Listed below are key characters (in bold) for searching within this file.

Hold down the control key and select the "f" key. Enter either a key character from the list below or document name and select enter for a list of documents containing the search word you entered.

APL – all documents behind this target sheet pertain to the original application submitted by the Applicant.

REVIEW – all documents behind this target sheet pertain to those documents submitted to and from staff as part of the project review.

PBM1 – all documents behind this target sheet are any Planning Board memos with attachments that went to the Board.

PBR1 - all documents behind this target sheet are any Planning Board reports with attachments that went to the Board.

CC1 - all documents behind this target sheet are any City Council memos/reports that went to the City Council.

DRC1 - all documents behind this target sheet are those pertaining to the post review of the project by the Development Review Coordinator.

MISC1 - all documents behind this target sheet are those that may not be included in any of the categories above.

APL

CITY OF PORTLAND, MAINE

PLANNING BOARD

July 19, 1996

Alan Mooney
Criterium-Mooney Engineers
650 Brighton Avenue
Portland, ME 04102

RE: Cumberland Avenue Parking Garage, Corner of Cumberland Avenue, Preble Street and Elm Street

Dear Mr. Mooney:

On July 9, 1996 the Portland Planning Board voted on the following motions regarding the Cumberland Avenue Parking Garage proposed by August Corp.

1. The Board voted 7-0 that the plan was in conformance with the Site Plan Ordinance of the Land Use Code with the following conditions:

   i. A revised plan be submitted for staff review and approval reflecting the comments of the Development Review Coordinator.

   ii. That the complete information on the lighting plan be submitted for staff review and approval.

   iii. That the landscaping plan be reviewed and approved by the City Arborist.

   iv. That revised facade details be submitted for staff review, carrying out for at least one level along Preble and Elm Street, and an additional level along Cumberland Avenue, the pedestrian facade (treatment); and brighter paint on the piping.

2. The Board voted 7-0 that the proposed development under sec. 14-526(16)(a)(2) may increase the street wall build-to line as shown on the submitted plan.

The approval is based on the submitted site plan and the findings related to site plan review standards as contained in Planning Report # 36 -96, which is attached.

Please note the following provisions and requirements for all site plan approvals:

1. A performance guarantee covering the site improvements as well as an inspection fee payment of 1.7% of the guarantee amount and 7 final sets of plans must be submitted to and approved by the Planning Division and Public Works prior to the release of the building permit. If you need to make any modifications to the approved site plan, you must submit a revised site plan for staff review and approval.

2. The site plan approval will be deemed to have expired unless work in the development has commenced within one (1) year of the approval or within a time period agreed upon in writing by the City and the applicant. Requests to extend approvals must be received before the expiration date.

3. A defect guarantee, consisting of 10% of the performance guarantee, must be posted before the performance guarantee will be released.

4. Prior to construction, a preconstruction meeting shall be held at the project site with the contractor, development review coordinator, Public Work's representative and owner to review the construction schedule and critical aspects of the site work. At that time, the site/building contractor shall provide three (3) copies of a detailed construction schedule to the attending City representatives. It shall be the contractor's responsibility to arrange a mutually agreeable time for the preconstruction meeting.

5. If work will occur within the public right-of-way such as utilities, curb, sidewalk and driveway construction, a street opening permit(s) is required for your site. Please contact Carol Merritt at 874-8300, ext. 8828. (Only excavators licensed by the City of Portland are eligible.)

If there are any questions, please contact the Planning Staff.

Sincerely,

Vice Chair

Cyrus Y. Hagge, Chair
Portland Planning Board

cc: Joseph E. Gray, Jr., Director of Planning and Urban Development
Alexander Jaegerman, Chief Planner
Richard Knowland, Senior Planner
P. Samuel Hoffses, Chief of Building Inspections
Marge Schmuckal, Zoning Administrator
George Flaherty, Director of Environmental/Intergovernmental Services
Kathi Staples PE, City Engineer
James Seymour, Acting Development Review Coordinator
William Bray, Deputy Director of Public Works
Jeff Tarling, City Arborist
Natalie Burns, Associate Corporation Counsel
Lt. Gaylen McDougall, Fire Prevention
Mary Gresik, Building Permit Secretary
Kathleen Brown, Assistant Director of Economic Development
Susan Doughty, Assessor's Office
Approval Letter File
Douglas Carr, One Canal Plaza, Portland, ME 04101
Morris Fisher, Boulos Property Management
Paul Stevens, SMRT, 144 Fore Street, Portland, ME 04104

Planning & Urban Development

Joseph E. Gray Jr.
Director

CITY OF PORTLAND

April 3, 1997

Paul J. Mattson
Development Coordinator
Burnham Realty and Enterprises
PO Box 1449
Scarborough ME 04070

RE: North Street Grading

Dear Mr. Mattson:

Thank you for your recent letter requesting an extension to your site plan approval for the regrading of the property located at the corner of North and Walnut Streets.

In my capacity of Director of Planning and Urban Development for the City of Portland, I am approving this extension to May 28, 1998.

If you have any questions, please contact Richard Knowland who worked on your project.

Sincerely,

Joseph E. Gray, Jr.
Director of Planning and Urban Development

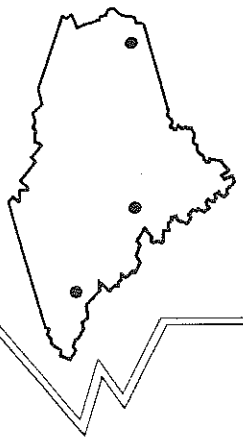
cc: Alexander Jaegerman, Chief Planner
Richard Knowland, Senior Planner
P. Samuel Hoffses, Chief of Inspection Services
Natalie Burns, Associate Corporation Counsel
Mary Gresik, Building Permit Secretary
James Seymour, Acting Development Review Coordinator
Kathleen Brown, Assistant Director of Economic Development
Susan Doughty, Assessor's Office
Approval Letter File

REVIEW

GEOTECHNICAL ENGINEERING INVESTIGATION
PROPOSED PARKING STRUCTURE
CUMBERLAND AVENUE
PORTLAND, MAINE

95-721 S **March 22, 1996**

S.W.COLE
ENGINEERING, INC.
GEOTECHNICAL CONSULTANTS



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S.W.COLE
ENGINEERING, INC.
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Six Liberty Drive, Bangor, ME 04401 TEL (207) 848-5714 FAX (207) 848-2403
161 Water St., P.O. Box 220, Caribou, ME 04736 TEL (207) 496-1511 FAX (207) 496-1501

95-721 S

March 22, 1996

Criterium-Mooney Engineers
Attn: Mr. Alan Mooney
650 Brighton Avenue
Portland, ME 04102

Subject: Geotechnical Engineering Investigation
Proposed Multi-Level Parking Structure - Design Report
Cumberland Avenue
Portland, Maine

Dear Mr. Mooney:

In accordance with our Agreement dated January 22, 1996, and subsequent verbal discussions we have made the subsurface investigation for the proposed parking structure project. The following report describes our scope of services, summarizes our findings and contains a general discussion of site suitability and foundation options. Our report is subject to the limitations presented in Attachment A.

1.0 INTRODUCTION

1.1 Scope of Work - The purpose of the investigation has been to explore the subsurface soil, water and bedrock conditions at the site and to provide a geotechnical evaluation of the findings as they relate to the proposed construction. Our evaluation has included an assessment of subsurface conditions relative to:

- Foundation Alternative
- Soil Bearing Capacity
- Settlement Potential
- Subgrade Preparation
- Frost Protection

- Foundation Drainage
- Pavement Structure
- Backfill and Compaction

1.2 Proposed Construction - The new structure will be constructed on the northwesterly side of Cumberland Avenue between Elm and Preble Streets. The area is currently occupied by a paved parking lot and a two story brick structure which is situated in the southeasterly corner of the parcel. We understand that the project consists of the construction of a 7 to 8 story parking structure having a footprint on the order of 186 by 170 feet in plan dimension. The ground level of the proposed structure will be sloped downward to the west and will be constructed within a few feet of existing grade.

We understand that the structure will be supported by 16 perimeter columns and two I-shaped interior bearing walls. The exterior perimeter columns are anticipated to be on the order of 1250 kips (combined live load and dead load). Each of the two interior I-shaped bearing walls consist of two short, but heavily loaded shear walls and one long light wall. The shear walls will support on the order of 1250 kips while the light wall will support about 70 kips per linear foot. The two I-shaped bearing walls will be on the order of 100 feet in length. A retaining wall is planned at the southerly corner to support a small grade change from the adjacent streets down to the ground level parking.

2.0 EXPLORATION AND TESTING

2.1 Exploration Work - Eleven test boring explorations (B-1, B-2, B-2A, B-3, B-3A, B-3B, B-4, B-5, B-6, B-7, and B-8) were made during the period of January 21, 1996 to February 1, 1996, by Great Works Test Borings, Inc. of Rollinsford, New Hampshire. Two supplemental test borings (B-9 and B-10) were made on February 27 and February 28, 1996, by Great Works Test Borings, Inc. to further explore the soil and bedrock at the site. All the exploration locations were selected by S. W. COLE ENGINEERING, INC. based on project information and a site plan provided by Criterium-Mooney Engineers. The borings were located using taped measurements from existing site features. The

locations of the test borings are shown on the "Exploration Location Plan", attached as Sheet 1. Logs of the test borings, based on the driller's field notes, our visual examination and laboratory testing of selected samples are attached as Sheets 2 through 14. Bedrock cores were obtained at Borings B-9 and B-10. Logs of the cores are attached at Sheets 15 and 16. A key to the notes and symbols used on the logs is attached as Sheet 17. The ground surface elevations shown on the logs were obtained by interpolation of ground contours provided on Sheet 1.

2.2 Laboratory Testing - Laboratory testing was performed on selected samples recovered during exploration work. All recovered samples were visually examined and classified. The results of moisture content tests are noted on the test boring log sheets. The results of five (5) grain size analyses are presented graphically on Sheet 18.

3.0 SITE & SUBSURFACE CONDITIONS

3.1 Site Location and Surficial Conditions - The site of the proposed parking structure is located on the northwesterly side of Cumberland Avenue and between Elm and Preble Streets in Portland, Maine. The parcel is on the order of 180 by 210 feet in plan dimensions and is currently occupied by a paved, on-grade parking lot and a two story brick building. The brick structure is situated in the southeasterly corner of the parcel and has a lower level floor at elevation 54±. A portion of the lower level is at about elevation 50± feet. This structure has a footprint on the order of 90 by 90 feet in plan dimensions. We were not able to explore the area occupied by this structure with test borings. The existing asphalt pavement at the site is in fair condition exhibiting cracking, minor to moderate frost heaving and has had several overlays and/or repair work. The site is bordered by sidewalks and roadways on three sides (easterly, southerly and westerly sides). The site is bordered by another paved parking area and a two story brick structure to the north. This existing adjacent two-story brick structure is situated along the property line at the northwesterly corner of the parcel (see Sheet 1). This structure has a lower level that is approximately 5 feet below existing grade (FFE = 41±). The type of foundation is not known but is likely supported on spread footings.

The extent of subsurface utilities at the site is not known other than the manhole that is shown on Sheet 1 which is located near the existing two story brick structure.

3.2 Subsurface Conditions - The borings made at the site encountered a general stratigraphy of surficial fill, glacial marine silty clay, glacial till and bedrock with depth.

The surficial fill is generally granular, consisting of loose to medium dense gravelly silty sand with some clay but does contain ash, brick, concrete and other miscellaneous debris at several locations. The thickness of the fill was found to range from about 4 to 11 feet at the exploration locations. Beneath the fill at Borings B-3A, B-4, B-5, B-6, B-9 and B-10, exists a 1.5 to 6 foot thick zone of gray to brown fine sand, silt and clay. This material was found to range in consistency from medium to stiff. This is a glacial marine sediment that is highly stratified with clay and silt layers. All of the borings encountered a loose to medium dense gray sand and silt with some gravel and clay (glacial till) with depth. The till contains some cobbles. Based on visual observations of samples and standard penetration resistance the glacial till is not highly consolidated. With the exception of Boring B-2A, the borings encountered a refusal surface. Bedrock cores were obtained at Boring B-9 and B-10. The bedrock recovered is a gray slate of good to excellent quality as determined by RQD (see log sheets). The following is a table listing boring number, depth of fill, and refusal depths. Detailed descriptions of the strata encountered in each boring are presented on the boring logs.

Boring No.	Approx. Surf. Elev. (ft.)	Approx. Fill Thick. (Incl. Possible Fill) (ft.)	Depth/Elev. of Bottom of Exploration (ft.)	
1	46	10	23.5/22.5±	Refusal - Probable Bedrock
2	48	9	9.0/39±	Refusal - Possible Old Tank Pad, Foundation or Cobble
2A	48	13	33.4/14.5±	Not Refusal
3	52	1.5	1.5/50.5±	Refusal - Probable Old Foundation or Construction Debris
3A	52	2.0	2.0/50±	Refusal - Probable Old Foundation or Construction Debris
3B	52	4.5	21.2/31±	Refusal - Probable Bedrock
4	47.5	5	21.4/26±	Refusal - Probable Bedrock
5	49	7	31.9/17±	Refusal - Probable Bedrock
6	53.5	7	20.3/33±	Refusal - Probable Bedrock
7	51	6.5	19.0/32±	Refusal - Probable Bedrock
8	53.5	7	31.6/22±	Refusal - Probable Bedrock
9	51	5.5	34.0/17±	Refusal - Bedrock Core (See Log)
10	51	8	27.0/24±	Refusal - Bedrock Core (See Log)

3.3 Groundwater - Groundwater observations were made in the boreholes during the exploration work. These observations are limited by the duration of the exploration program. Based on our observations at the site, it appears that groundwater was on the order of 6 to 8 feet below the ground surface during the time of exploration. It must be expected that higher groundwater levels exist during wet seasons of the year.

4.0 EVALUATION & RECOMMENDATIONS

4.1 Site Suitability - Based on the findings at the exploration locations, it is our opinion that the site soils are not suitable for support of the proposed structural loads using a shallow spread footing foundation system.

The surficial fill varies from about 4 to 11 feet in thickness and is not only loose to medium dense, but is also varied in content. The fill is generally granular, but does contain clay, ash, brick and other construction debris at several locations. Such material is not suitable for support of the proposed structural loadings.

We have made an allowable bearing capacity analysis of the underlying stiff glacial marine soils (silt and clay) found at many of the borings and the underlying loose to medium dense glacial till. It is our opinion that these soils have an allowable bearing capacity of about 3 ksf. Given the magnitude of structural loading, spread footing dimensions would be quite large. Also, considering that the glacial till is not highly consolidated, post-construction settlements would be expected.

A shallow spread footing foundation system would involve removal of all existing fill soils from beneath foundation areas and replacement with a compacted structural fill. This would require a significant amount of soil removal and off-site disposal of existing fill and replacement with a compacted structural fill. There are other concerns and risks associated with a spread footing foundation system, including:

- The fill soils may be thicker in other areas of the site - Although the information at the boring locations indicate fill thicknesses range from about 4 to 11 feet, there may be areas where fill soils are thicker which would need to be removed and/or densified.

- Existing buried structures may be encountered - It is likely that this parcel has been occupied by building structures and underground utilities. Thus,

remnants of old foundations and utilities may be encountered during excavation work that would need to be removed. The voids created by excavation work would need to be filled with a compacted structural fill.

- Many of the proposed foundations would be located adjacent to streets and the existing adjacent two-story building - Over excavation of the fill soils would extend significantly below existing grades likely requiring engineered braced shoring.

- Contaminated soils may be encountered - Information at Boring B-2 suggest that the soils in this area may be contaminated with petroleum products. A contingency for contaminated soil will need to be provided and a hazardous material handling program should be developed. Further exploration and analytical sampling would likely need to be performed to determine the extent and type of contamination. It should be noted that there may be other areas containing contaminated soils that could be encountered during excavation work for any of the foundation options discussed below.

4.2 Foundation Alternatives - Based on the information gathered to date and the assessment of risks discussed above, we recommend that a deep foundation system be utilized for support of the structural loads. The on-grade level of the parking structure (asphalt, base and subbase) can be placed on densified existing fill soils. We have made a cost estimate and general risk analysis of caisson, steel H-piling and auger-cast pile foundation systems.

The cost estimates provided are intended for comparison only and are based upon discussions with foundation specialty contractors. The actual constructed cost of the selected foundation will vary from the estimates provided below.

1. Caissons

We understand that total column loads will be on the order of 1250 kips. This load could be supported on one reinforced concrete caisson bearing on bedrock. We recommend that an allowable bearing contact pressure of about 60 ksf be used for the bedrock. It appears that approximately 38 caissons would be needed. Caisson would be 4.5 to 5.5 feet in diameter and an average of about 25 feet in length. Load tests are not required for caissons. An auger would need to remove the existing soil and some surficial fractured bedrock to provide a suitable bearing surface. Temporary casing would be required to support the excavation sidewalls. The bearing surface would need to be inspected and, potentially, be hand cleaned prior to placing concrete. Caissons could be installed within about 2 feet of the existing structure located on the adjacent lot. The caissons would require about 5 weeks to install.

Cost Estimate

Installation of Caissons - $360±/cubic yard concrete

Estimated Cost of Caissons - $225,000

Note: This estimate does not include the cost of survey, work, removal of 360± c.y. of soil, materials testing, bottom inspection, disposal of contaminated soils (if encountered) and cost of over-excavating for obstructions.

2. Auger-Cast Piles

Auger-cast piles generally range from 12 to 18 inches in diameter. An 18 inch auger-cast pile can be expected to develop a capacity of about 120 kips. Thus, it appears that about 10 piles would be needed at each column location. The piles would be installed with a hollow stem auger through which grout is pumped

as the auger is retracted. This system is susceptible to the need for over-excavation if cobbles, boulders or construction debris is encountered. The pile would be supported on bedrock but the bottom cannot be inspected. Thus, there is some risk of not bearing on a sound bedrock surface. Only a few piles could be installed per pile group per day because of disturbance from the drilling process. A load test would need to be performed on one pile which would require about 1 week to allow curing of the concrete.

Because of the high anticipated column loadings and the relatively low capacities of the piles, we do not recommend this option.

3. Steel H-Piling

We have made a comparison of 10 inch, 12 inch, and 14 inch steel H-Piling which is generally used for this type of project and anticipated column loads. We have made our comparison considering both ASTM A36 and ASTM A572 Grade 50 steel, assumed no more than 5 piles per group (beneath the heavily loaded columns) and availability of the sections. We suggest that consideration be given to the use of either an HP 12X53 (A572 Grade 50) or an HP 14X73 (A36) pile. Either pile should have a working capacity of about 130 tons. Availability is good for both sections, however, the A572 Grade 50 steel is typically ordered, where as many piling firms stock the A36 steel. Thus, lead time for ordering will need to be considered. There is a cost savings with the A572 Grade 50 steel due to the lighter section required. Based on a total column load of about 625 tons, a pile group of 5 would be needed for either pile type.

Cost Estimate

Mobilization & Demobilization - $5000

Total Length of Piles - 150± piles @ 26 lf (ave.) = 3900 lf

Installed HP 12X53 piles - $25/linear foot

Installed 12 inch pile protective points - $60/each

Installed HP 14X73 piles - $30/linear foot

Installed 14 inch pile protection points - $80/each

Dynamic Load Test - $4000 (at least 1 required)

Estimated Cost of Piles: HP 12X53 - $120,000
HP 14X73 - $140,000

Note: 1. This does not include the cost of backhoe excavation of existing obstructions (foundations or debris), if needed.
2. There is some risk of vibrations reaching the adjacent two story brick structure. Vibrations should be monitored during driving.

Summary - We recommend that steel H-piling be used for support of the new structure. The H-piling will have a better chance of advancing through cobbles or construction debris obstructions than the other alternatives and should cause little disturbance to the adjacent structure. Also, a piling foundation would not require removal of on-site soils other than excavation needed for obstructions, pile caps or grade beams.

We recommend that either HP 12X53 or HP 14X73 steel piles be driven to refusal and that foundation design be based on a pile capacity of 130 tons. The piles will likely have slightly higher capacities which will be determined during a dynamic pile load test program.

4.3 Pile Installation - We recommend a stop driving criteria of 5 blows per 1/4 inch penetration with a hammer energy of 20,000 to 30,000 ft-lb/blow. Driving stresses on piles should be maintained below 12,600 psi (A36 steel) or 17,500 psi (A572 Grade 50 steel). We anticipate that existing fill material may present some difficulty during driving due to buried obstructions (concrete, brick, cobbles, etc.). Pre-excavation in some locations may be necessary. We recommend that cast steel pile points be provided to improve pile tip integrity, particularly when driving through fill and during final set. We recommend that protective pile points be used. The protective points should be ASTM A148 steel having a minimum yield stress of 60 ksi. It will be very important to closely monitor the driving and actual set. Piling will need to penetrate to bedrock which appears to vary from about 20 to 35 below the site.

The piling contractor should submit information relative to pile driving equipment to be used for review prior to beginning driving. We recommend that S. W. COLE ENGINEERING, INC. be on site during pile driving. S. W. COLE ENGINEERING, INC. would be responsible for coordinating and analyzing the dynamic pile load test program, maintaining pile driving records and modifying driving criteria, if necessary, based on actual site driving experience.

4.4 Other Wall Footing Cast on Soil - We recommend that the short retaining wall(s) foundation(s) be supported on at least 12 inches of compacted structural fill overlying a geotextile fabric and densified native soils. All soil supported foundations should be designed for a net allowable bearing contact pressure of 3 ksf or less. We recommend that the subgrade in the area of Boring B-2 (old tank location) be over-excavated (below bottom of retaining wall foundation) by about 3 feet. A geotextile fabric should be placed on the subgrade and a granular structural fill used to bring the area up to within

12 inches of the bottom of foundation. This would allow for 12 inches of select fill beneath the foundations. This will also help densify the loose soils found in this area. Select fill should meet the following gradation specification.

Select Fill

Sieve Size	Percent Finer By Weight
4 Inch	100
3 Inch	95 to 100
1/4 Inch	25 to 90
#40	0 to 30
#200	0 to 5

4.5 Frost Protection - The design freezing index for the Portland, Maine area is on the order of 1250 Fahrenheit degree days. Thus, a frost penetration of 4.5 feet should be anticipated. All grade beams, pile caps and retaining wall foundations should be placed at least 4.5 feet below exterior finish grade.

4.6 Seismic Design - Relative to seismic design evaluation, we recommend that design consider soil profile type S_3 with a site coefficient S = 1.5.

4.7 Excavation Work - Excavation for the pile caps and grade beams will encounter ash and miscellaneous granular fill, existing concrete foundation structures sandy silty clay and clayey silt. Any existing foundation structures will need to be removed to at least 24 inches below proposed foundation members or greater if needed for ease of construction. Groundwater will be encountered in the excavations and will need to be controlled to a level at least 12 inches below subgrade.

The existing fill soils are very susceptible to slumping and/or sloughing from excavation sidewalls. Care should be taken to properly dewater the excavation area and to properly

shore and/or slope back the excavation sidewalls. All excavation work should be consistent with the OSHA standards for excavations (20 CFR Part 1926).

4.8 Foundation Drainage - We recommend that a foundation drainage system with a positive gravity outlet be provided at a depth of about 4.5 feet below finish grade around the periphery of the structure and along the two interior I-shaped walls. The two interior drainage lines should also be placed about 4.5 feet below finish grade and should connect to the peripheral drainage line at the lower end. It is recommended that rigid, perforated underdrain pipe with hole diameters of 1/4 to 5/8 inch be utilized. At least 6 inches of 3/4 inch crushed stone should be used to bed the drain pipe. The stone should be wrapped with filter fabric with an apparent opening size of 70 to 100.

We anticipate the structure will have at least one elevator. Elevators typically have a service pit extending about 4 feet below floor elevation. The pit slab should be underlain with at least 12 inches of crushed stone. An individual underdrain line should be installed with a gravity outlet. If drainage cannot be provided, the pit must have a water proofing treatment. If water proofing is done, a sump pit should be provided to allow the installation of a sump pump in the future, should the water proofing prove to be ineffective. See Sheet 19 for details.

4.9 Lateral Earth Pressure for Retaining Walls - We anticipate that the retaining walls may support about 4 feet of grade change. Considering a compacted select fill adjacent to the walls, we recommend the following parameters be considered.

- Mass Concrete on Compacted Select Fill ($\tan\delta$) .55.
- Active Lateral Earth Pressure Coefficient (K_a) = .31
- Passive Lateral Earth Pressure Coefficient (K_p) = 3.2
- At-Rest Lateral Earth Pressure Coefficient (K_o) = .47

4.10 Paved Areas - It is our opinion that the ground level of the parking structure can be supported on existing densified soils. We understand that the paved area will have a

finish grade within a few feet of the existing grade. We recommend that all existing pavement, topsoil and organics be removed from beneath the proposed paved area. Once the area has been excavated to subgrade, the subgrade soils should be densified (proof-rolled at least five passes with a roller compactor weighing about 15 kips) prior to placing aggregate sub-base material. This will provide a stable base from which to begin placing the sub-base fill. A soils technician should be on site to observe the densification process to assess subgrade soil suitability. Any soils that continue to yield should be over-excavated and replaced with granular fill.

We recommend that the pavement structure be 3 inches of bituminous pavement consisting of 1 inch of surface and 2 inches of binder over a 4 inch base (MDOT Type A base) and a 14 inch sub-base structure (MDOT Type D sub-base).

	Percent Finer By Weight	
Sieve Size	MDOT Type A	MDOT Type D
6 Inch	100	100
	Portion Passing 3"	
2 Inch	100	---
1/2 Inch	45-70	---
1/4 Inch	30-55	25-70
#40	0-20	0-30
#200	0-5.0	0-7.0

The base and sub-base materials should be compacted to at least 95 percent of their maximum dry density as determined by ASTM D-1557.

4.11 Construction Quality Control - It is important that a construction quality control program be implemented for the project before the start of earthwork. It is our opinion that a geotechnical engineering technician should be on site to make observations

during excavation, foundation construction, and backfilling operations. Decisions will have to be made in the field by the owner or owner's representative and the geotechnical engineer during the excavation and foundation construction phase.

Field testing and monitoring services should likely include:

1. Installation monitoring of deep foundations
2. Vibration monitoring during pile driving
3. Observations of excavated fill material and subgrade soil quality during excavation
4. Observations of groundwater conditions
5. Field soil sampling and testing including:
   - moisture-density testing (proctor tests)
   - grain size analyses
   - field soil density testing (compaction tests)

   NOTE: Field density tests combined with laboratory moisture-density testing can provide the contractor with information to assess lift thicknesses, type of compactor to use and number of passes for backfilling.
6. Concrete testing:
   - temperature
   - slump
   - air entrainment
   - test cylinder fabrication

5.0 CLOSURE:

We request that S. W. COLE ENGINEERING, INC. be provided the opportunity to review the final design and specifications to determine that our earthwork and foundation recommendations have been properly interpreted and implemented.

S. W. COLE ENGINEERING, INC.
GEOTECHNICAL CONSULTANTS
95-721 S
March 22, 1996

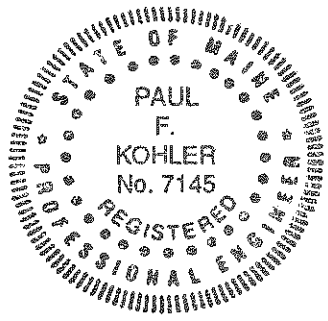
It has been a pleasure to be of assistance to you with this phase of your project. If you have any questions or if we may be of further assistance, please do not hesitate to contact us.

Very truly yours,

S. W. COLE ENGINEERING, INC.

Paul F. Kohler, P.E.

PFK:jel



Attachment A
Limitations

This report has been prepared for the exclusive use of Criterium-Mooney Engineers for specific application to the Proposed Parking Structure in Portland, Maine. S. W. COLE ENGINEERING, INC. has endeavored to conduct the work in accordance with generally accepted soil and foundation engineering practices. No other warranty, expressed or implied, is made.

The soil profiles described in the report are intended to convey general trends in subsurface conditions. The boundaries between strata are approximate and are based upon interpretation of exploration data and samples.

The analyses performed during this investigation and recommendations presented in this report are based in part upon the data obtained from subsurface explorations made at the site. Variations in subsurface conditions may occur between explorations and may not become evident until construction. If variations in subsurface conditions become evident after submission of this report, it will be necessary to evaluate their nature and to review the recommendations of this report.

Observations have been made during exploration work to assess site groundwater levels. Fluctuations in water levels will occur due to variations in rainfall, temperature, and other factors.

Recommendations contained in this report are based substantially upon information provided by others regarding the proposed project. In the event that any changes are made in the design, nature, or location of the proposed project, S. W. COLE ENGINEERING, INC. should review such changes as they relate to analyses associated with this report. Recommendations contained in this report shall not be considered valid unless the changes are reviewed by S. W. COLE ENGINEERING, INC.

S. W. COLE ENGINEERING, INC.

BORING LOG

BORING NO. B-1

PROJECT NO. 95-721 S
DATE START 01-31-96
DATE FINISH 01-31-96
ELEVATION 46'+-

PROJECT/CLIENT: PROPOSED PARKING GARAGE/CRITERIUM-MOONEY ENGINEERS
LOCATION: CUMBERLAND AVENUE PORTLAND, MAINE
DRILLING FIRM: GREAT WORKS TEST BORINGS CO. INC DRILLER: SHAWN BAKER

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING	HSA			
SAMPLER		1-3/8"	140 LBS	30"

WATER LEVEL INFORMATION
WATER OBSERVED AT 21.5'+-

CASING BLOWS PER FOOT	SAMPLE NO.	SAMPLE PEN.	SAMPLE REC.	SAMPLE DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH (FT)	STRATA & TEST DATA
									3"+-	ASPHALT PAVEMENT
	S-1	24"	6"	4.0'	3	2	2	2		BROWN SAND WITH SOME GRAVEL AND TRACE OF SILT (FILL) ~ LOOSE ~
	S-2	24"	0	6.0'	12	6	6	6	6.0'+-	
										BROWN SILTY SAND WITH SOME GRAVEL AND TRACE OF CLAY (FILL?)
									10.0'	~ MEDIUM DENSE ~
	S-3	24"	11"	12.0'	7	9	8	11		W= 8.7% GRAY SAND AND SILT WITH SOME GRAVEL AND TRACE OF CLAY (TILL) ~ MEDIUM DENSE . . .
	S-4	24"	6"	17.0'	4	7	8	10		W= 10.4% BECOMING LOOSE
	S-5	24"	10"	22.0'	2	3	3	2		W= 12.0%
									23.5'	AUGER REFUSAL AT 23.5' BOTTOM OF EXPLORATION AT 23.5'

SOIL CLASSIFIED BY:

X	DRILLER - VISUALLY
X	SOIL TECHNICIAN - VISUALLY
X	LABORATORY TESTS

REMARKS:
STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

S. W. COLE ENGINEERING, INC.

BORING LOG

BORING NO. B-2

PROJECT NO. 95-721 S
DATE START 01-31-96
DATE FINISH 01-31-96
ELEVATION 48'+-

PROJECT/CLIENT: PROPOSED PARKING GARAGE/CRITERIUM-MOONEY ENGINEERS
LOCATION: CUMBERLAND AVENUE PORTLAND, MAINE
DRILLING FIRM: GREAT WORKS TEST BORINGS CO. INC DRILLER: DAVE DIONNE

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING	HSA			
SAMPLER		1-3/8"	140 LBS	30"

WATER LEVEL INFORMATION
NO FREE WATER OBSERVED

CASING BLOWS PER FOOT	SAMPLE NO.	SAMPLE PEN.	SAMPLE REC.	SAMPLE DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH (FT)	STRATA & TEST DATA
									3"+-	ASPHALT PAVEMENT
										BROWNISH BLACK SILTY SAND WITH SOME GRAVEL, BRICK, ASH AND CLAY (FILL)
	S-1	24"	12"	4.0'	6	5	4	3	4.0'	~ LOOSE ~
	S-2	24"	12"	7.0'	1	1	9	5		BLACK AND DARK BROWN SILTY SAND AND GRAVEL WITH TRACE OF CLAY (FILL) ~ LOOSE TO MEDIUM DENSE ~
									9.0'	AUGER REFUSAL AT 9.0' BOTTOM OF EXPLORATION AT 9.0'

SOIL CLASSIFIED BY:

X	DRILLER - VISUALLY
X	SOIL TECHNICIAN - VISUALLY
	LABORATORY TESTS

REMARKS:
STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

S. W. COLE ENGINEERING, INC.

BORING LOG

BORING NO. B-2A

PROJECT/CLIENT: PROPOSED PARKING GARAGE/CRITERIUM-MOONEY ENGINEERS
LOCATION: CUMBERLAND AVENUE PORTLAND, MAINE
DRILLING FIRM: GREAT WORKS TEST BORINGS CO. INC DRILLER: DAVE DIONNE

PROJECT NO. 95-721 S
DATE START 02-01-96
DATE FINISH 02-01-96
ELEVATION 48'+-

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING	HSA			
SAMPLER		1-3/8"	140 LBS	30"

WATER LEVEL INFORMATION
NO FREE WATER OBSERVED

CASING BLOWS PER FOOT	SAMPLE NO.	SAMPLE PEN.	SAMPLE REC.	SAMPLE DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH (FT)	STRATA & TEST DATA
									3"+-	ASPHALT PAVEMENT
										AUGER PROBED TO 10'+- (SEE B-2)
									10.0'	
									11.0'	BLACK SILTY SAND AND GRAVEL (FILL)
	S-1	24"	24"	12.0'	2	1	1	2		~ LOOSE ~ (DISTURBED ?)
	S-2	24"	24"	17.0'	4	10	11	14		GRAY SAND AND SILT WITH SOME GRAVEL AND TRACE OF CLAY (TILL)
	S-3	24"	20"	22.0'	5	4	6	6		
										~MEDIUM DENSE ~
	S-4	24"	22"	27.0'	4	6	7	8		
	ROD	PROBE	FROM	27.0'-33.4'				15		
								12		
								16		
								18		
							HYD.	PUSH		
									33.4'	
										BOTTOM OF EXPLORATION AT 33.4'

SOIL CLASSIFIED BY:

X	DRILLER - VISUALLY
X	SOIL TECHNICIAN - VISUALLY
	LABORATORY TESTS

REMARKS:
STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

BORING NO. B-2A

S. W. COLE ENGINEERING, INC.

BORING LOG

BORING NO. B-3

PROJECT/CLIENT: PROPOSED PARKING GARAGE/CRITERIUM-MOONEY ENGINEERS
LOCATION: CUMBERLAND AVENUE PORTLAND, MAINE
DRILLING FIRM: GREAT WORKS TEST BORINGS CO. INC DRILLER: DAVE DIONNE

PROJECT NO. 95-721 S
DATE START 02-01-96
DATE FINISH 02-01-96
ELEVATION 52'+ -

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING	HSA			
SAMPLER		1-3/8"	140 LBS	30"

WATER LEVEL INFORMATION
NO FREE WATER OBSERVED

CASING BLOWS PER FOOT	SAMPLE NO.	SAMPLE PEN.	SAMPLE REC.	SAMPLE DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH (FT)	STRATA & TEST DATA
									3"+ -	ASPHALT PAVEMENT
									1.5'	BROWN SAND AND GRAVEL WITH SOME BRICK (FILL)
										AUGER REFUSAL AT 1.5'
										BOTTOM OF EXPLORATION AT 1.5'

SOIL CLASSIFIED BY:

X	DRILLER - VISUALLY
X	SOIL TECHNICIAN - VISUALLY
	LABORATORY TESTS

REMARKS:
STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

S. W. COLE ENGINEERING, INC.

BORING LOG

BORING NO. B-3A

PROJECT/CLIENT: PROPOSED PARKING GARAGE/CRITERIUM-MOONEY ENGINEERS
LOCATION: CUMBERLAND AVENUE PORTLAND, MAINE
DRILLING FIRM: GREAT WORKS TEST BORINGS CO. INC DRILLER: DAVE DIONNE

PROJECT NO. 95-721 S
DATE START 02-01-96
DATE FINISH 02-01-96
ELEVATION 52'+ -

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING	HSA			
SAMPLER		1-3/8"	140 LBS	30"

WATER LEVEL INFORMATION
NO FREE WATER OBSERVED

CASING BLOWS PER FOOT	SAMPLE NO.	SAMPLE PEN.	SAMPLE REC.	SAMPLE DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH (FT)	STRATA & TEST DATA
									3"+ -	ASPHALT PAVEMENT
									2.0'	DARK BROWN ASH, SAND AND BRICK (FILL)
										AUGER REFUSAL AT 2.0'
										BOTTOM OF EXPLORATION AT 2.0'

SOIL CLASSIFIED BY:

X	DRILLER - VISUALLY
X	SOIL TECHNICIAN - VISUALLY
	LABORATORY TESTS

REMARKS:
STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

S. W. COLE ENGINEERING, INC.

BORING LOG

BORING NO. B-3B

PROJECT/CLIENT: PROPOSED PARKING GARAGE/CRITERIUM-MOONEY ENGINEERS
LOCATION: CUMBERLAND AVENUE PORTLAND, MAINE
DRILLING FIRM: GREAT WORKS TEST BORINGS CO. INC DRILLER: DAVE DIONNE

PROJECT NO. 95-721 S
DATE START 02-01-96
DATE FINISH 02-01-96
ELEVATION 52'+ -

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING	HSA			
SAMPLER		1-3/8"	140 LBS	30"

WATER LEVEL INFORMATION
WATER OBSERVED AT 21.2' 11:00AM
WATER OBSERVED AT 19.1' 1:30PM

CASING BLOWS PER FOOT	SAMPLE NO.	PEN.	REC.	DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH (FT)	STRATA & TEST DATA
									3"+ -	ASPHALT PAVEMENT
										BROWNISH GRAY SILT AND SAND WITH SOME GRAVEL AND BRICK (FILL)
	S-1	24"	6"	4.0'	8	6	5	14	4.5'+ -	~ MEDIUM DENSE ~
	S-2	24"	20"	6.0'	4	2	5	5	6.0'+ -	BROWN SANDY SILT WITH SOME CLAY ~MEDIUM DENSE~ qp=2.75 ksf
										~ LOOSE BECOMINNG . . .
										GRAY SAND AND SILT WITH SOME GRAVEL AND TRACE OF CLAY (TILL)
	S-3	24"	12"	12.0'	2	1	1	2		
										. . . MEDIUM DENSE ~
	S-4	24"	16"	17.0'	3	2	3	5		
									21.2'	
	S-5	14"	5"	21.2'	5	28	100/2"			SPOON REFUSAL AT 21.2
										BOTTOM OF EXPLORATION AT 21.2'

SOIL CLASSIFIED BY:

X	DRILLER - VISUALLY
X	SOIL TECHNICIAN - VISUALLY
	LABORATORY TESTS

REMARKS:
STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

BORING NO. B-3B

S. W. COLE ENGINEERING, INC.

BORING LOG

BORING NO. B-4

PROJECT NO. 95-721 S
DATE START 01-26-96
DATE FINISH 01-26-96
ELEVATION 47.5'+ -

PROJECT/CLIENT: PROPOSED PARKING GARAGE/CRITERIUM-MOONEY ENGINEERS
LOCATION: CUMBERLAND AVENUE PORTLAND, MAINE
DRILLING FIRM: GREAT WORKS TEST BORINGS CO. INC DRILLER: SHAWN BAKER

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING	HSA			
SAMPLER		1-3/8"	140 LBS	30"

WATER LEVEL INFORMATION
WATER OBSERVED AT 14'+ -

CASING BLOWS PER FOOT	SAMPLE NO.	PEN.	REC.	DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH (FT)	STRATA & TEST DATA
									3"+ -	ASPHALT PAVEMENT
									1.0'	BROWN SAND AND GRAVEL (FILL)
									3.0'+ -	BLACK SILTY SAND WITH ASH (FILL) ~MEDIUM DENSE~
	S-1	24"	20"	4.0'	5	6	10	12		BROWNISH GRAY SILTY SAND WITH TRACE OF GRAVEL AND CLAY (FILL?) qp= 1.5 ksf
									5.0'+ -	
	S-2	24"	23"	6.0'	14	16	24	27		W= 23.0% qp= 3.0 ksf BROWNISH GRAY SANDY SILT WITH SOME CLAY
									9.5'	
	S-3	24"	24"	11.5'	13	16	9	11		GRAY SAND AND SILT WITH SOME GRAVEL AND TRACE OF CLAY (TILL) ~ MEDIUM DENSE ~ W= 12.8%
	S-4	24"	20"	16.5'	9	8	10	14		
									21.4'	
	S-5	22"	12"	21.4'	2	10	10	100/5"		SPOON REFUSAL AT 21.4'
										BOTTOM OF EXPLORATION AT 21.4'

SOIL CLASSIFIED BY:

X	DRILLER - VISUALLY
X	SOIL TECHNICIAN - VISUALLY
X	LABORATORY TESTS

REMARKS:
STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

BORING NO. B-4

S. W. COLE ENGINEERING, INC.

BORING LOG

BORING NO. B-5

PROJECT/CLIENT: PROPOSED PARKING GARAGE/CRITERIUM-MOONEY ENGINEERS
LOCATION: CUMBERLAND AVENUE PORTLAND, MAINE
DRILLING FIRM: GREAT WORKS TEST BORINGS CO. INC DRILLER: DAVE DIONNE

PROJECT NO. 95-721 S
DATE START 02-01-96
DATE FINISH 02-01-96
ELEVATION 49'+ -

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING	HSA			
SAMPLER		1-3/8"	140 LBS	30"

WATER LEVEL INFORMATION
NO FREE WATER OBSERVED

CASING BLOWS PER FOOT	SAMPLE NO.	PEN.	REC.	DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH (FT)	STRATA & TEST DATA
									3"+ -	ASPHALT PAVEMENT
										BLACK ASH, SAND AND SILT (FILL)
									3.0'+ -	
	S-1	24"	15"	4.0'	4	5	5	8		GRAY SAND AND SILT WITH SOME GRAVEL (FILL?)
										~ MEDIUM DENSE ~
	S-2	24"	24"	7.0'	3	4	5	7	7.0'+ -	
										GRAY CLAYEY SILTY SAND (TILL)
										~ LOOSE ~
	S-3	24"	24"	12.0'	1	1	1	2	12.0'	
										GRAY SAND AND SILT WITH SOME GRAVEL
										AND TRACE OF CLAY (TILL)
	S-4	24"	18"	17.0'	1	1	2	4		~ LOOSE BECOMING . . .
	S-5	24"	18"	22.0'	5	9	7	10		. . . MEDIUM DENSE ~
	S-6	24"	20"	27.0'	4	8	7	18		
	S-7	23"	16"	31.9'	4	9	17	100/5"	31.9'	
										SPOON REFUSAL AT 31.9'
										BOTTOM OF EXPLORATION AT 31.9'

SOIL CLASSIFIED BY:

X	DRILLER - VISUALLY
X	SOIL TECHNICIAN - VISUALLY
	LABORATORY TESTS

REMARKS:
STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

BORING NO. B-5

S. W. COLE ENGINEERING, INC.

BORING LOG

BORING NO. B-6

PROJECT/CLIENT: PROPOSED PARKING GARAGE/CRITERIUM-MOONEY ENGINEERS
LOCATION: CUMBERLAND AVENUE PORTLAND, MAINE
DRILLING FIRM: GREAT WORKS TEST BORINGS CO. INC DRILLER: DAVE DIONNE

PROJECT NO. 95-721 S
DATE START 02-01-96
DATE FINISH 02-01-96
ELEVATION 53.5'+ -

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING	HSA			
SAMPLER		1-3/8"	140 LBS	30"

WATER LEVEL INFORMATION
NO FREE WATER OBSERVED

CASING BLOWS PER FOOT	SAMPLE NO.	SAMPLE PEN.	SAMPLE REC.	SAMPLE DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH (FT)	STRATA & TEST DATA
									3"+ -	ASPHALT PAVEMENT
	S-1	24"	3"	4.0'	26	15	3	2	5'+ -	BROWN SAND AND GRAVEL WITH BRICK AND CONCRETE (FILL) ~ LOOSE ~
	S-2	24"	15"	7.0'	3	6	10	9	7.0'+ -	BROWN SAND AND SILT WITH SOME GRAVEL AND TRACE OF CLAY (FILL?) MEDIUM DENSE~ W= 17.3%
	S-3	24"	24"	12.0'	5	5	6	7	12.0'	BROWNISH GRAY SAND AND SILT WITH TRACE OF CLAY ~ MEDIUM DENSE ~
	S-4	24"	4"	17.0'	2	4	4	12	20.3'	GRAY SAND AND SILT WITH SOME GRAVEL AND TRACE OF CLAY (TILL) ~ MEDIUM DENSE ~
	S-5	4"	3"	20.3'	100/4"					SPOON REFUSAL AT 20.3' BOTTOM OF EXPLORATION AT 20.3'

SOIL CLASSIFIED BY:

X	DRILLER - VISUALLY
X	SOIL TECHNICIAN - VISUALLY
X	LABORATORY TESTS

REMARKS:
STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

BORING NO. B-6

S. W. COLE ENGINEERING, INC.

BORING LOG

BORING NO. B-7

PROJECT NO. 95-721 S
DATE START 01-26-96
DATE FINISH 01-26-96
ELEVATION 51'+-

PROJECT/CLIENT: PROPOSED PARKING GARAGE/CRITERIUM-MOONEY ENGINEERS
LOCATION: CUMBERLAND AVENUE PORTLAND, MAINE
DRILLING FIRM: GREAT WORKS TEST BORINGS CO. INC DRILLER: SHAWN BAKER

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING	HSA			
SAMPLER		1-3/8"	140 LBS	30"

WATER LEVEL INFORMATION
WATER OBSERVED AT 18'+-

CASING BLOWS PER FOOT	SAMPLE NO.	PEN.	REC.	DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH (FT)	STRATA & TEST DATA
									3"+-	ASPHALT PAVEMENT
										BROWN SILTY SAND WITH SOME GRAVEL (FILL)
	S-1	24"	16"	4.0'					4.0'+-	
										LIGHT BROWN SILTY SAND WITH SOME GRAVEL (PROBABLE FILL)
									6.5'+-	
	S-2	24"	24"	6.5'						~ VERY DENSE . . .
	S-3	24"	24"	11.5'	23	21	24	29		W= 11.0% GRAY SAND AND SILT WITH SOME GRAVEL AND TRACE OF CLAY (TILL)
	S-4	24"	9"	16.5'	9	16	13	16		. . . BECOMING DENSE ~
									19.0'	AUGER REFUSAL AT 19.0'
										BOTTOM OF EXPLORATION AT 19.0'
										NOTE: DUE TO MECHANICAL PROBLEMS BLOW COUNTS FOR S-1 AND S-2 WERE NOT REPRESENTATIVE OF SOIL DENSITY.

SOIL CLASSIFIED BY:

X	DRILLER - VISUALLY
X	SOIL TECHNICIAN - VISUALLY
X	LABORATORY TESTS

REMARKS:
STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

BORING NO. B-7

S. W. COLE ENGINEERING, INC.

BORING LOG

BORING NO. B-8

PROJECT/CLIENT: PROPOSED PARKING GARAGE/CRITERIUM-MOONEY ENGINEERS
LOCATION: CUMBERLAND AVENUE PORTLAND, MAINE
DRILLING FIRM: GREAT WORKS TEST BORINGS CO. INC DRILLER: DAVE DIONNE

PROJECT NO. 95-721 S
DATE START 02-01-96
DATE FINISH 02-01-96
ELEVATION 53.5'+ -

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING	HSA			
SAMPLER		1-3/8"	140 LBS	30"

WATER LEVEL INFORMATION
NO FREE WATER OBSERVED

CASING BLOWS PER FOOT	SAMPLE NO.	SAMPLE PEN.	SAMPLE REC.	SAMPLE DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH (FT)	STRATA & TEST DATA
									3"+ -	ASPHALT PAVEMENT
										BLACK ORGANIC SILTY SAND WITH SOME GRAVEL AND BRICK (FILL)
										~ MEDIUM DENSE ~
	S-1	24"	2"	4.0'	10	9	16	10	4.0'+ -	
										BROWN SILTY SAND WITH SOME GRAVEL (PROBABLE FILL)
										~LOOSE ~
	S-2	24"	10"	7.0'	3	2	3	3	7.0'+ -	
	S-3	24"	14"	12.0'	6	6	14	13		GRAY SAND AND SILT WITH SOME GRAVEL
										AND TRACE OF CLAY (TILL)
	S-4	24"	20"	17.0'	7	12	12	11		~ MEDIUM DENSE ~
	S-5	24"	20"	22.0'	3	4	4	6		
	S-6	24"	18"	27.0'	3	4	6	8		
	S-7	22"	20"	31.6'	3	11	25	110/2"	31.6'	SPOON REFUSAL AT 31.6'
										BOTTOM OF EXPLORATION AT 31.6'

SOIL CLASSIFIED BY:

X	DRILLER - VISUALLY
X	SOIL TECHNICIAN - VISUALLY
	LABORATORY TESTS

REMARKS:
STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

BORING NO. B-8

S. W. COLE ENGINEERING, INC.

BORING LOG

BORING NO. B-9

PROJECT/CLIENT: PROPOSED PARKING GARAGE/CRITERIUM-MOONEY ENGINEERS
LOCATION: CUMBERLAND AVENUE PORTLAND, MAINE
DRILLING FIRM: GREAT WORKS TEST BORINGS CO. INC DRILLER: DON

PROJECT NO. 95-721 S
DATE START 02-27-96
DATE FINISH 02-27-96
ELEVATION 51'+ -

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING	HSA			
SAMPLER		1-3/8"	140 LBS	30"

WATER LEVEL INFORMATION
NO FREE WATER OBSERVED
SOILS SATURATED BELOW 5'+ -

CASING BLOWS PER FOOT	SAMPLE NO.	PEN.	REC.	DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH (FT)	STRATA & TEST DATA
									3"+ -	ASPHALT PAVEMENT
	S-1	24"	16"	2.5'	18	72	49	13	5.5'+ -	BLACK ASH AND BRICK WITH SOME FINE SAND (FILL) ~DENSE~
	S-2	24"	20"	7.0'	5	4	7	12	9'+ -	GRAYISH BROWN SILTY CLAY WITH FINE SAND LAYERS ~STIFF~ qp=3.5-5.5 ksf
									10.5'+ -	BROWN SILTY FINE SAND
	S-3	24"	18"	12.0'	5	8	7	5		GRAY SAND AND SILT WITH SOME GRAVEL AND TRACE OF CLAY (TILL)
	S-4	24"	24"	17.0'	2	1	1	2		~LOOSE TO MEDIUM DENSE~
	S-5	24"	16"	22.0'	10	7	16	13		
	S-6	24"	18"	27.0'	4	9	14	20		
	S-7	24"	20"	32.0'	4	8	14	15		
									34.0'	REFUSAL @ 34.0'
										BEDROCK
	1R	24"	24"	36.0'					36.0'	GRAY SLATE RQD=92% (EXCELLENT)
										BOTTOM OF EXPLORATION AT 36.0'

NOTE :
BROKEN ROCK CORE BIT IN THE HOLE PREVENTED FURTHER CORING.

SOIL CLASSIFIED BY:

X	DRILLER - VISUALLY
X	SOIL TECHNICIAN - VISUALLY
	LABORATORY TESTS

REMARKS:
STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

BORING NO. B-9

S. W. COLE ENGINEERING, INC.

BORING LOG

BORING NO. B-10

PROJECT/CLIENT: PROPOSED PARKING GARAGE/CRITERIUM-MOONEY ENGINEERS
LOCATION: CUMBERLAND AVENUE PORTLAND, MAINE
DRILLING FIRM: GREAT WORKS TEST BORINGS CO. INC DRILLER: DON

PROJECT NO. 95-721 S
DATE START 02-28-96
DATE FINISH 02-28-96
ELEVATION 51'+-

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING	HSA			
SAMPLER		1-3/8"	140 LBS	30"

WATER LEVEL INFORMATION
NO FREE WATER OBSERVED
SOILS SATURATED BELOW 7'+-

CASING BLOWS PER FOOT	SAMPLE NO.	PEN.	REC.	DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH (FT)	STRATA & TEST DATA
									3"+-	ASPHALT PAVEMENT
	S-1	24"	8"	2.5'	8	8	6	7		BLACK AND BROWN SILTY FINE SAND WITH SOME GRAVEL AND ASH (FILL)
	S-2	24"	12"	7.0'	6	4	9	8		~MEDIUM DENSE~
									8'+-	
	S-3	24"	16"	12.0'	7	11	10	8		GRAYISH BROWN CLAYEY SILT AND FINE SAND qp <0.5 ksf ~MEDIUM DENSE~
									14'+-	
	S-4	24"	14"	17.0'	3	2	4	11		~LOOSE BECOMING . . . GRAY SAND AND SILT WITH SOME GRAVEL AND TRACE OF CLAY (TILL)
	S-5	24"	22"	22.0'	3	3	5	12		
										. . . MEDIUM DENSE~
	S-6	24"	8"	27.0'	8	8	17	16	27.0'	REFUSAL AT 27.0'
										BEDROCK GRAY SLATE
	1R	60"	58"	32.0'					32.0'	RQD=80% (GOOD)
										BOTTOM OF EXPLORATION AT 32.0'

SOIL CLASSIFIED BY:

X	DRILLER - VISUALLY
X	SOIL TECHNICIAN - VISUALLY
	LABORATORY TESTS

REMARKS:
STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

BORING NO. B-10

S.W.COLE
ENGINEERING, INC.
GEOTECHNICAL CONSULTANTS

PROJECT NUMBER 95-721.S

ROCK CORE LOG

PROJECT NAME/LOCATION CRITERIUM MOONEY
PROPOSED PARKING GARAGE - PORTLAND, ME.

BORING NUMBER B-10
CORE SIZE NQ2 SHEET 1 OF 1

LOGGED BY GWB DATE 3-7-96
CHECKED BY BFN DATE 3/11/96

DEPTH BELOW SURFACE (Ft.)	CORE RUN	CORE INTERVAL (In.)	CORE RECOVERY (In.)	RQD (%)	ROCK QUALITY	GRAPHIC LOG	ROCK DESCRIPTION AND IDENTIFICATION
27.0	1R	60"	58"	48/60 80%	GOOD		GRAY SLATE – SLIGHTLY WEATHERED – MODERATELY HARD – PYRITE CYSTALS VISIBLE – FRACTURES @ 20°-25°, 70° FROM HORIZONTAL
							CALCITE VEINS
							CALCITE VEINS
32.0							~ ZONE OF CORE LOSS

KEY TO THE NOTES & SYMBOLS
Test Boring and Test Pit Explorations

All stratification lines represent the approximate boundary between soil types and the transition may be gradual.

Key to Symbols Used:

w	-	water content, percent (dry weight basis)
q_u	-	unconfined compressive strength, kips/sq. ft. - based on laboratory unconfined compressive test
S_v	-	field vane shear strength, kips/sq. ft.
L_v	-	lab vane shear strength, kips/sq. ft.
q_p	-	unconfined compressive strength, kips/sq. ft. based on pocket penetrometer test
O	-	organic content, percent (dry weight basis)
W_L	-	liquid limit - Atterberg test
W_P	-	plastic limit - Atterberg test
WOH	-	advance by weight of hammer
WOM	-	advance by weight of man
WOR	-	advance by weight of rods
HYD	-	advance by force of hydraulic piston on drill
RQD	-	Rock Quality Designator - an index of the quality of a rock mass. RQD is computed from recovered core samples.

Description of Proportions:

0 to 5% TRACE
5 to 12% SOME
12 to 35% "Y"
35+% AND

REFUSAL: **Test Boring Explorations** - Refusal depth indicates that depth at which, in the drill foreman's opinion, sufficient resistance to the advance of the casing, auger, probe rod or sampler was encountered to render further advance impossible or impracticable by the procedures and equipment being used.

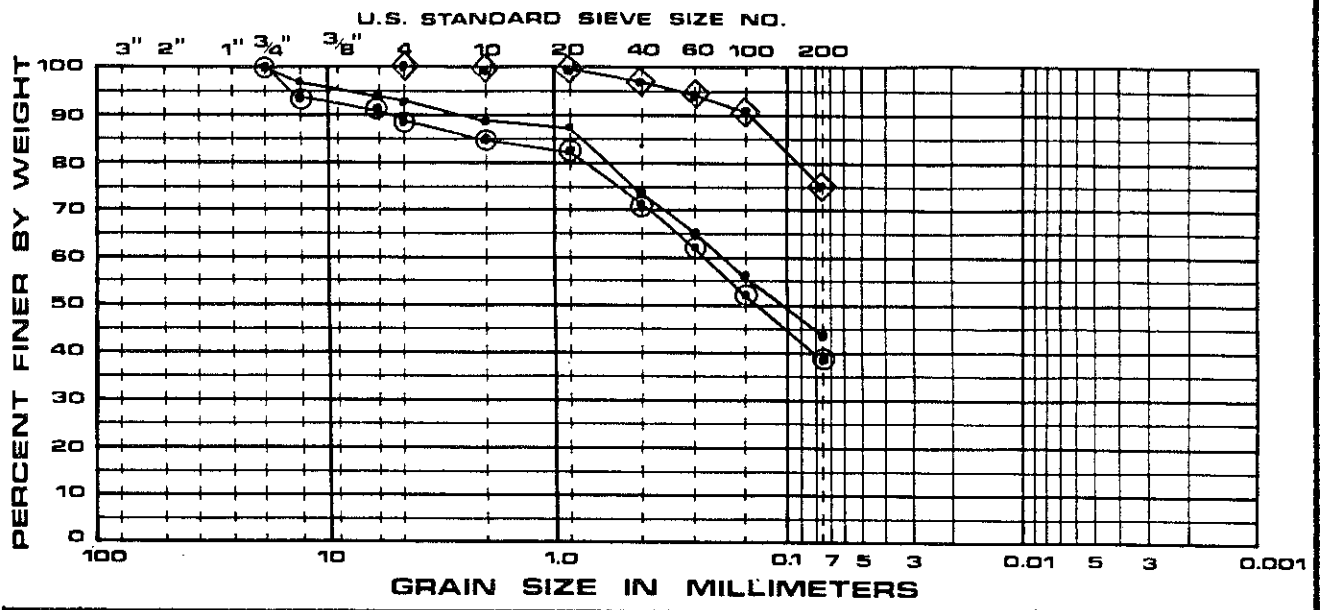
REFUSAL: **Test Pit Explorations** - Refusal depth indicates that depth at which sufficient resistance to the advance of the backhoe bucket was encountered to render further advance impossible or impracticable by the procedures and equipment being used.

Although refusal may indicate the encountering of the bedrock surface, it may indicate the striking of large cobbles, boulders, very dense or cemented soil, or other buried natural or man-made objects or it may indicate the encountering of a harder zone after penetrating a considerable depth through a weathered or disintegrated zone of the bedrock.

JOB NO. : 95-721 S

GRAIN SIZE ANALYSIS

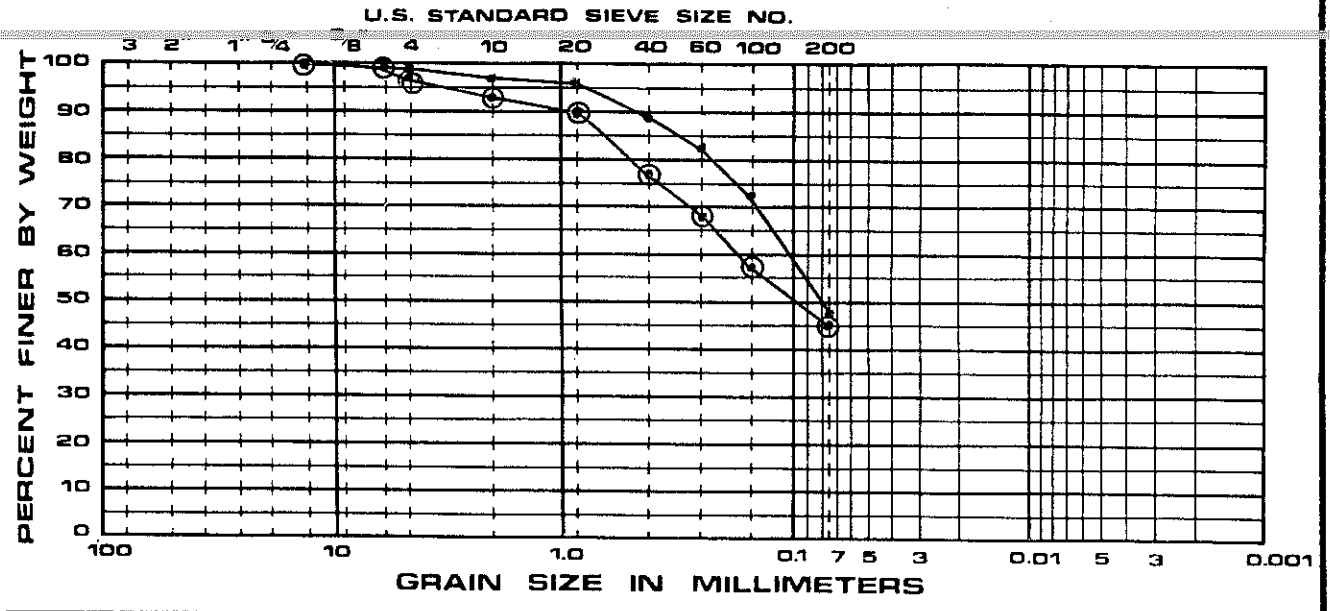
COBBLE	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COA.	MEDIUM	FINE	



PLOT	SOURCE	SAMP.	DEPTH	CLASSIFICATION	W%
⊙	B-1	S-3	10'-12'	SAND AND SILT W/SOME GRAVEL, TRACE OF CLAY	8.7
◇	B-4	S-2	4'-6'	SANDY SILT WITH SOME CLAY	23.0
•	B-4	S-4	14.5'-16.5'	SAND AND SILT WITH SOME GRAVEL, TRACE OF CLAY	12.8

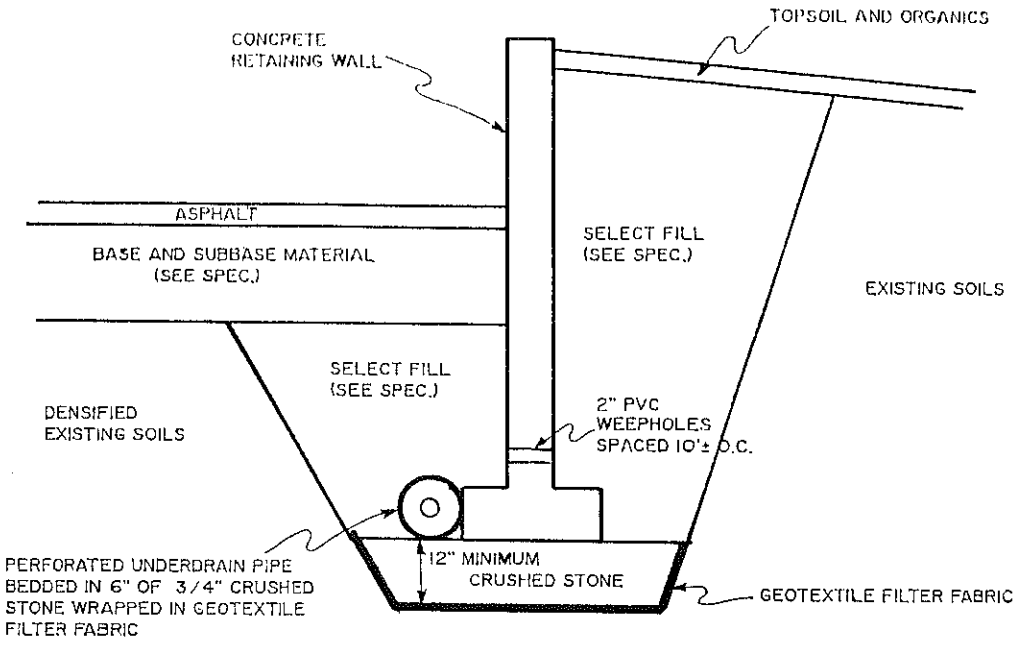
GRAIN SIZE ANALYSIS

COBBLE	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COA.	MEDIUM	FINE	

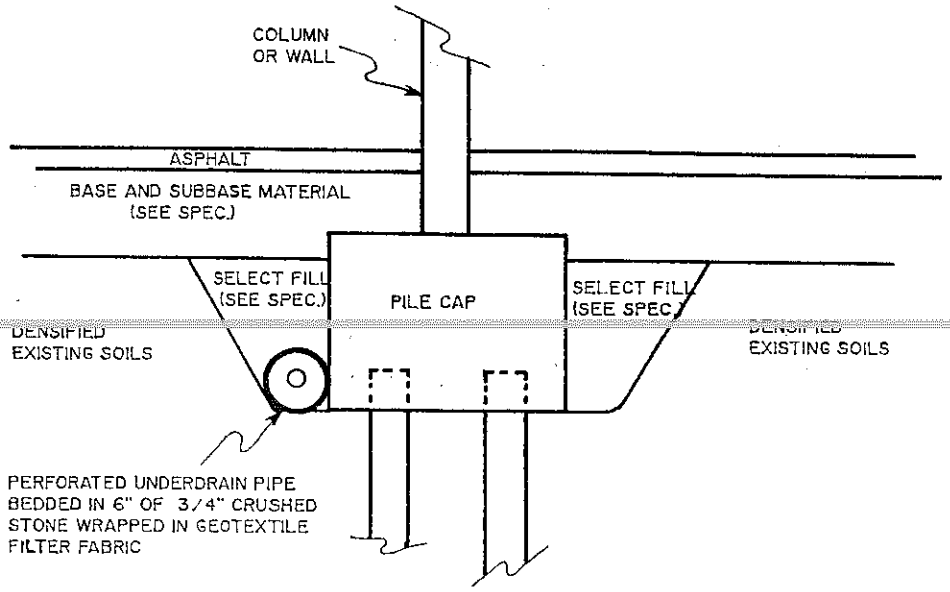


PLOT	SOURCE	SAMP.	DEPTH	CLASSIFICATION	W%
•	B-6	S-2	5'-7'	SAND AND SILT WITH TRACE OF GRAVEL	17.3
⊙	B-7	S-3	9.5'-11.5'	SAND AND SILT WITH TRACE OF GRAVEL	11.0

RETAINING WALL



PILE CAPS / GRADE BEAMS



S. W. COLE ENGINEERING, INC.
GEOTECHNICAL CONSULTANT

CRITERIUM MOONEY ENGINEERS

FOUNDATION DRAINAGE DETAILS

PROPOSED PARKING GARAGE
CUMBERLAND AVENUE PORTLAND, MAINE

Job No. 95-721 S
Date 3/22/96
Scale NOT TO SCALE
Sheet 19

35530

WARRANTY DEED

KNOW ALL BY THESE PRESENTS, that ATLAS CORPORATION, a Maine corporation with a principal place of business in Portland, Maine, does hereby GRANT unto AUGUST CORPORATION, a Maine corporation with a principal place of business in Portland, Maine and a mailing address of c/o Boulos Property Management, Two City Center, Portland, Maine 04101, with WARRANTY COVENANTS, two certain lots or parcels of land with the buildings thereon, situated at or near Cumberland Avenue, in the City of Portland, County of Cumberland, and State of Maine, as more particularly set forth on the attached Schedule A.

IN WITNESS WHEREOF, the undersigned Atlas Corporation has caused this instrument to be executed by its duly authorized officer, this 27th day of July, 1995.

WITNESSETH:

ATLAS CORPORATION

By: Catherine B. Cohen
Catherine B. Cohen
President

STATE OF MAINE
COUNTY OF CUMBERLAND, ss. July 27, 1995

Then personally appeared before me the above-named Catherine B. Cohen, President of Atlas Corporation, and acknowledged the foregoing instrument to be her free act and deed in said capacity and the free act and deed of said Atlas Corporation.

~~Notary Public~~ / Attorney-at-Law
~~Print~~ Name: Richard N. Bryant, Esq.
Commission Expires: _____

T:\D1117\WARDEED.RNB\27Jul95

SCHEDULE A TO WARRANTY DEED

GRANTOR: ATLAS CORPORATION
GRANTEE: AUGUST CORPORATION
DATE: JULY 27, 1995

PARCEL 1:

A certain parcel of land, together with buildings thereon, situated on the Northerly side of Cumberland Avenue, the Easterly side of Preble Street and the Westerly side of Elm street in the City of Portland, County of Cumberland and State of Maine, bounded and described as follows:

Beginning at a point on the Easterly sideline of Preble Street at the Southwest corner of the land now or formerly of Douglas T. and Linda A. Cardente (see Cumberland County Registry of Deeds, Book 6727, Page 52 and 55), which point is on the Westerly extension of the Southerly side of the two story brick building on the land of Cardente;

Thence N 59° 00' 05" E by Cardente and by said building and the extension thereof 209.61 feet to the Westerly sideline of Elm Street;

Thence S 32° 02' 05" E by Elm Street 187.98 feet to Cumberland Avenue;

Thence S 62° 01' 40" W by Cumberland Avenue 213.54 feet to Preble Street;

Thence N 30° 55' 20" W by Preble Street 176.67 feet to the point of beginning.

Said parcel contains 38,535 square feet and is shown on "Land Title Survey on Cumberland Avenue & Preble Street, Portland, Maine for August Corporation, Date July 20, 1995" by Owen Haskell, Inc. All bearings are magnetic 1973.

PARCEL 2:

A certain parcel of land, together with improvements thereon, situated on the Southerly side of Cumberland Avenue and the Easterly side of Preble Street in the City of Portland, County of Cumberland and State of Maine, bounded and described as follows:

Beginning at the back corner of an 8" x 8" granite monument found at the point of intersection at the Southerly sideline of Cumberland Avenue and the Easterly sideline of Preble Street;

Thence N 62° 01' 40" E by Cumberland Avenue 121.96 to the land now or formerly of Vesta Development Corporation (see Cumberland County Registry of Deeds, Book 11615, Page 280);

Thence S 31° 04' 10" E by Vesta Development Corporation and by the land of the City of Portland (see Cumberland County Registry of Deeds, Book 4075, Page 162) 189.07 feet to the land formerly of Crown Life Insurance Company (see Cumberland County Registry of Deeds, Book 10876, Page 76)and conveyed by it to October Corporation by deed dated June 12, 1995 and recorded in said Registry of Deeds in Book 11974, Page 39;

Thence S 59° 02' 20" W by Crown Life Insurance Company 122.15 feet to a 5/8" iron rod found at Preble Street;

Thence N 30° 57' 40" W by Preble Street 195.43 to the point of beginning.

Said parcel contains 23,448 square feet and is shown on "Land Title Survey on Cumberland Avenue & Preble Street, Portland, Maine for August Corporation, Date July 20, 1995" by Owen Haskell, Inc. All bearings are magnetic 1973.

Both Parcel 1 and 2 above are conveyed subject to all matters noted on the above-referenced "Land Title Survey on Cumberland Avenue & Preble Street, Portland, Maine for August Corporation, Date July 20, 1995" by Owen Haskell, Inc."

Traffic Impact Study

MONUMENT SQUARE ASSOCIATES PARKING GARAGE

CUMBERLAND STREET @ PREBLE & ELM STREETS ■ Portland, Maine

Prepared for
Criterium-Mooney Engineers
Portland, Maine

EATON
TRAFFIC
ENGINEERING
Brunswick, Maine

April 1996

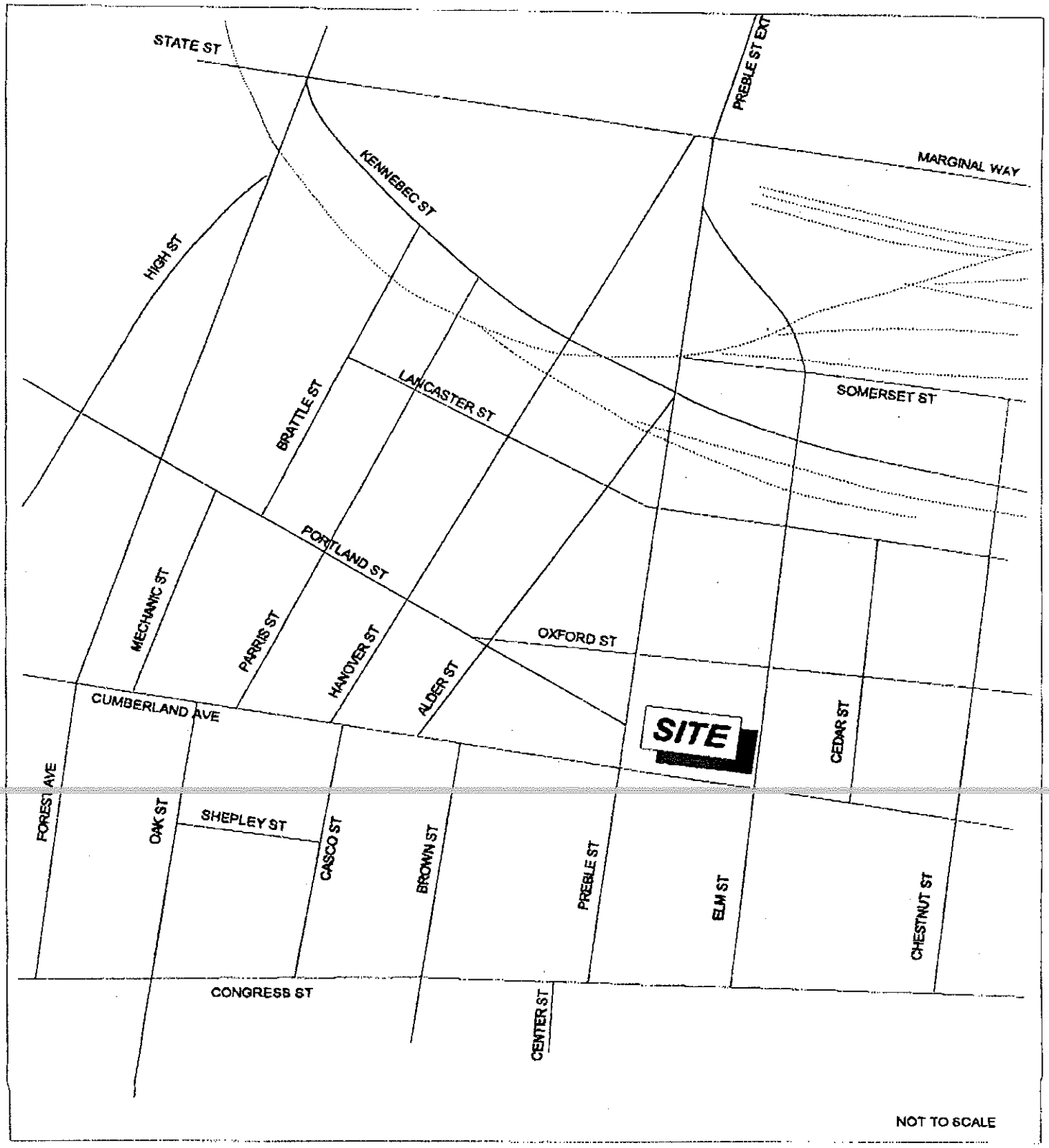
MONUMENT SQUARE ASSOCIATES PARKING GARAGE
Portland, Maine
Traffic Impact Study

Introduction

Monument Square Associates proposes to construct a 648± space parking garage on the north side of Cumberland Street between Preble and Elm Streets (see Figure 1 on the following page). Proposed access to the facility will be provided via two-way access drives on both Preble and Elm Streets. The access points will be located at the northerly end of the property, and are constrained to these points due to structural column spacing and the circulation plan for the garage. The Preble Street access drive is essentially aligned with Portland Street.

The construction of the parking garage will replace existing buildings along Cumberland Street and a surface parking lot (Seroco Parking). To serve drop-off and pick-up activities associated with the garage, two on-street parking spaces are proposed on the east side of Preble Street south of the Preble Street entrance to the garage. On-street parking currently is allowed on the west side of Preble Street north of the Preble Street/ Portland Street intersection. Of the 648 ± spaces planned for this garage, approximately 498 are expected to be leased spaces to serve employees in the immediate area. The remaining 150 spaces are to be "live" parking, available to the general public.

The purpose of this traffic impact study is to assess the impact of additional traffic associated with the increase in parking supply at the site. Clearly this parking is primarily intended to support the occupancy of existing vacant office and retail space in the immediate area. Accordingly, parking/traffic demand will be based upon increased employment in the area, less the traffic already associated with the existing surface parking lot. Discussions with the City Traffic Engineer and Deputy Public Works Director indicated that this was a reasonable approach to the study, and that the study should focus analysis on the intersections of Cumberland Street @ Preble Street, Cumberland Street @ Elm Street, and Preble Street @ Marginal Way. In addition, City staff indicated a concern with the Preble Street garage access being located at the Preble/ Portland Streets intersection, and tentatively indicated that through movements between Portland Street and the Preble Street garage access may need to be prohibited through use of a properly designed median island on Portland Street @ Preble Street.



EATON TRAFFIC ENGINEERING
2 Miranda St. - Brunswick, Maine
(207) 725-9805 Fax (207) 725-8773

Figure 1
SITE LOCATION

MONUMENT SQUARE ASSOCIATES PARKING GARAGE - PORTLAND, MAINE

Subsequent review of the accident history at this location, discussed more fully in the **Safety** section of this report, indicates that there is currently no safety problem associated with vehicle movements between Portland Street and the existing surface parking lot. Accordingly, this study will proceed on the basis that such movements could be safely allowed to continue, which, in addition to providing flexibility and convenience to garage users, also should help disperse traffic entering and exiting the facility.

Existing AM and PM Peak Hour Traffic

Manual turning movement counts were performed for the periods 6:00 - 9:00 AM and 3:00 - 6:00 PM during February 1996 for the following locations:

- Cumberland @ Preble
- Cumberland @ Elm
- Preble @ Marginal Way
- Preble @ Portland/Existing Seroco Parking Lot

Figures 2 and 3 on the following pages present the AM and PM peak hour traffic volumes for the first three locations noted above respectively. Figure 4 presents AM and PM traffic volumes at the Portland/Preble/Seroco Lot intersection, and includes information on the pattern of traffic entering and exiting the existing Seroco Lot, which can be used to assist in assigning access routes for the proposed facility. As can be seen in Figure 4, the Portland Street access pattern carries a significant proportion of traffic to/from the existing surface lot, with 40 percent of the vehicles entering from this route in the AM peak hour, and 55 percent exiting via this route during the PM peak hour.

Projected 1996 AM and PM Design Hour Traffic Volumes

Typically, traffic volumes vary seasonally, with the highest volumes occurring during the summer months of July and August. Traffic impact analysis generally evaluates peak traffic flows for the seasonal high (usually referred to as the "design hour"), thus it was necessary to "adjust" the February AM and PM peak hour traffic volumes shown in Figures 2 and 3 to reflect summer conditions. Factors provided by MDOT, based upon their statewide continuous traffic

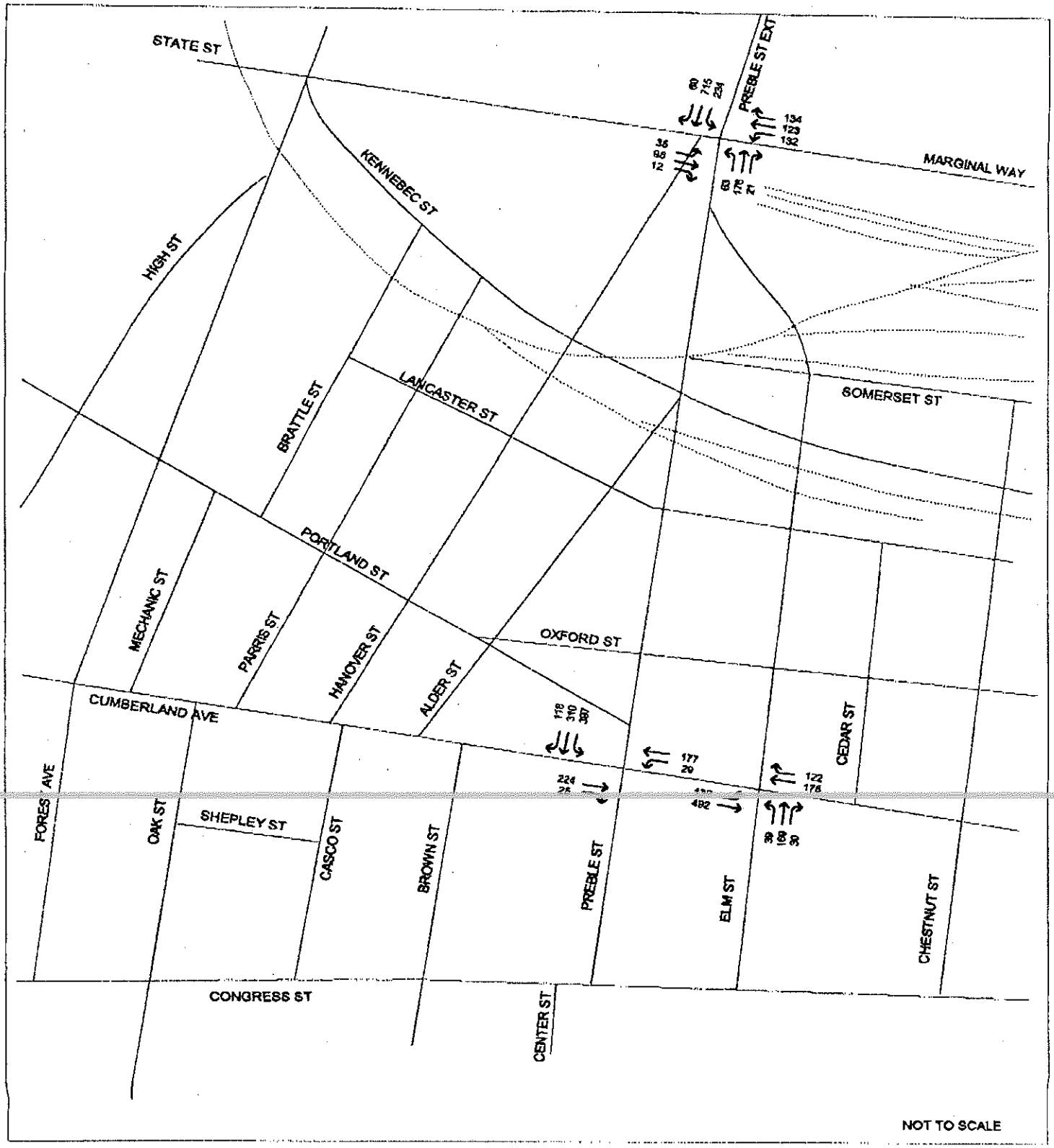


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Figure 2
1996 AM PEAK HOUR TRAFFIC - FEBRUARY 1996

MONUMENT SQUARE ASSOCIATES PARKING GARAGE - PORTLAND, MAINE

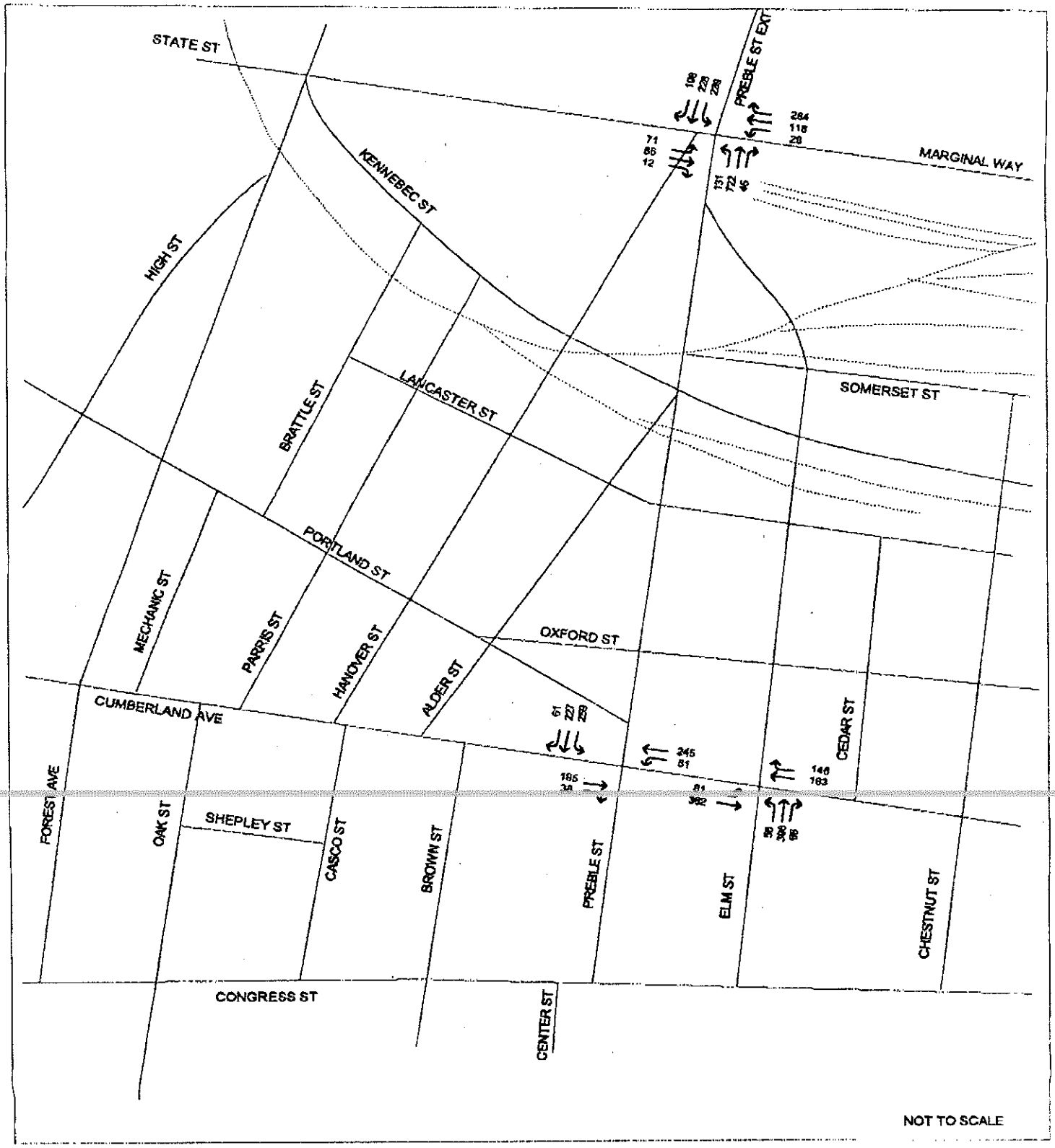

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Figure 3
1996 PM PEAK HOUR TRAFFIC - FEBRUARY 1996

MONUMENT SQUARE ASSOCIATES PARKING GARAGE - PORTLAND, MAINE

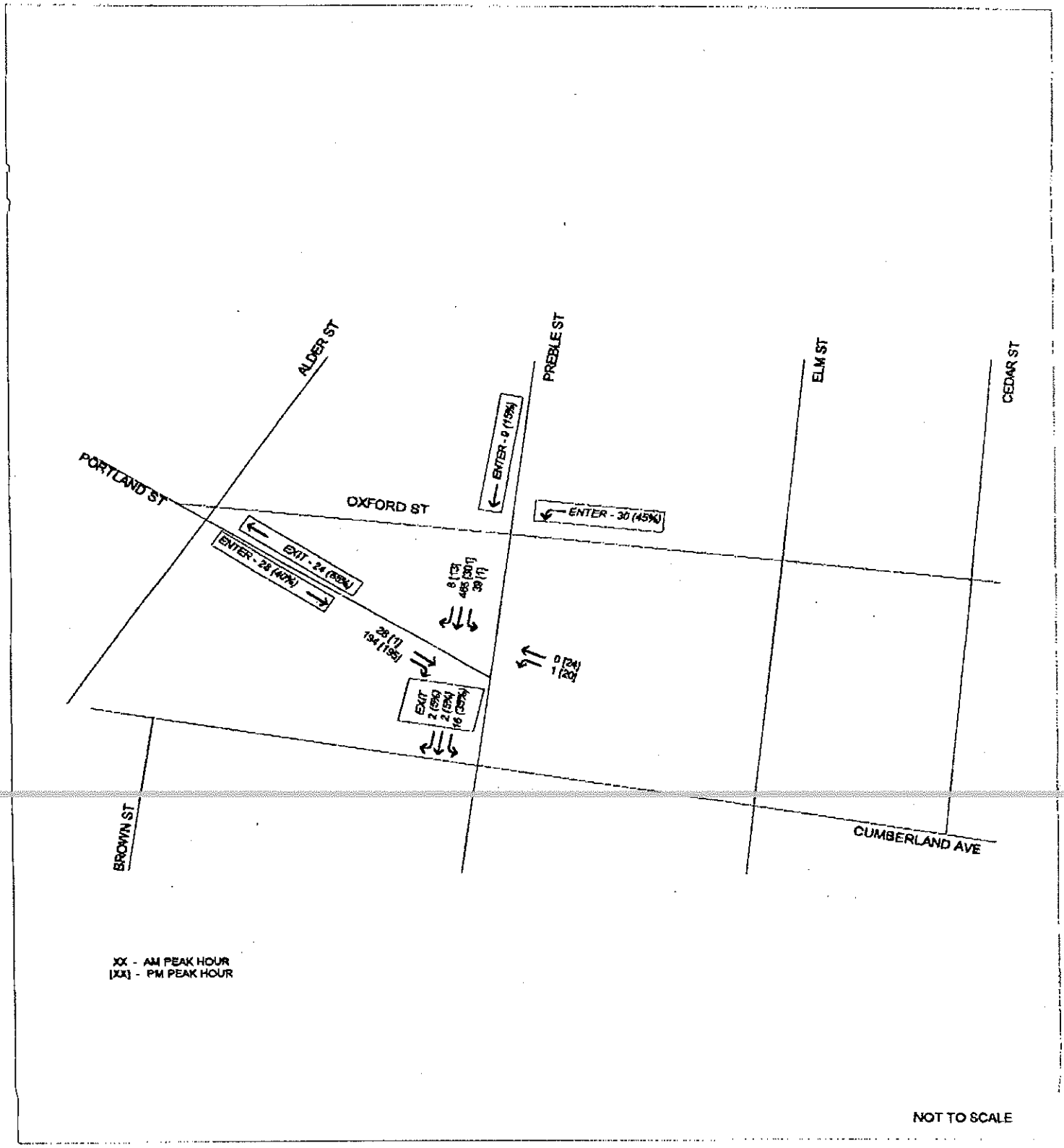

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Figure 4
AM & PM PEAK HOUR TRAFFIC TO/FROM EXISTING SURFACE PARKING LOT

MONUMENT SQUARE ASSOCIATES PARKING GARAGE - PORTLAND, MAINE

counting program, indicate that the February traffic volumes collected for this study would have to be increased by 25± percent to reflect peak seasonal volumes. Because the area of Portland in the vicinity of the proposed garage is not particularly likely to be travelled by tourists (one of the key factors in higher summer traffic), this level of increase is likely to result in traffic volumes higher than will actually be experienced; however, to provide a conservative assessment of potential impacts, the February AM and PM peak hour traffic volumes were increased by 25± percent to estimate AM and PM design hour volumes. In addition to the seasonal adjustment, the projected PM peak hour traffic volumes also incorporate the PM peak hour traffic associated with the proposed Maine Bank and Trust project (addition of drive through teller and ATM facilities) on the corner of Preble Street and Congress Street (it was assumed that this project would have little if any impact on AM peak hour traffic). Figures 5 and 6 present the estimated AM and PM design hour traffic volumes for the pre-development condition.

Site Generated AM and PM Peak Hour Traffic Volumes

The development of estimated AM and PM peak hour traffic associated with the proposed parking garage was accomplished using trip rates for the land uses to be served by the facility, combined with observation of the existing surface lot and its entering and exiting characteristics. Site generated peak hour traffic was first estimated using the statistics contained in the publication Trip Generation - Fifth Edition[1]. For the AM peak hour (typically 7:00 - 8:00 AM) it was assumed that the traffic to/from the garage would be restricted to the 498 spaces to be leased to employees in the area. Retail and other service related trips to the facility was assumed to be insignificant during the AM peak hour. The 498 leased spaces would support approximately 200,000 square feet of office type use at a parking demand rate of 2.5 spaces per 1000 square feet of office floor area. This translates into estimated AM peak hour traffic generation (for ITE Land Use Code 710 - General Office Building) of 327 trips - 291 entering and 36 exiting. The existing surface parking lot (all leased spaces) evidenced only one vehicle exiting the lot during the AM peak hour, and it is considered unlikely that any significant exiting parking would occur at the proposed garage. The exiting trips reflected in the ITE trip generation estimate may well represent drop-off trips or employees leaving for early

[1] Institute of Transportation Engineers, 1991 and February 1995 Update

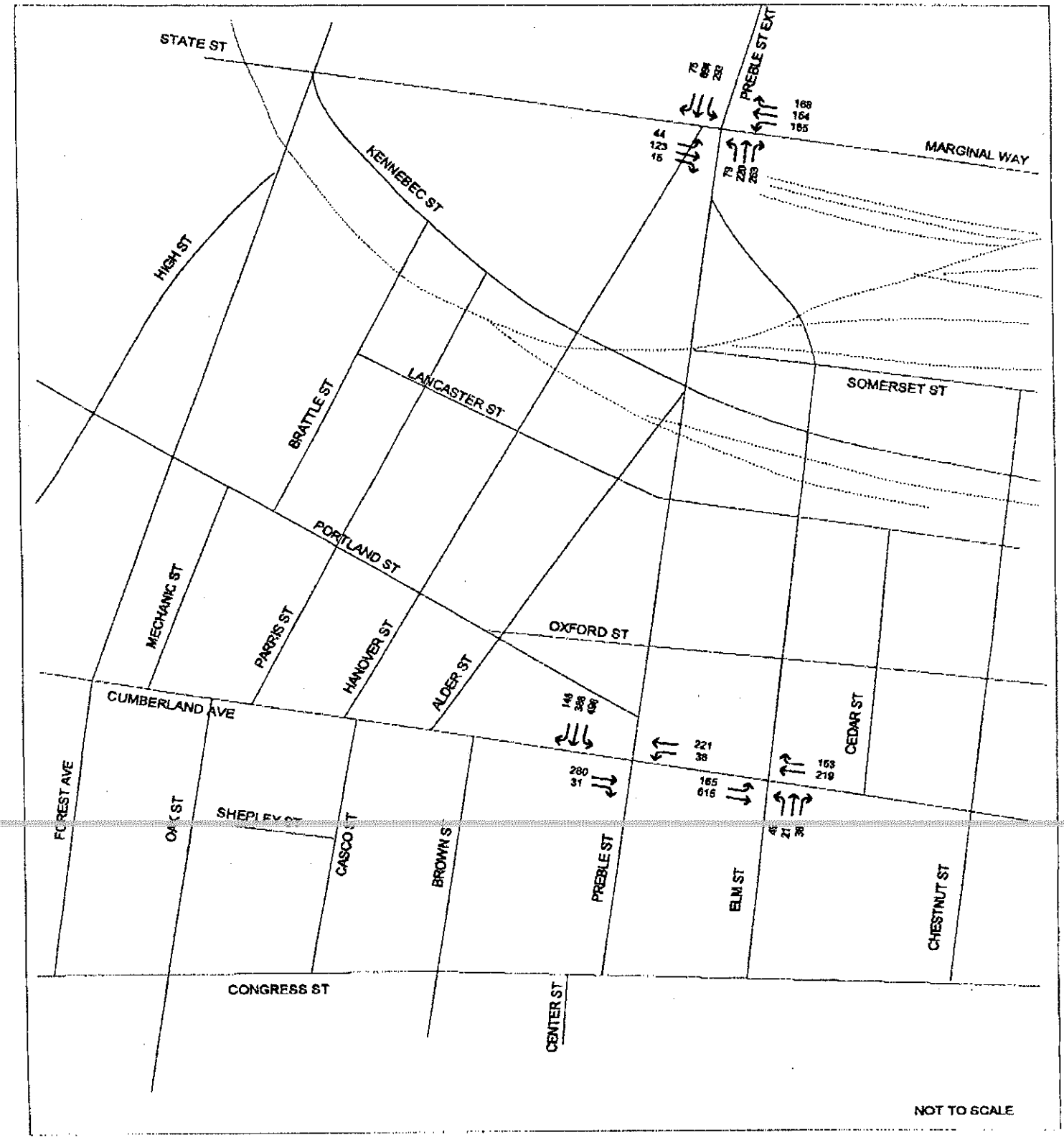

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Figure 5
ESTIMATED AM PEAK HOUR TRAFFIC - PRE-DEVELOPMENT

MONUMENT SQUARE ASSOCIATES PARKING GARAGE - PORTLAND, MAINE

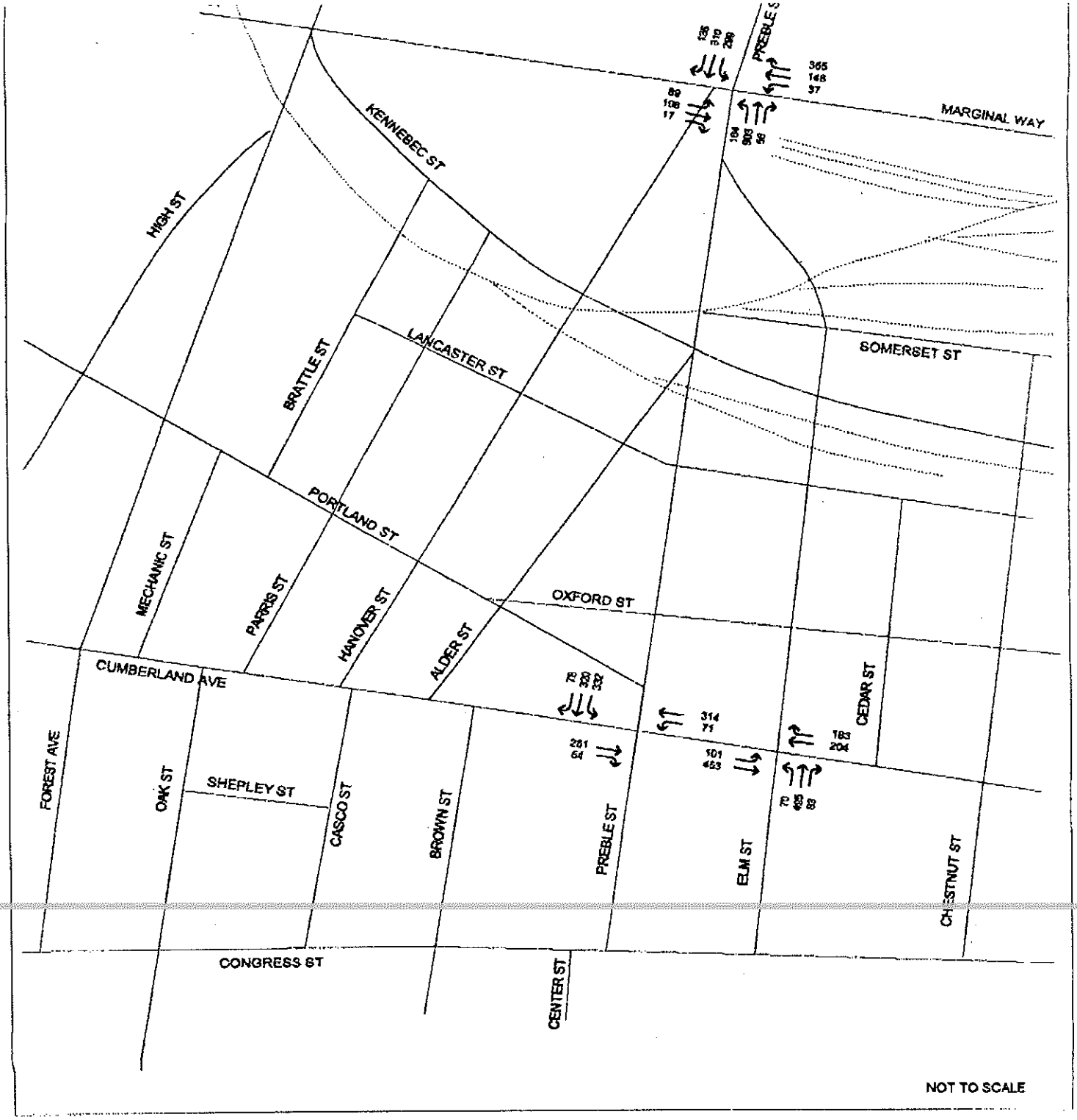

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Figure 6
ESTIMATED 1996 PM PEAK HOUR TRAFFIC - PRE-DEVELOPMENT

MONUMENT SQUARE ASSOCIATES PARKING GARAGE - PORTLAND, MAINE

appointments. These would generally not be significant for the proposed facility, thus AM peak hour traffic generation for the facility is estimated at 219± trips entering.

For the PM peak hour, all 648 spaces would be in use for trips associated with office and retail/service land uses in the area. For this analysis it was assumed that the ITE rate for general office buildings would apply again to the 498 leased spaces, and a generic retail/service rate based upon typical land uses in the ITE manual would be applied for the 150 live parking spaces. The office component of the PM peak hour (200,000 square feet) is projected to generate 310 trips - 53 entering and 257 exiting. Again, assuming the entering proportion would not apply for leased parking, the office component would generate 257 trips exiting the facility. For the retail/service component of demand, an average parking demand of 3.00 spaces per 1000 square feet of floor area would indicate that the 150 live spaces serve approximately 50,000 square feet of floor area. A review of a number of retail/service land uses contained in the ITE manual was conducted. Based upon this review, a generic average rate of 2 trips per 1000 square feet of floor area was used to estimate PM peak hour traffic generation of 100 trips - 50 entering and 50 exiting. This yields estimated PM peak hour traffic generation of 357± trips, 50 entering and 307 exiting.

In reviewing the trip generation estimates above and comparing them to the existing surface parking lot, the projected AM peak hour compares quite well with existing patterns of arrival, with about 60 percent of the capacity of each facility arriving during the AM peak hour. For the PM peak hour, the existing lot indicates a much less pronounced rate of departure, with approximately 40 percent of capacity departing during the PM peak hour. The projected PM peak hour based upon all 648 spaces and ITE office and retail/service trip rates would empty over 55 percent of the capacity of the proposed garage. While this estimate may be somewhat high, it will be carried through the analysis to provide a conservative measure of impacts during the PM peak hour.

Projected site generated AM and PM peak hour traffic was assigned to the roadway system in the vicinity of the proposed garage on the basis of the general arrival/departure patterns for the existing surface lot, as depicted in Figure 4. Figure 7 presents the net new traffic generated to the proposed facility (i.e. traffic to the existing surface lot is not included).

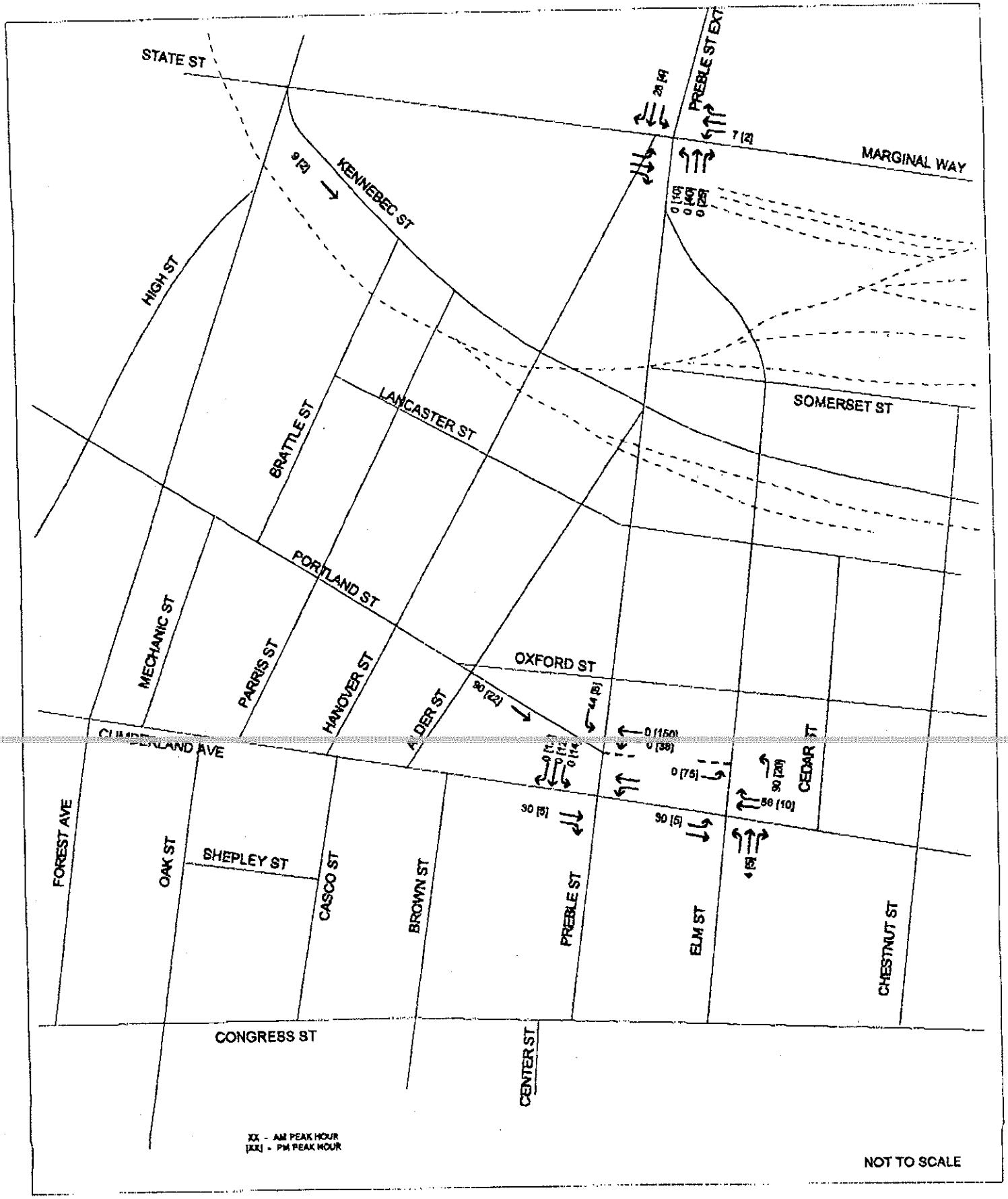


Figure 7
ESTIMATED NET AM & PM PEAK HOUR SITE GENERATED TRAFFIC VOLUMES

EATON TRAFFIC ENGINEERING

Operational Assessment of Pre- and Post-Development Conditions

Projected post-development AM and PM peak hour traffic volumes were estimated by combining pre-development volumes with net site generated traffic. Figures 8, 9, and 10 present these projections.

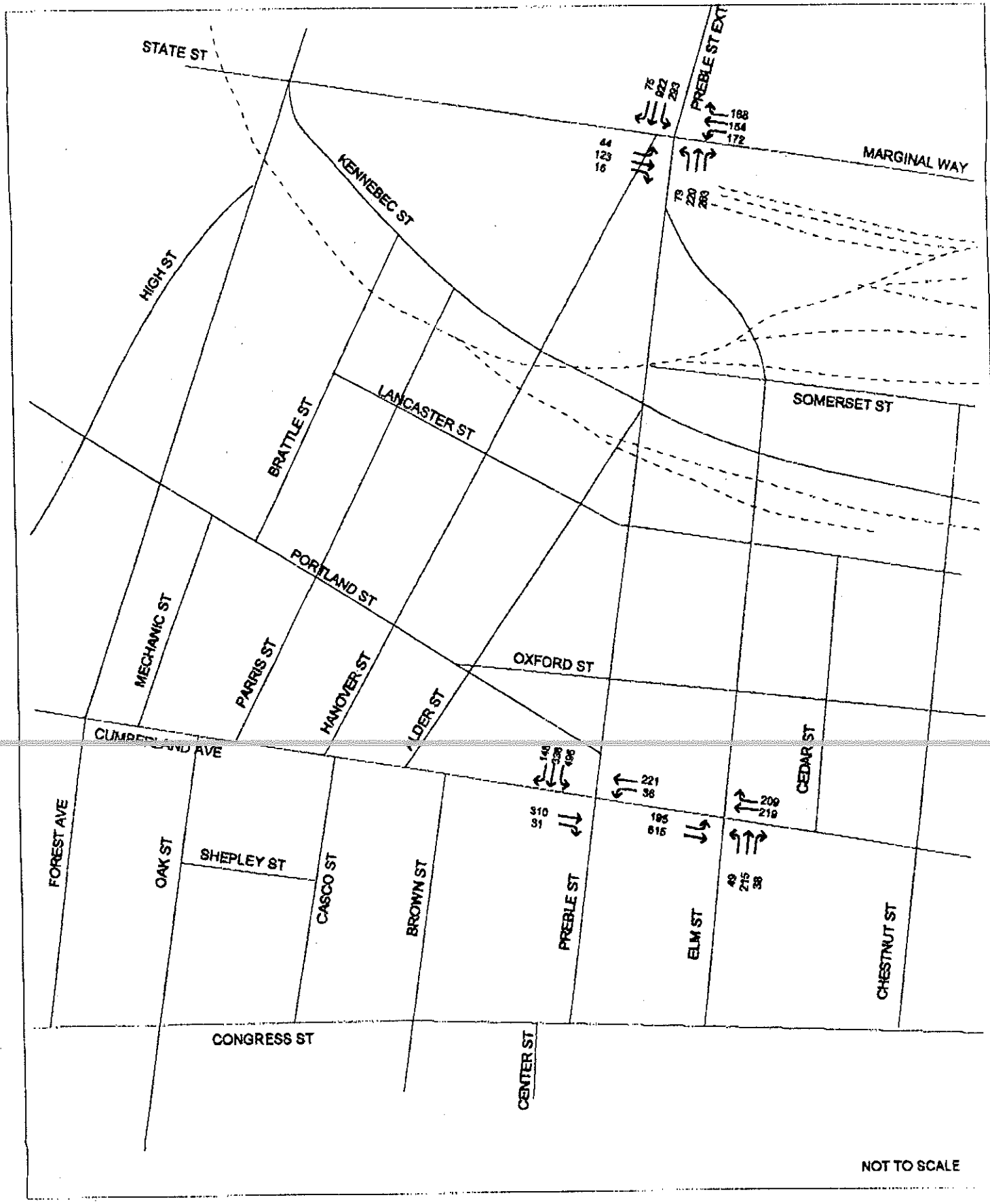
Capacity analysis was performed for the 1996 pre- and post-development PM peak hour condition for the study area signalized (Cumberland @ Preble, Cumberland @ Elm, Preble @ Marginal Way) and unsignalized intersection (Garage Access @ Preble/Portland) per the procedures contained in the Highway Capacity Manual[2]. Capacity analysis provides a quantitative assessment of the quality of traffic flow at an intersection, and "rates" this quality in terms of its Level of Service (LOS). LOS ratings range from A to F, and much like a school rank card, A indicates very good conditions, and F indicates extremely congested conditions. LOS for signalized intersections is based upon the average stopped delay for all vehicles using the intersection. The relationship between LOS and average stopped delay is shown in the table below.

Signalized Intersection Level of Service Measures

Level of Service	Average Stopped Delay Per Vehicle
A	≤ 5.0 Seconds
B	5.1 - 15.0 Seconds
C	15.1 - 25.0 Seconds
D	25.1 - 40.0 Seconds
E	40.1 - 60.0 Seconds
F	≥ 60.0 Seconds

For unsignalized intersections, such as the proposed access driveways, analysis procedures are different than those used for signalized intersections, and have recently been updated. LOS for unsignalized intersections is based upon average total delay, which takes into account the

[2] Special Report 209, Highway Capacity Manual, Transportation Research Board, 1994



EATON TRAFFIC ENGINEERING

Figure 8
PROJECTED AM PEAK HOUR TRAFFIC - POST-DEVELOPMENT

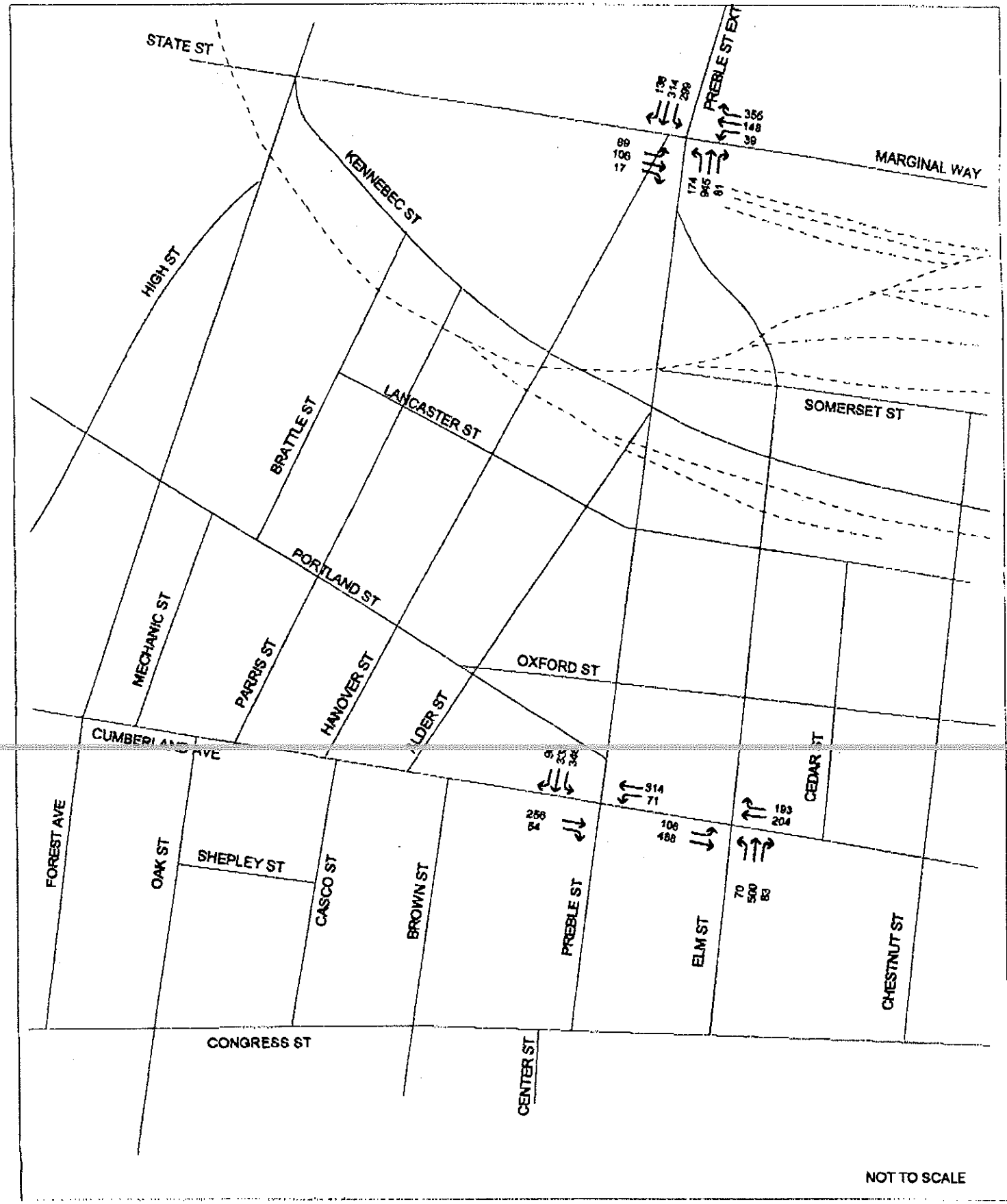
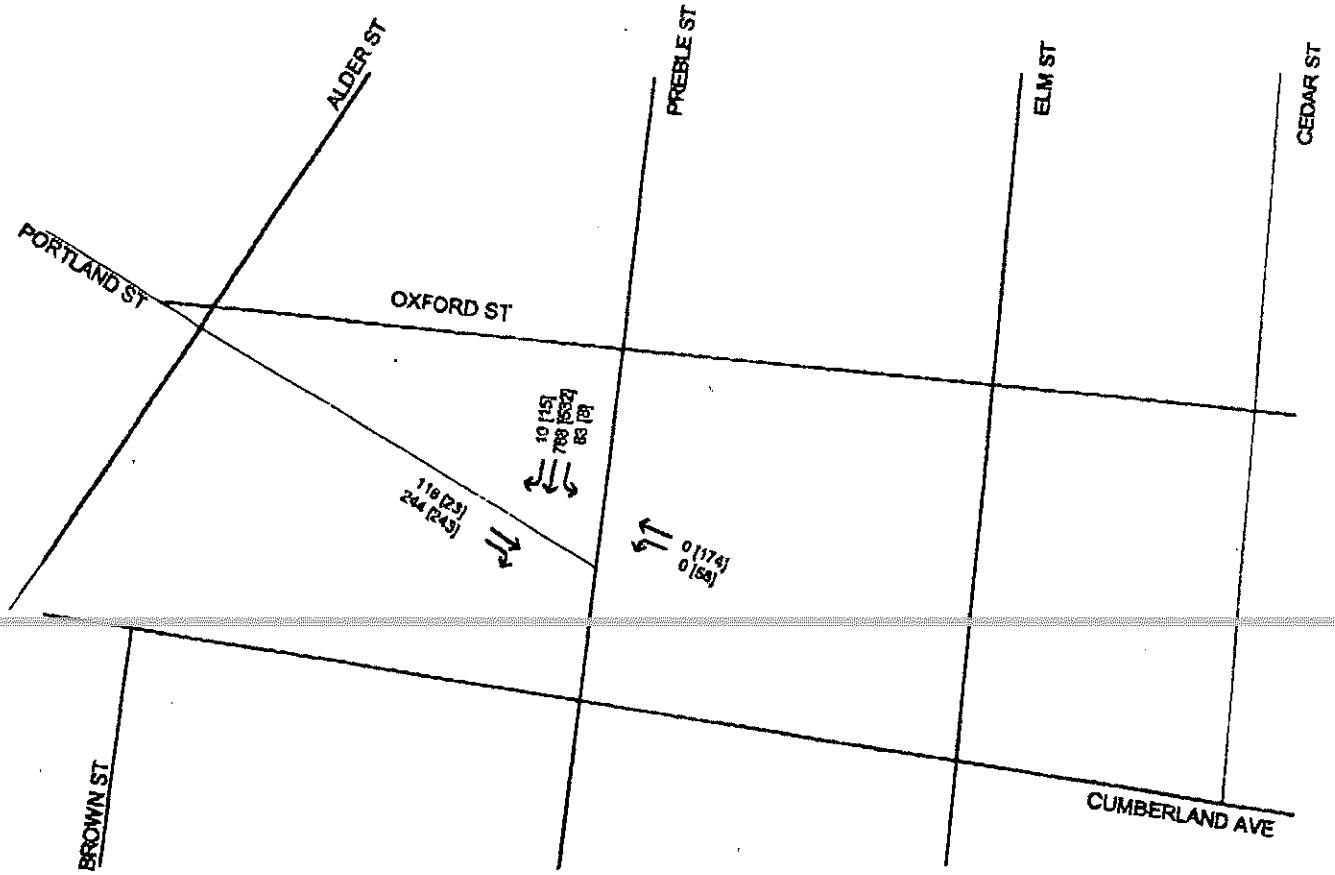


Figure 9
PROJECTED PM PEAK HOUR TRAFFIC - POST-DEVELOPMENT

EATON TRAFFIC ENGINEERING



XX - AM PEAK HOUR
[XX] - PM PEAK HOUR

NOT TO SCALE

EATON TRAFFIC ENGINEERING

Figure 10
PROJECTED AM & PM PEAK HOUR TRAFFIC AT PREBLE STREET ACCESS - POST-DEVELOPMENT

MONUMENT SQUARE ASSOCIATES PARKING GARAGE - PORTLAND, MAINE

delay involved in waiting in a vehicle queue. The relationship between LOS and average total delay is shown below:

Level of Service Measurement for Unsignalized Intersections

Level of Service	Average Total Delay Per Vehicle
A	≤ 5.0 Seconds
B	5.1 - 10.0 Seconds
C	10.1 - 20.0 Seconds
D	20.1 - 30.0 Seconds
E	30.1 - 45.0 Seconds
F	≥ 45.0 Seconds

To establish basic conditions for analysis of the three signalized intersections in the study area analyzed, current phasing and timing was observed in the field, and average phase timing during the AM and PM peak period was used as a starting point for this analysis. The results of the analysis for pre- and post-development traffic are summarized below.

Signalized Intersection Analysis

Location	Pre-Development		Post-Development	
	LOS	Stopped Delay (sec)	LOS	Stopped Delay (sec)
		AM Peak Hour		
Cumberland @ Preble	C	16.2	C	16.1
Cumberland @ Elm	B	14.5	B	14.4
Preble @ Marginal	C	18.6	C	18.7
		PM Peak Hour		
Cumberland @ Preble	B	13.1	B	13.3
Cumberland @ Elm	B	12.4	B	12.5
Preble @ Marginal	D	26.8	D	27.1

As can be seen, the impact of site generated traffic on the Cumberland/Preble and Cumberland/Elm intersections is minimal. At Marginal Way @ Preble Street, the impact is also quite small - an increase in delay of under 0.5 seconds per vehicle - but the intersection is experiencing low levels of service on some of the movements. While it is felt that the adjusted peak hour volumes used in this analysis are somewhat higher than will actually occur (see **Projected 1996 AM and PM Design Hour Traffic Volumes**), there are clear indications that the intersection is heavily loaded for short periods of time during the PM peak hour. This is perhaps a supplementary reason to provide direct access between the Preble Street access to the proposed garage and Portland Street. If this access route were not available, vehicles bound for I-295 would likely exit via the Elm Street access and further increase traffic at the Marginal Way @ Preble Street intersection.

Unsignalized intersection analysis was performed for the proposed entrance/exit drive from the site to Preble Street @ Portland Street. The table below summarizes the results of the analysis.

Unsignalized Intersection Analysis
Preble @ Portland Street/Garage Access

Movement	Pre-Development		Post-Development	
	LOS	Total Delay (sec)	LOS	Total Delay (sec)
		AM Peak Hour		
Portland St Thru	C	11.5	D	19.6
Portland St Right	B	6.0	B	6.0
Preble St Left	A	2.2	A	2.2
Total Intersection		6.7		8.0
		PM Peak Hour		
Portland St Thru	B	6.8	B	7.3
Portland St Right	A	4.9	A	4.9
Preble St Left	A	2.1	A	2.1
Garage Exit	B	9.8	D	26.2
Total Intersection		8.4		12.6

As would be expected, the LOS and delay associated with movements into the garage during the AM peak hour, and movements out of the garage during the PM peak hour increases significantly. While delay increases and LOS is reduced, these operational measures are felt to be acceptable for the short periods of time involved. Overall, the Preble/Portland/Garage intersection is projected to operate with reasonable delay and LOS.

Safety

Safety data for the most recent available 3 year period (1992-94) was obtained from the Accident Records Section of the MDOT Bureau of Planning for roadways in the vicinity of the site. A summary of the accident history in the area is presented in the table on the next page.

MDOT guidelines for identification of a High Accident Location (HAL - indicating a potential safety deficiency) is that a location must experience 8 or more accidents in a 3 year period and have a Critical Rate Factor of 1.00 or greater. Seven locations in the study area satisfy these criteria. Detailed accident collision diagrams for these locations were prepared from accident records on file at MDOT and analyzed. The findings of the analysis are summarized below:

Preble Street @ Kennebec Street: Of the 13 accidents occurring at this location, 10 involved cross traffic collisions between eastbound Kennebec Street and southbound Preble. Failure to yield the right of way (Kennebec Street is stop sign controlled) and disregarding a traffic control device were the primarily contributing factors cited in the reports. It is likely that speed on Preble Street might also be a factor. Given the number of cross traffic collisions, this location may warrant an intersection hazard beacon (flashing red and yellow).

Preble Street @ Lancaster Street: Of the 8 accidents at this location, 6 were cross traffic collisions, similar to those occurring at Preble @ Kennebec. Failure to yield the right of way was most commonly cited as the primary contributing factor. This location is a "borderline" HAL, but accident frequency has been increasing - from 2 in 1992, to 3 in 1993, to 4 in 1994. It is suggested that accident occurrence be monitored to determine if this trend on increasing accident frequency continues.

1992-94 Accident History in Site Vicinity

LOCATION	1992-94 ACCIDENTS	ANNUAL AVERAGE	CRITICAL RATE FACTOR[3]
Preble Street @ Marginal Way	30*	10.00	0.73
Preble Street/Marginal to Somerset	0	0	0
Preble Street @ Somerset	0	0	0
Preble Street/ Somerset to Kennebec/Alder	2	0.67	2.33
Preble Street @ Kennebec	13	4.33	2.51
Preble Street/Kennebec to Lancaster	0	0	0
Preble Street @ Lancaster	8	2.67	1.60
Preble Street/Lancaster to Oxford	3	1.00	0.68
Preble Street @ Oxford	13	4.33	0.80
Preble Street/Oxford to Portland	0	0	0
Preble Street @ Portland	6	2.00	0.80
Preble Street/Portland to Cumberland	0	0	0
Preble Street @ Cumberland	16	5.33	0.71
Preble Street/Cumberland to Congress	8	2.67	2.50
Elm Street/Congress to Cumberland	4	1.33	1.33
Elm Street @ Cumberland	25	8.33	1.29
Elm Street/Cumberland to Oxford	6	2.00	3.54
Elm Street @ Oxford	0	0	0
Elm Street/Oxford to Lancaster	2	0.67	1.18
Elm Street @ Lancaster	8	2.67	3.36
Elm Street/Lancaster to Kennebec	3	1.00	2.32
Elm Street @ Kennebec	18	6.00	8.25
Elm Street/Kennebec to Somerset	3	1.00	4.85
Elm Street @ Somerset	1	0.33	0.46
Elm Street/Somerset to Marginal	2	na	na
Cumberland Ave/Brown to Preble	2	0.67	0.69
Cumberland Ave/Preble to Elm	2	0.67	0.59
Cumberland Ave/Elm to Cedar	1	0.33	0.21

[3] The Critical Rate Factor is a statistical measure which compares the accident frequency at a location to similar locations throughout the State. A Critical Rate Factor of 1.00 or greater indicates that the location has a higher frequency of accidents than would be expected due to random occurrence, with a 99 percent level of confidence.

1992-94 Accident History in Site Vicinity (cont)

LOCATION	1992-94 ACCIDENTS	ANNUAL AVERAGE	CRITICAL RATE FACTOR
Portland Street @ Forest Ave*	30	10.00	0.93
Portland Street/Forest to Mechanic*	6	2.00	2.85
Portland Street @ Mechanic*	0	0	0
Portland Street/Mechanic to Brattle*	1	0.33	0.65
Portland Street @ Brattle*	1	0.33	0.23
Portland Street/Brattle to Parris*	3	1.00	1.64
Portland Street @ Parris*	8	2.67	1.78
Portland Street/Parris to Hanover*	0	0	0
Portland Street @ Hanover*	6	2.00	1.27
Portland Street/Hanover to Oxford*	2	0.67	0.95
Portland Street @ Oxford*	2	0.67	0.52
Portland Street/Oxford to Preble*	5	1.67	0.94

* 1993-95 Data

Preble Street/ Cumberland to Congress Street: Of the 8 accidents on this segment of Preble Street, 4 clearly involve collisions with vehicles entering or exiting an on-street parking space. Two of the remaining accidents are lane change/sideswipe accidents that could also be related to on street parking. The primary trend indicates that on-street parking activity is a major contributing factor. Other than prohibiting on-street parking, which is not likely to be feasible, no recommendation can be made to address this section of Preble Street.

Elm Street @ Cumberland Street: Cross traffic collisions between eastbound Cumberland Street and northbound Elm Street constitute the primary accident pattern at this location, with 15 of the 24 accidents being of this type. The remainder of the accidents are generally disparate in nature and indicate no pattern. All but two of the 15 cross traffic collisions occurred during the late night or early morning when the traffic signal was operating in a flashing mode. To address this problem it is recommended that the traffic signal at this location be operated in full "stop and go" mode 24 hours a day.

Elm Street @ Lancaster Street: Of the eight accidents at this location, 6 were cross traffic collisions between eastbound Lancaster Street and northbound Elm Street. The remaining two accidents were lane change sideswipe collisions on Elm Street northbound. As was the case for the Preble/Kennebec and Preble/Lancaster intersections, disregard of the traffic control device (stop sign control on Lancaster) was cited as the primary contributing factor. It is somewhat strange that no accidents occurred at this location in 1993, with 4 occurring for both 1992 and 1994. Because of the cross traffic collision pattern, this intersection may be a candidate for an intersection hazard beacon.

Elm Street @ Kennebec Street: The primary collision pattern at this intersection is lane change/sideswipe accidents on Elm Street northbound, with 13 of the 18 total accidents being this type. The remaining 5 accidents were cross traffic collisions, 4 of these between eastbound Kennebec and northbound Elm Street. The major contributing factors cited included driver inattention, unsafe/improper turn, and unsafe lane change. It is recommended that pavement markings be improved in this area, and that overhead lane assignment signs be considered to address the lane change/sideswipe pattern.

Portland Street @ Parris Street: Of the 8 accidents occurring at this location, 4 accidents were cross traffic collisions, 3 of these occurring during icy conditions. An additional 3 accidents were rear-end collisions, with 2 of these occurring on an icy roadway. Overall it appears that environmental conditions are the prime contributing factor in accident occurrence at this location.

Although not meeting the criteria for a HAL, the intersection of Forest Avenue @ ParkAve/Portland Street was analyzed due to the number of accidents (30) that occurred.

Forest Avenue @ Park-Portland: The primary collision patterns at this location include cross traffic collisions (7), left turn collisions (7) and rear-end collisions (9). In addition, two accidents involving pedestrians occurred (1 involving a pedestrian violation). Overall the accident experience at this heavily travelled intersection is fairly typical. It is interesting that 12 of the 30 accidents occurred after 6:00 PM, after peak traffic flow periods have subsided. Cross traffic and rear-end collisions were most common for these evening accidents (4 each). Accident frequency is increasing (6 in 1993, 9 in 1994

and 15 in 1995), and this location should be monitored. In addition, it is suggested that vehicle clearance intervals be reviewed and modified if necessary.

An overall pattern that seems to emerge from the accident analysis is that unsignalized intersections on both Preble and Elm Streets are experiencing a significant number of cross traffic collisions. While failure to yield, disregarding traffic control devices and driver inattention were cited as primary contributing factors, it is likely that vehicle speeds on Preble and Elm Street are also factors. Both streets are one-way facilities that serve as a direct north/south routing to/from downtown Portland. Once a vehicle on Elm Street clears the Elm/Cumberland intersection it has "clear sailing" to Marginal Way. The same is true - in the opposite direction - for Preble Street (the Preble/Oxford signal does not typically stop traffic on Preble very often due to low vehicle demand on Oxford. To compound the potential speed problem, the locations of cross street intersections on Elm and Preble are often difficult to see due to the closeness of adjacent buildings and/or on-street parking. Overall, it appears that improving the visibility of cross streets would assist or at least help warn drivers on Elm and Preble that a potential conflict is present.

Access and Circulation

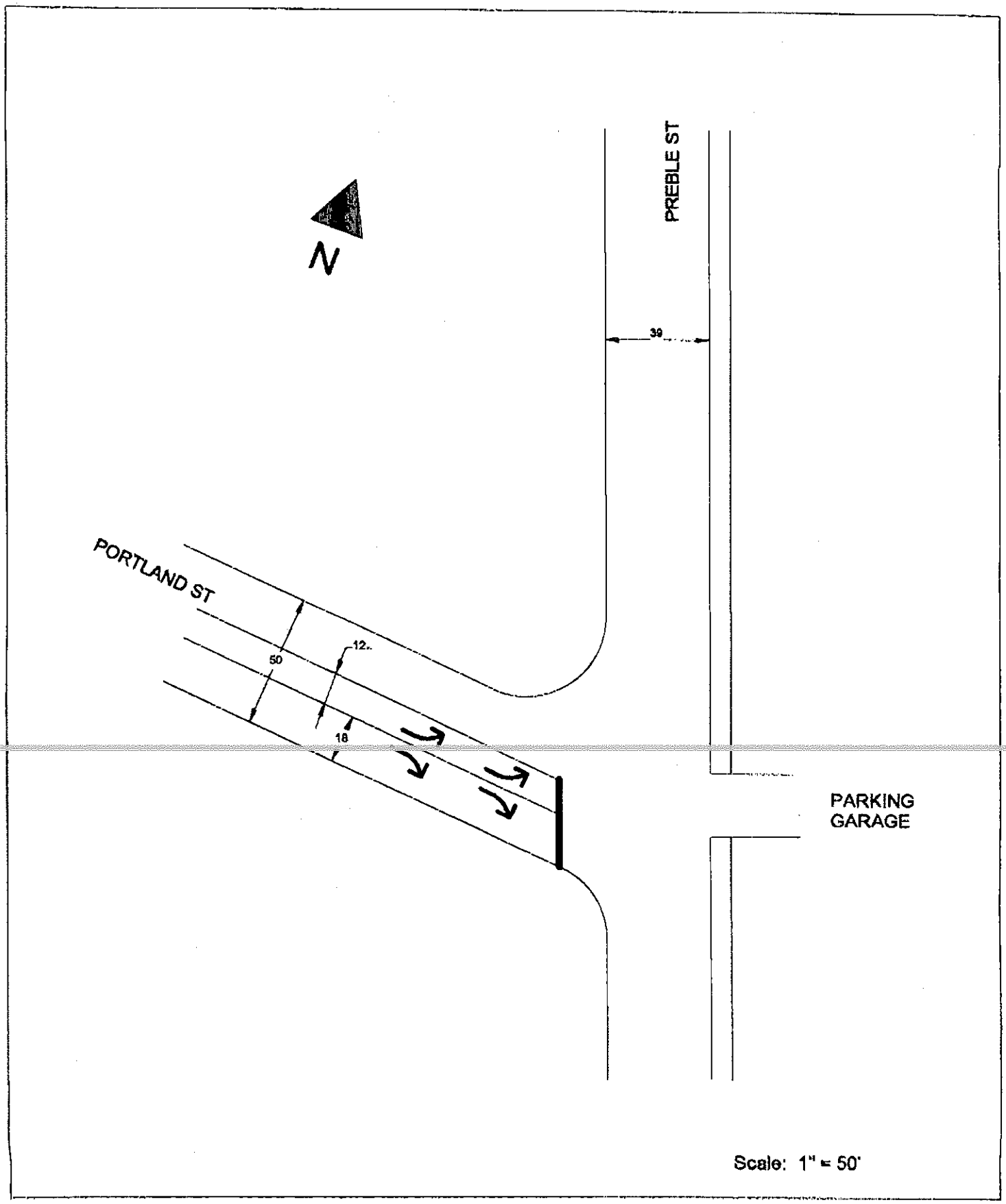
As noted in the introduction of this report, preliminary discussions with City of Portland staff raised the issue as to whether vehicles entering and exiting the Preble Street access should be allowed to do so to/from Portland Street. AM and PM peak period traffic counts at the intersection of Preble @ Portland/Seroco Lot indicates that a significant proportion of existing parking lot traffic uses a Portland Street routing. A review of accident history at this location reveals that only 6 accidents occurred at this location over the 3 year period 1992-94. Three of the accidents were collisions with bicyclists. The accident reports did not specify whether the bicyclists were travelling in the wrong direction on Preble Street, but it is a likely explanation for the accidents, since drivers would be looking north (left) to see oncoming traffic, and would not expect any traffic to be approaching from the south. The remaining accidents included 2 rear-end collisions, and 1 lane change/sideswipe collision. No cross traffic accidents involving traffic entering or exiting the existing access to the Seroco parking lot were recorded.

Portland Street is approximately 50 feet in width near Preble Street. It is suggested that two approach lanes be provided on Portland Street at its intersection with Preble Street to provide a through lane for access into the garage, and a right turn lane for vehicles turning on to Preble Street. Figure 11 on the following page provides a schematic layout of the suggested lane configuration.

Summary of Findings

The proposed Monument Square Associates parking garage will provide 648 parking spaces in the Portland Central Business District. Access to the facility will be provided by two-way entrance/exits on Preble Street and Elm Street. The facility is projected to generate 291 vehicle trips during the AM peak hour, and 357 trips during the PM peak hour. Analysis of the impact of the net increase in AM and PM peak hour traffic indicates that the key intersections in the study area (Cumberland @ Preble, Cumberland @ Elm, and Preble @ Marginal Way) will operate at acceptable levels of service. The capacity analysis did indicate that the Preble @ Marginal Way intersection is heavily loaded during the PM peak hour, and that maintaining access to the Preble Street entrance/exit via Portland Street will help minimize the impact of exiting PM peak hour traffic on that intersection.

Safety analysis indicates that there are currently 7 High Accident Locations in the study area. Detailed review of these locations is contained in the **Safety** section of this report, and will not be repeated here.



EATON TRAFFIC ENGINEERING

Figure 11
PROPOSED LANE MARKINGS - PORTLAND STREET ACCESS

MONUMENT SQUARE ASSOCIATES PARKING GARAGE - PORTLAND, MAINE

GOVERNMENT CENTER

A HUMAN SERVICES COMPLEX

July 17, 1996

Bill Bray
City of Portland
Department of Parks & Public Works
65 Hanover Street
Portland, ME 04101

Re: Elm Street Parking

Bill:

During the recent hearing and approval of the Cumberland Street parking garage, there was no discussion of the existing parking spaces located on Elm Street. Specifically, there are four or five one hour parking spaces on the left side of Elm Street at approximately 56 Elm. These service Southern Maine Area Agency on Aging as well as the offices of the Workers' Compensation Commission. As you know, we have struggled for years to obtain parking on Elm Street in order to help service all the human service agencies in this area. These particular parking spots are in constant use by the public who have physical difficulties.

My concern is that since the new parking garage will have an exit near these parking spaces, a decision will be made to eliminate them. This would be very harmful to the existing agencies and I would certainly want to voice my objection should that ever be considered. I assume that since it has not been addressed, the garage exit is designed in such a way not to affect these existing parking spaces.

I would appreciate your office keeping me informed if there is any change in this regard.

Sincerely,

Douglas Cardente

DC/sa

cc: Rick Knowland, City of Portland Planning Dept.
Cyrus Y. Hagge, Planning Board Chairman

COPY

CITY OF PORTLAND
Planning and Urban Development Department

MEMORANDUM

TO: Richard Knowland, Senior Planner

FROM: William J. Bray, Deputy Director of Public Works

DATE: July 9, 1996

SUBJECT: Cumberland Avenue Parking Garage

The proposed site plan addresses traffic related concerns. Rather than installing the traffic island in Portland Street up front, I would suggest a trial period of one year (upon operation of the parking garage) to observe whether actual field conditions require it. After this trial period, we will review whether the island is warranted. However, should it become obvious during this period that the island is needed, I would like the flexibility to require it at that point rather than waiting for the entire trial period to end.

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Inspection Services
P. Samuel Hoffses
Chief

Planning and Urban Development
Joseph E. Gray Jr.
Director

CITY OF PORTLAND

8 July 1996

Allied Construction
P.O. Box 1396
Portland, Me. 04104

RE : 315 Cumberland Ave.

Dear Sir,

Your application to construct foundation only for proposed open parking srtucture has been reviewed and a permit is herewith issued subject to the following requirements: This permit does not excuse the applicant from meeting applicable state and federal laws.

No Certificate of Occupancy will be issued until all requirements of this letter are met

Site Plan Review Requirement

Building Inspection: Approved M. Schmuckal
Fire Dept. Approved. Lt. McDougall
Planning Dept : 1. All of the exterior wall mounted kim fixtures be a " Halfmoon" design. 2.That further discussion take place with the applicant regarding the potential glare and spill over of the interior lighting fixtures adjacent to the Cardente property and Cumberland Ave. R. Knowland.
Development Review Coorinator : See attached memo. from James Seymour dayed 7-1-96. 2. Applicant to address contitions noted in meno and revised site plan from staff , review and approval accordingly. Seymour- Knowland.

Building & Fire Code Requirements

1. Before cncrete for the foundatioin is placed, approvals from the Development review Coordinator and Inspection Services must be obtained.
2. All inspection reports must be sent to this office to my attention.
4. A list of all subconstructors with addresses and telephone numbers must also be sent to this office.

If you have any questions regarding these requirements, please do not hesitate to contact this office.

Sincerely,

P. Samuel Hoffses
Chief of Inspection Services

cc: M. Schmuckal, Lt. McDougall, R. Knowland , J Seymour

STEVENS MORTON ROSE & THOMPSON
Architecture Engineering Planning

144 Fore Street / P.O. Box 618
Portland, Maine 04104
Tel. 207.772.3846
Fax 207.772.1070

TRANSMITTAL / MEMORANDUM

July 1, 1996

To: Rick Knowland, Senior Planner
Dept. of Planning and Urban Development
389 Congress St.
Portland, Maine 04101

From: Mark G. Johnson, ASLA

Re: Cumberland Avenue Parking Garage
Portland, Maine
Project No. 96065

---

1. Attached are:

2 sets	Lighting Levels Plan (E-LL)
1 each	Metalco - metal garage screen and railing system
	Kim Lighting - Wall Forms: for building mounted wall pack lighting. Note that all fixtures except those at the entry retaining wall and pillars along Preble Street will be full-face (the others being half-face).
	Spaulding Lighting - Cambridge: pole lights for top deck.
	Kim Lighting - PGL1(HP) - for internal deck lighting.

2. Following under separate cover will be lighting level plans for the top deck and the site (wall mounted fixtures.

3. Please call if you have any questions.

Thanks!

cc: Morris Fisher, BPM
PSS, DVJ, file 96065.22

SMRT
ARCHITECTURE ENGINEERING PLANNING

STEVENS MORTON ROSE & THOMPSON
144 Fore Street P.O. Box 618
Portland, Maine 04104
Tel 207/772-3846 Fax 207/772-1070

Cumberland Avenue Parking Garage

LIGHTING DATA

July 9, 1996

Catalogue cuts of the proposed lights have been submitted to the Planning Staff, as have lighting plans indicating footcandles on the parking decks. All lights will be High Pressure Sodium (HPS), with the general distribution as follows:

1.	Wall mounted lights around building:	70 Watt HPS, +/- 35 fixtures
2.	Ceiling lights inside garage:	150 Watt HPS, +/- 210 fixtures On 20' x 60' Grid
3.	Pole mounted lights on upper deck:	Double 400 Watt HPS, 6 poles 20' mounting height 2 lines of three each line

Planning & Urban Development

Joseph E. Gray Jr.
Director

CITY OF PORTLAND

December 20, 1996

H. Alan Mooney
Criterium Engineers
650 Brighton Avenue
Portland, ME 04102

RE: Cumberland Avenue Garage

Dear Alan:

This letter is intended to address a variety of revisions to the Cumberland Avenue parking garage site plan.

The following revisions have been reviewed and approved by the Portland Planning Authority.

- Conversion of space in the parking garage along Elm Street into commercial space and facade elevation details noted in your letter of 10-17-96. Proposed signage will need to be reviewed separately.
- The shifting of the landscaped planter from the building edge to the Cumberland Avenue curbing has been approved subject to the city arborist approving the tree species and size.
- The addition of a swing gate adjacent to the snow storage area along Cumberland Avenue.

The "revised paving detail" (sk #37) appears to be acceptable however a profile should be submitted for review that indicates how the 2 foot tipdown can be accomplished with a 5 inch reveal as shown on the drawing.

Should you have any questions on this letter, please call Richard Knowland of the Planning Department.

Sincerely,

Joseph E. Gray, Jr., Director
Planning and Urban Development

cc: Alexander Jaegerman, Chief Planner
Richard Knowland, Senior Planner
Jeff Tarling, City Arborist
Samuel Hoffses, Chief of Inspection Services

O:\PLAN\DEVREV\PROJECTS\PREBCUMB\LETTERS\MOONEY.SAP12/23/96

ATTACHMENT E-1

CITY OF PORTLAND, MAINE
MEMORANDUM

TO: Richard Knowland, Senior Planner

FROM: James Seymour, Acting Development Review Coordinator

DATE: July 1, 1996

RE: Cumberland Avenue Parking Garage Site Plan - August Corp.

I have reviewed the plans and details associated with the site plan application for the Cumberland Avenue Parking Garage by August Corporation and provide the following comments:

1. Drainage Plan

A. The locations of the street catchbasins shall be further away from the handicap ramps such that standard catchbasin inlet "headstone" can be installed.

Change Preble St - CB SGG ATTACHED SHEET

B. Standard City of Portland details for Precast Concrete Catchbasin Type "E", Typical A-4 Catchbasin Stone Detail, and the Typical Pavement Grading on Slopes for Catchbasin and Inlet.

NOTE OK

C. A catchbasin was to be added in the area designated for snow storage. No catchbasin was indicated on the plan. I've spoken with the consultant who may modify the larger 8' oil/grit separator to also function as a catch basin. A detail of the modification or the additional catchbasin shall be added to the Drainage Plan.

NOTED OK

2. Site Improvement Plan

A. The handicap ramp and sidewalk corners as shown on the plan at the location of Elm Street and Cumberland Avenue should not be designed with curved tipdowns. Instead the ramp shall be designed the same as the ramp on the corner of Preble Street and Cumberland Avenue.

Change SGG SHEET A1.2

B. A note shall be added to the detail for underdrain to specify pipe material. Also, the location of the underdrain connection shall be shown. I strongly suggest that based on the possibility that contaminated soils may exist, according to S.W. Coles report, the foundation drain may transport some of the oil contamination to the stormdrain system. If the foundation drain is connected to the treatment system it could enhance the groundwater and stormwater discharge.

address →

3. Miscellaneous

A. A note shall be added to the plans stating "all street repair box cuts and trenches shall be repaved in accordance with the Public Works Technical Standards or under the approval of the Public Works Inspector and City Engineer.

Add

B. A note shall be added to the Site Plan stating or showing the location of the CMP pole replaced at the ingress/egress of Elm Street. All relocations shall be approved and constructed in accordance with the standards of Central Maine Power Company and NYNEX prior to obtaining a building permit.

Address

Due to the 4th of July holiday, I will not be able to be reached until Monday July 8, 1996. If you have any comments or questions please contact me. In the interim, I have contacted the stormwater consultant, Scott Decker of Squaw Bay Corp. and will have faxed in the necessary catchbasin related details so he can revise many of the comments for the Planning Board Meeting.

CITY OF PORTLAND, MAINE
DEVELOPMENT REVIEW APPLICATION
PLANNING DEPARTMENT PROCESSING FORM

I. D. Number

Address: 315 Cumberland Ave

August Corporation
Applicant

29 May 1996
Application Date

Applicant's Mailing Address

Project Name/Description

Criterion-Rooney Engineers
Consultant/Agent

315 Cumberland Ave
Address of Proposed Site

Alan Rooney - 775-1969
Applicant or Agent Daytime Telephone, Fax

033-H-004
Assessor's Reference: Chart-Block-Lot

Proposed Development (check all that apply): X New Building ___ Building Addition ___ Change of Use ___ Residential
___ Office ___ Retail ___ Manufacturing ___ Warehouse/Distribution ___ Other (specify) Parking Garage

36,000.00SF
Proposed Building Square Feet or # of Units

38,535 Sq Ft
Acreage of Site

Zoning

Check Review Required:

- [X] Site Plan (major/minor)
- [ ] Subdivision # of lots _____
- [ ] PAD Review
- [ ] 14-403 Streets Review
- [ ] Flood Hazard
- [ ] Shoreland
- [ ] Historic Preservation
- [ ] DEP Local Certification
- [ ] Zoning Conditional Use (ZBA/PB)
- [ ] Zoning Variance
- [ ] Single-Family Minor
- [ ] Other _____

Fees paid: site plan 300.00 subdivision _____

Approval Status: Reviewer RICHARD KNOWLAND

- [ ] **Approved**
- [X] **Approved w/Conditions** listed below
- [ ] **Denied**

1. ALL OF THE EXTERIOR WALL MOUNTED RIM FIXTURES BE A "HALFMOON" OPTION
2. THAT FURTHER DISCUSSION TAKE PLACE WITH THE APPLICANT REGARDING THE POTENTIAL
3. AND SPILL OVER OF THE INTERIOR LIGHTING FIXTURES ADJACENT TO THE CAROLINE
4. PROPERTY AND CUMBERLAND AVE.

Approval Date 7/9/96 Approval Expiration 7/9/97 (date) Extension to _____ (date)

- [ ] Additional Sheets Attached

- [ ] Condition Compliance Richard Knowland (signature) 7/26/97 (date)

Performance Guarantee [ ] Required* [ ] Not Required

* No building permit may be issued until a performance guarantee has been submitted as indicated below

- [ ] Performance Guarantee Accepted _____ (date) _____ (amount) _____ (expiration date)
- [ ] Inspection Fee Paid _____ (date) _____ (amount)
- Performance Guarantee Reduced _____ (date) _____ (remaining balance) _____ (signature)
- Performance Guarantee Released _____ (date) _____ (signature)
- Defect Guarantee Submitted _____ (submitted date) _____ (amount) _____ (expiration date)
- Defect Guarantee Released _____ (date) _____ (signature)

Pink - Building Inspections Blue - Development Review Coordinator Green - Fire Yellow - Planning 2/9/95 Rev5 KT.DPUD