1836-A-1
669-725 Brighton Ave.
Glenridge Condos.
~~Dartmouth Co~~

John L. Murphy • Civil Engineer

BOX 200, R. F. D. 1
WEST BALDWIN, MAINE 04091
Telephone 207-625-8222

May 7, 1984

Traffic Impact
110 Apartment Complex
Brighton Avenue
Portland, Maine

Introduction

Dartmouth Realty Company of Portland, Maine has proposed the installation of up to 110 apartment units on Brighton Avenue between Jeanne Street and Wayside Drive. During March and April of 1984 traffic data was collected on roadways surrounding and abutting the proposed project. The traffic count summary sheets are attached for further analysis by the City, if desired. The data collected was as follows:

1. Twenty-four hour weekday traffic counts at Brighton Avenue and Jeanne Street, Brighton Avenue and Wayside Road, and Ludlow Street at Jeanne Street. These counts were taken twice, first in March and again in April.

2. Spot speed study on Brighton Avenue in front of the proposed site.

3. Accidents on Jeanne Street and on Brighton Avenue adjacent to the site for 1981 through February of 1984.

4. Sight distance measurements for intersection sight distance on Brighton Avenue and Jeanne Street.

Analysis of Data

The traffic volume data (attached) showed that Jeanne Street varied in 24 hour volume from 474 to 515 on the Brighton Avenue end and from 485 to 531 on the Ludlow Street end. Ludlow Street east of Jeanne Street varied from 3024 to 3076 indicating a function as a collector type facility for the surrounding residential area. Wayside Drive varied from 879 vehicles per day to 950 vehicles per day. The four 24 hour weekday counts on Brighton Avenue in front of the site varied from a low of 18,816 to a high of 20,942 to average 19,494 vehicles during the 24 hour weekday. Fuller Street at Ludlow Street was counted only once, resulting in 424 vehicles per 24 hour weekday.

Thus the 24 hour weekday volumes show Ludlow Street as a collector with Brighton Avenue as a major artery. Wayside Drive and Jeanne Street function as local streets serving residential neighborhoods and also connecting the major artery to the Ludlow Street collector. The volumes further show that Wayside Drive on the Brighton Avenue end has 1.85 times as much traffic as Jeanne Street. (It also serves a larger residential area.) Yet Wayside Drive at Brighton Avenue functions without any measurable level of congestion or undue delay.

The attached spot speed study conducted using a radar device indicated that the mean speed on Brighton Avenue in front of the proposed project was 39.35 MPH eastbound and 39.66 MPH westbound. The 85% operating speed was 41.8 MPH eastbound and 41.6 MPH westbound. The 85% speeds are the indication of what the reasonable driver believes to be a safe speed in the area. The 85% speeds are thus used in determination of sight distance requirements, posted speed limits, and warrants for traffic signals. The 1982 edition of the Transportation Engineering Handbook published by the Institute of Transportation Engineers, regarding required safe intersection sight distance, specifies a requirement of 400 feet for 40 miles per hour and 500 feet for 50 miles per hour. Sight distance from the proposed driveway on Brighton Avenue was measured as in excess of 610 feet along the critical approach on the east. This distance is more than adequate for 42 miles per hour determined as the 85% speed.

The 1978 Manual on Uniform Traffic Control Devices has specified warrants for installation of traffic signals. The volume warrants are reduced to 70% of required if the operating speed measured is over 40 MPH. This is the situation for the proposed project. Warrant #2, Interruption of Continuous Traffic, was investigated using 70% of required volume. This meant that the warrant would be satisfied if, for each of any eight hours of an average day, 630 vehicles exist on the total of both approaches of Brighton Avenue and 53 vehicles exist on the minor street approach. The 630 vehicle requirement is obviously satisfied on Brighton Avenue, thus only the 53 vehicle per hour requirement was projected under the two extreme potential situations as follows:

1. Access to Brighton Avenue only with 110 apartment units.

2. Access to Brighton Avenue and Jeanne Street with all Jeanne Street traffic entering and exiting Brighton Avenue through the proposed project access point on Brighton Avenue and all project approach traffic using the Brighton Avenue entrance.

Based upon the maximum of 9.2 trips per day per unit of apartments as specified in the 1982 Trip Generation Manual published by the Institute of Transportation Engineers, the project of 110 units would produce 1012 trips per day. The existing counts of Jeanne Street traffic during March of 1984 were then divided into a percentage of daily traffic per each hour at the Brighton Avenue end. The 1012 trips per day were thus divided using these percentages of existing Jeanne Street flow to determine hourly volumes. The projected approach volumes were derived using a 50% split of the newly generated traffic to develop a worst case situation for use in Warrant #2 analysis. The Jeanne Street two-way volumes actually counted were used in projected volume determinations.

A table showing the analysis by hourly volume is attached. The result of the analysis is that traffic signals are not warranted under Warrant #2 even if Jeanne Street traffic combines with the project traffic in one access to Brighton Avenue and all traffic from the project uses the Brighton Avenue entrance. This analysis is a worst case situation because no approach traffic is assigned to Jeanne Street and this obviously will not be the case.

Thus the result of this phase of analysis is that the project will not generate enough traffic to warrant signals at a Brighton Avenue entrance.

The final phase of study was the existing accidents on Brighton Avenue and Jeanne Street in the vicinity of the project. Portland Police Department records were reviewed for the period from January 1, 1981 through February 29, 1984. This analysis indicated that two fatal accidents had occurred at Brighton Avenue and Jeanne Street. Both accidents involved eastbound vehicles. In one case, the fatality was a pedestrian, in the other it was a moped operator. No apparent patterns existed at any specific location to a degree that indicated any existing safety problem. The accident total breakdowns for the 3 year, 2 month period are as follows:

1. Brighton Avenue at Jeanne Street (node) - 6 accidents.
2. Brighton Avenue at Wayside Drive (node) - 7 accidents.
3. Brighton Avenue between Wayside and Jeanne (link) - 11 accidents.
4. Jeanne Street between Brighton Avenue and Ludlow St. - 3 accidents.

The Dartmouth Company

489 Congress St.
P.O. Box 4570
Portland, Maine 04112
(207) 772-2794

June 19, 1985

Ms. Barbara Barhydt, Planner
City of Portland
389 Congress Street
Portland, ME 04101

Re: Glenridge Condominium project

Dear Barbara:

As requested, enclosed is a copy of the revised utility plan of the Glenridge project showing the final location of the street lights along Jeanne Street. It is our understanding that these six street lights will be leased to the City of Portland by Central Maine Power Company. The Dartmouth Company will provide the poles and bases conforming to the specifications of the City of Portland for these street lights. All of these details have been covered with Mr. William Bray of the traffic division and Mr. Phil Brunell of Central Maine Power Company.

Should you have any further questions concerning this plan, please contact me at your convenience.

Sincerely yours,

Richard L. Knowlton

Richard Knowlton
Development and Construction Coordinator

enclosure

RK/kc

Conclusions

1. No measurable congestion problems will result from additional traffic to be generated by the project.

2. Project traffic does not warrant traffic signals.

3. There is no existing safety problem in the area which is apparent from existing accident data.

4. Sight distance on Brighton Avenue from the proposed driveway is adequate.

5. A second project driveway is recommended on Jeanne Street for emergency access and better distribution of project traffic to desired destinations on the existing public roadway system. Even if 40% of all the anticipated project traffic is added to the 531 counted vehicles on Jeanne Street, the total volume of 531 + 405 = 936 vehicles per day is approximately the same as the existing 950 vehicles per day counted on Wayside Drive.

Warrant #2 Analysis
110 Units X 9.2 Trips/day = 1012 Trips/day

Time	Brighton Westbound		Brighton Eastbound		Hourly %	50% Project Traffic	50% Jeanne Street	50% Jeanne + Project
	3/84	4/84	3/84	4/84				
12 - 1	111	76	49	58	1%	6	1	7
1 - 2	77	53	51	40	0	0	0	0
2 - 3	25	18	22	23	0	0	0	0
3 - 4	19	15	18	19	1%	6	2	8
4 - 5	29	23	21	30	1%	6	2	8
5 - 6	59	52	76	91	1%	6	4	10
6 - 7	237	205	258	314	6%	30	15	45
7 - 8	488	445	776	774	4%	20	11	31
8 - 9	458	482	695	699	5%	25	13	38
9 -10	462	497	510	612	4%	20	11	31
10 -11	539	533	573	610	6%	30	15	45
11 -12	596	556	588	636	8%	41	22	63
12 - 1	642	661	617	702	6%	30	16	46
1 - 2	645	593	573	558	5%	25	14	39
2 - 3	744	635	655	691	9%	46	24	70
3 - 4	805	744	648	698	7%	35	17	52
4 - 5	1049	1006	672	639	10%	51	27	78
5 - 6	774	866	587	602	7%	35	19	54
6 - 7	539	547	514	632	5%	25	14	39
7 - 8	404	374	357	456	4%	20	12	32
8 - 9	335	364	297	285	4%	20	11	31
9 -10	347	355	268	259	2%	10	6	16
10 -11	178	179	156	191	3%	15	7	22
11 -12	137	133	112	134	1%	6	3	9
					100%	508	266	774

INSTRUCTIONS

SITE LOCATION APPLICATION

1. *Fill out the application completely. Incomplete applications will be returned.*

2. Publish the public NOTICE once in a newspaper circulated in the area where the project is located. (A form is provided for this and is attached to the application.) The notice should appear in the paper during the week the application is filed with this department.

3. Send a copy of the NOTICE form attached to this application to the owners of property abutting the project. Their names and addresses can be obtained from town tax maps or local public officials. Abutters should receive notice during the week the application is filed with this department.

4. Send a copy of the NOTICE form attached to this application and a duplicate of the application to the Municipal Office, or if the project is located in an unorganized area send the duplicate to the Office of the County Commissioners.
   See EXHIBIT B
5. Attach a complete copy of deed, lease, purchase option, or other evidence of your title, right or interest in the property.
   See EXHIBIT C
6. If any site plans, drawings, soils maps, or other data are on sheets larger than 8½" x 11", 12 copies must be submitted. If information is on 8½" x 11" sheets or smaller, only one copy is needed providing it is of reproducible quality. ALL PLANS SHALL BE FOLDED TO SIZE 8½" x 11".
   See SITE PLAN
7. Send the application along with all attachments to: The Department of Environmental Protection, Bureau of Land Quality Control, State House, Station 17, Augusta, Maine 04333.

NOTE

Be sure to send your application in well in advance of the date on which you plan to start the project. Processing may require up to 45 days.

The Department does not require that the application or plan be prepared by professionals. However, past experience indicates that professional assistance is helpful and in many instances this advice can be used to overcome site limitations through proper design.

1. State below the objective of the project as proposed, including, as appropriate, number of lots, size of buildings, parking lots, etc.

Applicant proposes to build a 100 unit apartment complex to be known as GLENRIDGE, on a 20.5 Acre site on Brighton Avenue in Portland. See EXHIBIT D for a description of the development. See EXHIBIT E for a description of the Applicant.

2. If the project is an expansion of an existing project or facilities, submit a brief summary of all pertinent aspects of the existing facilities and/or the larger project. (For subdivisions a copy of municipality approved plans.)

NA

3. a. State approximate date for start of construction Fall 1984 (detention basin)

   b. State approximate date for completion of construction Spring 1986

4. a. How many acres included in this project? 20.5

   b. How many total acres do you own?

   c. How many total acres do you lease?

   d. How many total acres are under option? 20.5

   e. Other (explain)

5. What is the existing use of the site (farmland, wood lot, commercial, etc.)? Former site of the Lucas Brickyard (early 1900's); now overgrown vacant lot.

6. a. State below the estimated total cost of the project, as proposed in this application, and itemize major categories, including estimated costs of activities to be devoted to minimizing or preventing adverse effects on the surrounding environment during construction and/or operation of this project.

Legal	$20,000	Water Supply	$48,000
Surveys	$10,000	Landscaping	$88,400
Roads	$132,000	Erosion Control	$5,000
Sewers	$216,000	Other	$778,327
Structures	$3,023,000	TOTAL	$4,320,727

6. b. ATTACH A STATEMENT AS TO HOW YOU PLAN TO FINANCE THE PROJECT. Provide evidence of your financial capacity to finance this project. If the costs involve more than normal legal and surveying fees, submit one of the following:

   i. A letter from a financial institution, governmental agency, or other funding agency which states a funding commitment or an "intent to fund" specifying the amount of funds and the uses for which the funds may be utilized; or

   See EXHIBIT F

ii. The most recent corporate annual financial report and any supporting material indicating the availability of sufficient funds to finance the development; or

iii. Copies of financial statements or other evidence indicating availability of funds when the developer will personally finance the development.

7. Describe below the surface drainage characteristics of the site.

Does it abut or include a water body NO

What is the water body (name)

Nature of shoreline (rocky, sandy, wooded)

Will changes in surface drainage affect other properties (explain) NO. See EXHIBIT G, STORM-WATER MANAGEMENT REPORT, GLENRIDGE PROJECT, BRIGHTON AVE. PORTLAND ME. and supplemental information from City of Portland.

How close to the site is the nearest body of water The upper reach of Capisic Pond is approximately 800 feet south of the project site, across Brighton Avenue.

General slope of ground in area (flat, steep, percent slope, etc.) Rel. flat; several pronounced ridges on northern boundary; several shelves remnants of brickyard operations

Any portion of site subject of flooding or ponding (describe) Heavy storms result in localized ponding near Wayside Drive in vicinity of existing catch basin. Largely the result of improper grading and poor condition of inlet structure.

8. Check how water is to be supplied to the site:

_____ Individual wells (by lot owners)

_____ Central well(s) with distribution lines (by applicant)

XXX Off-site utility company or public agency

_____ Other (explain)

9. If other than a subdivision, indicate the total water usage anticipated (gallons per day): 18-30,000 GPD

10. If water is to be supplied by a method other than individual wells, state the name and address of the person or agency responsible for the quality and maintenance of such supply and the installation schedule. Provide a letter assuring that proper service, is, or will be, available. PORTLAND WATER DISTRICT, 225 Douglass Street, P.O.Box 3553, Portland, ME. See EXHIBIT H

11. If the water supply is to come from a well(s), attach data establishing that a sufficient quantity and quality of water is available for the estimated needs. (For example, a letter from a local well driller or data from a test well).
NA

12. Check how sewage is to be disposed of:

_____ Individual septic tanks (by lot owners)

_____ Central on-site disposal with collection lines (by applicant)

XXX Off-site utility company or public agency

_____ Other

13. If sewage disposal is to be provided by a method other than individual septic tanks, state the name and address of the person or agency responsible for the maintenance of such system and the installation schedule. Provide a letter assuring that proper service is, or will be, available. William B. Goodwin, P.E., Department of Public Works, 389 Congress St. Porland, ME 04101. See EXHIBIT I.

14. a. If the proposed project will discharge any liquid waste from any commercial or industrial processing, or any sewage, into any stream, river, pond, lake or other body of water, including tidal waters, provide the following information:

BODY OF WATER	TYPE OF DISCHARGE	QUANTITY (Gal/Day)
NA		

b. Has a waste discharge license been applied for from the Department of Environmental Protection, Bureau of Water Quality Control? Check One: YES ☐ NO ☐

15. State below the present condition of the public access routes to the proposed project, including the type, condition, and width of road surface and number of travel lanes.

a. Road Name BRIGHTON AVENUE

b. Type and Condition BITUMINOUS CONCRETE: GOOD CONDITION

c. Width of Travel Surface (excluding road shoulders) 44 feet, curb to curb

d. Width of Road Shoulder -

e. Number of Lanes Four lanes

16. State below the nature of the interior roads and parking system within the proposed project, including the type and width of road surface, length of road, number of lanes, parking areas and capacity, the width of right-of-way, and the estimated completion schedule. If roads are to be built "to town standards," attach a copy of these standards. Plans must include a typical cross-section of roads proposed (see pg. 9 for example).

a. Name of Road GLENRIDGE DRIVE

b. Type Bituminous Concrete

c. Width of Travel Surface (excluding road shoulders) 24 feet paved width

d. Width of Road Shoulders 2 feet on each side

e. Length of Roads 595 feet

f. Parking Lot Size 9' x 19' spaces

g. Number of Spaces 161 total

h. Width of Right-of-Way NA (private road)

See EXHIBIT J: Cross Section

17. Attach statement of maintenance responsibility of any commonly owned facilities, including roads and parking lots. (If the road(s) are to be dedicated as a town road, indicate who will maintain the road(s) until the town accepts the responsibility.)

The Dartmouth Company will be responsible for all maintenance
See EXHIBIT K

18. List the type and amounts of all solid wastes to be generated both during construction and operation. Construction: minor amounts of brush and stumps; Operation: approx. 1.5 Cubic Yards of household refuse per day.

Indicate the method of collection and location of the disposal area(s) for each of the wastes listed.

Stumps will be used on-site in filling holes away from roads and building sites; domestic solid waste will be hauled to the Regional Waste System on Outer Congress Street by M. S. Troiano and Sons.

Have the owner of the solid waste disposal facility fill out Attachment A on page 10. This form or one containing the same information must be submitted with the application.

NOTE: If the solid waste disposal facility is run by the municipality, the letter should be filled out by the Mayor, Town Manager or Selectmen.

See EXHIBIT L: "Attachment A"

19. If project is other than a subdivision, state plans for landscaping and show details on site plan or a separate landscaping plan. Landscape plans should include as a minimum: species type and location of trees and/or shrubs, size of trees and/or shrubs, planting dates.

See EXHIBIT M: Typical Landscape Plan

20. If other than residential subdivision, state below the estimate average number of vehicles per day anticipated on or using the site.

See EXHIBIT N: TRAFFIC IMPACT STUDY; see also supplemental information from City of Portland.

21. If other than residential subdivision, state below the manner in which police and fire service requirements of the proposed project will be provided. If public departments are to provide service, letters from these departments should be provided.

NA

22. Submit the appropriate U.S.G.S. topographic map which includes the project site. Indicate on the map:

See EXHIBIT O: USGS Map: Portland West 7½' Quadrangle

a. Location of boundaries of the project as proposed.

b. Location of boundaries of all property you own or control.

23. Submit 12 copies of site plans, drawn to a scale sufficient to show all details and be entirely ledgible: (Recommended Scale: 1" = 100') (ALL PLANS SHALL BE FOLDED 8½" x 11")

See SITE PLAN in pocket for a through f.

a. Location, function and ground area of all structures and facilities.

b. Location, ground area of parking lots and all roads, length and typical cross-section of roads.

See EXHIBIT J: Cross Sections

c. The nature and extent of any site work such as filling, grading, drainage, dredging, etc.

d. The nature and extent of any proposed construction or facilities related to the project.

e. The topography of the project site using 5 foot contours.

f. Streams and drainage ways.

24. Attach the results of an on-site soil investigation done by a qualified evaluator INCLUDING A SOILS MAP to the same scale as the site plan. The soils designations, lines or demarcation and test pit locations are to be shown directly on the site plan. If the application is for a subdivision, test pits must be made and reported on each proposed lot. All other applications should have test pits made in areas of proposed subsurface sewage disposal and/or construction location. (SEE PAGE 10 FOR EXAMPLE FORMAT.)

See EXHIBIT P: Soils report by S.W. Cole Engineering Inc.

25. Attach plans and statements indicating measures which will be taken to control surface water runoff:

a. These provisions should include predevelopment and postdevelopment runoff calculations and complete specifications for any retention device. This requirement may be waived depending on the individual project. Example: subdivisions with no road construction.

See EXHIBIT G

26. Attach plans and statements indicating measures which will be followed to control erosion and sedimentation during both the construction phase and after completion of the project. These should include, but are not limited to the following:

See EXHIBIT Q

a. Drainage and slope data to include location and size of culverts, areas to be riprapped, location and typical cross-section of drainage ditches.

b. For areas to be seeded, indicate seed mixture by percent, type of fertilizer, application rates (lbs./100 square feet) of seed, fertilizer and lime.

c. Areas to be mulched and type of mulch.

d. Sedimentation pond locations and appropriate engineering data where applicable.

e. SCHEDULE OF APPROXIMATE DATES FOR IMPLEMENTATION FOR a. through d. above.

27. State below whether the proposed development will require the installation of advertising signs, display lighting, or any similar device which might have an impact on the surrounding environment.

Check One: YES ☒ NO ☐ If YES, explain: Applicant intends to erect two signs on the property - see EXHIBIT R; see EXHIBIT S for typical light fixtures.

28. Indicate whether the proposed project will:

a. Cause any changes in climate. YES ☐ NO ☒

b. Lower the ground water table in the project vicinity. YES ☐ NO ☒

c. Increase noise levels by more than ten decibels (dbA) at any time for a duration exceeding one minute. YES ☐ NO ☒

Explain why you have answered yes to any of the above.

29. Attach a copy of any deed covenants, restrictions and/or association agreements to be imposed on prospective purchasers and/or occupants of the development.
See EXHIBIT T

30. List below the names and addresses of the owners of abutting property.

NAME	ADDRESS
See EXHIBIT U	

CHECK APPLICATION FOR COMPLETENESS

EXHIBIT A

State of Maine

Department of State

I, the Secretary of the State of Maine, certify that according to the provisions of the Constitution and Laws of the State of Maine, the Department of State is the legal custodian of the Great Seal of the State of Maine which is hereunto affixed and of the records of organization, charter amendments, dissolutions of corporations and annual reports filed by the same.

I FURTHER CERTIFY that The Dartmouth Company, formerly DARTMOUTH REAL ESTATE COMPANY, is a duly organized corporation under the laws of the State of Maine and that the date of the incorporation of said corporation is October 10, 1916.

I FURTHER CERTIFY that on April 11, 1927 a certificate changing the purposes was filed; on May 25, 1928 a certificate increasing the capital was filed; on July 27, 1929 a certificate increasing the capital was filed; on February 11, 1930 a certificate changing number of directors was filed; on August 26, 1955 a certificate decreasing the capital stock was filed; on December 16, 1958 a certificate increasing capital stock was filed; on May 16, 1968 a certificate increasing authorized capital was filed; on February 1, 1974 a change of registered office was filed; on October 19, 1976 a change of clerk and registered office was filed; on October 19, 1976 an amendment changing the name was filed; on December 22, 1977 articles of merger was filed; on November 22, 1982 a change of clerk and registered office was filed; on November 22, 1982 articles of merger was filed; and on February 3, 1983 a change of clerk and registered office was filed. No further amendments have been filed to date.

I FURTHER CERTIFY that said corporation has filed the 1984 annual report due to this Department, paid all corporate franchise taxes and fees and that no action is now pending by or on behalf of the State of Maine to forfeit the charter and that according to the records in the Department of the Secretary of State, said corporation is a legally existing corporation in good standing under the laws of the State of Maine at the present time.

In Testimony Whereof, I have caused the Great Seal of the State to be hereunto affixed. GIVEN under my hand at Augusta, this fourteenth day of September in the year of our Lord one thousand nine hundred and eighty-four.

Secretary of State

SS-C7B-72

NOTE: Use this form or one containing identical information.

APPLICANT SHALL SEND THIS NOTICE

(To owners of abutting property, municipal officials and newspapers)

Please take notice that The Dartmouth Company, 489 Congress Street, P. O. Box 4570, Portland, Maine 04112.
(Name of Applicant) (Address of Applicant)

is filing an application for a Site Location Permit with the Maine Department of Environmental Protection pursuant to the Provisions of Title 38 MRSA Sec. 481-489 to: construct a Planned Residential Unit Development, consisting of 100 units of two-bedroom apartments in 23 buildings, on a 20.5 acre site on Brighton Avenue in the City of Portland. The project, to be known as GLENRIDGE, will be managed by the Dartmouth Company.
(State specifically what is to be done)

in the town of

The application will be filed for public inspection at the Department's Office in Augusta and at the municipal offices on Sept. 24, 1984.
(Date)

Written comments from any interested person must be sent to the Department of Environmental Protection within 14 days of filing of the application to receive consideration.

Request for a public hearing must also be sent to the Department within 14 days of filing of the application.

EXHIBIT C

OPTION AGREEMENT

This Agreement is made this 13th day of February, 1984 by and between Auto Sales and Finance Co., a Maine corporation (herinafter called "Auto Sales") and The Dartmouth Company a Maine corporation (hereinafter called "Dartmouth") upon the following terms and conditions:

1. Ownership: Auto Sales hereby represents to Dartmouth that it is the sole owner in fee simple of the real estate more particularly described in Schedule A. attached hereto and made a part hereof (hereinafter called the "real estate").

2. Option: Subject to the terms and conditions set forth herein Auto Sales hereby grants to Dartmouth the exclusive and irrevocable right and option to purchase the real estate (hereinafter called the "option").

3. Option Period: (a) The period during which Dartmouth may execute this option shall begin on PSW and shall extend until August 31, 1985 unless sooner terminated (hereinafter called the "original option period").

   (b) Dartmouth shall have the right to extend the option period to and including February 28, 1985 by giving to Auto Sales written notice of said extension no later than three (3) days prior to the expiration of the original option period (hereinafter called the "extended option period").

4. Option Consideration: (a) During the original option period Dartmouth shall pay to Auto Sales

   (1) Five Hundred Dollars ($500.00) on the fifteenth day of the original option period and

(2) Five Hundred Dollars ($500.00) every other week i.e. bi-weekly, on the same day of the week as the first payment until a total of Five Thousand Dollars ($5,000.00) has been paid to Auto Sales. No further payments shall be due from Dartmouth to Auto Sales as consideration for granting the option for the original option period.

(b) In the event Dartmouth desires to exercise its right to extend the option period Dartmouth shall pay, as full consideration for the exercise of said extension right the sum of Twenty-Five Thousand Dollars ($25,000.00) payable with the written notice of said extension.

(c) In the event Dartmouth exercises its right to terminate this Agreement in the manner set forth below in paragraph 13 then, in such case, Auto Sales shall retain all payments which have been paid and shall be entitled to receive any payments which have accrued and should have been paid, by Dartmouth to the date of termination. However, Dartmouth shall not be liable for any further payments beyond those already made or accrued prior to said termination.

5. Option Exercise: In the event Dartmouth elects to exercise the option, it shall do so by notifying Auto Sales by certified mail, return receipt requested, to Auto Sales at the address set forth below in paragraph 18. Said notice shall be deemed effective upon mailing by Dartmouth. Said notice shall specify a closing date not later than sixty (60) days after the date of mailing of the notice (hereinafter called

the "Closing Date"). After giving said notice no further option consideration shall be due and payable hereunder.

6. Purchase Price: The purchase price for the real estate shall be Two Hundred Twenty-Five Thousand Dollars ($225,000.00). Any sums paid by Dartmouth to Auto Sales as option consideration pursuant to Paragraph 4 herein shall be credited to the purchase price.

7. Closing: The closing shall take place on the Closing Date at 10:00 A.M. at the office of Drummond Woodsum Plimpton & MacMahon 900 Maine Savings Plaza, Portland, Maine or at such other place as shall be mutually agreed upon by the parties. Dartmouth may, at its sole option, accelerate the closing Date upon seven (7) days written notice to Auto Sales.

8. Conveyance Title: Auto Sales shall execute and deliver to Dartmouth, or its nominee, on the closing date a warranty deed conveying the property described in Schedule A. attached hereto, with full warranty covenants, conveying to Dartmouth, or its nominee, the real estate in fee simple with good and marketable title thereto, free and clear of all liens and encumbrances. It is a condition precedent to the obligation of Dartmouth hereunder that a title insurance policy (ALTA Owner's Policy Form B-1970 with extended coverage and with standard exceptions deleted) of Chicago Title Insurance Company or an equivalent company selected by Dartmouth at its sole option ("Title Comppany") be issued to Dartmouth as of the Closing Date, in a face amount equal to the

purchase price to be paid hereunder, showing good and marketable title to the real estate to be in Dartmouth in fee simple, free and clear of all liens and encumbrances. In the event the Title Company cannot, on the Closing Date, issue its policy showing title in such condition, Dartmouth shall notify Auto Sales of such fact and Auto Sales shall have a reasonable time, but in no event longer than sixty (60) days, to remove the objectionable title defect. Auto Sales shall use its best efforts during said period to cure said defects. If such defect cannot be removed by Auto Sales, Dartmouth may either (a) terminate this Agreement, in which case both parties shall be released from their obligations hereunder and all funds theretofore paid by Dartmouth, shall be immediately returned to it, or,(b) consummate the sale of the Property in accordance with this Agreement. The title insurance policy shall be paid for by Dartmouth. A copy of the Deed shall be delivered to Dartmouth's attorney for approval as to form and substance at least one (1) month prior to the Closing Date.

9. Prorations: (a) At the Closing the parties shall appropriately prorate real estate taxes and easements assessed on the real estate for the tax year as established by the City of Portland.

(b) Auto Sales shall be responsible for timely payment of the real estate transfer tax.

(c) At the closing Dartmouth shall pay to Auto Sales the purchase price less any credit due for prior payments of option consideration.

10. Engineering Report: (a) Dartmouth may, at its option and at its sole expense, retain a person or persons to examine the real estate and prepare an engineering and/or soil report. Auto Sales agrees to fully and promptly cooperate in assisting the person(s) retained by Dartmouth for said purpose including, without limitation, providing access to the real estate at all reasonable times. Any such report shall be the sole property of Dartmouth.

11. Surveyor's Report: Dartmouth may, at its sole option and at its sole expense, retain a surveyor to examine the real estate and prepare a surveyor's report. Auto Sales agrees to fully and promptly cooperate in assisting the person(s) retained by the Dartmouth for said purpose, including, without limitation, providing access to the real estate at all reasonable times. Any such report shall be the sole property of Purchaser.

12. Reports: (a) In the event that this purchase is not completed through no fault of Auto Sales, Dartmouth shall provide Auto Sales one copy of any survey or soil test report for Auto Sales' information only and without any liability or recourse to Dartmouth or to any surveyor, engineer or other preparer employed by Dartmouth for any information contained therein.
(b) Dartmouth shall conduct preliminary soils tests within two (2) weeks of the date set forth above. In the event these preliminary tests indicate that it is not feasible, in Dartmouth's sole discretion, to construct one hundred five (105) townhouse units on the real estate then Dartmouth agrees that it shall

terminate this agreement. No such failure to terminate shall be construed as an exercise of the option rights contained herein or shall limit Dartmouth's right to terminate this Agreement in the future.

13. Termination: Dartmouth may terminate this Agreement at any time by giving to Auto Sales written notice of said termination.

14. Brokers: (a) Auto Sales warrants and represents that it has not dealt with any real estate brokers in connection with this transaction except Sulka Real Estate. Auto Sales shall be responsible for any commission due Sulka Real Estate and further agrees to indemnify and hold Dartmouth harmless from and against any other claims for a broker's commission if the claim is based upon communications or dealings of any kind with Auto Sales.

(b) Dartmouth warrants and represents that it has not dealt with any real estate brokers in connection with this transaction. Dartmouth agrees to indemnify and hold Auto Sales harmless from and against any claim for a broker's commission, if the claim is based upon communication or dealings of any kind with Dartmouth.

15. Approvals: Auto Sales and Dartmouth acknowledge that all governmental approvals and permits, which are necessary for the construction of one hundred five (105) townhouses on the real estate, together with roads, utility services and other related improvements, do not presently exist. Auto Sales shall fully cooperate with Dartmouth in any efforts [illegible] Dartmouth to obtain said permits and approvals

at such times and in such manner as Dartmouth may request.

16. Memorandum of Option Agreement: Auto Sales agrees, at the request of Dartmouth, to execute promptly a Memorandum of this Agreement in recordable form for recording in the Cumberland County Registry of Deeds.

17. Default: (a) In the event Dartmouth fails to consummate the purchase of the real estate, in accordance with the provisions of this Agreement, for any reason other than a reason specified in this Agreement entitling Dartmouth to terminate this Agreement, and in the event Auto Sales shall have performed all of its obligations hereunder, then Auto Sales shall be entitled to retain the option consideration paid to date and shall be entitled to receive any further option consideration which has accrued and should have been paid as liquidated damages in full and complete satisfaction of all claims against Dartmouth and this Agreement shall be deemed terminated without further liability between the parties.

(b) In the event Auto Sales fails to perform its obligations as set forth in this Agreement, Dartmouth shall have the right to receive back the option consideration and in such instance this Agreement shall be deemed terminated without further liability between the parties or Dartmouth may pursue all available legal rememdies to enforce the terms of this Agreement including, without limitation, requesting specific performance, collecting expenses incurred by Dartmouth, collecting reasonable attorney's fees

incurred pursuant to enforcement, and collecting damages arising from any breach occasioned by Auto Sales.

(c) All rights and liabilities of the respective parties hereto, as set forth herein, shall survive the transfer of the real estate.

18. Notices: All notices, demands or other communications made pursuant to this Agreement shall be in writing and sent by certified or registered mail, return receipt requested, and shall be deemed given when mailed-

to Seller at:
Auto Sales & Finance Co.
c/o Sulka Real Estate
449 Forest Avenue
Portland, Maine 04101
Attention: Sol Sulka

to Purchaser at:
The Dartmouth Company
489 Congress Street
P.O. Box 4570
Portland, Maine 04112-4570
Attention F. Gordon Hamlin, Jr.,
President

19. Miscellaneous: (a) This Agreement shall inure to the benefit of and be binding upon the parties hereto and their respective heirs, personal representatives, successors in interest and assigns.

(b) This Agreement constitutes the entire Agreement between the parties, supersedes all prior negotiations and understandings among them, and shall not be altered or amended except by written amendment signed by Auto Sales and Dartmouth.

(c) This Agreement may be simultaneously executed in a number of counterparts, each of which when so executed and delivered shall be an original; but such counterparts shall constitute but one and the same

(d) Dartmouth reserves the right to assign its interest in this Agreement to another person(s) or legal entity by giving to Auto Sales written notice thereof.

(e) This Agreement shall be construed and enforced in accordance with and governed by the laws of the State of Maine.

IN WITNESS WHEREOF, the parties hereto have executed this Agreement as a sealed instrument on the day, month and year first above written.

WITNESS:

AUTO SALES AND FINANCE COMPANY

By Dorothy B. Dubin
Its President

THE DARTMOUTH COMPANY

By
Its President

SCHEDULE A

A certain lot or parcel of land on Brighton Avenue in the City of Portland, County of Cumberland and State of Maine more particularly described as follows:

Beginning at a point on Brighton Avenue at the southwesterly corner of land now or formerly of one Pendexter; thence north 46°08'01" west along said Brighton Avenue six hundred ninety nine and eighty one hundredths (699.81) feet to the easterly side of Wayside Road; thence north 36°51'29" east seventy (70) feet to a point; thence south 53°08'31" east ninety nine and ninety six hundredths (99.96) feet to a point; thence north 36°49'43" east four hundred fifty five (455) feet to an iron pipe; thence north 45°16'31" west three hundred fifty two and fifty eight hundredths (352.58) feet to an iron pipe; thence north 60°44'47" east two hundred nineteen and fifty four hundredths (219.54) feet to a iron pipe; thence north 60°53'33" east one hundred fifty six and eighty two hundredths (156.82) feet to an iron pipe; thence north 58°29'40" east two hundred ninety four and thirty eight hundredths (294.38) feet to a point; thence south 31°30'20" east one hundred forty four and sixty two hundredths (144.62) feet to a point; thence south 75°50'37" west forty (40) feet to a point; thence south 14°09'23" east fifty (50) feet to a point; thence north 75°50'37" east seventy and sixty eight hundredths (70.68) feet to a point; thence south 14°09'23" east three hundred nine and thirty four hundredths (309.34) feet to a point; thence south 30°47'18" east ninety five (95) feet to a point; thence north 59°12'42" east one hundred thirteen and fourty five hundredths (113.45) feet to a point; thence south 30°47'18" east ninety six and thirty nine hundredths (96.39) feet to a point; thence generally northeasterly along Lot 35 as shown on a Plan of property made for Auto Sales and Finance Co. by Robert P. Titcomb, Inc. on September 2, 1982 which line is also the line of land of grantor herein twenty feet more or less to a point; thence north 59°12'42" east fifty nine and sixty one hundredths (59.61) feet to a point; thence south 30°47'18" east fifty (50) feet to a point; thence south 59°12'42" west fifty nine and sixty one hundredths (59.61) feet to a point; thence along line of grantor and Lot 34 as shown on said Plan to the northwesterly corner of said Lot 34; thence south 36°37'17" east one hundred ten and seventy four hundredths (110.74) feet to a point; thence south 38°41'00" east fifteen (15) feet to a point; thence south 40°53'52" west one hundred seventy five (175) feet to a point; thence south 46°07'04" west three hundred twenty one and thirty four hundredths (121.34) feet to a iron pipe; thence south 29°18'00" east one hundred two and fifty seven hundredths (102.57) feet to the northerly side line of Jeanne Street; thence south 60°42'00" west along said Jeanne Street one hundred seventeen and twenty six hundredths (117.26) feet to a point; thence in a generally southwesterly direction along said Jeanne Street fifty three and twenty six hundredths (53.26) feet to an iron pipe; thence south 22°33'30" west along said Jeanne Street one hundred thirty eight and seventy hundredths (138.70) feet to an iron pipe; thence in a generally southwesterly direction along said Jeanne Street sixteen and twenty nine hundredths (16.29) feet to an iron pipe; thence south 53°40'29" west forty one and seventy two hundredths (41.72) feet to an iron pipe; thence north 46°01'30" west one hundred twenty two and seventy seven

hundredths (122.77) feet to an iron pipe; thence south 43°52'06" west one hundred thirty one and sixty five hundredths (131.65) feet to the point of beginning.

The above described premises contain 20.50 acres.

EXHIBIT D

The Dartmouth Company

489 Congress St.
P.O. Box 4570
Portland, Maine 04112
(207) 772-2794

July 31, 1984

The proposal consists of a 100-unit Planned Residential Unit Development on a 20.5-acre site, as shown on the drawings which accompany this application. The units will be two-bedroom, one and two-story horizontally attached single-family units which are grouped in clusters of three to six units. There will be five unit types:

Unit Type	No. of Units	Square Footage/Unit
A	4	770
B	64	865
C	19	902
D	8	924
E	5	816
	100	

The proposed Planned Residential Unit Development conforms with the "R-3" Residential Zone in which it is located. This zone permits such developments on sites with a minimum gross area of at least three acres in the form of horizontally attached single-family units, with an overall density not exceeding six and seven-tenths dwelling units per net acre. Net acreage is calculated by subtracting from the gross area of the site twenty percent of such gross area. The maximum number of units allowed under the zone then would be 109 units, or nine more than are actually proposed.

THE DARTMOUTH COMPANY

The Dartmouth Company, subsidiary of Consumers Water Company, is a real estate management and development firm founded by the late Frank A. Rumery in 1916. From its inception the company was successful in developing a variety of residential and commercial properties. It rapidly became known for high standards in building quality, efficient management and integrity in its dealings with tenants.

In 1931, the financial difficulties of its lessees required the company to seek additional capital. Consumers Water Company provided the needed assistance through the purchase of Dartmouth Real Estate Company common stock. By the end of World War II Consumers had acquired a 50% interest. Its holdings increased until, in 1976, it acquired the remaining Dartmouth Company shares.

From 1931 until its acquisition by Consumers Water Company, Dartmouth's growth was relatively slow. It primarily managed properties and its major development was the Rumery Industrial Park in South Portland in which Consumers also participated. This development included the original Hannaford Brothers plant, sold to Hannaford in 1967. The profitable sale of this plant convinced Consumers to expand its real estate activities and led to the second rapid growth period of the company.

Consumers decided in 1968 to pursue new development and acquisition by Dartmouth while divesting it of some marginal properties and management accounts.

A Decade of Growth

In a decade, Dartmouth has added over $20 million of new assets, including the construction and lease-back of more than

330,000 square feet of warehouse space, the development of over 150,000 square feet of office space and the construction or purchase of some 425 residential units in Greater Portland and Massachusetts. Since 1978, Dartmouth has also planned, built and sold more than $4 million of single-family condominiums. For most of these projects, Dartmouth has done the conceptual and general contracting work in-house, while continuing the management of existing properties. For this reason, the staff has grown from 2 in 1971 to 21 in 1984.

Projects during this time have included the 250,000 square foot Emery-Waterhouse distribution center at Exit 8 of the Maine Turnpike; purchase of the Canal Bank Building in Portland, the construction of Yarmouth Woods, a 138-unit residential complex; purchase and completion of a 90-unit residential complex, Coachlantern Townhouses in Scarborough, Maine; construction of the 33,000 square foot Pen Bay physicians' office building in Rockport, Maine; construction of the 25-unit townhouse project known as Clairmont Court; the rehabilitation of 489 Congress Street into premium office space in downtown Portland; construction of the A. W. Hastings building in Riverside Industrial Park, Portland; and the acquisition of 170 existing apartment units.

The Foundations of Growth

The key ingredients in Dartmouth's success during a turbulent decade have been resources, flexibility and creativity.

In today's market, a real estate investor must have the resources to invest without the benefit of immediate returns. Dartmouth has always had a strong financial position, with high earnings and substantial liquid investments, in addition to the backing of its parent company.

The real estate market in Portland has been mercurial during the most recent period of Dartmouth Company's growth. The company has had the flexibility to meet the market and has often been one step ahead of it. It is always open to new ideas and works closely with brokers.

As land becomes more scarce, a real estate company must be more creative in the use of capital, land and existing structures. It must create its own value. Dartmouth has been in the forefront of creative development, having sold the first office condominium in the state, developed unique sale lease-back options and upgraded several of its older properties.

The first three qualities, however, would be useless without a fourth: integrity. Dartmouth's long-term reputation for fairness and sound management has often been the determining factor when a property owner must select among developers or managers.

Key Personnel

F. Gordon Hamlin, Jr., President

Mr. Hamlin, who joined Dartmouth in 1983, was formerly president and co-founder of Northeast Capital Corporation, which specializes in financing and syndication of real estate projects. From 1974 through 1978 he was vice president of Canal National Bank, responsible for administration of its commercial and residential mortgage portfolio. In 1978 he helped found Shelter Group, Inc., of Lewiston, a real estate development firm in which he served as vice president - finance. A graduate of Dartmouth College, he also holds an MBA from New York University Graduate School of Business Administration.

Paul S. Laughlin, Vice President

An alumnus of Colby College, Mr. Laughlin joined the Dartmouth Company in 1973. Prior to that time he operated his own construction firm in Massachusetts. His present responsibilities include project development and supervision. Among his projects have been the Physicians' Building at Penobscot Bay Medical Center, one of the largest of its kind in northern New England; several apartment projects; and more recently Ledgewood, a 78-unit condominium project.

Marylou Robinson, Assistant Vice President

A graduate of Bay State College in Boston, Mrs. Robinson has done extensive graduate work in real estate law and management. She joined the firm in 1977 and is currently property manager, with line responsibility for over $25 million in commercial and residential property.

Susan A. Olmstead, Treasurer - CPA

Mrs. Olmstead is a graduate of Husson College. Prior to joining Dartmouth in 1984 she had six years experience in public accounting including extensive work in real estate audit and partnerships.

FGH:am

7/26/84

EXHIBIT G

STORMWATER MANAGEMENT REPORT

GLENRIDGE PROJECT

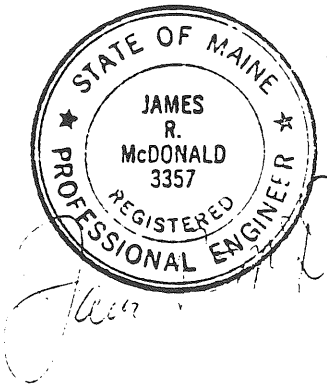
BRIGHTON AVENUE, PORTLAND, MAINE

For

THE DARTMOUTH COMPANY

489 Congress Street

Portland, Maine 04101



Prepared By: Berry Huff McDonald Milligan, Inc.

Engineers·Surveyors·Planners

28 State Street

Gorham, Maine 04038

STORMWATER MANAGEMENT REPORT

Design Criteria

The stormwater calculations for this Report are based on the Manual, "Stormwater Management and Design," by Roy F. Weston, Inc. Reference material also included the "Stormwater Management Manual" by Greater Portland Council of Governments. Both manuals use methods essentially the same as those in the Soil Conservation Service Manual.

For these calculations conditions of runoff were examined for "Before" and "After" development. Calculations were based on 2 year and 25 year peak discharge values. Rainfall data was derived from U.S. Weather Bureau Technical Paper Number 40 and are values currently in use by the local Soil Conservation Service office.

Runoff is based on a Type II storm distribution curve.

Existing Conditions

The existing site comprises approximately 20.5 acres on the northerly side of Brighton Avenue. It is the site of the old Lucas Brickyard. The site is essentially open with light grass growth over most of the area and some scattered growths of trees. Higher areas on the easterly side of the site have many ledge outcrops.

Soils on the site, based on Soil Conservation Service medium intensity soils maps range from Scantic silt loams on the lower westerly side

of the site to Buxton silt loams in the central portions and to Hollis shallow to bedrock soils on the easterly high grounds of the site.

The old brickyard operation on this side removed most of the topsoil from the site and exposed underlying clays or ledge. This has had the effect of decreasing the amounts of more permeable soils on the site. For this reason the rate of storm runoff from this site is high due to the presence of these impervious surfaces.

The site slopes from east to west and ranges from moderate to flat slopes based on criteria of the Soils Conservation Service.

On the westerly boundary of the property there is a 30 foot wide easement for a 48-inch combined sewer running southerly. Stormwater runoff from the northerly portion of the site now enters this 48-inch drain at several points.

The existing site is divided into two major drainage areas called Drainage Areas #1 and #2 in this Report for predevelopment and Drainage Areas #1A and #2A for post development.

Drainage Area #1 comprises approximately 7.3 acres on the southerly side of the site. This area drains southwesterly generally in the direction of the intersection of Brighton Avenue and Wayside Road. Part of this area drains towards a small drainage swale located along the rear of the lots on the easterly side of Wayside Road. This swale

runs southerly to a small catch basin near Brighton Avenue which apparently connects to the storm sewer system in Wayside Road. The major portion of the runoff from Drainage Area #1 runs towards Brighton Avenue where during heavy storms it sheet flows over the sidewalk on Brighton Avenue eventually reaching the catch basin inlet near Wayside Road.

Drainage Area #2 comprises approximately 11.5 acres on the northerly side of the site. This area drains westerly through several grassy swales and empties into the low area on the westerly side of the site. In this area there is a 15 inch vertical riser pipe rising slightly above the existing ground. This pipe connects to a manhole over the 48 inch combined sewer. Drainage from the site now exits through this pipe and a catch basin located 200'± southerly from the above manhole.

Proposed Development Drainage - General

In order to limit the peak discharge of stormwater from the proposed site a detention pond is proposed to be located as shown on the plan on the northwesterly portion of the site in what is now a low wet area. By diverting a portion of the existing Drainage Area #1 into the proposed detention pond we will show that the peak discharge from Drainage Area #1 will be reduced by approximately 17 %. Storm drainage from Drainage Area #1A will be directed westerly to a proposed catch basin on the southerly corner of the property where it will connect to the 18 inch combined sewer in Brighton Avenue.

The drainage area to the above 18 inch sewer will be reduced from 7.3 acres (before development) to 4.9 acres (after development). Storm flows now sheeting over the sidewalk on Brighton Avenue will be eliminated.

As mentioned previously, part of the runoff from Drainage Area #1 is intercepted by a swale running north-south along the backs of lots on Wayside Road. We propose to reduce the amount of runoff to this swale by constructing a new swale westerly of the proposed construction. This swale will direct runoff northerly to the proposed detention basin and southerly to the proposed catch basin near Brighton Avenue.

Drainage Calculations - Before Development

Drainage Area #1

Area = 7.3 Acres

Soil Types - Scantic, Buxton and Hollis - Silt, Clay and Ledge

Hydrologic Soil Group - D

Runoff Curve Number - 89

Slope Elevation 66 - 41 = 25'/900' = 2.7% Flat

25 Year Storm (24 Hour Rainfall) - 5.4 Inches

2 Year Storm (24 Hour Rainfall) - 2.6 Inches

Storm Distribution - Type II

Calculate peak discharge for 25 year storm:

Total Runoff = 4.16 Inches (From Chart)

Q = 7.2 C.F.S./Inch Runoff

Q = 7.2 x 4.16 = 29.9 C.F.S.

Q (25 Year Peak) = Use 30 C.F.S. Before Development

Drainage Calculations - Before Development/Drainage Area #1 (Continued)

Calculate peak discharge for 2 year storm:

Rainfall = 2.6 Inches/24 Hours

Total Runoff = 1.54 Inches (Chart)

Q = 7.2 C.F.S./Inch Runoff

Q = 7.2 x 1.54 = 11 C.F.S. (Before Development)

Drainage Area #2 - Before Development

Area = 11.5 Acres

Runoff Curve Number = 89

Slope = 30'/1000' = 3% Flat

Runoff = 4.16 Inches (Chart)

Q = 10 C.F.S./Inch Runoff (Chart)

Q (25 Year) 10 x 4.16 = 42 C.F.S. (Before)

Calculate peak discharge for 2 year storm:

Rainfall = 2.6 Inches/24 Hours

Runoff = 1.54 Inches (Chart)

Q (2 Year) 10 x 1.54 = 15.4 C.F.S. (Before)

Drainage Calculations - After Development

Drainage Area #1A

Area = 4.9 Acres

Impervious Area = 0.7 Acres (Curve Number 98)

Other Areas (Grassed) = 4.2 Acres (Curve Number 89)

Weighted Curve Number = $\frac{(98)\ (.7) + 89\ (4.2)}{4.9}$ = 90

Drainage Calculations - After Development - Drainage Area #1A (Continued)

Q = 5.8 C.F.S./Inch Runoff

Runoff = 4.26 Inches

Q (25 Year) 5.8 x 4.26 = 25 C.F.S. (After)

Reduction in Peak Runoff - $\frac{30 - 25}{30}$ = 17% ±

From 25 Year Storm

Q (2 Year) 4.26 x 1.62

= 6.9 C.F.S. Say 7.0 C.F.S.

Reduction in Peak Runoff = $\frac{11 - 7}{11}$ = 36%

For 2 Year Storm

Drainage Area #2A (After)

Area = 13.8 Acres

Impervious Area = 3 Acres (Curve Number = 98)

Other (Grass) = 10.8 Inches (Curve Number 89)

Weighted Curve Number = 91

Runoff = 4.37 Inches

Q = 14.5 C.F.S./Inch Runoff

Q (25 Year) 14.5 x 4.37 = 63 C.F.S. (After)

Q (2 Year) 1.8 x 14.5 = 26 C.F.S. (After)

Detention Pond Volume

Drainage Area #2A

Calculate volume required in a detention pond to control peak 25 year discharge to pre development value of 42 c.f.s.

Q_O(Outflow) = 42 C.F.S.

Q_I(Inflow) = 63 C.F.S.

Detention Pond Volume - Drainage Area #2A Continued

From Chart 5 - 2 Appendix

$Q_o/Q_I = 42/63 = .67$

$$\frac{\text{V Storage}}{\text{V Runoff}} = 0.22$$

$$\text{Volume runoff} = \frac{4.37'' \times 13.8 \times 43{,}560}{12}$$

$$= 219{,}000 \text{ ft}^3$$

$VS = 0.22 \times 219{,}000 = 48{,}000 \text{ ft}^3$

Note: It is the intent of the developer to provide additional detention storage to effect a decrease in the peak discharge of the 25 year storm.

Volume Detention Pond

Proposed = 220 x 130 x 2.5 (Average Depth)

Volume = $72{,}000 \text{ ft}^3$

$$\frac{\text{V Storage}}{\text{V Runoff}} = \frac{72{,}000}{219{,}000} = .33$$

See Chart 5 - 2

$\frac{Q_o}{Q_I} = 0.42$

$Q_I = 63$ C.F.S.

$Q_o = .42 \times 63 = 26$ C.F.S.

Reduction in Peak Discharge = $\frac{42 - 26}{42} = 38\%$

To Control Discharge from Detention Pond:

Place 12 inch discharge at Elevation 39

Place 24 inch discharge at Elevation 40

With Pond Full at Elevation 42.5 Discharges are:

12" = 8 C.F.S.

24" = 18 C.F.S.

Total = 26 C.F.S.

Consider 2 Year Storm Drainage Area #2A

Q_I = 26 C.F.S.

Q_o = 15.4 C.F.S.

Runoff = $\frac{1.8 \times 13.8 \times 43,560}{12}$ = 90,000 ft^3

$\frac{Q_o}{Q_I} = \frac{15.4}{26} = .59$

$\frac{VS}{VR} = 0.24$

Volume Storage = 0.24 x 90,000 = 21,600 ft^3

$\frac{21,600}{220 \times 130}$ = .75 ft = 9" Depth Required

Check Condition of Pond With:

h = 1' on 12"

Q = 5 C.F.S. in 12"

Q = 4 C.F.S. in 24"

Total = 9 C.F.S. Less Than 15.4 C.F.S. (Before Value)

$\frac{Q_o}{Q_I} = \frac{9}{26} = 0.35$

$\frac{VS}{VR} = .4$

VS = .4 x 90,000 = 36,000 ft^3

Conclusion: Adequate storage is available to reduce 2 year peak.

Check pond with h = 1.5' on 12"

Q = 6 C.F.S. 12"

Q = 8 C.F.S.± 24"

Total 14 C.F.S.

$\frac{Q_o}{Q_I} = \frac{14}{26} = .54$

$\frac{VS}{VR} = 0.26$

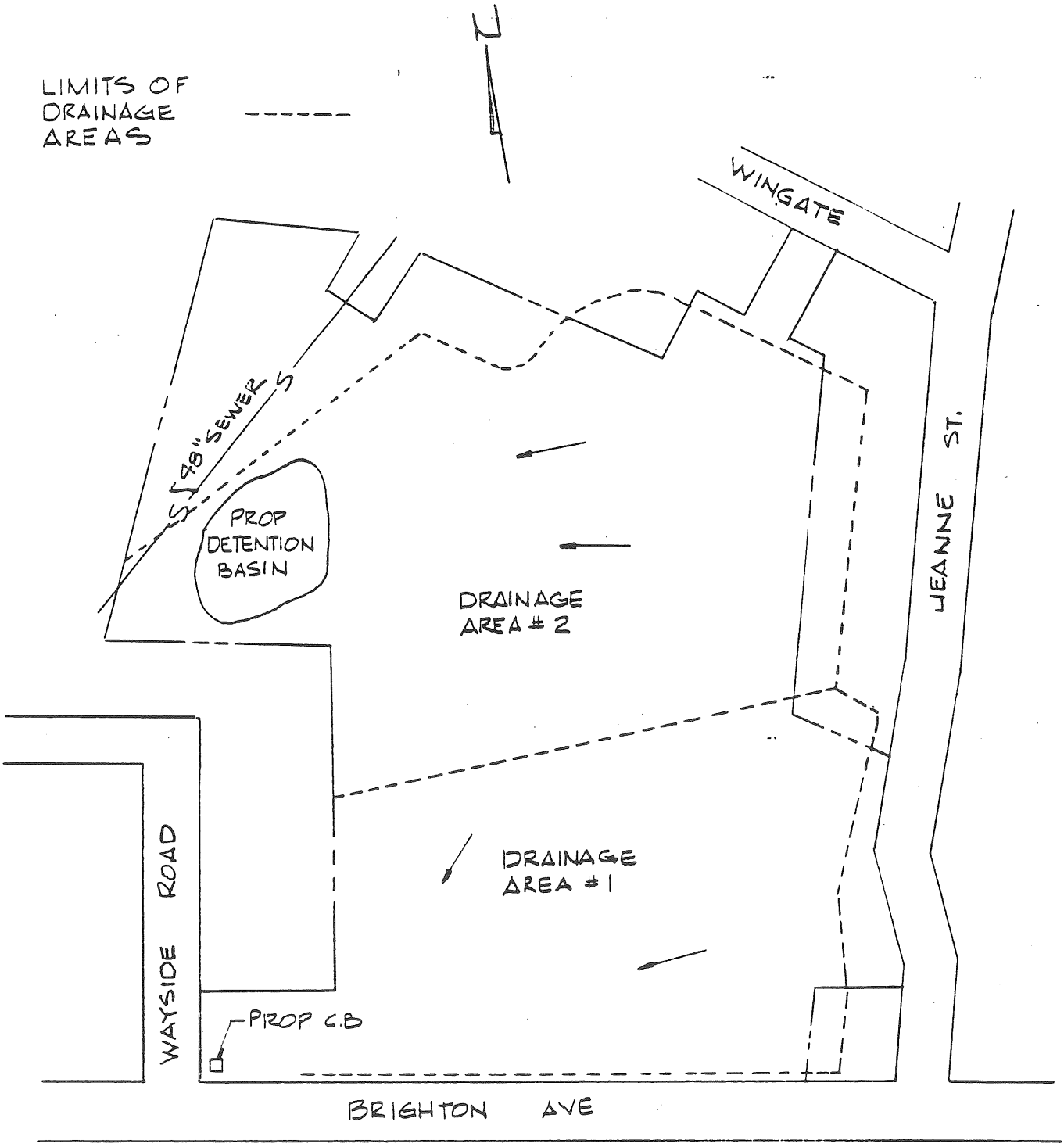
Volume Storage = 0.26 x 90,000 = 23,000 ft^3

Volume in Pond @ h = 1.5 = 40,000 $ft^{3\pm}$

Conclusion: 2 year peak discharge will be decreased in excess of 10% below pre development value.

Overflow Spillway

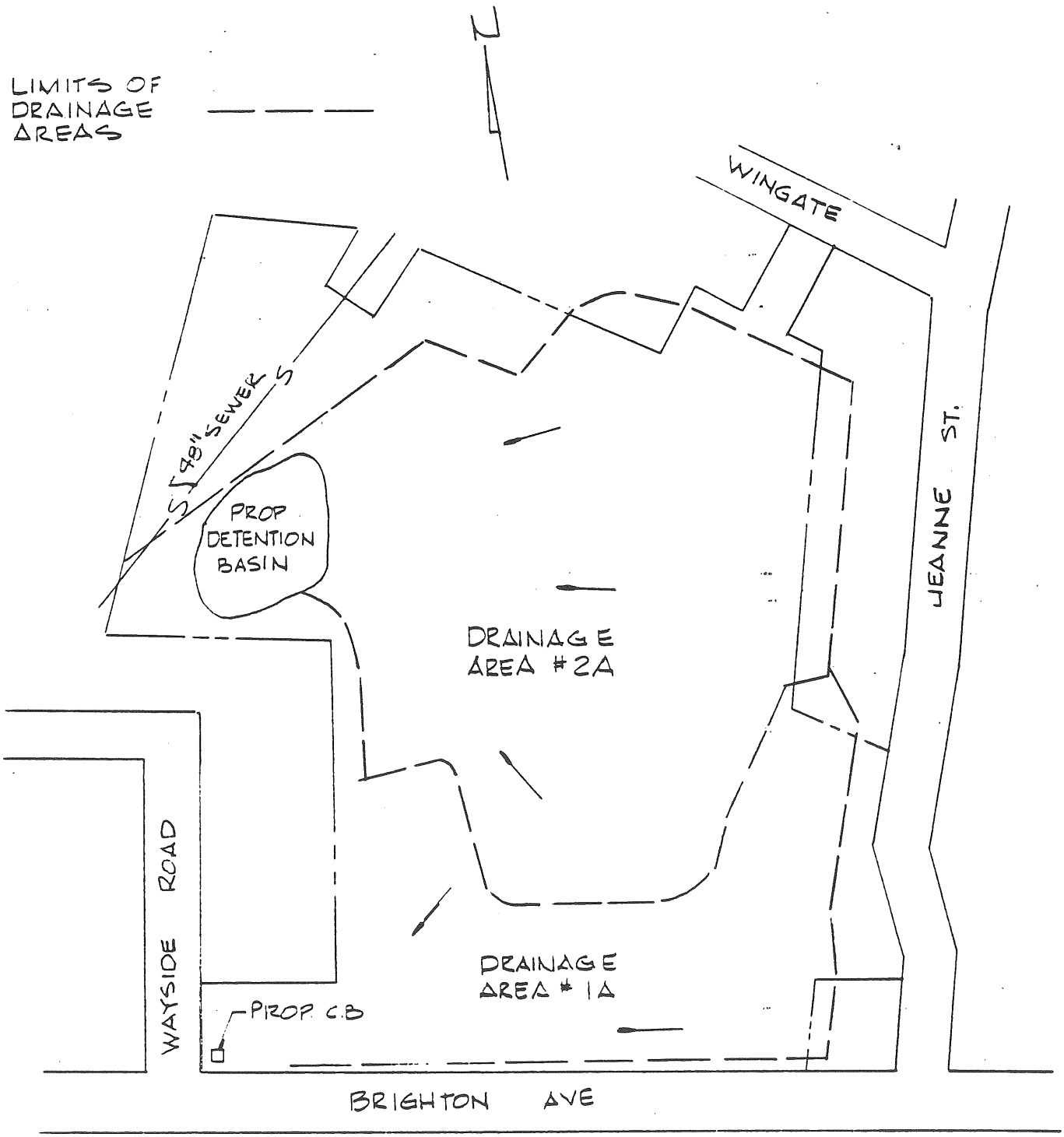
An 8 foot wide spillway will be provided having a capacity of approximately 26 c.f.s.



SKETCH OF DRAINAGE AREA
BEFORE DEVELOPMENT

GLENRIDGE SUBDIVISION

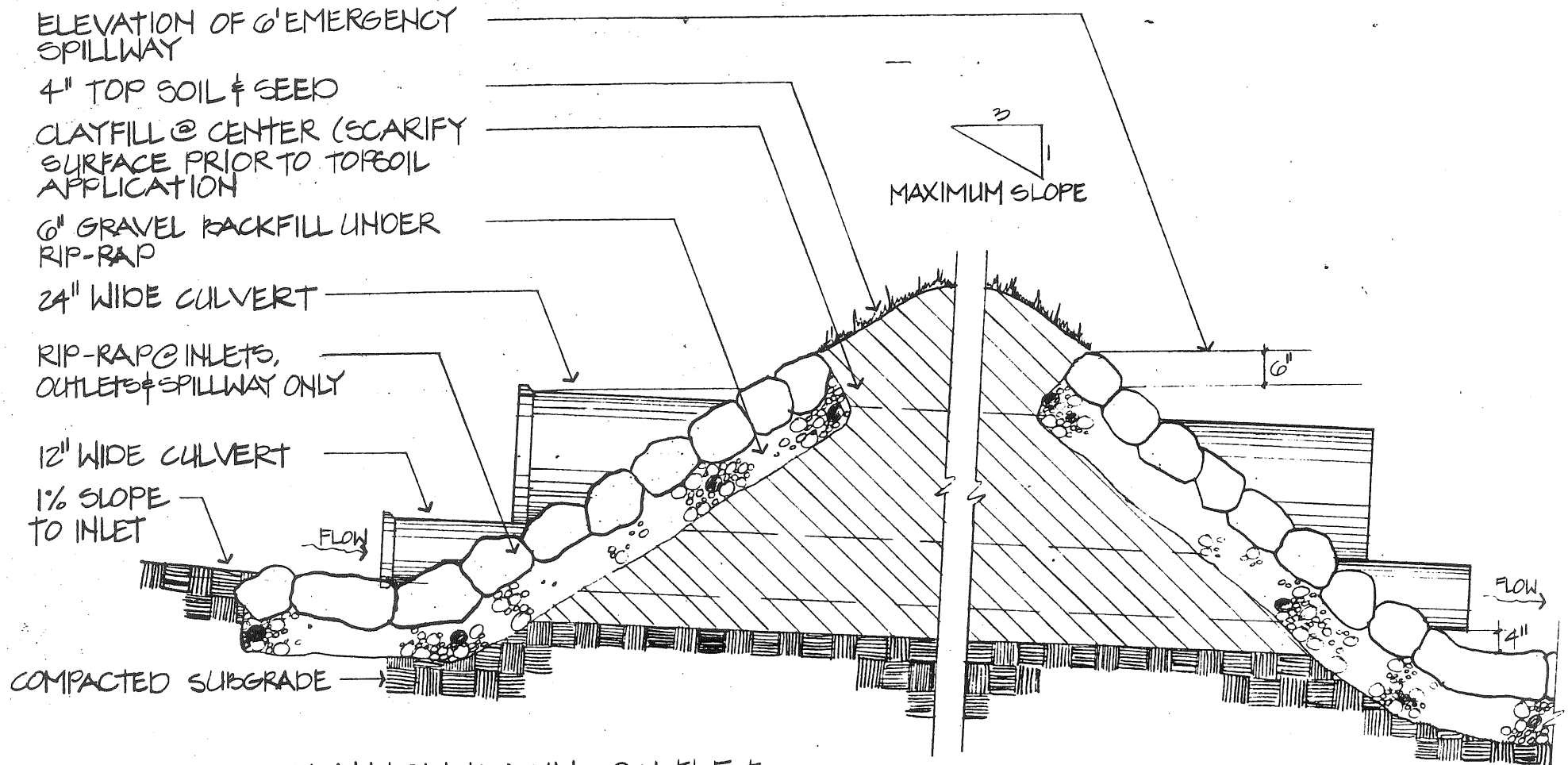
NOT TO SCALE



SKETCH OF DRAINAGE AREA
AFTER DEVELOPMENT

GLENRIDGE SUBDIVISION

NOT TO SCALE



DETENTION BASIN OUTLET

NOT TO SCALE

STATE OF MAINE
JAMES R. McDONALD
3857
REGISTERED
PROFESSIONAL ENGINEER

ONE DAY PRECIPITATION VALUES

These precipitation values were derived from U. S. Weather Bureau Technical Paper No. 40 and are to be used for all runoff computations described in the new Engineering Field Manual. Each field office will use only the rainfall figures assigned to that field office. Five districts have been divided into two areas each. These field offices will take care to use the correct rainfall figures. Only the approving Engineer will have the authority to change these values for a particular project and his reasons for doing so will be documented.

S&WCD Number, Field Office & S&WCD Location	Rainfall Frequency 24-Hour Duration					
	2 Yr	5 Yr	10 Yr	25 Yr	50 Yr	100 Yr
1. Fort Kent - St. John Valley	2.0	2.9	3.5	4.0	4.4	4.8
2. Presque Isle - Central Aroostook	2.0	3.0	3.6	4.2	4.6	5.0
3. Houlton - Southern Aroostook	2.1	3.1	3.8	4.4	4.9	5.4
4. Sanford - York County	2.6	3.8	4.5	5.3	5.9	6.4
5. Dover-Foxcroft - Piscataquis County - North of CPR	2.2	3.2	3.8	4.5	5.0	5.4
5. Dover-Foxcroft - Piscataquis County - South of CPR	2.3	3.3	3.9	4.6	5.1	5.6
6. Belfast - Waldo County	2.5	3.6	4.2	4.9	5.5	6.0
7. Bangor - Penobscot County - North of CPR	2.2	3.2	3.8	4.5	5.0	5.4
7. Bangor - Penobscot County - South of CPR	2.4	3.4	4.0	4.7	5.2	5.8
8. Skowhegan - Somerset County - North of CPR	2.2	3.1	3.7	4.3	4.8	5.3
8. Skowhegan - Somerset County - South of CPR	2.4	3.4	4.1	4.8	5.3	5.8
9. Portland - Cumberland County - Northwest of Rt. 11	3.0	4.3	5.0	5.9	6.4	7.0
9. Portland - Cumberland County - Southeast of Rt. 11	2.6	3.8	4.5	5.4	5.9	6.4

Exhibit 2-8

Accumulation of Rainfall to 24 Hours
Representing a Type II Distribution (13)

Time hours	P_x/P_{24} Type II
0	0
2.0	0.022
4.0	0.048
6.0	0.080
7.0	....
8.0	0.120
8.5	....
9.0	0.147
9.5	0.163
9.75	....
10.0	0.181
10.5	0.204
11.0	0.235
11.5	0.283
11.75	0.387
12.0	0.663
12.5	0.735
13.0	0.772
13.5	0.799
14.0	0.820
16.0	0.880
20.0	0.952
24.0	1.000

Note: Ratio of accumulated rainfall to total rainfall.

EXHIBIT 3-2

RUNOFF CURVE NUMBERS FOR VARIOUS LAND USES (14)

Land Use Description	Hydrologic Condition	Runoff Curve Number - Hydrologic Soil Group - A	B	C	D
Agricultural					
Fallow	-	77	86	91	94
Row Crops	Poor	72	81	88	91
Row Crops	Good	67	78	85	89
Close Seeded	Poor	66	77	85	89
Close Seeded	Good	58	72	81	85
Pasture	Poor	68	79	86	89
Pasture	Good	39	61	74	80
Meadow	Good	30	58	71	78
Woods	Poor	45	66	77	83
Woods	Good	25	55	70	77
Farmsteads	-	59	74	82	86
Roads	-	74	84	90	92
Urban/Suburban	Percent Impervious				
Lawns, Parks, etc.	-	39	61	74	80
Pavement, roofs	-	98	98	98	98
Commercial Areas	-	95	95	95	95
Row Houses, townhouses	-	80	85	90	95
Residential (1/8 acre)	65	80	85	90	95
Residential (1/4 acre)	38	61	75	83	87
Residential (1/2 acre)	25	54	70	80	85
Residential (1 acre)	20	51	68	79	84
Residential (2 acres)	-	47	66	77	81
Newly Graded Areas	-	81	89	93	95

RAINFALL-RUNOFF DEPTHS FOR SELECTED RUNOFF CURVE NUMBERS

CURVE 89

Inches \ Tenths	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
0	0.00	0.00	0.00	0.00	0.02	0.04	0.08	0.12	0.17	0.22
1	0.28	0.35	0.41	0.48	0.55	0.63	0.71	0.78	0.86	0.94
2	1.03	1.11	1.19	1.28	1.37	1.46	1.54	1.63	1.72	1.81
3	1.90	1.99	2.08	2.17	2.26	2.36	2.45	2.54	2.64	2.73
4	2.82	2.92	3.01	3.11	3.20	3.30	3.39	3.49	3.58	3.68
5	3.77	3.87	3.96	4.06	4.16	4.25	4.35	4.45	4.54	4.64
6	4.74	4.83	4.93	5.02	5.12	5.22	5.32	5.42	5.51	5.61
7	5.71	5.80	5.90	6.00	6.10	6.20	6.30	6.39	6.49	6.59
8	6.69	6.79	6.88	6.98	7.08	7.18	7.28	7.38	7.47	7.57
9	7.67	7.77	7.87	7.97	8.06	8.16	8.26	8.36	8.46	8.56
10	8.66	8.76	8.86	8.95	9.05	9.15	9.25	9.35	9.45	9.55
11	9.65	9.75	9.84	9.94	10.04	10.14	10.24	10.34	10.44	10.54
12	10.64	10.73	10.83	10.93	11.03	11.13	11.23	11.33	11.43	11.53

CURVE 90

0	0.00	0.00	0.00	0.01	0.03	0.06	0.10	0.15	0.20	0.26
1	0.32	0.39	0.46	0.53	0.61	0.69	0.77	0.85	0.93	1.01
2	1.10	1.18	1.27	1.35	1.44	1.53	1.62	1.71	1.80	1.89
3	1.99	2.08	2.17	2.26	2.36	2.45	2.54	2.64	2.73	2.83
4	2.92	3.02	3.11	3.20	3.30	3.40	3.49	3.59	3.69	3.78
5	3.88	3.97	4.07	4.17	4.26	4.36	4.46	4.56	4.65	4.75
6	4.85	4.95	5.04	5.14	5.24	5.34	5.44	5.54	5.63	5.73
7	5.83	5.92	6.02	6.12	6.21	6.31	6.41	6.51	6.61	6.71
8	6.81	6.91	7.01	7.11	7.20	7.30	7.40	7.50	7.60	7.70
9	7.79	7.89	7.99	8.09	8.19	8.29	8.39	8.49	8.58	8.68
10	8.78	8.88	8.98	9.08	9.18	9.28	9.38	9.48	9.57	9.67
11	9.77	9.87	9.97	10.07	10.17	10.27	11.37	10.47	10.57	10.67
12	10.77	10.86	10.96	11.06	11.16	11.26	11.36	11.46	11.56	11.66

CURVE 91

0	0.00	0.00	0.00	0.01	0.03	0.07	0.12	0.17	0.23	0.29
1	0.36	0.43	0.50	0.58	0.66	0.74	0.82	0.91	0.99	1.08
2	1.17	1.25	1.34	1.43	1.52	1.61	1.70	1.80	1.89	1.98
3	2.07	2.16	2.26	2.35	2.44	2.54	2.63	2.73	2.83	2.92
4	3.02	3.11	3.21	3.30	3.40	3.50	3.59	3.69	3.79	3.89
5	3.99	4.08	4.17	4.27	4.37	4.47	4.56	4.66	4.76	4.86
6	4.96	5.05	5.15	5.25	5.34	5.44	5.54	5.64	5.74	5.84
7	5.94	6.04	6.14	6.24	6.34	6.44	6.53	6.63	6.73	6.83
8	6.93	7.03	7.13	7.23	7.33	7.43	7.52	7.62	7.72	7.82
9	7.92	8.02	8.12	8.22	8.31	8.41	8.51	8.61	8.71	8.81
10	8.91	9.01	9.11	9.21	9.31	9.41	9.51	9.61	9.71	9.80
11	9.90	10.00	10.10	10.20	10.30	10.40	10.50	10.60	10.70	10.80
12	10.89	10.99	11.09	11.19	11.29	11.39	11.49	11.59	11.69	11.79

Exhibit 2-7A

REFERENCE	U. S. DEPARTMENT OF AGRICULTURE	TSC - NE - ENG.
SCS TR-16	SOIL CONSERVATION SERVICE	220
	ENGINEERING & WATERSHED PLANNING UNIT, BROOMALL, PENNSYLVANIA	SHEET 11 OF 14

EXHIBIT 3-7

PEAK DISCHARGE GRAPHS (10)

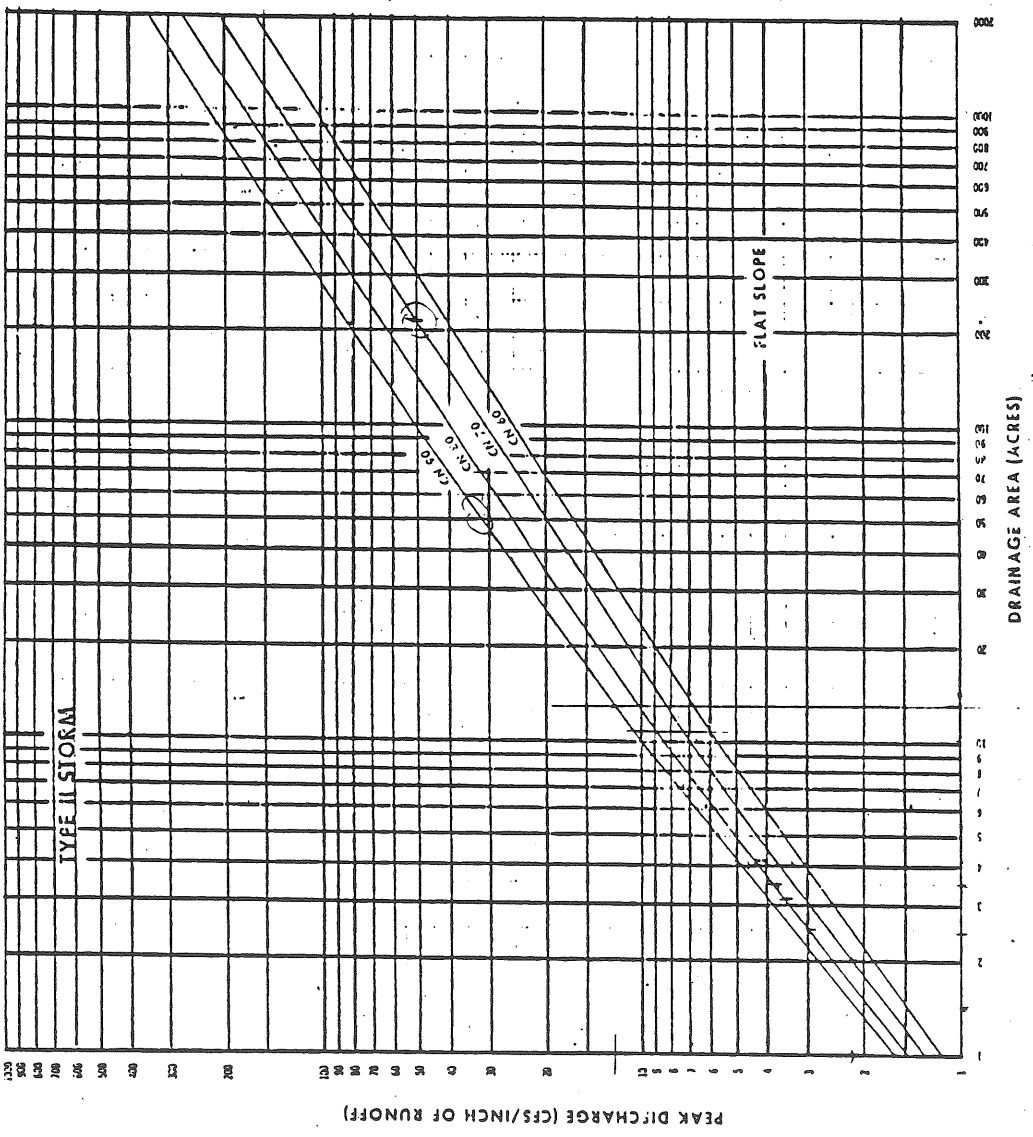


EXHIBIT 4-1

ORIFICE DISCHARGE CURVES

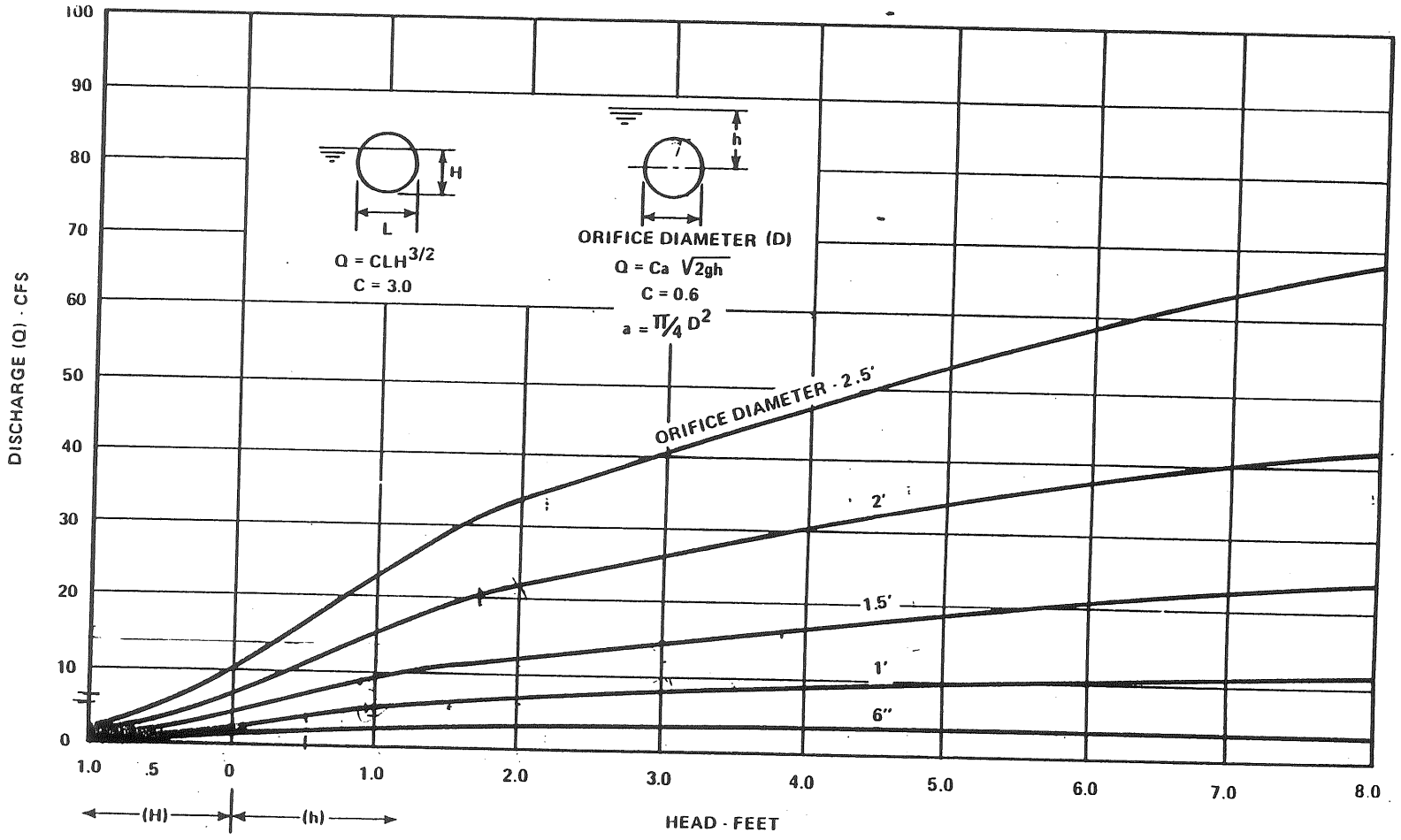


EXHIBIT 4-2

WEIR DISCHARGE CURVES

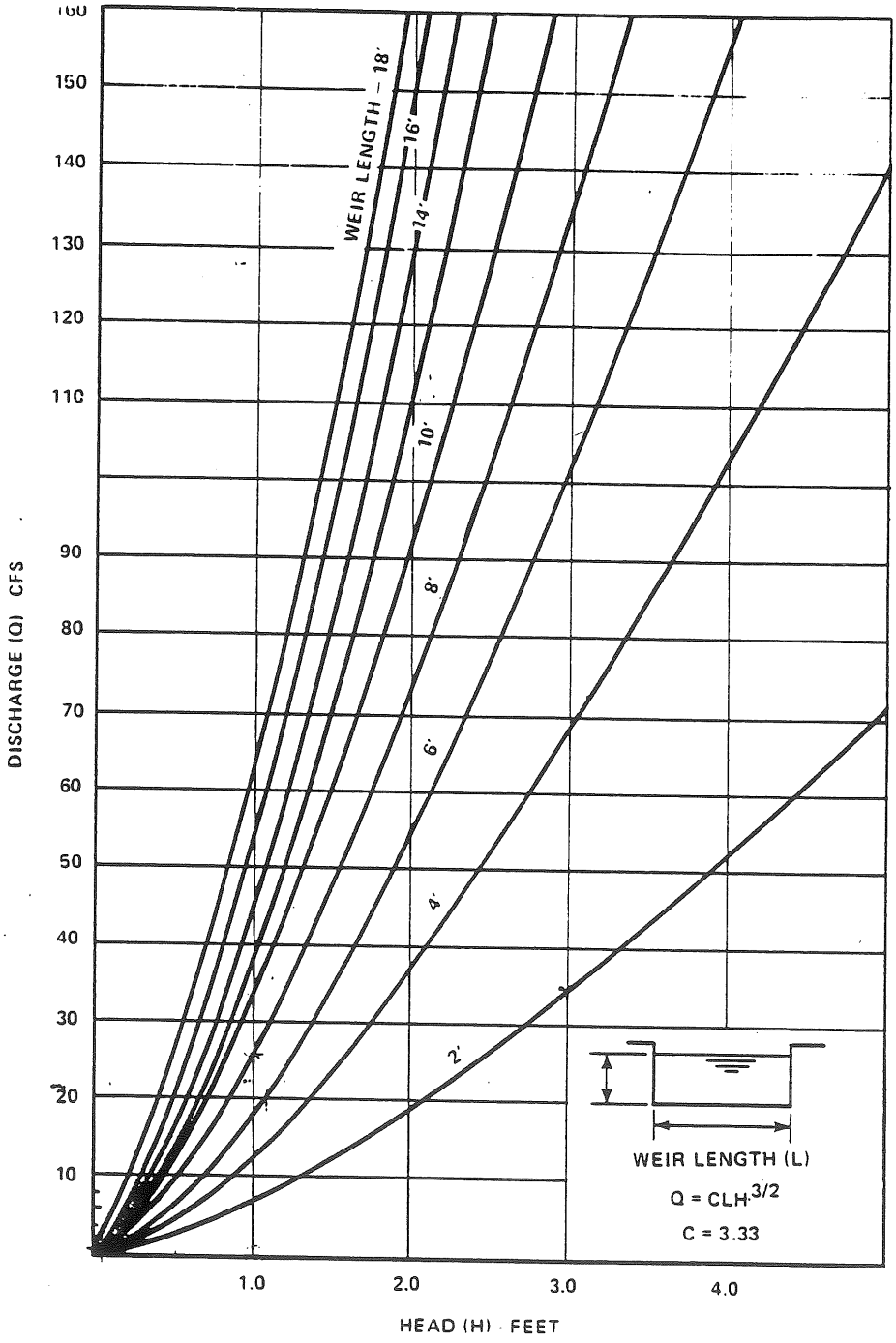


EXHIBIT 5-2

APPROXIMATE STRUCTURE ROUTING FOR HIGH RELEASE RATES (10) (TYPE II DISTRIBUTION 24-HOUR RAINFALL)

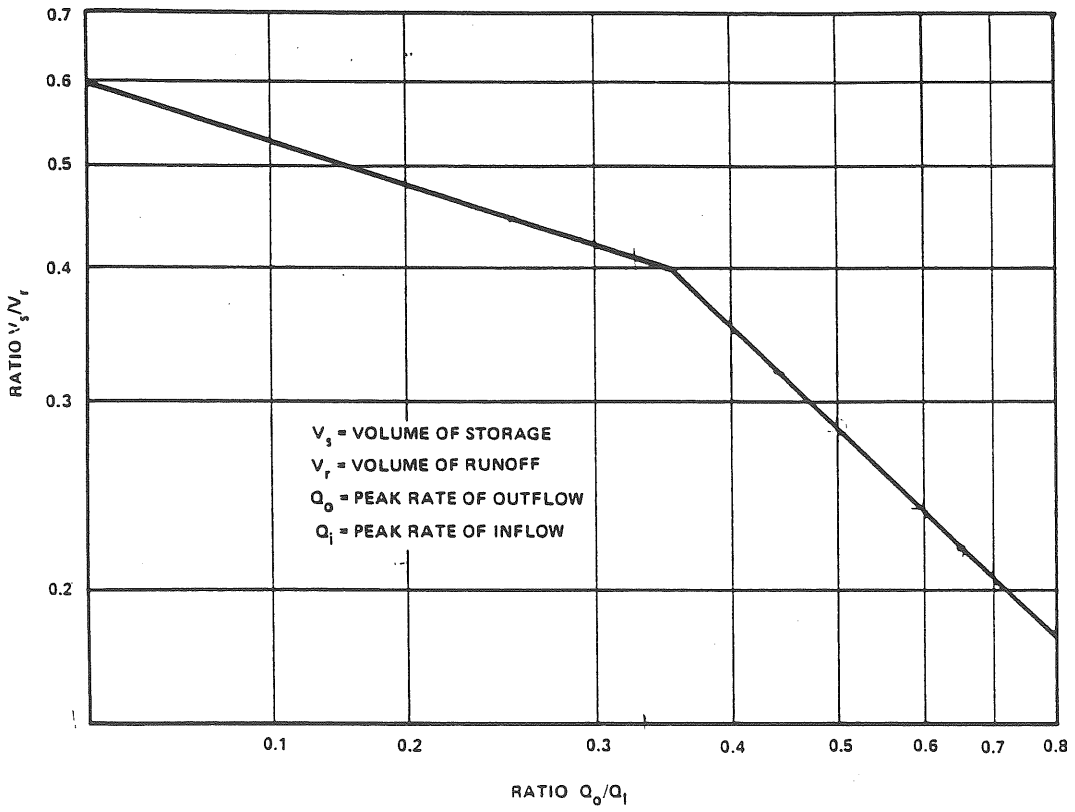


EXHIBIT G

BH2M BERRY · HUFF · McDONALD · MILLIGAN · INC.

ENGINEERS • SURVEYORS • PLANNERS

LESTER S. BERRY, JR.
JAMES R. McDONALD
THOMAS MILLIGAN, JR.

August 27, 1984

The Dartmouth Company
489 Congress Street
Portland, ME 04101

Attention: Mr. F. Gordon Hamlin, Jr.

Re: Storm Drainage and Sanitary Sewage Flows
Glenridge Project
Brighton Avenue, Portland, Maine

Dear Gordon:

As a result of the August 14, 1984 public hearing for the above project I have compiled some additional information relating to storm drainage and sanitary sewage flows in the hope that this will clarify information in our original submission.

Storm Drainage

The peak storm water runoff from each drainage area, for a 25 year and a 2 year storm are shown clearly in the summary of our Storm Water Management Report.

The most significant point to understand is that the peak storm water runoff for each drainage area will be reduced as a result of the proposed Glenridge development.

Based on the theoretical 25 year storm with a Type II distribution pattern, we have calculated that the detention basin will be full (Elevation 42.5') for less than one hour.

For the theoretical 2 year storm the basin will not reach full level. We calculate that for the 2 year storm there will be 2 feet of water in the basin (to Elevation 41) for a period of less than one hour.

Following the cessation of the theoretical 2 year or 25 year storm the detention basin would completely drain within a period of less than 30 minutes.

Sanitary Sewage Flows

The sanitary sewage for the project will connect to the manhole in Brighton Avenue as shown on the plans. This manhole is drained by an 18 inch concrete combined sewer at a grade of 1.5%. The following calculations are made to show the relationship of sanitary sewage flows to the capacity of the 18 inch sewer.

Capacity of 18 inch sewer at 1.5% = 17 c.f.s. (See Attached Chart)

Sanitary Flows

Average Flow 100 units @ 300 gallons/day = 30,000 gallons/day = .046 cfs

Maximum Flow = 5 x 30,000 = 150,000 gallons/day = 0.23 cfs

% of 18" capacity used for max. sanitary flow = $\frac{0.23}{17}$ cfs = 1.3%

% of 18" capacity used for average sanitary flow = $\frac{0.046}{17}$ = 0.26%

From the above it can be seen that the sanitary sewer flows from the proposed Glenridge project are insignificant when compared to the capacity of the 18 inch sewer serving the project.

If you have any questions on any of the above please let me know.

Very truly yours,

BERRY HUFF MCDONALD MILLIGAN INC.

James R. McDonald

Enclosure

cc: Mitchell DeWan

JRM/taf

EXHIBIT H

Portland Water District

225 Douglass St. • P.O. Box 3553 • Portland, ME 04104-3553

(207) 774-5961

July 9, 1984

RECEIVED JUL 13 1984

Mr. Jim McDonald
BH2M
28 State Street
Gorham, ME 04038

Re: Glenridge Project

Dear Jim,

We received your preliminary plan of the Glenridge project.

The concept of an 8" service and 6" meter is acceptable to the District. We are enclosing a plan of a 6" underground meter vault for your information. The cost of the service and meter vault to be a developer expense. The private hydrant can be purchased from the District, so as to conform to District standards.

The existing 8" water main can stay in the portion of Jeanne Street that is to be bypassed, so long as the street and right-of-way is not abandoned. However, if the street is to be abandoned, we would abandon the water line and require the developer to install an 8" water main in the relocated portion of Jeanne Street.

We trust this answers your questions. If further information is needed, please be in touch.

Very truly yours,

Donald E. Wyman
Director of Marketing/Customer Relations

DEW/d

Enclosure

EXHIBIT I

RECEIVED MAY 11 1984

CITY OF PORTLAND

GEORGE A. FLAHERTY
DIRECTOR OF PARKS & PUBLIC WORKS

May 4, 1984

James MacDonald
B.H.2M.
28 State Street
Gorham, Maine 04038

Re: Proposed Development on Brighton Avenue between Jeanne St. and Wayside Road, Portland Maine

Dear Mr. MacDonald:

The 10" dia., 12" dia., 15" dia. Vit. Clay, and 18' dia. RCP public sewers in Brighton Avenue and Jeanne Street as well as the wastewater treatment facilities in the City of Portland have adequate capacity to transport and treat the anticipated sanitary wastewater flows from the proposed development. Attached are two sheets showing the locations and sizes of the public sewers in that area.

In regard to Stormwater Runoff from the proposed development, I can state that with proper engineering a suitable solution can be obtained. As I stated in our telephone conversation the City has plans to make improvements to the public sewer system in this area by continuing the Sanitary/Stormwater Separation Program (recently completed in Deering Center) through the area of the proposed development. I would appreciate meeting with you to discuss the proposed development and the possibilities of coordinating the proposed public improvements with the development.

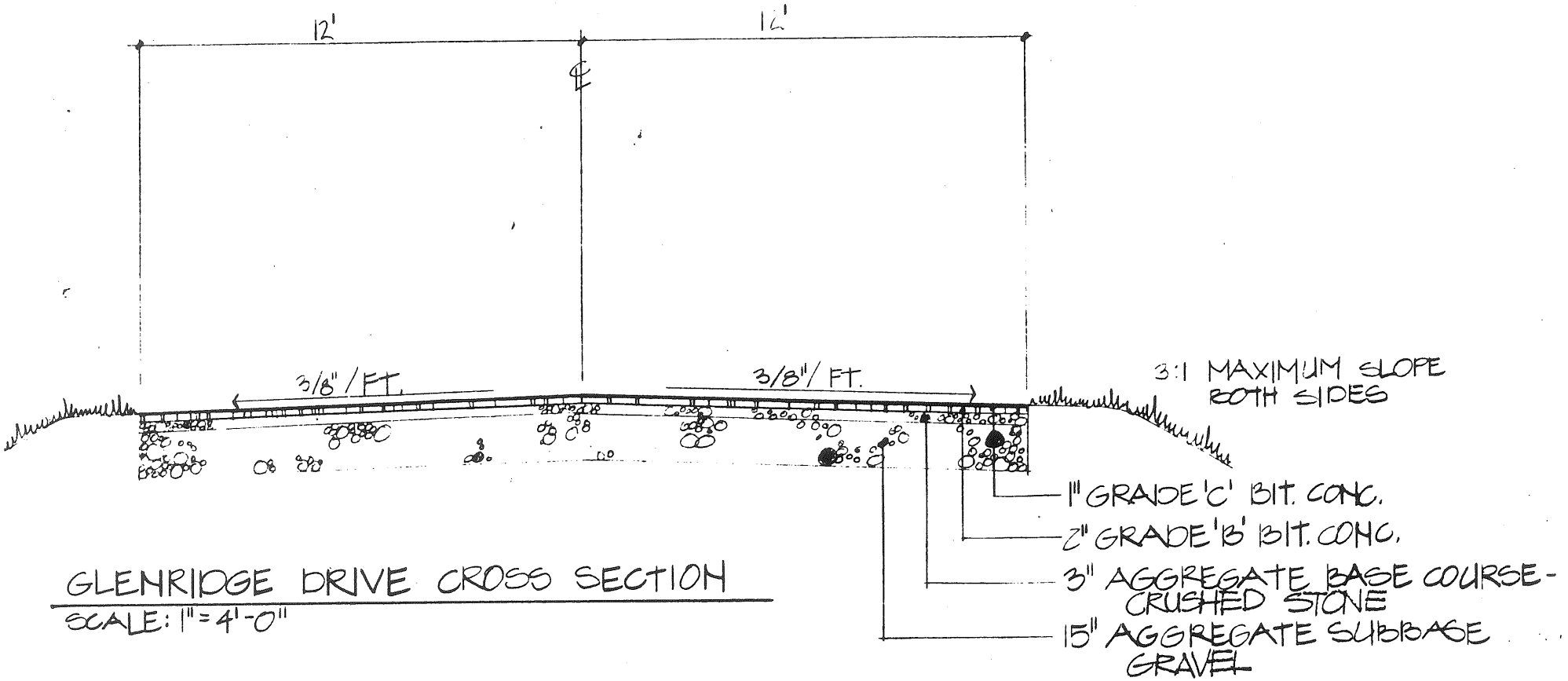
Sincerely,

William B. Goodwin

William B. Goodwin, P.E.
Environmental Project Engineer

WBG/HP-86B

Enclosure



GLENRIDGE DRIVE CROSS SECTION

SCALE: 1" = 4'-0"

EXHIBIT J

#17

The Dartmouth Company maintenance staff, which will include one superintendent, an assistant and a part-time employee, will be responsible for all commonly owned facilities such as plowing all roads, parking lots, walkways, all ground maintenance, all exterior lighting and all recreational facilities provided.

We will also be responsible for maintaining the water system as follows:

1. Maintain accurate record map of the system showing as built location of all water mains and valves.

2. Operate all valves at least annually. Bring valve covers to grade as needed.

3. Flush hydrant on same schedule as Portland Water District.

Sanitary Sewer System:

1. Maintain accurate record map of system showing as built location.

2. Inspect manholes spring and fall for obstructions to flow. If evidence of obstruction exists flush line to remove obstruction.

3. If area is regraded , bring manhole covers to grade.

Stone Water System

1. Maintain accurate record map of system showing as built locations of all pipes, catch basins, and manholes.

2. Clean out catch basins on an annual program or more frequently if experience indicators.

3. Inspect pipes annually for evidence of obstructions to flows.

Detention Basin

1. The detention basin shall be maintained in such a way as to accomplish the goal of the design of the detention basin.

2. Spring and fall and after every major storm, inspect all parts of the detention basin.

3. Periodic mowing of interior basin and embankments.

4. Remove all accumulation of silt and debris on an annual basis.

We will also be responsible for inside apartment maintenance. We retain through our telephone answering service a qualified office employee on a 24 hour basis, 365 days a year for the handling of emergencies. Our men are all equipped with radios and can be reached at any time with the use of these radios with the bay station being provided at The Dartmouth office and our answering service.

LANGUAGE TO BE INCLUDED IN AN
AGREEMENT TO MAINTAIN FIRELANE

The Developer, for itself, its successors and assigns, does hereby covenant with the City, its sucessors and assigns, that the area shown as "Emergency Access" on a subdivision plot plan entitled _____ and dated _____, 1984 and approved on _____, be maintained in the condition hereafter described:

A. It shall be at least 16 feet in width, with a roadway at least 12 feet in width which contains a minimum depth of 12" of gravel.

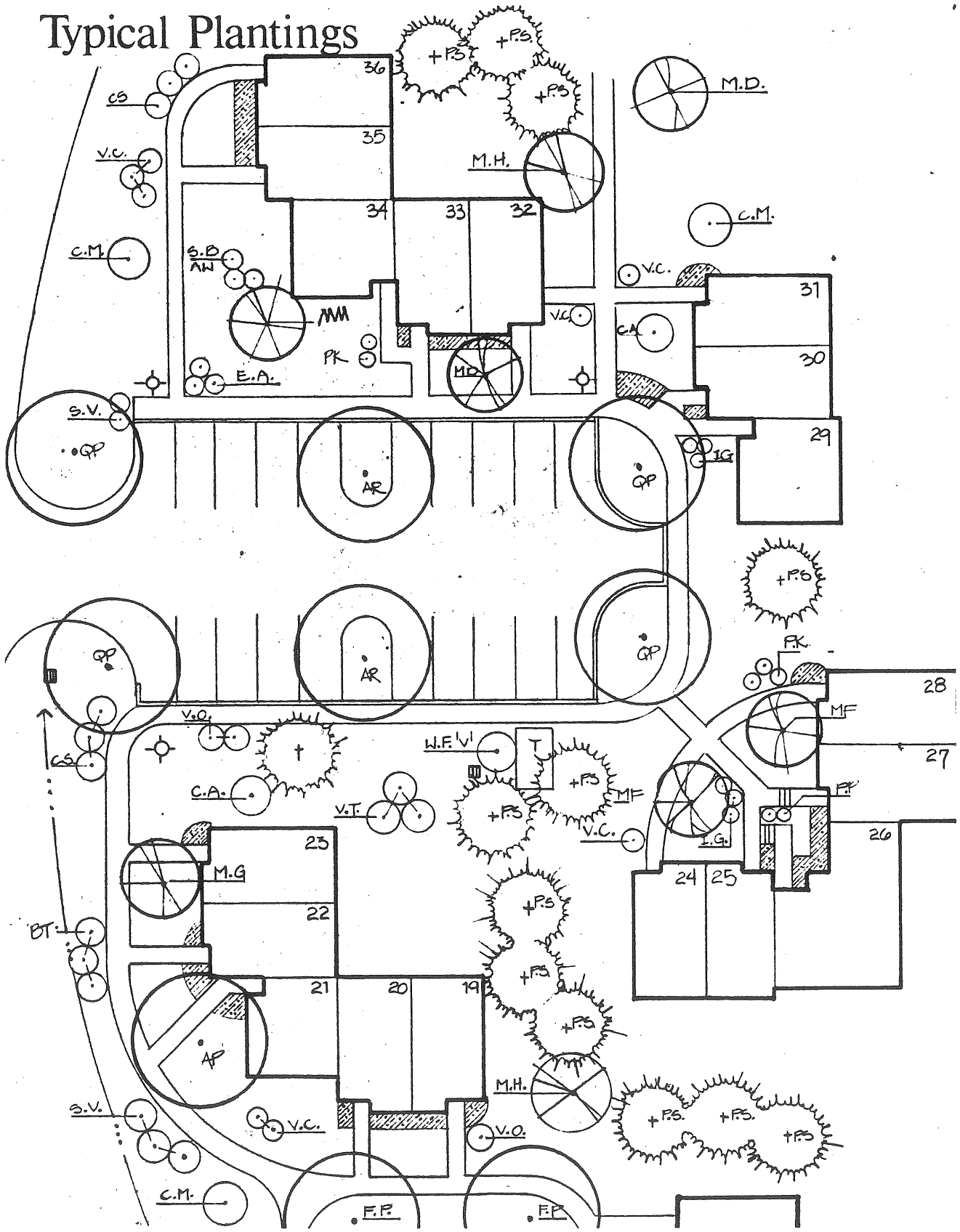
B. It shall be completely clear and in good repair so as to be safe and convenient for emergency vehicles during all seasons of the year.

C. It shall contain a gate which bars non-emergency access, but which permits immediate access by emergency vehicles.

D. It shall not be utilized as a parking area and shall contain signs appropriately painted with "NO PARKING - FIRE LANE - This lane shall be clear at all times for emergency vehicles."

The Developer further covenants for itself, its successors and assigns that should the Developer or its successors and assigns commit any breach of this covenant, the City may enter the premises and correct the breach. The Developer agrees that it and its successors and assigns, shall pay the City for all expenses reasonably incurred in the correction of any such breach.

Typical Plantings



Plant List

AB.	QNTY.	BOTANICAL NAME	COMMON NAME	SIZE
		TREES		
AP	2	Acer platinoides 'Crim. King'	Crimson King Maple	2½-3" cal.
AR	11	Acer rubrum	Red Maple	2½-3" cal.
AC	5	Aesculus carnea 'Briotti'	Ruby Red Horsechestnut	2-2½" cal.
AM	3	Amelanchier canadensis	Downy Shadblow	8-10' ht.
BA	1	Betula alba	European White Birch	2½-3" cal.
BP	2	Betula pendula 'Gracilis'	Cutleaf Weeping Birch	2½-3" cal
FP	12	Fraxinus pennsylvanica 'Aut. Purp.'	Autumn Purple White Ash	2½-3" cal.
MS	4	Magnolia soulangeana	Saucer Magnolia	6-8' ht.
MD	3	Malus 'Dolgo'	Dolgo Crabapple	1½-2" cal.
MF	11	Malus floribunda	Japanese Flowering Crab	1½-2" cal.
MG	3	Malus 'Golden Hornet'	Golden Hornet Crabapple	1½-2" cal.
MH	10	Malus 'Hopa'	Hopa Crabapple	1½-2" cal.
MM	9	Malus 'Mary Potter'	Mary Potter Crabapple	1½-2" cal.
PA	4	Phellodendron amurense	Amur Corktree	2½-3" cal.
PN	37	Pinus nigra	Austrian Pine (mixed sizes)	4-7' ht
PS	70	Pinus strobus	Eastern White Pine (mixed sizes)	5-8' ht.
PR	9	Prunus sargenti	Sargent Cherry	2-2½" cal.
QP	14	Quercus palustris	Pin Oak	2½-3" cal.
SN	7	Salix niobe	Golden Weeping Willow	2-2½" cal.
TC	6	Tilia cordata	Littleleaf Linden	2½-3" cal.
		SHRUBS		
AS	12	Acanthopanax sieboldianus	Five-leaved Acanthopanax	4-5' ht.
BT	9	Berberis thunbergi atropurpurea	Redleaf Japanese Barberry	18-24" ht.
CA	5	Caragana arborescens	Siberian Peashrub	3-4' ht.
CH	9	Chaenomeles x superba 'Tex. Scar.'	Texas Scarlet Quince	18-24" ht.
CL	8	Clethra alnifolia	Summersweet Clethra	3-4' ht
CM	10	Cornus mas	Corneliancherry Dogwood	5-6' ht.
CS	10	Cornus siberica	Siberian Dogwood	4-5' ht.
CR	12	Cornus stolonifera	Redosier Dogwood	3-4' ht.
EU	35	Elaeagnus umbellata	Autumn Olive	3-4' ht.
EA	16	Euonymus alatus compacta	Dwarf Winged Euonymus	18-24" ht.
FI	8	Forsythia intermedia 'Lynwood Gold'	Linwood Gold Forsythia	18-24" ht.
IG	12	Ilex glabra compacta	Inkberry	18- 24" ht
IV	10	Ilex verticillata	Common Winterberry	3-4' ht.
LO	10	Ligustrum obtusifolium regalianum	Regal Privet	2-3' ht.
LZ	8	Lonicera 'Zabelli'	Zabelli Honeysuckle	3-4' ht.
PV	8	Philadelphus virginalis	Virginalis Mockorange	3-4' ht.
PK	12	Potentilla 'Katherine Dykes'	Katherine Dykes Potentilla	18-24" ht.
PP	10	Potentilla 'Primrose Beauty'	Primrose Beauty Potentills	15-18" ht.
RF	15	Rhamnus frangula	Common Buckthorn	5-6' ht.
SP	12	Salix purpurea	Dwarf Arctic Willow	2-3' ht.
SB	10	Spiraea x bumalda 'Anthony Waterer'	Anthony Waterer Spirea	18-24" ht.
SG	8	Spiraea x bumalda 'Gold Flame'	Gold Flame Spirea	18-24" ht.
SV	12	Spiraea vanhouttei	Bridalwreath Spirea	3-4' ht.
SA	12	Symphoricarpos alba	Common Snowberry	2-3' ht.
VC	15	Viburnum carlesi	Koreanspice Viburnum	18-24" ht.
VO	10	Viburnum opulus	European Highbush Cranberry	2-3' ht.
VS	6	Viburnum opulus sterile	Common Snowball	2-3' ht.
WV	6	Weigela vaniceki	Vanecki Weigela	2-3' ht.
		PERENNIALS		
HE	150	Hemerocalis sp.	Daylilies (mixed colors)	2 yr
HO	100	Hosta sp.	Hosta (mixed varieties)	2 yr
IR	100	Iris siberica	Siberian Iris	2 yr
RU	75	Rudbeckia	Coneflower/Shasta Daisy	2 yr

EXHIBIT N

John L. Murphy • Civil Engineer

BOX 200, R. F. D. 1
WEST BALDWIN, MAINE 04091
Telephone 207-625-8222

May 7, 1984

Traffic Impact
110 Apartment Complex
Brighton Avenue
Portland, Maine

Introduction

Dartmouth Realty Company of Portland, Maine has proposed the installation of up to 110 apartment units on Brighton Avenue between Jeanne Street and Wayside Drive. During March and April of 1984 traffic data was collected on roadways surrounding and abutting the proposed project. The traffic count summary sheets are attached for further analysis by the City, if desired. The data collected was as follows:

1. Twenty-four hour weekday traffic counts at Brighton Avenue and Jeanne Street, Brighton Avenue and Wayside Road, and Ludlow Street at Jeanne Street. These counts were taken twice, first in March and again in April.

2. Spot speed study on Brighton Avenue in front of the proposed site.

3. Accidents on Jeanne Street and on Brighton Avenue adjacent to the site for 1981 through February of 1984.

4. Sight distance measurements for intersection sight distance on Brighton Avenue and Jeanne Street.

Analysis of Data

The traffic volume data (attached) showed that Jeanne Street varied in 24 hour volume from 474 to 515 on the Brighton Avenue end and from 485 to 531 on the Ludlow Street end. Ludlow Street east of Jeanne Street varied from 3024 to 3076 indicating a function as a collector type facility for the surrounding residential area. Wayside Drive varied from 879 vehicles per day to 950 vehicles per day. The four 24 hour weekday counts on Brighton Avenue in front of the site varied from a low of 18,816 to a high of 20,942 to average 19,494 vehicles during the 24 hour weekday. Fuller Street at Ludlow Street was counted only once, resulting in 424 vehicles per 24 hour weekday.

Thus the 24 hour weekday volumes show Ludlow Street as a collector with Brighton Avenue as a major artery. Wayside Drive and Jeanne Street function as local streets serving residential neighborhoods and also connecting the major artery to the Ludlow Street collector. The volumes further show that Wayside Drive on the Brighton Avenue end has 1.85 times as much traffic as Jeanne Street. (It also serves a larger residential area.) Yet Wayside Drive at Brighton Avenue functions without any measurable level of congestion or undue delay.

The attached spot speed study conducted using a radar device indicated that the mean speed on Brighton Avenue in front of the proposed project was 39.35 MPH eastbound and 39.66 MPH westbound. The 85% operating speed was 41.8 MPH eastbound and 41.6 MPH westbound. The 85% speeds are the indication of what the reasonable driver believes to be a safe speed in the area. The 85% speeds are thus used in determination of sight distance requirements, posted speed limits, and warrants for traffic signals. The 1982 edition of the Transportation Engineering Handbook published by the Institute of Transportation Engineers, regarding required safe intersection sight distance, specifies a requirement of 400 feet for 40 miles per hour and 500 feet for 50 miles per hour. Sight distance from the proposed driveway on Brighton Avenue was measured as in excess of 610 feet along the critical approach on the east. This distance is more than adequate for 42 miles per hour determined as the 85% speed.

The 1978 Manual on Uniform Traffic Control Devices has specified warrants for installation of traffic signals. The volume warrants are reduced to 70% of required if the operating speed measured is over 40 MPH. This is the situation for the proposed project. Warrant #2, Interruption of Continuous Traffic, was investigated using 70% of required volume. This meant that the warrant would be satisfied if, for each of any eight hours of an average day, 630 vehicles exist on the total of both approaches of Brighton Avenue and 53 vehicles exist on the minor street approach. The 630 vehicle requirement is obviously satisfied on Brighton Avenue, thus only the 53 vehicle per hour requirement was projected under the two extreme potential situations as follows:

1. Access to Brighton Avenue only with 110 apartment units.

2. Access to Brighton Avenue and Jeanne Street with all Jeanne Street traffic entering and exiting Brighton Avenue through the proposed project access point on Brighton Avenue and all project approach traffic using the Brighton Avenue entrance.

Based upon the maximum of 9.2 trips per day per unit of apartments as specified in the 1982 Trip Generation Manual published by the Institute of Transportation Engineers, the project of 110 units would produce 1012 trips per day. The existing counts of Jeanne Street traffic during March of 1984 were then divided into a percentage of daily traffic per each hour at the Brighton Avenue end. The 1012 trips per day were thus divided using these percentages of existing Jeanne Street flow to determine hourly volumes. The projected approach volumes were derived using a 50% split of the newly generated traffic to develop a worst case situation for use in Warrant #2 analysis. The Jeanne Street two-way volumes actually counted were used in projected volume determinations.

A table showing the analysis by hourly volume is attached. The result of the analysis is that traffic signals are not warranted under Warrant #2 even if Jeanne Street traffic combines with the project traffic in one access to Brighton Avenue and all traffic from the project uses the Brighton Avenue entrance. This analysis is a worst case situation because no approach traffic is assigned to Jeanne Street and this obviously will not be the case.

Thus the result of this phase of analysis is that the project will not generate enough traffic to warrant signals at a Brighton Avenue entrance.

The final phase of study was the existing accidents on Brighton Avenue and Jeanne Street in the vicinity of the project. Portland Police Department records were reviewed for the period from January 1, 1981 through February 29, 1984. This analysis indicated that two fatal accidents had occurred at Brighton Avenue and Jeanne Street. Both accidents involved eastbound vehicles. In one case, the fatality was a pedestrian, in the other it was a moped operator. No apparent patterns existed at any specific location to a degree that indicated any existing safety problem. The accident total breakdowns for the 3 year, 2 month period are as follows:

1. Brighton Avenue at Jeanne Street (node) - 6 accidents.
2. Brighton Avenue at Wayside Drive (node) - 7 accidents.
3. Brighton Avenue between Wayside and Jeanne (link) - 11 accidents.
4. Jeanne Street between Brighton Avenue and Ludlow St. - 3 accidents.

Conclusions

1. No measurable congestion problems will result from additional traffic to be generated by the project.

2. Project traffic does not warrant traffic signals.

3. There is no existing safety problem in the area which is apparent from existing accident data.

4. Sight distance on Brighton Avenue from the proposed driveway is adequate.

5. A second project driveway is recommended on Jeanne Street for emergency access and better distribution of project traffic to desired destinations on the existing public roadway system. Even if 40% of all the anticipated project traffic is added to the 531 counted vehicles on Jeanne Street, the total volume of 531 + 405 = 936 vehicles per day is approximately the same as the existing 950 vehicles per day counted on Wayside Drive.

John L. Murphy • Civil Engineer

BOX 200, R. F. D. 1
WEST BALDWIN, MAINE 04091
Telephone 207-625-8222

August 27, 1984

Terry Dewan
c/o Mitchell Dewan
386 Fore Street
Portland, Maine 04101

Re: Glenridge Project

Dear Terry:

Subsequent to Gordon Hamlin's letter of August 20, 1984 I have performed some additional data collection on Jeanne Street. This consisted of an origin-destination license plate study from 8:15 AM to 11:15 AM on Thursday, August 23, 1984 and from 3:30 PM to 5:30 PM on Friday, August 24, 1984. (I am aware that school was not in session during these days.)

This data was collected to aid in documentation of trip distribution from our project based upon actual travel patterns on Jeanne Street. The license plate survey taken in 5 minute increments enabled a breakdown in directional split plus elimination of thru trips. A maximum possible trip length of 10 minutes with the majority of trips less than 5 minutes enabled breakout of trips made by those assumed to be familiar with the area: those having business on Jeanne Street, Wingate Drive or Phipps Road or residents of the area.

The original statement that 40% of trips from Glenridge might tend to use Jeanne Street was based upon mechanical counter analysis and the fact that there are 53 completed houses on Jeanne Street, Wingate Drive and Phipps Road. Of these houses only 11 driveways (plus one of the two driveways from the house on the westerly corner of Brighton Avenue at Jeanne Street) are closer to Brighton Avenue than to Ludlow Street. Thus less than $\frac{1}{4}$ of the 53 homes with access to Wingate Drive, Jeanne Street or Phipps Road have a shorter distance to travel to Brighton Avenue than to Ludlow Street. However mechanical counters showed approximately an even distribution of traffic on Jeanne Street with slight preference for the Ludlow Street end. This means that traffic appears to travel farther to use Brighton Avenue than Ludlow Street and resulted in the 40% estimate of Glenridge traffic on Jeanne Street.

Since Glenridge occupants will be residents, the origin-destination analysis was performed to see how current residents and those familiar with the existing neighborhood and having business in the neighborhood use Jeanne Street.

On both days observed in August 1984, approximately 52% of the trips that began or ended within the Jeanne Street neighborhood used Brighton Avenue rather than Ludlow Street. Of the total trips at the Ludlow Street end of Jeanne Street approximately 63% were trips beginning or ending in the neighborhood and 66% of the trips at the Brighton Avenue end were beginning or ending in the immediate neighborhood. Thus based upon the origin-destination data and the mechanical counts, those with trip ends in the area tend to use Brighton Avenue (52% of origin-destination) even though more than 75% of the houses in the neighborhood have a shorter trip to Ludlow Street

Thus based upon the previous analysis and the origin-destination data plus the location of Glenridge on the Brighton Avenue end of Jeanne Street 40% to 45% of the trips from Glenridge is a good estimate of maximum potential trip desire to use Jeanne Street. Thus Jeanne Street would have approximately the same traffic profile as Wayside Drive at Brighton Avenue.

Without the direct connection to Jeanne Street from Glenridge the same trip desire would exist, however since two left turns would be required for Glenridge residents to use Jeanne Street only 35% to 40% of the trips are expected to use this route. The result would be a more difficult left turn from Jeanne Street onto Brighton Avenue due to the increase of left turns from Glenridge into Jeanne Street. This type of interference is recognized in Circular 212 published by the Highway Research Board in 1980 describing methods to analyze unsignalized intersections. The left turn from a side street to the major street is the most difficult maneuver from any intersection and additional difficulty results with conflicts from left turns from the major street into the side street.

The delay results on the side street and not on the major street. Thus placing an entrance from Glenridge on Brighton Avenue would more severely impact existing Jeanne Street traffic at Brighton Avenue than the currently proposed design with Jeanne Street access. This would be due to estimated left turn interference of from 175 to 200 new left turns per day with up to 10% of these during the peak one hour. Thus this left turn movement could increase from 21 to 41 during the peak hour with 40% of the desired trips made on Jeanne Street.

Some of the comments made during the public meeting are worth further clarification, particularly the one about higher volumes in the past. Major capacity improvements at the nearby Rosemont intersection on Brighton Avenue during 1979 probably decreased thru trip desires. The conclusion regarding a reduction in thru trips is based upon the fact that the higher volume counts were made with less houses in the neighborhood on Wingate Drive and Phipps Road. Thus potholes probably did not account for a volume decrease on Jeanne Street.

The traffic "problems" referred to are not substantiated by facts or testimony of even the City's expert in traffic. A single entrance on Brighton Avenue from Glenridge will increase delay for left turn traffic from Jeanne Street to Brighton Avenue. This will result in acceptance of shorter gaps in traffic with potential increase in the dangerous 90° angle type impact accident. The potential is greater due to the short sight distance from Jeanne Street on Brighton Avenue as documented by Bill Bray, City Traffic Engineer, in his memo to the Planning Board.

The comments regarding my collection of data are erroneous. I did not collect the March and April 1984 traffic counts. I merely supervised the City in placing their mechanical counters. The developer paid the City for these counts and copies of the counts are attached to my report. These counts were made to get a relative idea and comparison of traffic on Jeanne Street vs. Wayside Drive as well as other surrounding streets. The counts must be adjusted by factoring to compare with counts taken at a later date. Thus to derive an average annual daily traffic (AADT) figure for 1984 the March counts taken would be factored by 0.9668, the April counts by 0.9355 and counts taken last week by 0.8662. This is based upon statewide urban group IV factors kept by MDOT.

Sincerely,

John L. Murphy

cc: Gordon Hamlin

The
Dartmouth
Company

489 Congress St.
P.O. Box 4570
Portland, Maine 04112
(207) 772-2794

August 10, 1984

City of Portland, Maine
389 Congress Street
Portland, ME 04101

RE: The Dartmouth Company - Subdivision and Site Approval of Property at Intersection of Brighton Avenue and Jeanne Street

Ladies and Gentlemen:

This letter is to evidence our agreement, as part of the approval of our application under the subdivision and site ordinances, that we will provide a portion of the cost of installing a stop light at the intersection of Brighton Avenue and Jeanne Streets, if such a stop light is required as indicated herein.

If the City of Portland, under its customary criteria, determines that, as of a date two years after the date that the last certificate of occupancy is issued for buildings constructed pursuant to the project being approved, The Dartmouth Company will agree to contribute to the City toward the cost of such a stop light, an amount equal to its pro rata share of such costs based on the traffic volume generated by residents of The Dartmouth Company project as a percentage of the overall traffic entering Brighton Avenue from Jeanne Street.

The development of this area by The Dartmouth Company involves a relocation of Jeanne Street and the construction of a new intersection of Jeanne Street with Brighton Avenue. In performing this work, The Dartmouth Company will install three inch conduit pipe for the cables for a stop light in the new street area, in order to avoid the necessity of opening the street at some later date. In the event that a stop light is required as provided herein, so that The Dartmouth Company is required to contribute its portion of the cost thereof, the cost of such three inch conduit and its installation shall be applied against the amount required to be contributed by The Dartmouth Company.

Very truly yours,

F. Gordon Hamlin, Jr.
President

FGH:am

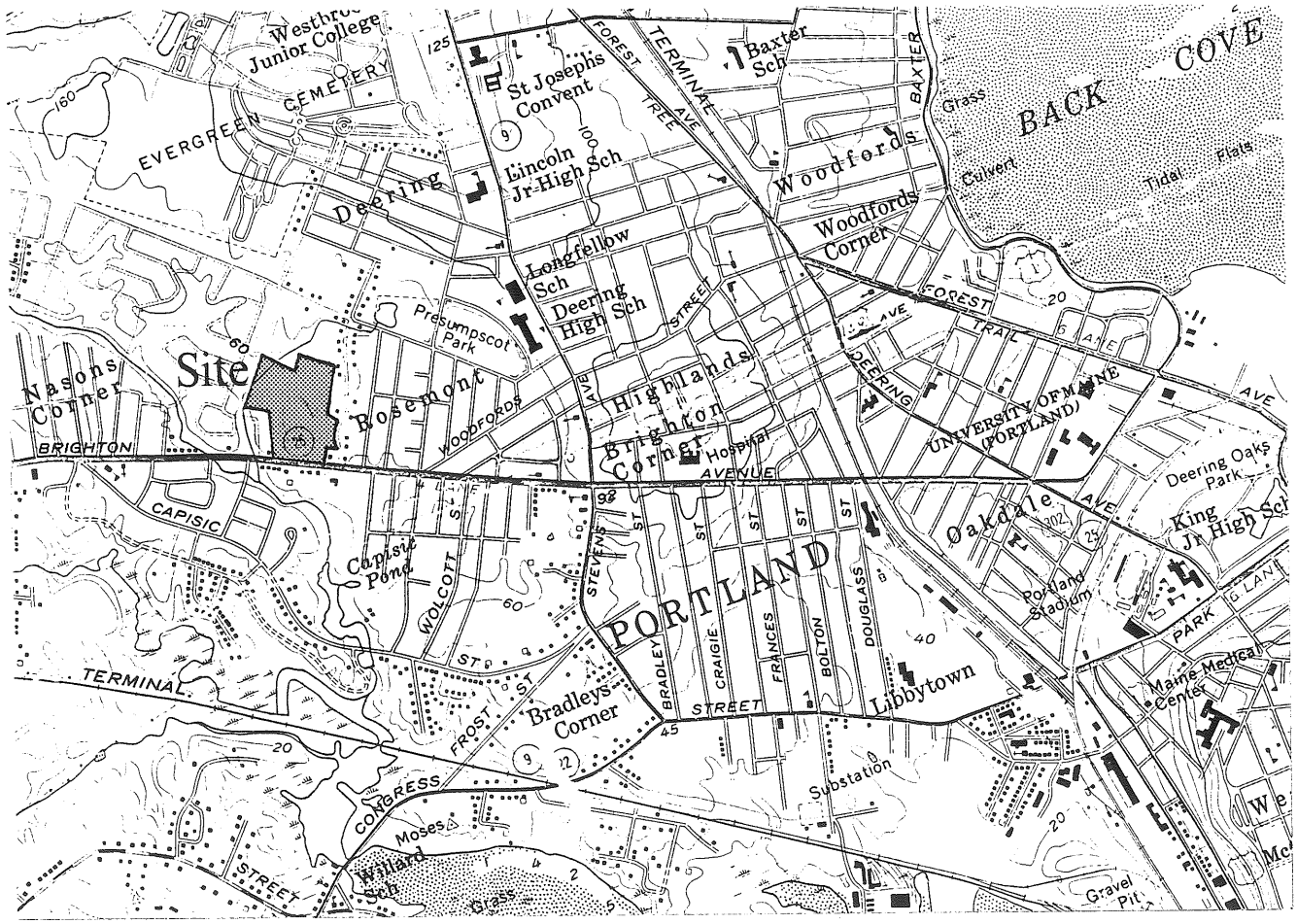

Westbrook Junior College
CEMETERY
EVERGREEN
St Josephs Convent
Lincoln Jr High Sch
Deering
Longfellow Sch
Deering High Sch
Presumpscot Park
Site
Nasons Corner
BRIGHTON
Rosemont
WOODFORDS
Highlands
Brighton Corner
Hospital
AVENUE
FOREST
TERMINAL
TREE
AVE
Baxter Sch
BAXTER
Woodfords
Woodfords Corner
Grass
BACK
COVE
Culvert
Tidal
Flats
STREET
TRAIL
DEERING
UNIVERSITY OF MAINE (PORTLAND)
Deering Oaks Park
King Jr High Sch
Oakdale
Portland Stadium
PARK
PORTLAND
CAPISIC
Capisic Pond
WOLCOTT
STEVENS
BRADLEY
CRAIGIE
FRANCES
BOLTON
DOUGLASS
Libbytown
Maine Medical Center
TERMINAL
FROST
Bradleys Corner
CONGRESS
Moses
Willard Sch
Substation
Gravel Pit

EXHIBIT P

S.W.COLE
ENGINEERING, INC.
GEOTECHNICAL CONSULTANT

2001 HAMMOND STREET
BANGOR, MAINE 04401
TEL. 848-5714

84-34 S
March 20, 1984

Dartmouth Co.
Four Canal Plaza
Portland, Maine 04112

Subject: Dartmouth Co. Site
Brighton Ave.
Portland, Maine

PRELIMINARY REPORT

Gentlemen:

In response to your request we are currently investigating the soils at the project site with respect to the proposed development. On March 08, 1984 we logged six test pits made with a backhoe supplied by R.L. Grondin & Sons of Gorham. Testing of the recovered samples is now underway in our laboratory.

We have put together this interum report to make available information which should be helpful in the planning stages of the proposed project. Enclosed are a bedrock contour map and an area soil-type map of the site.

Sheet 1 is a site plan showing 2 foot ground surface contours taken from the "Topographic Plan for Dartmouth Co." by BH2M with our preliminary interpretation of the general soil types at the site. Sheet 2 is a site contour map showing our interpretation of bedrock as determined from the exploration data, existing topography and on-site observations.

In using this material it must be kept in mind that the information is very generalized and has been prepared only for use as tools in the initial planning stages.

GENERAL SOIL TYPES - SHEET 1

Shallow Rock - Area A - Structures in this area would be founded on rock or on compacted soil mats over rock. This area lends itself to fills (no significant settlements) but not to cuts (drilling and blasting). Consideration also needs to be given to the difficulty of installation of underground utilities.

Brown Clay Over Rock - Area B - This area will accommodate shallow (2 to 3 feet) grading (cuts or fills).

Brown Clay Over Gray Clay - Area C - This area has stiff clays over soft clays. This area will accommodate cutting and some minor filling. The underlying clay soils are compressible but should cause little concern if fills are controlled to thicknesses which will be defined when consolidation test results become available.

Gray Clay - Area D - This area has gray clay at or near the existing ground surface. The clay appears to be over consolidated (at least to the extent of the thickness of clay over burden removed in the brick making process) therefore the area can accommodate some minor uniform filling. Care needs to be exercised not to excavate into or to disturb the underlying clay.

Fill Over Gray Clay - Area E - This area has been recently filled. Any additional loadings are expected to cause significant settlement. If this area is to be used for housing, site preloading will likely be required.

The area on the northwest side of the site beyond Area E has not been explored. If this area is being considered for structures explorations will be required.

The surficial soils in all areas are poorly drained. To provide proper drainage and a moisture barrier beneath the slab (for dry floors) a granular mat should be placed between the existing soils and the slab.

The information provided in this preliminary report is intended for use in preparing the initial siting and grading. The site appears suitable for the proposed usage. The siting of the structures and site grading may well be the key to the successful development of this site.

As test results become available, we will evaluate the project from the soils standpoint with respect to the proposed site grading and submit our final soils report.

If you have any questions as planning goes along, please call.

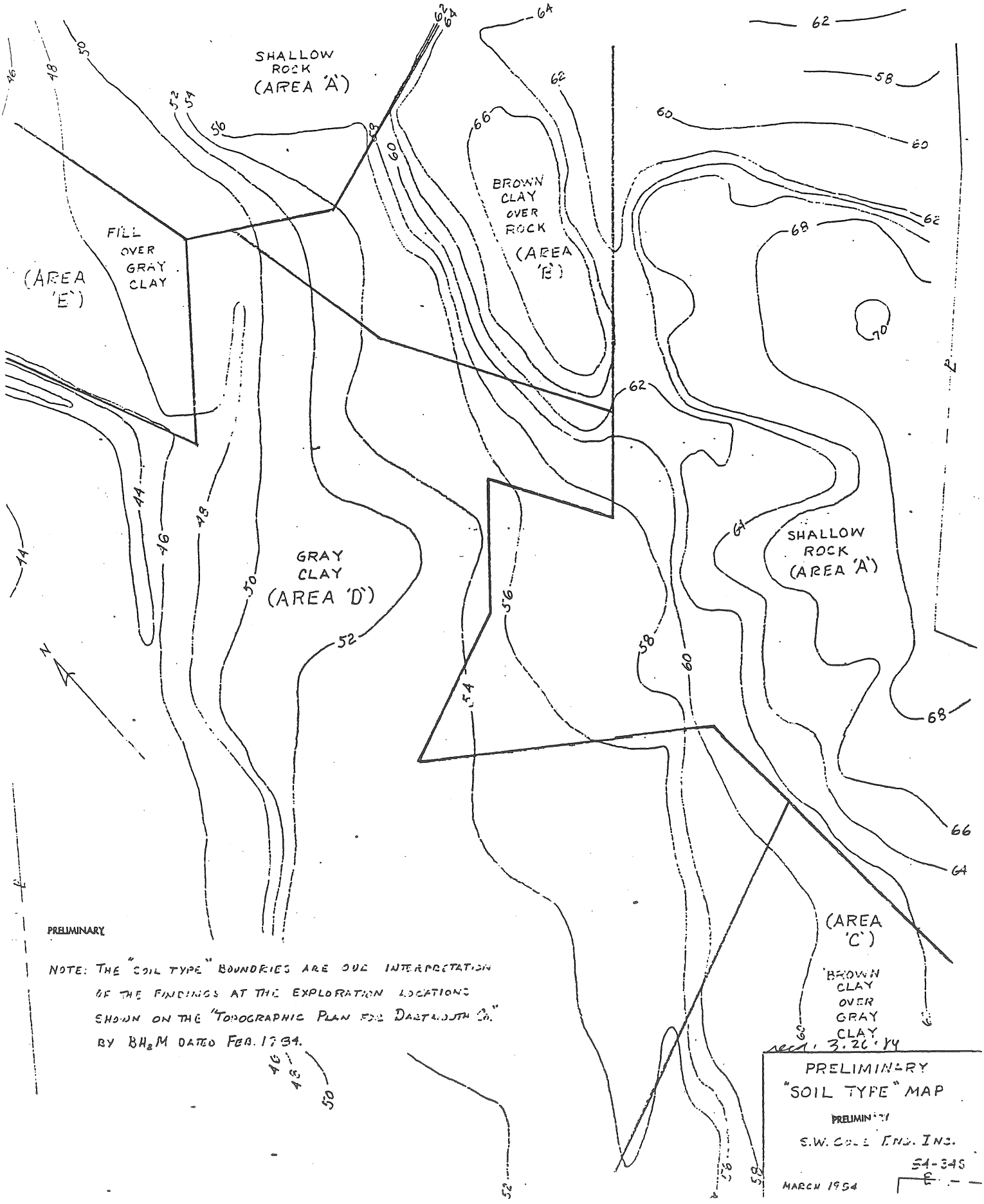
Very truly yours,

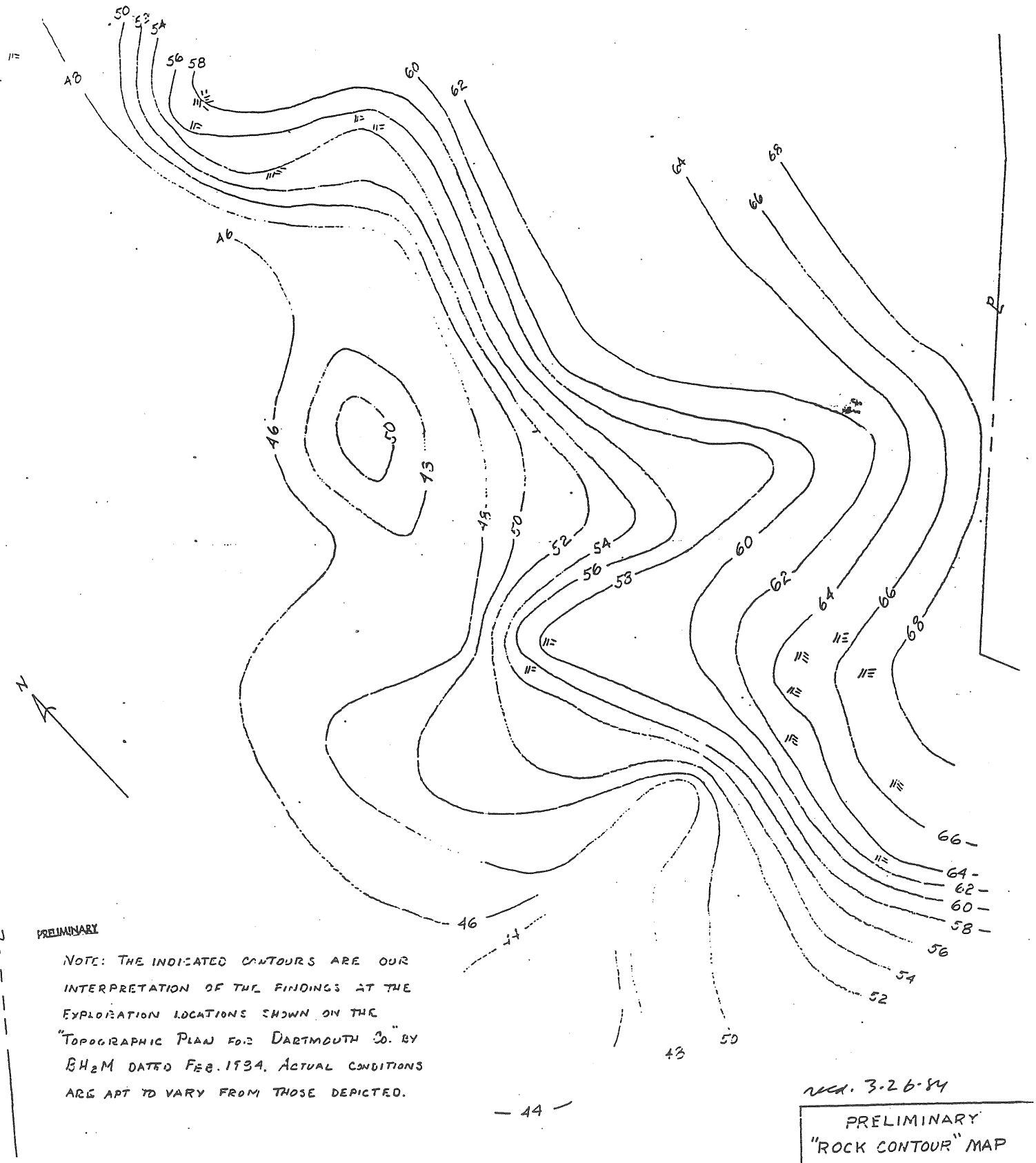
S. W. COLE ENGINEERING, INC.

William B Hopkins

William B. Hopkins
Soils Engineer

WBH:cdr


SHALLOW ROCK (AREA 'A')
FILL OVER GRAY CLAY (AREA 'E')
BROWN CLAY OVER ROCK (AREA 'B')
GRAY CLAY (AREA 'D')
SHALLOW ROCK (AREA 'A')
(AREA 'C')
BROWN CLAY OVER GRAY CLAY
N
PRELIMINARY
NOTE: THE "SOIL TYPE" BOUNDRIES ARE OUR INTERPRETATION OF THE FINDINGS AT THE EXPLORATION LOCATIONS SHOWN ON THE "TOPOGRAPHIC PLAN FOR DARTMOUTH CO." BY BH2M DATED FEB. 1984.
PRELIMINARY "SOIL TYPE" MAP
PRELIMINARY
S.W. COLE ENG. INC.
84-345
MARCH 1984
rev'd. 3.26.84



NOTE: THE INDICATED CONTOURS ARE OUR INTERPRETATION OF THE FINDINGS AT THE EXPLORATION LOCATIONS SHOWN ON THE "TOPOGRAPHIC PLAN FOR DARTMOUTH 30." BY BH2M DATED FEB. 1984. ACTUAL CONDITIONS ARE APT TO VARY FROM THOSE DEPICTED.

rev'd. 3-26-84

PRELIMINARY
"ROCK CONTOUR" MAP
PRELIMINARY
S.W. COLE ENG. INC.
84-345
MARCH 1984

MITCHELL-DEWAN ASSOCIATES Landscape Architects

July 31, 1984

GLENRIDGE

SOIL EROSION AND SEDIMENTATION CONTROL PLAN

Soil erosion and sedimentation measures will follow the State of Maine Department of Transportation "Standard Specifications for Highways and Bridges," Revisions of June 1981.

Specifically, these measures will include:

a. Existing vegetation will be preserved in those areas not to be occupied by building, pavement, utilities, or detention basin. This shall also apply to areas not required for cut/fill.

b. Stormwater detention basin will be constructed prior to construction of roads, utilities, and building and rough graded to act as sedimentation basin during the construction period. After construction the basin will be cleared of accumulated debris and sediment, and graded as shown on the Site Plan.

c. Vegetation will be established on final slopes as soon as possible after their construction. Special care will be taken along all property boundaries and in the areas of the detention basin.

d. Stockpiles of loam salvaged during the construction will be seeded with rye to establish a rapid cover.

e. Geotextile fencing will be installed throughout the project site during construction and maintained until the disturbed areas are satisfactorily revegetated.

f. Street excavation will have the required sub base in place as soon as possible after construction begins to minimize the amount of soil exposed to erosion.

g. Inlets and outlets of all culverts will be rip-rapped.

h. Revegetation will be accomplished as soon as practicable after construction activities have been completed. Loam and seed, bark mulch, and plantings will be used to re-establish the ground cover.

i. After construction all disturbed areas that will not be paved or built upon will be seeded with the following mix at the rate of 2½ pounds per 1000 square feet:

50% Barron Blue
40% Creeping red fescue
10% Penn fine rye

These areas will be fertilized with 10-20-20 at the rate of 2 pounds/100 square feet and limed at the rate of 10 pounds/ 100 square feet.

386 Fore Street Portland Maine 04101 Tel 207-774-4427

Glenridge Development
Brighton Avenue
Portland, Maine

Calculations for Sedimentation Basin Requirements

The following calculations were based on methods contained in "Stormwater Management Manual" prepared by the Greater Portland Council of Governments. These methods were derived from data compiled by the Soil Conservation Service.

Calculations relate only to Drainage Area 2A. (See Stormwater Management Report) This drainage area will drain to a proposed detention basin having a capacity of approximately 72,000 cubic feet.

Design Criteria

Detention Time (From Manual)	10 Hours
Area (D.A.2A)	13.8 Acres
Runoff Curve Number (RCN)	91
Design Storm (Manual)	10 Years
24 Hour Rainfall (Type II)	4 Inches
V_s (Available Storage)	72,000 Feet^3
Capacity of Spillway (Temporary)	4 c.f.s.$\pm$
Design Period (Construction)	1 Year

Check principal spillway discharge to see if it is small enough to meet 10 hour detention time.

1. V_R = 2.92"
2. Peak Q_I = 3.02 x 12 = 36 c.f.s
3. Q/D.A. = $\frac{36}{13.8}$ = 2.6 c.f.s/acre
4. Q/Q_I = 0.15 (Exhibit 11.7.3)
5. Max Q = 0.15 x 36 = 5.4 c.f.s.

   Spillway Capacity - 4 c.f.s. ok

   Check for Sufficient Storage
6. Q/D.A. = $\frac{4}{13.8}$ = 0.29 c.f.s./acre
7. See Table B - VR = 2.92 Inches and Q/D.A. = 0.29 - VS = 1.4 In.
8. Volume Storage Required = $\frac{1.4 \times 13.8}{12}$ = 1.61 Acre Feet

   = 69,000 Feet^3 ok

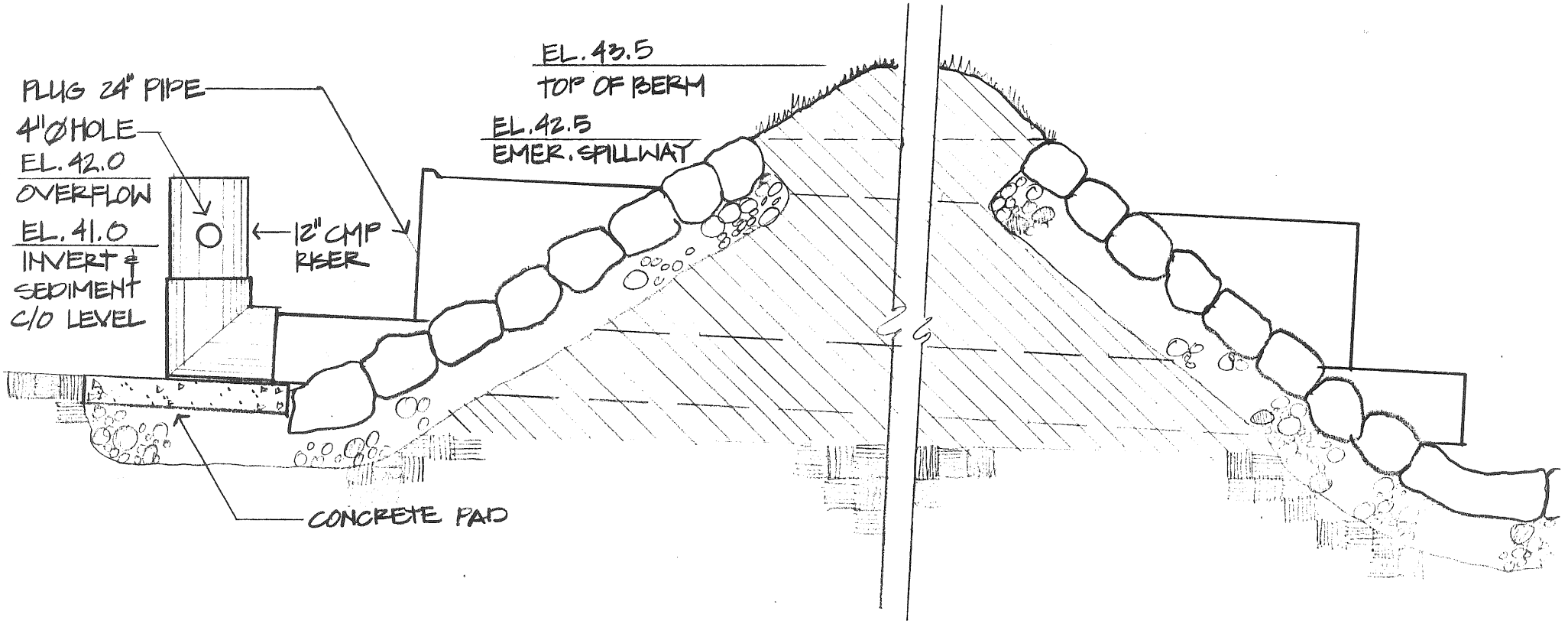
Conclusion

The following steps should be taken to provide temporary sediment storage during construction for this project.

1. Plug 24 inch outlet.

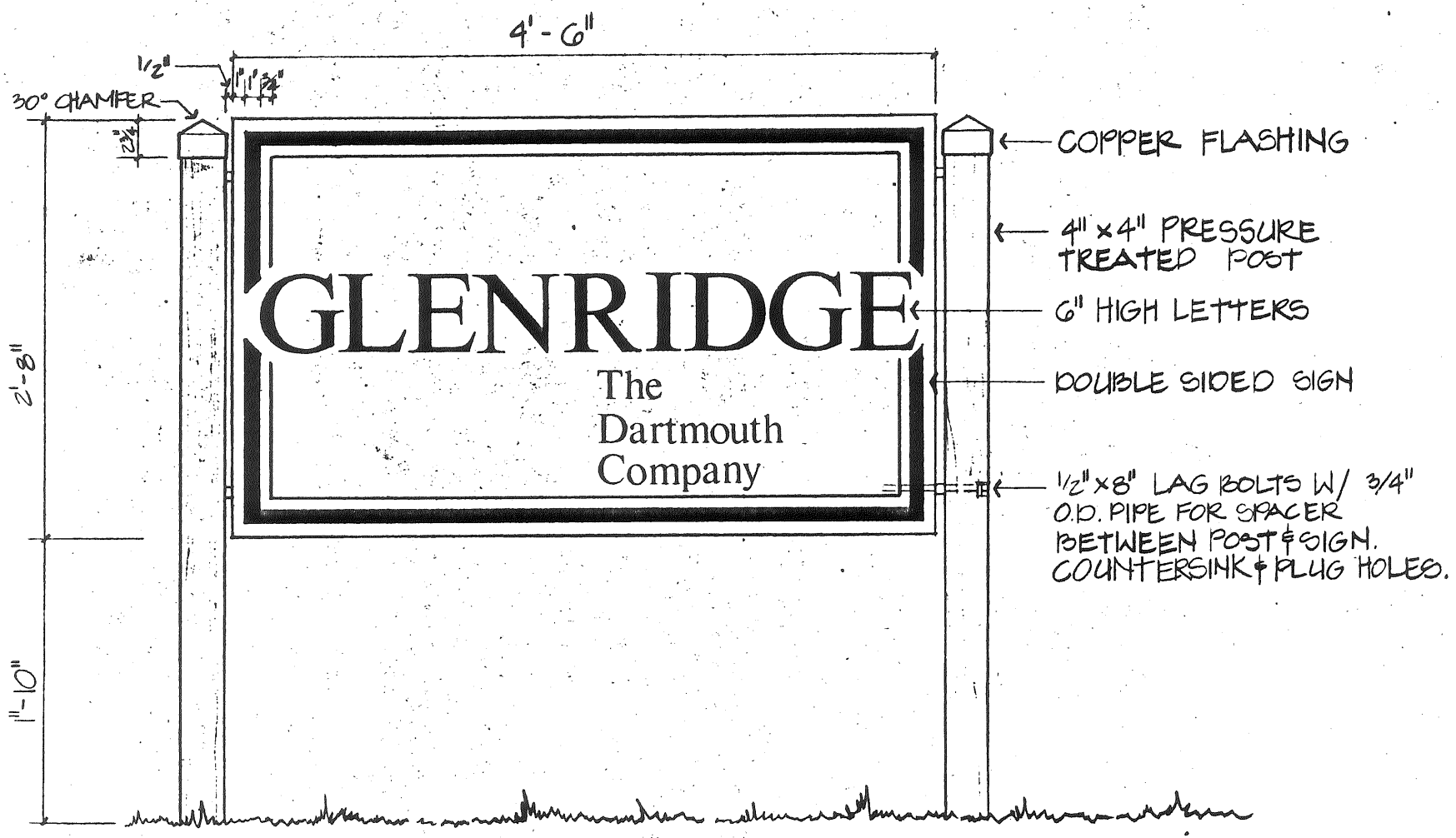
2. Extend and turn up (using bend) the 12 inch outlet to elevation 42.0. Provide 4 inch diameter hole in vertical section at elevation 41.0. This elevation will be sediment cleanout level.

3. Emergency spillway shall be in place before construction.



TEMPORARY PIPING TO CONVERT DETENTION BASIN TO SEDIMENTATION BASIN

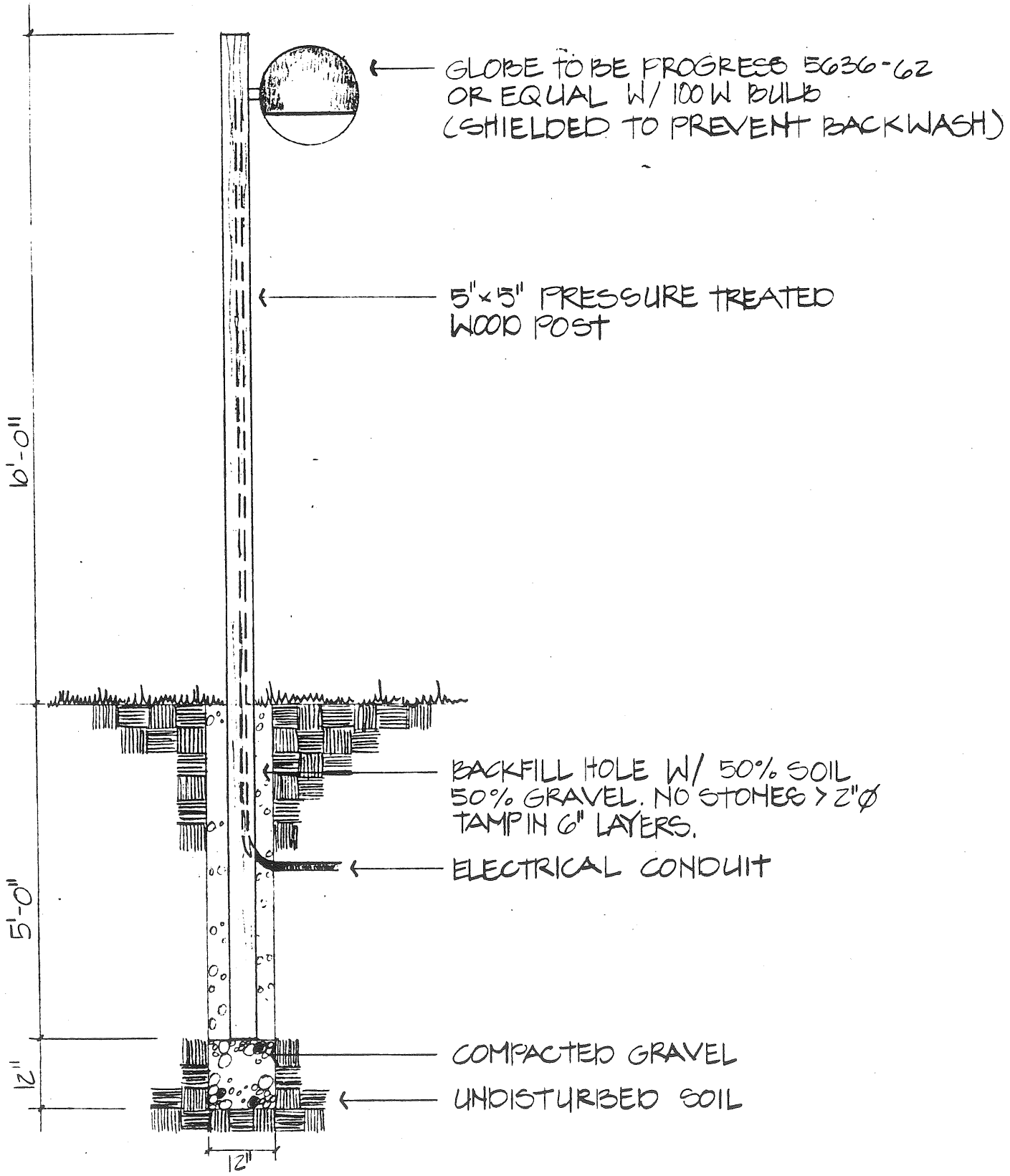
NOT TO SCALE



ENTRANCE SIGN

SCALE: 1" = 1'-0"

EXHIBIT R



LIGHT STANDARD

SCALE: 1" = 2'-0"

Rules and Regulations

EXHIBIT T

For the comfort, convenience and protection of the parties hereto and pursuant to paragraph 20 of a lease between The Dartmouth Co. (Lessor) and the undersigned (collectively called Lessee), the undersigned agrees to abide by these regulations and to such other regulations as Lessor may from time to time deem appropriate to issue.

1. SIGNS: Lessee agrees not to display any signs or exterior lights or markings on the leased premises.

2. GARBAGE AND TRASH: Unless notified otherwise, Lessee understands that trash will be picked up weekly (before 7:00 a.m.) and will not be taken unless it is in a sealed plastic bag and is placed in front of Lessee's apartment. Lessee agrees not to place trash outside the apartment any earlier than the morning when the pick up shall occur. It shall be Lessee's responsibility to determine the day and place where the pick up will occur.

3. PLUMBING AND ELECTRICITY: Lessee agrees not to use toilets, basins, etc. for any purpose other than those for which they were designed; nor to throw any sweepings, rubbish, rags or any other improper articles into the same; nor to overload the electrical system.

4. LOCKS AND KEYS: Lessee agrees not to change, install or in any way alter locks installed on the doors of the leased premises, and agrees to pay a charge of $15.00 per key for each key which Lessee fails to return.

5. MOVING: Lessee agrees to move furniture to and from the leased premises only between 8 A.M. and 7 P.M. daily, and to remove all packing cases, barrels or boxes used in moving.

6. APPLIANCES: Lessee agrees not to install major appliances of any kind within, on or about the leased premises without Lessor's consent.

7. ENTRANCES, FRONT WALKS AND LAWNS: Lessee agrees not to obstruct or use sidewalks, driveways, walk ways, public lawns, entrances, stairs, and other public areas for any purpose other than ingress and egress to and from the leased premises.

8. CAR REPAIRS: Lessee agrees to make only emergency car repairs within the development.

9. ANTENNAS: Lessee agrees not to place or erect radio or television aerials on the roof or exterior of the building, nor to transmit by using amateur radio equipment within the development.

10. NOISE: Lessee agrees not to play, operate, or permit to be played or operated, any musical instrument, phonograph, television or radio on the premises if the same shall disturb or annoy the neighbors, nor permit any such noises to go beyond the interior of the leased premises.

11. PARKING: Lessee agrees to abide by the parking regulations which may be established from time to time by Lessor, to park only in the spaces provided for Lessee if Lessor has designated spaces, to notify all guests of the regulations regarding parking and to require guests to abide by the parking regulations.

12. STORAGE: Lessee agrees not to store any goods or materials of any kind or description that are highly combustible or would increase the fire risk. Lessor will not be responsible for any loss or damage by fire, water, theft or otherwise for any such personal property. Lessee specifically agrees not to make any claim, either in law or in equity, for any loss incurred.

13. WALLS: Lessee agrees not to use adhesive hangers on walls, woodwork or any part of the premises. Lessee may use screws and nails for the purpose of hanging pictures, shades and curtain rods.

14. DECKS: Lessee agrees to keep the rear terrace neat, tidy and clean at all times and will not erect clotheslines nor store, hang or drape rugs, towels, laundry, wash or other household items in the yard. Lessee will only use patio furniture on said terrace and will not store, keep or permit other miscellaneous items to be kept thereon.

15. MINIMUM HEATING REQUIREMENT: At no time whatsoever shall the thermostat(s) which regulate heat on the leased premises be set lower than 56°.

16. A lock out fee of $25.00 is in effect before 8 AM and after 5 PM Monday through Friday, weekends and on holidays.

Seen and Agreed to by _____

on _____, 19 _____

_____

ABUTTERS

EXHIBIT U

MAP #182

Block & Lot	Name & Address
B-1	Ida Stein 93 Wayside Road Portland, ME 04102
B-2	Lea Eppinger 103 Wayside Road Portland, ME 04102
B-4	Morris Baker 109 Wayside Road Portland, ME 04102
B-5	James Bougopoulos 115 Wayside Road Portland, ME 04102
B-6	Raymond P. Neveau 123 Wayside Road Portland, ME 04102
B-7	Melvin A. Fineberg 129 Wayside Road Portland, ME 04102
B-8	Raymond A. Ricker 135 Wayside Road Portland, ME 04102

MAP #182A

C-1	Alice E. Burns 9 Wayside Road Portland, ME 04102
C-2	Auto Sales & Finance Co. c/o Hazel Bernstein 638 Congress St. Portland, ME 04101
C-3	Geroge D. Conley 15 Wayside Road Portland, ME 04102
C-4	Richard C. MacWilliams 21 Wayside Road Portland, ME 04102

MAP #182A

Block & Lot	Name & Address
C-5	Morris D. Levin 27 Wayside Road Portland, ME 04102
C-6	Harriet Ketover 31 Wayside Road Portland, ME 04102
C-7	Julia C. Martin 35 Wayside Road Portland, ME 04102
C-8	Kenneth M. Silver 43 Wayside Road Portland, ME 04102
C-9	Charles W. Hurll, Jr. 51 Wayside Road Portland, ME 04102
C-10	Brent A. Tracy 55 Wayside Road Portland, ME 04102
C-11	Ralph C. Tobiassen 77 Wayside Road Portland, ME 04102
C-12	Marjorie Sumner 85 Wayside Road Portland, ME 04102

MAP #183

A-2	Auto Sales & Finance Co. c/o Hazel Bernstein 638 Congress St. Portland, ME 04101
A-6	Auto Sales & Finance Co. c/o Hazel Bernstein 638 Congress St. Portland, ME 04101

MAP #183

Block & Lot	Name & Address
A-7	Auto Sales & Finance Co. c/o Hazel Bernstein 638 Congress St. Portland, ME 0410o
A-8	Randall A. Stuart 48 Jeanne Street Portland, ME 04102
A-9	Pearl A. Grant 50 Jeanne Street Portland, ME 04102
A-10	Gayla J. Zolton 62 Jeanne Street Portland, ME 04102
A-11	Frances Beach 70 Jeanne Street Portland, ME 04102
A-12	Jean M. Meyer 76 Jeanne Street Portland, ME 04102
A-13	Richard S. Harrington 84 Jeanne Street Portland, ME 04102
A-14	Charles Chorney 92 Jeanne Street Portland, ME 04102

MAP #183A

A-20	Sun Savings 467 Congress Street Portland, ME 04101
C-1	Sun Savings 467 Congress Street Portland, ME 04101
C-2	Paul L. & Marie E. Walker 50 Wingate Drive Portland, ME 04102

MAP #183A

Block & Lot	Name & Address
C-3	Robert C. & Joane E. Austin 38 Wingate Drive Portland, ME 04102
C-4	Anna E. Russo 29 Munjoy Street Portland, ME 04101
C-5	Robert M. & Mary H. Meyers 26 Wingate Drive Portland, ME 04102

MAP #224A

A-1	Doctor's Park Inc. 656 Brighton Avenue Portland, ME 04102
A-6	John H. Duffy 700 Brighton Avenue Portland, ME 04102
A-7	John J. Zappia 115 Codman Street Portland, ME 04101
A-8	Anderson Watkins Associates 674 Brighton Avenue Portland, ME 04101
A-11	Anderson Watkins Associates
A-16	Norman L. Drilinsky 706 Brighton Avenue Portland, ME 04102
A-17	Lewis E. Schoppee 722 Brighton Avenue Portland, ME 04102
A-19	Vincent T. Kane 716 Brighton Avenue Portland, ME 04102
A-22	Edna Grzyb 726 Brighton Avenue Portland, ME 04102
A-29	Alfred W. Trefry 732 Brighton Avenue Portland, ME 04102

MAP #183

Block & Lot	Name & Address
B-41	James E. Baker 45 Jeanne Street Portland, ME 04102
B-42	Arthur Jacobson 37 Jeanne Street Portland, ME 04102

MAP #183A

B-13	Jeffrey S. Shafran Wingate Drive Portland, ME 04102

EXHIBIT V

CITY OF PORTLAND, MAINE
MEMORANDUM

DATE: 7/3/84

TO: Barbara Barhydt, Planner

FROM: William J. Bray, Traffic Engineer

SUBJECT: Apartment Complex - Dartmouth Company

Based on my review of the subject site plan, I am recommending the following:

- Relocation of Jeanne Street through the proposed site forming a new "single" entrance (roadway) onto Brighton Avenue. Measured site distance at Brighton Avenue for the new roadway is increased considerably over the existing site distance of Jeanne Street. The proposed roadway will have site distances of 610 feet easterly and roughly 2,000 feet westerly, whereas existing Jeanne Street has distances of less than 300 feet easterly and roughly 480 feet westerly. It should be noted that the existing site distance on Jeanne Street is less than the design standard established for the 85th percentile speeds of greater than 40 m.p.h.

- The Developer is to provide the City with a written committment to assist in the cost associated with installing traffic signals at the proposed roadway and Brighton Avenue if warranted in the future. The Developer would only be responsible for an amount (percentage of total cost) equal to site traffic/street traffic. These values would be determined based on actual field measurements. Furthermore, it would be my recommendation to require this committment for a time period of two years after the issuance of the last "Occupancy Permit".

- The Developer to install a 3" conduit line under the new roadway at the Brighton Avenue intersection.

WJB/bjk

Planning Report #83-84

Planning Department Report

Subdivision and Site Plan Review of Glenridge

Submitted to:
Portland Planning Board
August 14, 1984

I. Introduction

The Dartmouth Company as a general partner of Glenridge Associates has requested subdivision and site plan approval for a Planned Residential Unit Development located in the vicinity of 669 to 725 Brighton Avenue. Attachment A is the letter of intent from the Dartmouth Company. Those firms associated with the development of this project are as follows: Glenridge Associates will own Glenridge; the Dartmouth Company is the developer; Winton Schott is the architect; Mitchell-DeWan Associates are the landscape architects; and BH2M are the engineers.

Two hundred and forty-two (242) notices were sent to area residents.

II. Summary of Project

Zoning:	R-3 Residential
Land Area:	20.5 Acres
Number of Units:	100 two-bedroom units horizontally attached
Number of Clusters:	21 clusters of units - 3 to 6 units per cluster
Height of Buildings:	9 one-story units, 64 one and a half story units and 27 two-story units
Ground Floor Area:	48,092 square feet, 5.4% coverage of lot
Total Floor Area:	97,096 square feet
Average Unit Area:	870 square feet
Parking Spaces	155 spaces provided, 100 required
Rent Range:	$600 plus utilities
Land Uses:	The site for the proposed development is surrounded by a single-family residential neighborhood. Nason's Corner is approximately 2,400 feet west of the site and Rosemont Corner is approximately 1,200 feet from the site. A portion of the land across Brighton Avenue is zoned R-P Residence Professional which contains three medical office buildings and one insurance office. Two medical office buildings (Quick Care and Dr. Levesque office) are under construction near Rosemont.

Proposed Development:

The proposed project is for 100 two-bedroom units of rental housing which will be financed in the conventional market. The proposal is a Planned Residential Unit Development within the R-3 Residence Zone. Access to the 20.5 acre site will be over Brighton Avenue and Jeanne Street. A private roadway called Glenridge Drive will intersect Jeanne Street and lead northerly into the project. The proposal includes dedicating and constructing a new portion of Jeanne Street through the parcel so that the intersection of Jeanne Street and Brighton Avenue will be at a location with improved site distance. The project does not have access onto any of the other adjacent streets except that an emergency fire lane intersecting Wingate Drive is proposed.

III. Staff Review

The project has been reviewed by staff for compliance with the review criteria set forth in the Subdivision and Site Plan Ordinances. The Building and Inspection Services and the Fire Department have reviewed and approved the plan. The findings and comments of other departments are contained within this report.

1. The project will not result in undue water or air pollution.

   The residential subdivision is not located in a floodway or coastal high hazard area as delineated by the City's flood boundary and floodway maps.

2. The project has sufficient water available for the resaonably forseeable needs of the subdivision and will not cause an unreasonable burden on the existing water supply.

   An eight inch water main will intersect an eight inch existing water main in Jeanne Street. The proposed main will serve the development and smaller service lines (2 inch, 1½ inch, and 1 1/4 inch lines) will lead to the individual buildings. A fire hydrant is proposed on the eight inch main along Glenridge Drive. Attachment B is a letter from the Portland Water District confirming that the proposed plan for water lines is acceptable.

3. The project will not cause unreasonable soil erosion or reduction in the capacity of the land to hold water so that a dangerous or unhealthy condition may occur.

   A soil erosion and sedimentation control plan has been submitted for the Glenridge project. The major points of the plan include the following:
   1) preserve existing vegetation in undisturbed areas;
   2) stormwater detention area will be constructed prior to all other construction so that it will serve as a sedimentation basin;
   3) vegetation will be established on final slopes as soon as possible and all disturbed areas will be loamed and seeded;
   4) hay bale checks will be used throughout the project during construction,
   5) the street sub base will be installed as soon as possible to minimize erosion, and
   6) inlets and outlets will be rip-rapped.

   The erosion and sedimentation plan is enclosed as Attachment C.

   The stormwater management plan for the project includes a detention basin which is adequately sized to accommodate the runoff from the site while limiting the rate of flow to existing levels into the City sewer system. Attachment D is the memorandum from Robert Roy, Planning Engineer.

4. The project will not cause unreasonable highway or public road congestion or unsafe conditions with respect to use of the highway or public roads existing or proposed.

The original plan for the Glenridge proposal had access from Brighton Avenue and Jeanne Street. A traffic study was completed by John L. Murphy, Civil Engineer, and the narrative is included as Attachment E. Mr. Murphy concluded that no measurable congestion problems will result from the additional traffic generated, and that a traffic signal is not warranted (this conclusion was based on data that included the traffic which is currently generated on Jeanne Street). In addition, the location for the intersection on Brighton Avenue was selected because it achieved the best sight distance. Finally, there is no safety problem apparent from accident data and a second entrance on Jeanne Street for emergency access was recommended.

William Bray, City Traffic Engineer, reviewed the original plan and traffic study. His findings are enclosed as Attachment F. Mr. Bray recommended that Jeanne Street be relocated through the proposed development to the location on Brighton Avenue selected for the entrance. The sight distance for the proposal is improved substantially over the existing intersection. Secondly, Mr. Bray recommended that the Dartmouth Company provide the City with a written commitment to assist in the cost of installing a traffic signal if warranted. The commitment would be enforcable for two years after the issuance of the last occupancy permit. Third, the developer was required to install a three inch conduit line under the roadway for potential signalization.

The Dartmouth Company has revised the plan and has relocated Jeanne Street through the southwest corner of the development as per Mr. Bray's recommendation. This new portion of Jeanne Street is proposed as a dedicated street and will be constucted to City standards (two waivers are requested which are discussed later in this section). The remaining portion of Jeanne Street will be improved to create a T intersection with Jeanne Street. This portion of the street will be renamed when the new section of Jeanne Street is completed and accepted by the City. It is shown on the plan as Jeanne Street Court. Three driveways are affected by the relocation which will be lengthened and matched into the street by Dartmouth. In addition, the Dartmouth Company has submitted a letter of commitment to install a signal at the intersection of Jeanne Street and Brighton Avenue if the City determines it is warranted within two years of the issuance of the last occupancy permit. The required three inch conduit line under the new roadway is also shown on the plan. A second means of access recommended in Mr. Murphy's report has been accomplished with a fire lane which leads to Wingate Drive.

Mr. Bray has reviewed the revised plan and has approved it. Mr. Bray will be available at the public hearing to answer questions.

The existing Jeanne Street is scheduled to be reconstructed under CIP funds. The City plans to coordinate the reconstruction of Jeanne Street with the developer's construction of the new section of Jeanne Street. Actual construction work is expected to begin in the Spring of 1985. The reconstructed Jeanne Street will have 28 feet of pavement, granite curbs and a sidewalk on

one side of the street (northerly side). The Dartmouth Company has submitted a request for a waiver from the City's street standards which require 32 feet of pavement and a sidewalk on both sides of the street. The propsoed street is shown as meeting City specifications on the plan. The Dartmouth Company is requesting the waiver in order to install one sidewalk on the northerly side of the new portion of Jeanne Street and have a pavement width of 28 feet. Mr. William Bray and Mr. William Boothby support the request for a waiver so that all of Jeanne Street will be constructed to the same standards.

The Dartmouth Company has submitted a commitment letter to provide sufficient land for a hammerhead turn around if the City determines that Jeanne Street Court should be closed off within four years of the letter's date (Attachment G). At this time the intention is to keep Jeanne Street Court open. Attachment H is a letter of understanding between the Dartmouth Company and the City of Portland regarding the developer's and the City's responsibilities for improving Jeanne Street (Jeanne Street Court). Both documents are being reviewed by Public Works.

The proposal has five parking areas and two smaller parking areas for two clusters of units. There are 155 parking spaces for a 1.55 ratio of parking spaces per unit. The zoning ordinance requires 100 spaces. The spaces area 9 feet by 19 feet which complies with the zoning ordinance. A bituminous curb edges the parking areas. An internal walkway system is planned which leads through the project and individual walks lead to each unit. Glenridge Drive is the central roadway for the project and it intersects the new section of Jeanne Street. Glenridge is 24 feet wide and does not have curbs or sidewalks. The roadway, parking areas and sidewalks in the development will be privately owned and maintained by the Dartmouth Company.

5. The project will provide for adequate sanitary waste disposal and will not cause an unreasonable burden on the ability of the municipality to dispose of solid waste and sewage.

   The sanitary waste system for the proposal includes 6 and 8 inch lines which lead to a 15 inch public sewer in Brighton Avenue. Two clusters of units have six inch lines which connect into the existing 12 inch sewer in Jeanne Street. Attachment I is a copy of a letter from William Goodwin, City's Environmental Project Engineer, stating that the City's sewers and wastewater treatment facilities have sufficient capacity for the proposal.

   Solid waste will be collected by a private contractor once or twice a week. There are five trash buildings on site which will store the trash. These buildings are located near clusters of units.

6. The project will not have an undue adverse effect on the scenic or natural beauty of the area, aesthetics, historic sites or rare and irreplacable areas.

   The Glenridge site is the former location of the Lucas brickyard. The area is relatively open with stands of trees scattered along

the perimeter of the site. The center of the area is experiencing succession growth. There is a ridge and generally higher elevations along the north/northeasterly side of the site. The land slopes down toward Brighton Avenue and the westerly side of the site.

The Dartmouth Company has attempted to create a unified response to the design possibilities of the site. The units are located in the center of the site so that the existing vegetation and the ridge or higher elevations on the site provide a natural buffer for the development. A natural low area will be better defined and serve as the detention basin.

The proposed planned residential unit development has 100 horizontally attached units. There are 9 one-story units, 64 one and a half story units and the remaining 27 units are all two-story structures. The units are grouped in 21 clusters of three to six units which are identified as buildings. Attachment J is the total floor area and ground floor area of all the buildings and structures proposed on the site. The total ground coverage of the buildings is 48,092 square feet which is 5.4% and total site coverage (including pavement) is 18.68%.

All of the units are two-bedroom units and the average unit size is 870 square feet. Below is a breakdown of unit type, number of units and square footage per unit:

Unit Type	No. of Units	Square Footage/Unit
A (1-story)	4	770
B (1½-story)	64	865
C (2-story)	19	902
D (2-story)	8	924
E (one-story)	5	816
	100	

All of the units will have separate hook-ups for a washer and dryer. Five buildings have basements with storage facilities for all of the units.

The design of the units and arrangements in clusters or buildings varies in order to reduce the scale of the buildings and to create some individuality. There are five basic unit types which are clustered in various configurations for each building. The units have different roof height (1, 1½, and 2 stories) and the roofline is broken with roof gables. Twelve clusters are arranged on a corner design (rather then a straight line) and the facades of the units step forward and back so that a uniform line is not created. Wooden doors, pillars and french doors are some of the details shown for each unit. Attached is a reduced sketch of one cluster of units (Attachment K). The units are designed to be compatible with the neighborhood.

The exterior of the structures will be masonite (pressed wood) clapboards with a wood grain texture. The clapboards will have

four inches of the board exposed which is the traditional exposure for clapboards. The colors proposed will be mid-tone colors of cream, olive, blue, brown, reddish brown and green.

The landscape plan for Glenridge includes typical plantings around the buildings and an overall landscape plan. In general, the proposal shows the preservation of existing vegetation around the perimeter of the site. An area in the northeast corner will be graded, top-dressed and seeded with a wildflower mix for the northeast. The plant list includes 223 trees of 20 different species, 28 species of shrubs and 4 species of perennials (Daylilies, Hosta, Siberian Iris, coneflower/Shasta Daisy). Doug Mason, Senior Planner, reviewed the landscape plan and his recommendations are attached (Attachment L). The plan preserves large areas of open space as a buffer for the project. The units are arranged so that courtyards and open spaces between the units are achieved. In addition, two areas are reserved for recreation areas. The exact activities for these areas has not been determined at this time but the uses will be developed as needed to meet the interests of the tenants.

7. The proposed plan is in the R-3 residential zone and the area is also designated as an R-3 zone in the Land Development Plan.

8. The Dartmouth Company has submitted a letter of financial capability for Glenridge for the amount of $3,500,000.00 from Casco Northern Bank (Attachment M).

9. The project is not in the shoreland zone.

10. School capacity is sufficient to absorb any increase in enrollment generated from this project. It is estimated by the Planning staff that the proposal will generate a total of 30 children. Based on national multipliers (The Fiscal Impact Guidebook), the estimated breakdown of expected children and relevant school capacities are as follows:

School	Expected No	Capacity	Actual 1983-84 Enrollment
Hall Elementary or	26	840	388
Longfellow Elemen.		540	458
Lincoln Junior	2	956	749
Deering High	2	1307	1266
	30		

All of the schools in the immediate area of the proposed development have sufficient capacity.

11. The power and telephone lines are shown underground. Overhead electric poles are shown on the plan along the new section of Jeanne Street; however, the developer has indicated that the plan will be revised to delete these poles. There are overhead lines on the existing Jeanne Street which will remain.

12. Exterior Lighting

The exterior lighting for the development includes approximately twenty 10 foot high pressure treated wood poles with globes containing 100 watt bulbs. The lamps are adequate and compliment

the development. The plan does not show street lights along the new section of Jeanne Street. The developer is working with William Bray in siting the poles. The plan will be available at the public hearing.

13. The estimated total cost of the project is $3,500,000.00. Construction is expected to begin in the spring of 1985. It is anticipated to be constructed in two phases and the development will be completed late in 1986.

14. There is a utility easement in the northwest corner of the site which encompasses a 48 inch combined sanitary and stormwater main.

15. Lieutenant Collins of the Fire Department has reviewed and approved the subdivision plan. The plan includes a fire lane which enters the site from Wingate Drive. The emergency lane will be gravel except for the portion of the lane located between buildings which will have concrete grass pavers (permits grass to grow between pavers). The maintenance covenant for the fire lane submitted by the Dartmouth Company (Attachment N) has been approved by the Fire Department. The covenant will be recorded with the deed as a permanent restriction in the property. A gate with appropriate signage and a chain lock will be located at the beginning of the fire lane.

16. Public Comment is attached.

CITY OF PORTLAND, MAINE
MEMORANDUM

DATE: 8/28/84

TO: Barbara Barhydt - Planning

FROM: William Bray - Traffic Engineer

SUBJECT: Traffic Issues - Glenridge Development

To provide answers to each question raised by members of the Planning Board and the general public, additional traffic work has been completed. This work consisted of collecting new automatic traffic recorder (ATR) counts on Jeanne Street, manual turning counts on Jeanne Street, estimation of existing and future traffic splits on Jeanne Street, and an evaluation of site access alternatives.

ATR counts were taken during the week of 8/20/84 for six consecutive days to determine the validity of the developer's data. The developer's traffic volume for the month of March was 531 vehicles. The City's volume for August is 586 vehicles. To compare these figures on an annualized basis, monthly variation factors supplied by MDOT were applied to each count. MDOT's values were .9759 and .8662, respectively, for the months of March and August. Multiplying each raw count by the respective monthly variation factor, the net difference between the two counts is 11 vehicles spaced out over an average 24 hour time period. It is my opinion that the data used by the developer's consultant represents a typical average condition.

As stated previously, manual turning movement data was collected on Jeanne Street at both the Ludlow Street and Brighton Avenue intersections. This data was used to estimate existing "trip split" on Jeanne Street. A total of 46 vehicle trips enter Jeanne Street between the hours of 7:00 am and 9:00 am, and 83 trips leave Jeanne Street during the same hours. 25 of the entering trips enter via Brighton Avenue and the remaining 21 enter via Ludlow Street. The exiting traffic has a similar pattern with 44 trips exiting onto Brighton Avenue and 39 trips exiting onto Ludlow Street. Based on these volumes, 54 percent of the traffic entering Jeanne Street enter from Brighton Avenue and 53 percent exit Jeanne Street via Brighton Avenue.

These values were considered to be representative of future site traffic and were used to calculate the future traffic on Jeanne Street. The projected increase in traffic on Jeanne Street, based on a vehicle split of (.53 Brighton Avenue and .47 Ludlow Street) would be 476 vehicles per day. If the 476 new trips are added to the existing Jeanne Street traffic, the annual aveage daily traffic on Jeanne Street would be roughly 988 vehicles. For comparison purposes, the total future traffic on Jeanne Street would be 109 vehicles per day greater than the existing traffic on Wayside Road.

Several citizens questioned why access to the proposed site has to be from Jeanne Street. In an effort to correct existing sight and roadway alignment deficiencies on Jeanne Street, it is my recommendation that the alignment of Jeanne Street be changed as shown by the developer. The single most important reason why the access road shouldn't be limited to a new Brighton Avenue entrance is safety. If a new access road is constructed near and adjacent to Jeanne Street, but not connected, a portion of the site traffic will still desire to use Jeanne Street. Therefore, increased traffic will be added to Jeanne Street where the existing alignment is substandard and unsafe. Furthermore, with the existing sight problems on Brighton Avenue, left turn traffic into Jeanne Street and/or the development road will also increase the accident occurances along this section of roadway.

WJB/smb

CITY OF PORTLAND, MAINE
MEMORANDUM

DATE: 8/30/84

TO: Robert Roy, Planning Engineer

FROM: William B. Goodwin, Environmental Project Engineer

SUBJECT: Glenridge Development

You requested that I address the following questions and concerns raised by Planning Board members and area residents attending the August 22nd Public hearing on this development:

1. An estimate of the volume of sanitary flows that will be generated by the 100 two-bedroom units in this project.

   In accordance with Chapter 241 of the Code of Maine Rules (Maine State Wastewater Disposal Rules), the volume of sanitary flows to be generated by this project is as follows (assumes an occupancy factor of two persons per bedroom):

MINIMUM	MODERATE	CONSERVATIVE
18,000 GPD	24,000 GPD	30,000 GPD

   Definitions of the design flows can be found in Table 7-1 of the Rules which is attached.

2. Is the sewer system in this area adequate to handle this additional demand? Area residents complained of present problems with sewer back-ups, citing an already over-taxed sewer system.

   The sewer system is adequate to handle the additional sanitary flows generated by this project.

   The present problems with sewer back-ups in this area are especially peculiar to combined sewers. The problems occur from the stormwater which is carried away from this area by the same pipes that carry the sanitary flows. The back-ups occur from too much stormwater entering the sewer system uncontrolled. The stormwater drainage design for this project incorporates a detention basin behind the homes on Wayside Road to control the entry of stormwater from the development in recognition of this problem. You have the stormwater analysis from our computer to attach in order to give the Planning Board a complete analysis of this development's drainage design.

3. What is the timetable for sewer separation between Ludlow and Capisic Brook on the other side of Brighton Avenue as recommended in the W.S.I.S. Drainage Study? Could this be given a high priority in the C.I.P. within the next couple of years if this project goes forward?

   The West Side Interceptor Sewer Drainage Study's recommendations are included in the C.I.P. This year's appropriation was designated for Separation of Sagamore Village. If the Planning Board desires to give a high priority to

the sewer separation between Ludlow Street and Capisic Brook, they could designate next year's W.S.I.S. appropriation to this purpose. You have the estimates for this separation work which you can attach for the Planning Board's information. Whereas the detention chamber at Capisic Dam need not be constructed at the same time as the separation work, the proposed appropriation for next year should be adequate to accomplish the separation work.

My recommendation for next year's W.S.I.S. appropriation was going to be either the sewer separation between Ludlow Street and Capisic Brook or the recommended improvements between Forest Avenue and Bishop Street near the Meadowbrook Development.

I hope this information provides clarification on the issues which you referred to me.

William B. Goodwin

William B. Goodwin, P.E.

WBG/bjk
cc: George A. Flaherty, Director of Parks and Public Works
Marc H. Guimont, P.E., City Engineer

Attachment 1

CITY OF PORTLAND, MAINE
MEMORANDUM

TO: Kathleen Conner, Senior Planner DATE: 8/31/84

FROM: Robert Roy, Planning Engineer, Parks/Public Works

SUBJECT: Sanitary and Stormwater Concerns - Glenridge Development

Attached are Bill Goodwin's responses to questions relating to:

1. Increased sanitary flows
2. The adequacy of the existing system to handle these flows
3. Sewer and storm flow separation.

Also attached is a summary of the stormwater calculations contained in the Stormwater Management Report prepared by BH2M Engineers, as well as an independent analysis run on our computer using the Stormwater Design Program (Table 1). The results from both sets of calculations are comparable even though two different methods were used. The figures derived by the consultant tended to be higher and more conservative, as is generally the case with design calculations.

The existing site is divided into two major drainage areas (1 & 2) (Figure 1). Drainage area #1 comprises approximately 7.3 acres on the southerly side of the site. After development this drainage area will be reduced in size by diverting a portion of the area to the detention basin. Construction of swales which will lead to a proposed catch basin at the southerly corner of the site near Brighton Avenue and Wayside Road should facilitate drainage. This catch basin must be kept free of debris to prevent ponding.

Drainage area #2 comprises approximately 11.5 acres on the northerly half of the site. This area presently drains to a low area on the westerly side of the site. Drainage now exits on the site through a 15 inch vertical riser pipe slightly above the existing ground and through a catch basin located 200'± southerly of the user pipe. The riser pipe connects to a manhole over the 48" combined sewer. This pipe is a poor inlet for runoff as stormwater ponds until it reaches the elevation of the pipe. This open pipe also presents a safety hazard for small children.

After development drainage area #2 will increase in size to 13.8 acres. This area will drain directly into the proposed detention basin. Approximately 70% of the total site after development will drain into the basin.

The outlet from the detention basin will limit flows to 14 CFS and 26 CFS for a 2 year and 25 year storm, respectively. These flow rates are less than the estimated existing outflows from this drainage area.

Attached is a letter from BH2M Engineers providing additional information on the drainage design and sanitary flows. Based on a 25 year storm, They calculate the detention basin will be full for less than one hour, and after the storm ends, the basin would completely drain in 30 minutes or less. These conclusions are acceptable for this type of detention facility.

The basin will drain through the outlet pipes, along a rip-rapped channel, into a catch basin to be constructed where the riser pipe presently exists. This basin will provide a much better inlet for runoff while eliminating the riser pipe and the problems associated with it.

The developer is aware of the maintenance requirements of this type of stormdrain system in order for it to function as it is designed.

In conclusion, this Department is satisfied that the stormdrain system is adequate and that the City sewer system is adequate to handle sanitary flows generated by this development. The project should not create nor aggravate drainage problems to the rear of the homes on Wayside Drive.

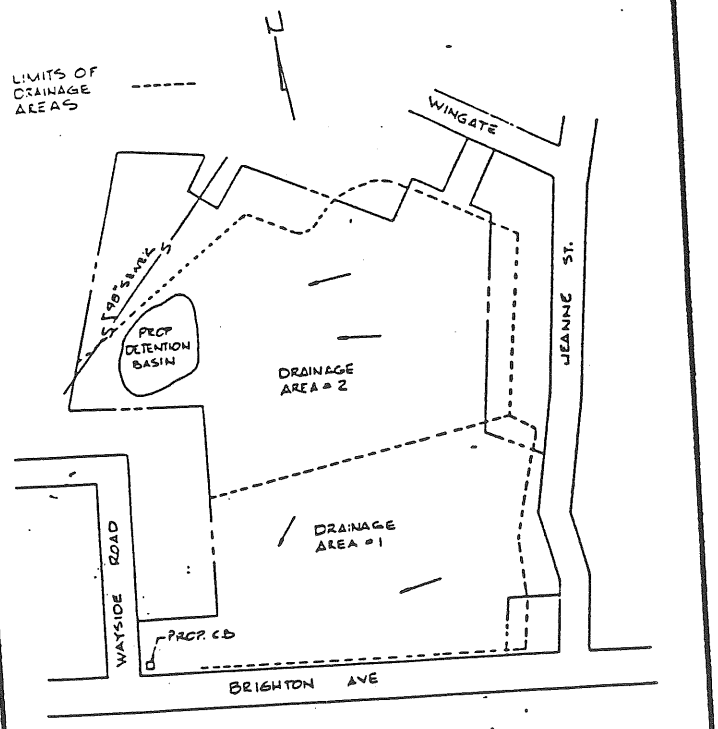
RR

RR/bjk
Attachment

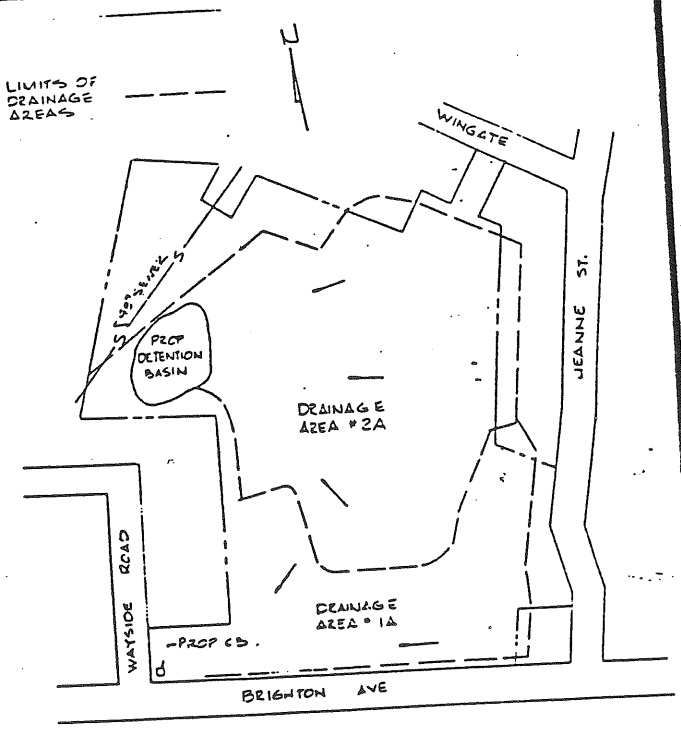
GLENRIDGE DEVELOPMENT

STORMWATER RUNOFF ANALYSIS

FIGURE 1.



SKETCH OF DRAINAGE AREA
BEFORE DEVELOPMENT
GLENRIDGE SUBDIVISION
NOT TO SCALE



SKETCH OF DRAINAGE AREA
AFTER DEVELOPMENT
GLENRIDGE SUBDIVISION
NOT TO SCALE

TABLE 1.

DRAINAGE CALCULATIONS

	Area 1		Area 2	
	Before	After	Before	After
Area (acres)	7.3	4.9	11.5	13.8
Peak Flow (cubic feet per second)				
2 year storm				
BH2M	11	7	15.4	26
City	10	9.1	14.2	27.3
25 year storm				
BH2M	30	25	42	63
City	19.9	18.2	29.3	54.7

The Dartmouth Company

489 Congress St.
P.O. Box 4570
Portland, Maine 04112
(207) 772-2794

July 31, 1984

Mr. John Barker, Chairman
Planning Board
City of Portland
389 Congress Street
Portland, ME 04101

RE: Application for Subdivision and Site Plan Review, Glenridge
Proposed By: The Dartmouth Company, 489 Congress Street, Portland, Maine

Dear Mr. Barker:

The Dartmouth Company, as the General Partner of Glenridge Associates, a Maine Limited Partnership, is applying to the City of Portland Planning Department for Subdivision and Site Plan approval of a Planned Residential Unit Development, to be known as Glenridge, on Brighton Avenue between Jeanne Street and Wayside Road. This letter, in addition to conveying our application for subdivision and site plan review, addresses the information required by Article V, Section 14-526(6)(2) of the City of Portland's code of ordinances relating to the final site plan for a major development.

a. Proposed Use

The proposal consists of a 100-unit Planned Residential Unit Development on a 20.5-acre site, as shown on the drawings which accompany this application. The units will be two-bedroom, one and two-story horizontally attached single-family units which are grouped in clusters of three to six units. There will be five unit types:

Unit Type	No. of Units	Square Footage/Unit
A	4	770
B	64	865
C	19	902
D	8	924
E	5	816
	100	

The proposed Planned Residential Unit Development conforms with the "R-3" Residential Zone in which it is located. This zone permits such developments on sites with a minimum gross area of at least three acres in the form of horizontally attached single-family units, with an overall density not exceeding six and seven-tenths dwelling units per net acre. Net acreage is calculated by subtracting from the gross area of the site twenty percent of such gross area. The maximum number of units allowed under the zone then would be 109 units, or nine more than are actually proposed.

b. Land Area, Floor Area, and Ground Coverage

The average unit size will be 870 square feet. The units will be located within a total of 21 structures on the 20.5 acre site. In addition, there will be five small accessory buildings for maintenance and trash storage. The total floor area of the development will be 97,096 square feet. The ground coverage of all structures will be 57,092 square feet or 6.39% of the site. (See Exhibit A for a breakdown by building of floor area and ground coverage.)

c. Property Control and Easements

The development will be located on property currently optioned by The Dartmouth Company under an option dated February 13, 1984, from Auto Sales and Finance Co., a Maine corporation.

At present there is located in the northwest corner of the site a utility easement for a 48-inch combined sanitary and storm sewer main owned and maintained by the City. This easement will be unaffected by the proposed development.

d. Solid Waste Disposal

Trash collection will be handled by a private contractor on a weekly or twice-weekly basis, as required. Trash will be stored in enclosed trash buildings, carefully located to serve the various clusters of residences, prior to pick-up.

e. Off-Site Public Facilities

i. Streets and Parking:

The primary access point to the site will be on Brighton Avenue by way of a relocated Jeanne Street as recommended in a traffic study prepared by John L. Murphy, Civil Engineer (see Exhibit B). This configuration has been reviewed and recommended by City Traffic Engineer William J. Bray and is acceptable to The Dartmouth Company (see Exhibit C, memorandum from William J. Bray to Barbara Barhydt, 7/3/84). The Dartmouth Company agrees to cover the cost of such relocation and proposes to convey the street to the City. In constructing the relocation of Jeanne Street, Dartmouth requests a waiver of the requirement of a sidewalk on the east side of the street. In all other respects the road would comply with City requirements. As part of this relocation, The Dartmouth Company agrees to assist in the cost associated with installing traffic signals at the proposed roadway and Brighton Avenue if warranted in the future up to two years after issuance of an occupancy certificate. This assistance will be defined as that percentage of total cost of the signal equal to the proportion of site traffic to total street traffic, based on actual field measurements. The Dartmouth Company also agrees to install a 3" conduit line under the new roadway at the Brighton Avenue intersection (see Exhibit D attached).

In addition to the main access, a fire lane for emergency access only is proposed off Wingate Drive. The developer will maintain this fire lane per the proposed Fire Lane Maintenance Agreement (see Exhibit E).

The development's internal road system, including the major access road and parking areas, will remain in private ownership, and will be maintained (including snowplowing) by The Dartmouth Company or by a private contractor. The development also will provide 155 off-street parking spaces, exceeding the City's requirement of one space per dwelling unit.

ii. Sewer and Water:

The proposed development is serviced by city water, sanitary and storm sewer, gas, electricity, telephone, cable television, and public transportation (Metro buses). Discussions with all providers of these services indicate the facilities are adequate for a development of this size (see Exhibits F and G).

All sewer, water, and stormwater management facilities constructed on-site, with the exception of the existing 48-inch combined line owned by the City and any utility line under or adjacent to the proposed relocated Jeanne Street, will be maintained by The Dartmouth Company. (See our proposed Utility Maintenance Schedule, Exhibit H.) Any utilities installed by The Dartmouth Company in the relocated Jeanne Street right-of-way are proposed to be deeded to the City along with the right-of-way.

f. Drainage or Topography

The drainage and topography of the site is fully described in the attached drawings, in the accompanying Stormwater Management Report, Glenridge Project (see Exhibit I), and in the Soil Erosion and Sedimentation Control Plan (see Exhibit J).

The site is not located in a floodway or coastal high hazard area as delineated by the City's flood boundary and floodway maps.

The stormwater management system proposed for the site incorporates an on-site stormwater retention strategy. Post-development peak discharges from the southerly portion of the site (drainage areas 1/1A) will be reduced from 30 C.F.S. (pre-development) to 25 C.F.S. for a 25-year peak storm and from 11 C.F.S. (pre-development) to 7 C.F.S. for a 2-year peak storm. Post-development peak discharges from the northerly portion of the site (drainage areas 2/2A) will be reduced from 42 C.F.S. (pre-development) to 26 C.F.S. for a 25-year peak storm and from 15 C.F.S. to 13± C.F.S. for a 2-year peak storm. This stormwater management system thus exceeds the stormwater management standards of the City, in which pre- and post-development discharges are required to be at least equal.

g. Time Period for Completion

At the present time, The Dartmouth Company estimates construction will start in the Spring of 1985. It is likely that the development will proceed in two phases, in which case the second phase will be completed late in 1986.

h. Financing

Dartmouth has discussed project financing with Casco Northern Bank (see letter, Exhibit K).

The Dartmouth Company respectfully submits this proposal accompanied by the following drawings:

1. Site Plan
2. Utility Plan
3. Planting Plan
4. Road Profile and Details
5. Sanitary and Storm Sewer Profiles
6. Architectural Elevations
7. Architectural Floor Plans

Thanking you in advance for your consideration of our proposal.

Very truly yours,

F. Gordon Hamlin, Jr.
President

FGH:am

Exhibit A

GLENRIDGE

Floor Area and Ground Coverage
of Improvements

Building #	Floor Area	Ground Coverage
1-5	4,362 sq. ft.	2,181 sq. ft.
6-8	2,632	1,316
9-13	4,362	2,181
14-18	4,480	2,240
19-23	4,362	2,181
24-28	4,276	2,546
29-31	2,632	1,316
32-36	4,362	2,181
37-42	5,382	2,691
43-47	4,598	2,299
48-53	5,132	2,951
54-58	4,362	2,181
59-61	2,632	1,316
62-64	2,500	1,635
65-70	5,250	3,010
71-73	2,632	1,316
74-78	4,362	2,181
79-84	5,178	2,997
85-90	5,178	2,997
91-96	5,092	3,362
97-100	3,402	2,086
Office & Trash	432	432
Trash Bldgs. (4)	496	496
Basement Storage (5)	9,000	9,000
Total Square Footage	97,096	57,092

FGH:am
7/30/84

Exhibit B

John L. Murphy • Civil Engineer

BOX 200, R. F. D. 1
WEST BALDWIN, MAINE 04091
Telephone 207-625-8222

May 7, 1984

Traffic Impact
110 Apartment Complex
Brighton Avenue
Portland, Maine

Introduction

Dartmouth Realty Company of Portland, Maine has proposed the installation of up to 110 apartment units on Brighton Avenue between Jeanne Street and Wayside Drive. During March and April of 1984 traffic data was collected on roadways surrounding and abutting the proposed project. The traffic count summary sheets are attached for further analysis by the City, if desired. The data collected was as follows:

1. Twenty-four hour weekday traffic counts at Brighton Avenue and Jeanne Street, Brighton Avenue and Wayside Road, and Ludlow Street at Jeanne Street. These counts were taken twice, first in March and again in April.

2. Spot speed study on Brighton Avenue in front of the proposed site.

3. Accidents on Jeanne Street and on Brighton Avenue adjacent to the site for 1981 through February of 1984.

4. Sight distance measurements for intersection sight distance on Brighton Avenue and Jeanne Street.

Analysis of Data

The traffic volume data (attached) showed that Jeanne Street varied in 24 hour volume from 474 to 515 on the Brighton Avenue end and from 485 to 531 on the Ludlow Street end. Ludlow Street east of Jeanne Street varied from 3024 to 3076 indicating a function as a collector type facility for the surrounding residential area. Wayside Drive varied from 879 vehicles per day to 950 vehicles per day. The four 24 hour weekday counts on Brighton Avenue in front of the site varied from a low of 18,816 to a high of 20,942 to average 19,494 vehicles during the 24 hour weekday. Fuller Street at Ludlow Street was counted only once, resulting in 424 vehicles per 24 hour weekday.

Thus the 24 hour weekday volumes show Ludlow Street as a collector with Brighton Avenue as a major artery. Wayside Drive and Jeanne Street function as local streets serving residential neighborhoods and also connecting the major artery to the Ludlow Street collector. The volumes further show that Wayside Drive on the Brighton Avenue end has 1.85 times as much traffic as Jeanne Street. (It also serves a larger residential area.) Yet Wayside Drive at Brighton Avenue functions without any measurable level of congestion or undue delay.

The attached spot speed study conducted using a radar device indicated that the mean speed on Brighton Avenue in front of the proposed project was 39.35 MPH eastbound and 39.66 MPH westbound. The 85% operating speed was 41.8 MPH eastbound and 41.6 MPH westbound. The 85% speeds are the indication of what the reasonable driver believes to be a safe speed in the area. The 85% speeds are thus used in determination of sight distance requirements, posted speed limits, and warrants for traffic signals. The 1982 edition of the Transportation Engineering Handbook published by the Institute of Transportation Engineers, regarding required safe intersection sight distance, specifies a requirement of 400 feet for 40 miles per hour and 500 feet for 50 miles per hour. Sight distance from the proposed driveway on Brighton Avenue was measured as in excess of 610 feet along the critical approach on the east. This distance is more than adequate for 42 miles per hour determined as the 85% speed.

The 1978 Manual on Uniform Traffic Control Devices has specified warrants for installation of traffic signals. The volume warrants are reduced to 70% of required if the operating speed measured is over 40 MPH. This is the situation for the proposed project. Warrant #2, Interruption of Continuous Traffic, was investigated using 70% of required volume. This meant that the warrant would be satisfied if, for each of any eight hours of an average day, 630 vehicles exist on the total of both approaches of Brighton Avenue and 53 vehicles exist on the minor street approach. The 630 vehicle requirement is obviously satisfied on Brighton Avenue, thus only the 53 vehicle per hour requirement was projected under the two extreme potential situations as follows:

1. Access to Brighton Avenue only with 110 apartment units.

2. Access to Brighton Avenue and Jeanne Street with all Jeanne Street traffic entering and exiting Brighton Avenue through the proposed project access point on Brighton Avenue and all project approach traffic using the Brighton Avenue entrance.

Based upon the maximum of 9.2 trips per day per unit of apartments as specified in the 1982 Trip Generation Manual published by the Institute of Transportation Engineers, the project of 110 units would produce 1012 trips per day. The existing counts of Jeanne Street traffic during March of 1984 were then divided into a percentage of daily traffic per each hour at the Brighton Avenue end. The 1012 trips per day were thus divided using these percentages of existing Jeanne Street flow to determine hourly volumes. The projected approach volumes were derived using a 50% split of the newly generated traffic to develop a worst case situation for use in Warrant #2 analysis. The Jeanne Street two-way volumes actually counted were used in projected volume determinations.

A table showing the analysis by hourly volume is attached. The result of the analysis is that traffic signals are not warranted under Warrant #2 even if Jeanne Street traffic combines with the project traffic in one access to Brighton Avenue and all traffic from the project uses the Brighton Avenue entrance. This analysis is a worst case situation because no approach traffic is assigned to Jeanne Street and this obviously will not be the case.

Thus the result of this phase of analysis is that the project will not generate enough traffic to warrant signals at a Brighton Avenue entrance.

The final phase of study was the existing accidents on Brighton Avenue and Jeanne Street in the vicinity of the project. Portland Police Department records were reviewed for the period from January 1, 1981 through February 29, 1984. This analysis indicated that two fatal accidents had occurred at Brighton Avenue and Jeanne Street. Both accidents involved eastbound vehicles. In one case, the fatality was a pedestrian, in the other it was a moped operator. No apparent patterns existed at any specific location to a degree that indicated any existing safety problem. The accident total breakdowns for the 3 year, 2 month period are as follows:

1. Brighton Avenue at Jeanne Street (node) - 6 accidents.
2. Brighton Avenue at Wayside Drive (node) - 7 accidents.
3. Brighton Avenue between Wayside and Jeanne (link) - 11 accidents.
4. Jeanne Street between Brighton Avenue and Ludlow St. - 3 accidents.

Conclusions

1. No measurable congestion problems will result from additional traffic to be generated by the project.

2. Project traffic does not warrant traffic signals.

3. There is no existing safety problem in the area which is apparent from existing accident data.

4. Sight distance on Brighton Avenue from the proposed driveway is adequate.

5. A second project driveway is recommended on Jeanne Street for emergency access and better distribution of project traffic to desired destinations on the existing public roadway system. Even if 40% of all the anticipated project traffic is added to the 531 counted vehicles on Jeanne Street, the total volume of 531 + 405 = 936 vehicles per day is approximately the same as the existing 950 vehicles per day counted on Wayside Drive.

Warrant #2 Analysis
110 Units X 9.2 Trips/day = 1012 Trips/day

Time	Brighton Westbound		Brighton Eastbound		Hourly %	50% Project Traffic	50% Jeanne Street	50% Jeanne + Project
	3/84	4/84	3/84	4/84				
12 - 1	111	76	49	58	1%	6	1	7
1 - 2	77	53	51	40	0	0	0	0
2 - 3	25	18	22	23	0	0	0	0
3 - 4	19	15	18	19	1%	6	2	8
4 - 5	29	23	21	30	1%	6	2	8
5 - 6	59	52	76	91	1%	6	4	10
6 - 7	237	205	258	314	6%	30	15	45
7 - 8	488	445	776	774	4%	20	11	31
8 - 9	458	482	695	699	5%	25	13	38
9 -10	462	497	510	612	4%	20	11	31
10 -11	539	533	573	610	6%	30	15	45
11 -12	596	556	588	636	8%	41	22	63
12 - 1	642	661	617	702	6%	30	16	46
1 - 2	645	593	573	558	5%	25	14	39
2 - 3	744	635	655	691	9%	46	24	70
3 - 4	805	744	648	698	7%	35	17	52
4 - 5	1049	1006	672	639	10%	51	27	78
5 - 6	774	866	587	602	7%	35	19	54
6 - 7	539	547	514	632	5%	25	14	39
7 - 8	404	374	357	456	4%	20	12	32
8 - 9	335	364	297	285	4%	20	11	31
9 -10	347	355	268	259	2%	10	6	16
10 -11	178	179	156	191	3%	15	7	22
11 -12	137	133	112	134	1%	6	3	9
					100%	508	266	774

TRAFFIC COUNT
SUMMARY SHEET

Location Fuller St - North of Ludlow Direction Both Year 1984

Date		North 3-28		South to Ludlow 3-28					TOTAL
Day		Wed		Wed					
Hour				A.M.					
12 - 1		2		1					3
1 - 2		0		ø					ø
2 - 3		1		1					2
3 - 4		0		1					1
4 - 5		1		2					3
5 - 6		0		5					5
6 - 7		1		6					7
7 - 8		4		20					24
8 - 9		13		17					30
9 - 10		5		14					19
10 - 11		5		10					15
11 - 12		18		12					30
				P.M.					
12 - 1		6		7					13
1 - 2		8		12					20
2 - 3		6		16					22
3 - 4		15		15					30
4 - 5		15		30					45
5 - 6		18		20					38
6 - 7		15		19					34
7 - 8		5		14					19
8 - 9		7		15					22
9 - 10		14		10					24
10 - 11		7		7					14
11 - 12		1		2					3
TOTAL		167		257	=424				424
% Av. Week Day									
Weather Condition									
Roadway Condition									

Remarks _____