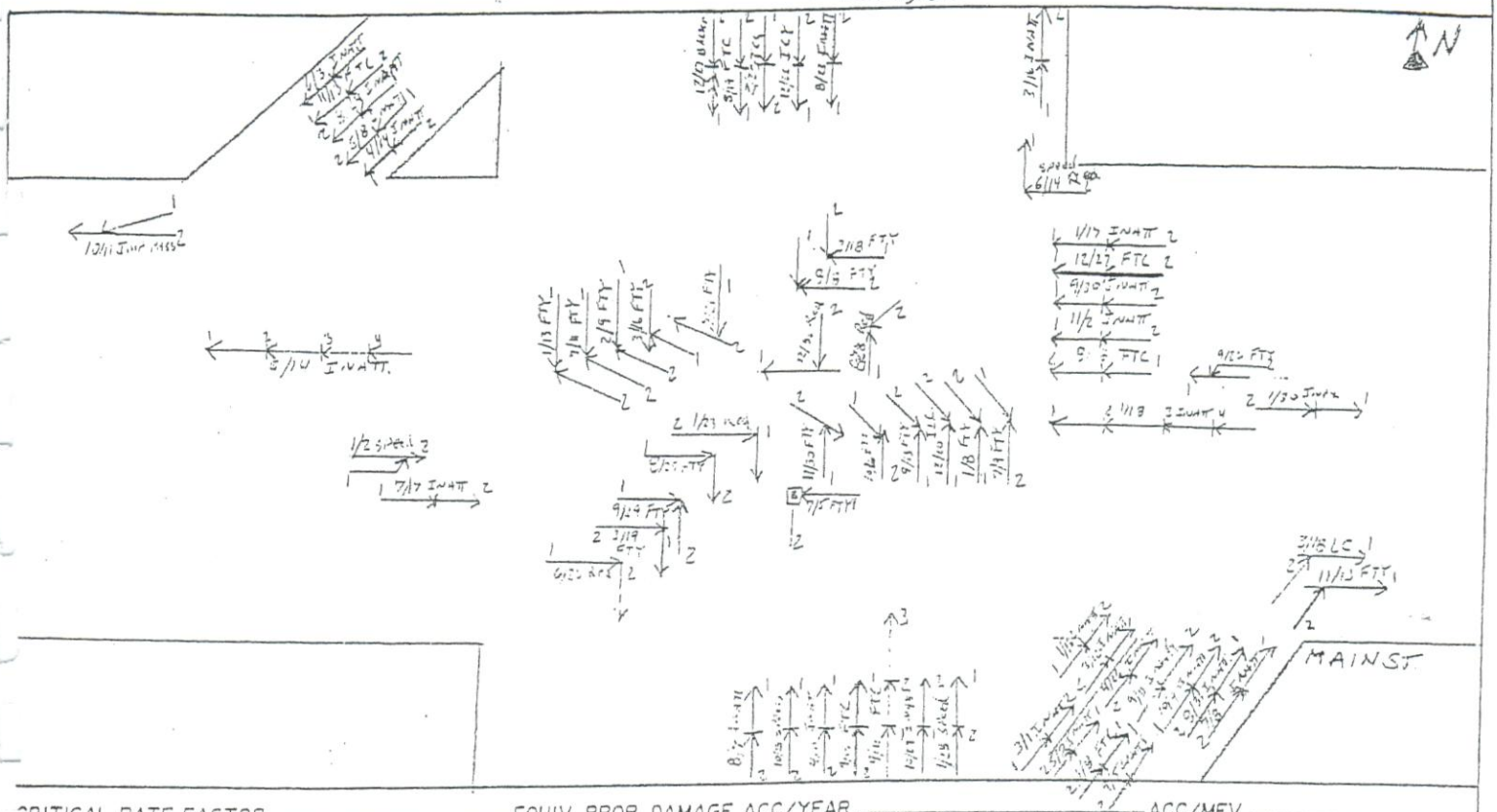
SHEET 1 OF 2

LOCATION MAIN ST / LARRABEE

TOWN WESTBROOK NODE NO(S) 5476

YEAR(S) REVIEWED 95, 96 97 DATE PREPARED 1/5/99

OF DEIR




CRITICAL RATE FACTOR _____ EQUIV. PROP. DAMAGE ACC/YEAR _____ ACC/MEV _____

LIGHT
1. DAWN ( MORNING )
2. DAYLIGHT
3. DUSK ( EVENING )
4. DARK ( ST. LIGHTS ON )
5. DARK ( NO ST. LIGHTS )
6. DARK ( ST. LIGHTS OFF )
7. OTHER

ROAD SURFACE
1. DRY
2. WET
3. SNOW/SLUSH-SANDED
4. ICE/PACKED SNOW-SANDED
5. MUDDY
6. DEBRIS
7. OILY
8. SNOW/SLUSH-NOT SANDED
9. ICE/PKD. SNOW-NOT SANDED
0. OTHER

APPARENT CONTRIBUTING FACTORS - HUMAN
01. NO IMPROPER ACTION
02. FAIL TO YLD. RIGHT OF WAY
03. ILLEGAL UNSAFE SPEED
04. FOLLOW TOO CLOSE
05. DISREGARD TRAFFIC CONTROL DEVICE
06. DRIVING LEFT OF CENTER - NO PASSING
07. IMPROPER PASS-OVERTAKING
08. IMP. UNSAFE LANE CHANGE
09. IMP. PARKING START/STOP
10. IMPROPER TURN
11. UNSAFE BACKING
12. NO SIGNAL OR IMP. SIGNAL
13. IMPEDING TRAFFIC
14. DRIVER INATTENTION - DISTRACTION
15. DRIVER INEXPERIENCE
16. PEDEST. VIOLATION ERROR
17. PHYSICAL IMPAIRMENT
18. VISION OBSCURED - WINDSHIELD GLASS
19. VISION OBSCURED - SUN/HEADLIGHTS
20. OTHER VISION OBSCUREMENT
30. OTHER HUMAN VIOLATION FACTOR
31. HIT AND RUN
UNKNOWN

VEHICULAR
41. DEFECTIVE BRAKES
42. DEFECTIVE TIRE/FAILURE
43. DEFECTIVE LIGHTS
44. DEFECTIVE SUSPENSION FACTOR
45. DEFECTIVE STEERING
50. OTHER VEHICLE DEFECT
51. UNKNOWN

SYMBOLS

| | | | |
|---|---|---|---|
| ANGLE | PEDESTRIAN | P | FATAL ACCIDENT |
| BACKING | REAR END | | |
| FIXED OBJECT | SIDE SWIPE | | VEHICLE ( MOVING ) |
| HEAD ON | TURNING MOVE | | BICYCLE — B |
| OVERTURN | CHANGE LANE | | ANIMAL — A |
| PARKED VEHICLE | OUT OF CONTROL | | SLED — S |

WEATHER
C = CLEAR
F = FOG
R = RAIN
SL = SLEET
S = SNOW
CL = CLOUDY
XW = CROSS WINDS

INJURIES
K = FATAL
B = NON-INCAPACITATING
A = INCAPACITATING
C = POSSIBLE INJURY

| REPORT NO. | DATE | TIME | INJURIES K | A | B | C | LIGHT | ROAD SURFACE | ACF | OTHER |
|---|---|---|---|---|---|---|---|---|---|---|
| 4349 | 12/30/95 | 2330 | | | | X | 4 | 1 | 1/5 | R-on R... |
| 03607 | 1/23/95 | 1421 | | | X | | 2 | 1 | 5/1 | Rear L... |
| 10034 | 2/27/95 | 1335 | | | | | 2 | 9 | 1/1 | Snow/... |
| 2421 | 4/14/95 | 1145 | | | | X | 2 | 1 | 1/14 | Inattent... |
| 13371 | 4/26/95 | 1005 | | | | X | 2 | 1 | 1/14 | Inattent... |
| 14463 | 5/9/95 | 1105 | | | | X | 4 | 1 | 17,14/1 | Inattent... |
| 22726 | 7/21/95 | 1645 | | | | | 2 | 1 | 3,3/1 | FTY |

# COLLISION DIAGRAM



LOCATION MAIN ST / LARRABEE

TOWN WESTBROOK NODE NO(S) 5476

YEAR(S) REVIEWED 95, 96 DATE PREPARED 1/5/99

BY DEB

| REPORT NO. | DATE | TIME | INJURIES K | A | B | C | LIGHT | ROAD SURFACE | ACF | OTHER |
|---|---|---|---|---|---|---|---|---|---|---|
| 24611 | 8/7/95 | 1230 | | | | X | 2 | 1 | 1/14 | IMPT |
| 24720 | 8/8/95 | 0015 | | | | | 4 | 1 | 1/2 | FTY |
| 26013 | 8/19/95 | 1015 | | | | X | 2 | 1 | 4/30 | [illegible] |
| 26771 | 9/25/95 | 2325 | | X | | X | 6 | 1 | 1/2 | FTY |
| 27166 | 9/29/95 | 1100 | | | | X | 2 | 1 | 14/1 | IMPT |
| 28592 | 9/11/95 | 1700 | | | | | 2 | 1 | 14/1 | IMPT |
| 31812 | 10/4/95 | 1500 | | | | | 2 | 1 | 14/1 | IMPT |
| 32839 | 10/[illegible]/95 | 1835 | | | | | 3 | 1 | 7/1 | [illegible] |
| 34347 | 10/23/95 | 1432 | | | X | | 2 | 2 | 1/3 | Speed |
| 38768 | 11/30/95 | 1225 | | | X | | 2 | 1 | 1/10 | IMPT/REV |
| 315168 | 10/16/96 | 1704 | | | X | | 2 | 1 | 14/1 | FTY |
| 41062 | 11/12/96 | 920 | | | | X | 2 | 1 | 1/17 | IMPT/REV |
| 14219 | 8/16/96 | 825 | | | | | 1 | 2 | 14/1 | IMPT |
| 30937 | 9/3/96 | 210 | | | | X | 2 | 2 | 1/10 | IMPT/REV |
| 33150 | 9/30/96 | 17[illegible] | | | | | 2 | 1 | 1/14 | IMPT |
| 45351 | 12/[illegible]/96 | 2047 | | | | | 4 | 2 | 1/1 | ICY |
| 45045 | 12/[illegible]/96 | [illegible]2 | | | | | 2 | 1 | 3/1 | IMP LANE [illegible] |
| 32972 | 9/29/96 | 600 | | | | | 1 | 1 | 1/2.5 | FTY |
| 30938 | 9/13/96 | 1300 | | | | | 2 | 2 | 1/4 | FOLLOW CLOSE |
| 29752 | 8/31/96 | 930 | | | | | 2 | 1 | 1/14 | IMPT |
| 29397 | 8/[illegible]/96 | 1735 | | | | X | 2 | 1 | [illegible]/11 | IMPT/REV |
| 28920 | 8/23/96 | 915 | | | | | 2 | 1 | 1/14 | IMPT |
| 3[illegible]74 | 2/[illegible]/96 | 1015 | | | | | 2 | 1 | 4/1 | FOLLOW CLOSE |
| 7793 | 7/2/96 | 1900 | | | | | 2 | 2 | 1/4 | IMPT |
| 1612 | 3/16/96 | 1722 | | | | | 2 | 1 | 10/3/1 | IMP/REV |
| 4221 | 4/11/96 | 2[illegible]5 | | | | X | 2 | 2 | 4/1 | FTC |
| 0034 | 5/2/96 | 1700 | | | | | 2 | 1 | 14/1 | IMPT |
| 2046 | 5/[illegible]/96 | 1252 | | | | X | 2 | 1 | 1/1/1/14 | IMPT |
| 6066 | 3/[illegible]/96 | 1720 | | | | X | 2 | 1 | 4/14 | IMPT |
| 1788 | 3/[illegible]/96 | 2140 | | | | X | 4 | 1 | 2/3/1 | FTY |
| 4304 | 11/[illegible]/96 | 1[illegible]15 | | | | | 4 | 2 | 3/1 | SPEED |
| 4035 | 1/2/96 | 1545 | | | | | 4 | 8 | 1/2 | ETC |
| 4504 | 1/30/96 | 830 | | | | X | 2 | 1 | 1/15 | [illegible] |
| 2053 | 2/[illegible]/96 | 1215 | | | | | 2 | 1 | 1/2 | FTY |

# COLLISION DIAGRAM

SHEET 3 OF 3

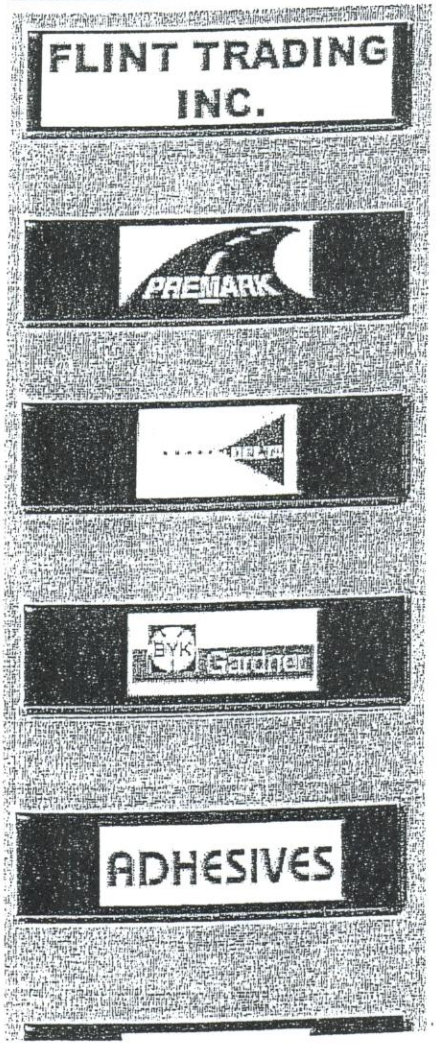
LOCATION MAIN ST / LARRABEE

TOWN WESTBROOK NODE NO(S) 5476

YEAR(S) REVIEWED 95, 96 DATE PREPARED 1/5/98

BY D.E.L.

| REPORT NO. | DATE | TIME | INJURIES K | A | B | C | LIGHT | ROAD SURFACE | ACF | OTHER |
|---|---|---|---|---|---|---|---|---|---|---|
| 20054 | 5/20/96 | 1535 | | | | X | 2 | 1 | 1/14 | INATT |
| 38047 | 10/29/97 | 1710 | | | | | 3 | 1 | 14/1 | INATT |
| 40170 | 11/13/97 | 1326 | | | | | 2 | 1 | 1/4 | FTC |
| 40171 | 11/13/97 | 1715 | | | | | 4 | 1 | 1/2 | FTY |
| 39590 | 11/8/97 | 1030 | | | | X | 1 | 1 | 1/2 | FTC |
| 40027 | 12/27/97 | 1933 | | | | | 4 | 1 | 1/4,15 | FTC |
| 49303 | 12/27/97 | 1806 | | | | | 4 | 1 | 11,14/1 | UNSAFE SPEED |
| 33695 | 9/26/97 | 1522 | | | | | 2 | 1 | 1/2,14 | FTY |
| 31280 | 9/5/97 | 1130 | | | | | 2 | 1 | 1/14 | INATT |
| 25054 | 7/17/97 | 1600 | | | | | 2 | 1 | 14/1 | INATT |
| 24710 | 7/9/97 | 2105 | | X | | | 4 | 2 | 2,15/1 | FTY |
| 21225 | 6/23/97 | 835 | | | | | 2 | 1 | 1/5 | Red Light |
| 24461 | 7/8/97 | 641 | | | | | 2 | 1 | 1/2 | FTY |
| 23732 | 7/5/97 | 1615 | | | | X | 2 | 1 | 1/16 | Care Ft. |
| 19141 | 6/3/97 | 1541 | | | | X | 2 | 1 | 1/14 | INATT |
| 20743 | 6/14/97 | 2208 | | | | X | 4 | 1 | 20,4/20,3 | Speed Rel |
| 11393 | 3/19/97 | 1620 | | | | | 2 | 1 | 1/3,15 | UNSAFE SPEED |
| 11392 | 3/13/97 | 525 | | | | X | 1 | 1 | 1,2 | FTY |
| 10653 | 3/12/97 | 1405 | | | | | 2 | 1 | 1/14 | INATT |
| 09349 | 3/1/97 | 2000 | | | X | | 2 | 2 | 14/1 | INATT |
| 2603 | 1/17/97 | 1155 | | | | | 2 | 1 | 1/16 | INATT |
| 02906 | 1/13/97 | 1501 | | | | X | 2 | 1 | 1/1/1/14 | INATT |
| 02390 | 1/16/97 | 920 | | | | | 2 | 2 | 14/1 | INATT |
| 02039 | 1/3/97 | 1235 | | | | | 2 | 1 | 1/2 | FTY |
| 03786 | 1/23/97 | 745 | | | | | 2 | 4 | 1/3 | Speed |


# PREMARK®

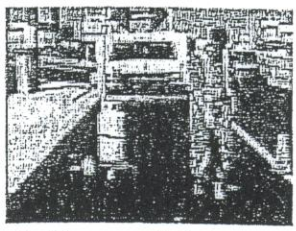
## PREFORMED THERMOPLASTIC PAVEMENT MARKINGS

[PREMARK® 20/20 FLEX]

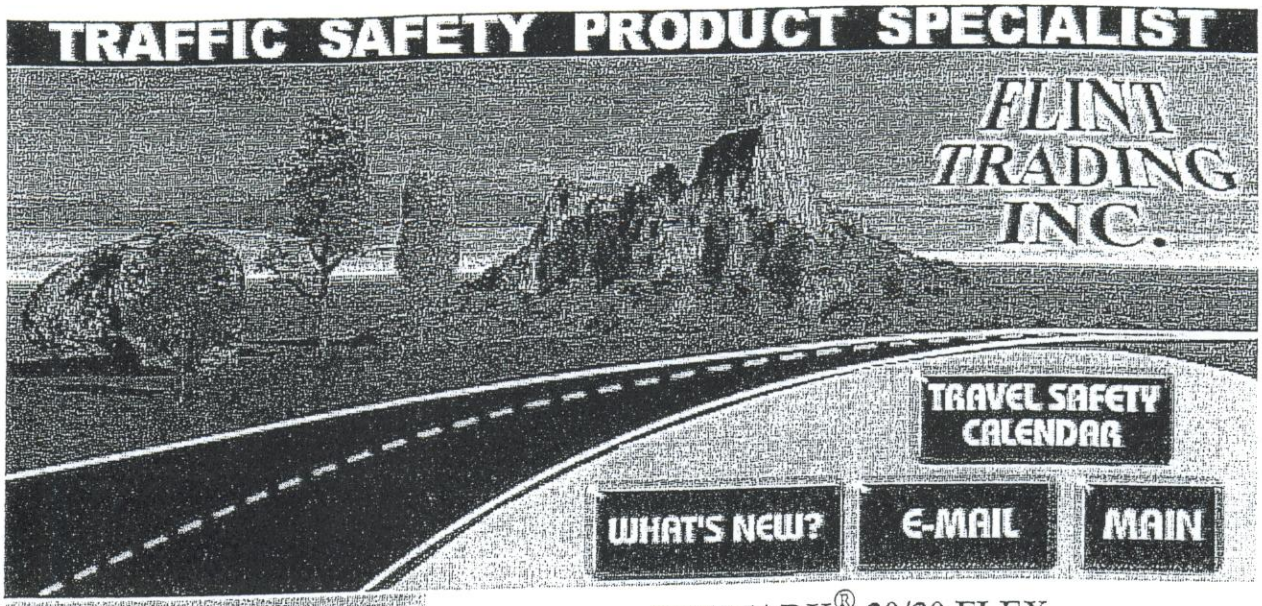
PREMARK® high performance retroreflective pavement markings are engineered for pedestrian, bicyclist, motorist and road worker safety. Unique composition and application features ensure:

## NO MINIMUM ROAD OR AIR TEMPERATURE REQUIREMENTS

1. Clean Surface



2. Remove Moisture




FLINT TRADING INC.

PREMARK

DELTA

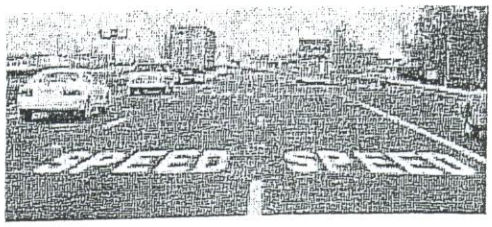
BYK Gardner

ADHESIVES

FLINT 2000

# PREMARK® 20/20 FLEX

## HIGH PERFORMANCE PREFORMED THERMOPLASTIC




PREMARK® 20/20 FLEX high performance retroreflective pavement markings are engineered for enhanced visibility, durability and flexibility. In keeping with the standard set by PREMARK® in 1980, PEMARK® 20/20 FLEX has no minimum road or air temperature requirements and is designed for use in intersections where maximum wear and tear is present.

### Ensures Enhanced Visibility

With high initial and retained retroreflectivity, PREMARK® 20/20 FLEX provides enhanced brightness and better visibility.

PREMARK® 20/20 FLEX's factory applied surface beads combine the visibility benefits of "bigger" beads with the durability of "smaller" beads. PREMARK® 20/20 FLEX also contains 30% glass beads by weight to provide retroreflectivity throughout its service life.