CCM-101

City of Cambridge

62.

IN CITY COUNCIL

March 16, 1998

COUNCILLOR REEVES

ORDERED: That the City Manager be and hereby is requested to provide the City Council with information as to the public health impact of the Polaroid project in connection with the contamination of soil or any other relevant issues; and be it further

ORDERED: That the City Manager is requested to provide information to the City Council about the water table level and its effect on the garage design.

In City Council March 16, 1998.
Adopted by the affirmative vote of nine members.
Attest:- , City Clerk.

A true copy; D. Margaret Drury

ATTEST:-

D. Margaret Drury
City Clerk

CITY OF CAMBRIDGE
Traffic, Parking and Transportation
57 Inman Street,
Cambridge, Massachusetts 02139

Susan E. Clippinger
Director

Administration 349-4700
Parking Violations 349-4705
Resident Parking 349-4701

January 27, 1998

TO: Bob Bersani, Director of Inspectional Services

FROM: Sue Clippinger, Director of Traffic, Parking & Transportation

RE: Polaroid/Spalding & Slye Site at 784 Memorial Drive

This Department has reviewed the developer's proposal which includes 10 surface parking spaces and the construction of a 577 space garage at 784 Memorial Drive. The garage would be used by employees and visitors to the site with 30 spaces allocated to the housing that is proposed for the future. The site previously was used as a surface parking lot with 311 employee surface parking spaces which existed prior to the 1973 parking freeze.

This parking garage as proposed is consistent with the requirements of zoning and proposes to use the two existing curb cuts on Putnam near Pleasant and on Pleasant at Florence. The best way to manage traffic to and from the garage and to minimize unnecessary traffic on residential streets is with two entrance/exits. Both curb cuts are preexisting conforming curb cuts which have been previously used for access and egress to the surface parking. The curb cut on Putnam Ave is currently closed by a fence. The developer agrees that relocating the curb cuts is preferable but is seeking a building permit first before taking any steps to change their curb cuts.

The Department has reviewed the two curb cuts from the perspective of whether they are safe. The Department's assessment is that use of the current curb cut on Pleasant Street is safe but the use of the curb cut on Putnam Ave. is unsafe due to its proximity to the intersection of Putnam and Pleasant and due to the volume of cars that will be using the curb cut.

Putnam Ave bends at Pleasant. There is a flashing beacon at the intersection and it is used by schoolchildren. There are several schools in the area including the Morse, Graham and Parks, Cambridgeport and King. A school crossing guard is assigned to the location 7:50 am to 8:50 am and 2:15 p.m. to 3:15 p.m. Currently, the curb cut on Putnam is not in use and is closed by a fence and locked gate. The use of this curb cut is unacceptable especially during the morning peak hour when volumes entering the garage are at their highest and conflicts between turning vehicles and through vehicles are at their greatest.

The current curb cut is 36' from the intersection. The city zoning code requires a curb cut to be 25' from an intersection. However, the Mass. Highway Department (MHD) Highway

Design Manual for local and collector streets and the Institute of Transportation Engineers (ITE) Guidelines for Driveway Location and Design and Guidelines for Urban Major Street Design all recommend that a curb cut be at least 50' from an intersection. None of these guidelines address the relationship between the volume of vehicles using a curb cut and the distance it must be from an intersection. However, it is clear that increased use of the curb cut leads to increased conflict with the intersection and reduced safety. The city's outside traffic engineer, Rizzo Associates recommends that when left turns into the curb cut exceed 12/hour, the location becomes a high hazard location. The Department's senior traffic engineer concurs with this assessment.. The developer's traffic report indicates that left turns into the site at this location are 36/hour in the am peak. For this reason, the Department finds the use of the Putnam Ave. curb cut in its present location as unsafe access to the new parking garage.

If the Putnam Ave. curb cut was relocated to the edge of proponent's property line it would be 68 feet from the intersection. If this relocation occurred, the Department would find the use of the curb cut acceptable.

CC: S. Schlesinger

CITY OF CAMBRIDGE
COMMUNITY DEVELOPMENT DEPARTMENT

SUSAN B. SCHLESINGER
Assistant City Manager for Community Development

ELIZABETH EPSTEIN
Deputy Director for Community Development

Memo

TO: Robert W. Healy
FROM: Susan B. Schlesinger
DATE: 02/05/98

RE: Council Order #74 dated February 2, 1998 regarding traffic volumes in Cambridgeport

In response to the above referenced council order, I report the following:

Attached is a report prepared by the City's consultant, Rizzo Associates. The report describes expected increases in traffic volumes in Cambridgeport resulting from development including University Park and the proposed developments at 784 Memorial Drive (Polaroid) and Putnam Avenue (Bread & Circus) as well as background growth. The report also includes recommendations for a traffic mitigation program to be implemented by the developer of 784 Memorial Drive, the MDC and the City.

The Rizzo report was prepared in response to the transportation study for the proposed development at 784 Memorial Drive prepared by Robert D. Vanasse and Associates, Inc. on behalf of Spaulding & Slye. The Rizzo report also responds to a report prepared by Stephen Kaiser for the Cambridgeport Neighborhood Initiative pertaining to the Polaroid development.

Several meetings attended by City staff, representatives from the Cambridgeport Neighborhood Initiative, Spaulding & Slye, Stephen Kaiser, Rizzo Associates and Vanasse Associates have been held to review the transportation study prepared for the Polaroid project and develop an effective mitigation program for both the project and Memorial Drive in general. Spaulding & Slye participated in 5 of 7 of these meetings either directly or represented by Vanasse Associates and have committed to have their traffic consultant begin a warrant study for a traffic signal at Pleasant Street and Memorial Drive. This group will continue to meet and will include the MDC at future meetings. Meetings were held on Dec. 10, Dec. 17, Jan. 7 (2), Jan. 21, Jan. 28 and Feb. 4. Meeting notes for the first 6 of the 7 meetings held to date are attached.

City Hall Annex
57 Inman Street
Cambridge, MA 02139
617 349-4600
Fax: 617 349-4669

Memorandum

To: Beth Rubenstein
Cambridge Community Development Department

Fr: Barry M. Pell, P.E.
Rizzo Associates, Inc.

Re: **INTERIM REPORT**
Traffic, Access and Parking
Proposed Polaroid Site Development
784 Memorial Drive
Cambridge, Massachusetts

Dt: February 2, 1998

I. Introduction

Rizzo Associates, Inc. has reviewed reports, memoranda, and data pertaining to traffic, access and parking for the referenced project. This information encompasses documents prepared by the developer's (Spaulding & Slye) transportation consultant Robert D. Vanasse & Associates, Inc.; by a neighborhood group (Cambridge Neighborhood Initiative [CNI]) and CNI's traffic consultant, Stephen Kaiser; and by the city of Cambridge. The following Interim Report responds to the project transportation studies by the developer (*Traffic Review and Access Study*, Robert D. Vanasse & Associates, Inc.; November 1997) and by Stephen Kaiser (*Step–1 Report on Cambridgeport Traffic* and Appendices; (Stephen H. Kaiser, for the Cambridgeport Neighborhood Initiative; December 10, 1997). A meeting was held on January 7, 1998 with the city, the developer and representatives from CNI for a preliminary review of the Vanasse report.

II Executive Summary

The Vanasse report applies, in general, a reasonable methodology, assumptions and analysis of the traffic impacts for the proposed Polaroid site development and addresses the study scope

prepared by the city. As detailed on the following pages, the Vanasse report contains some items which are incorrect and also has omissions/weaknesses, which are highlighted as follows:

- Existing pedestrian patterns (especially school crossings) should be discussed.
- Existing short-cut vehicle routes, especially during peak traffic hours, should be discussed.
- The width and locations (relative to adjacent intersections) of existing site driveways should be described.
- Nearby schools and their operating hours should be discussed, as well as how current reconstruction work at the Morse School affects student access routes, pedestrian crossing volumes, and school bus movements.
- Intersection turning movement traffic volume data should be checked for consistency with the ATR data for the afternoon peak hour on northbound Memorial Drive at River Street and at Western Avenue (left turn).
- The queue analysis should include intersections along Putnam Avenue and should be more precisely reported (rather than, for example 25+ vehicles). The number of queued vehicles should be equated to roadway lengths and referenced to distances to cross streets.
- The trip generation and assignment data applied as background traffic for the Bread & Circus and University Park developments should be presented.
- The background traffic analysis should not include trip generation for an alternative or previous use of the Polaroid site.
- The volume and distribution of project truck trips should be identified.
- Additional site vehicle trips should be based on full trip generation for the proposed development, without any reduction for the occupancy of the front building, which is currently vacant
- The project trip assignment overestimates site traffic that would depart from Pleasant Street onto Memorial Drive due to peak period congestion encountered on Memorial Drive. Instead of 30 percent, all of the Pleasant Street left turns would likely use Florence Street and/or Putnam Avenue and one-half of the Pleasant Street right turn may use Putnam Avenue and Western Avenue. Transportation system management (see Definitions) measures should be analyzed and a signal warrant justification study should be conducted to determine the potential for improving this situation by modifying signal

timing/coordination at Western Avenue/Memorial Drive and signalizing the Pleasant Street/Memorial Drive intersection.

- The intersection capacity analysis calibration methodology should be explained and justified.

- Signalized intersections on Memorial Drive currently operate at level of service "E" and "F" (LOS) during the afternoon peak hour, rather than LOS "D" and "E" as reported in the Vanasse study.

- The impact of the project on traffic safety and pedestrian safety should be evaluated, particularly for high volume pedestrian school crossing locations.

- The proposed mitigation measures (a brief listing of nine items) are vague and need to be more concrete and quantitative. The report on proposed transportation demand management (TDM) measures prepared by the city contains a much more thorough and detailed description of TDM elements which should serve as an initial framework for the developer to establish a mitigation program. A copy of this report is attached. All of the elements in the city's report would reduce site trips. Among the more effective measures, in the judgment of Rizzo Associates, are shuttle bus service to Central Square and Kenmore Square (with guaranteed ride home) and subsidized MBTA pass. As recommended in the city's report, the project proponent should commit to achieve a goal of a minimum of 20 percent non drive-alone mode share. This refers to development trips made by other than motorized vehicles occupied only by the driver. TDM elements should be implemented as soon as the site begins occupancy so that the first tenants develop commuting habits which promote non drive-alone characteristics. This will also insure that parking demand does not exceed the proposed on-site supply. The TDM program should also include a detailed monitoring program to measure success in achieving its goal, with additional measures available to be implemented if necessary.

- The site access shown on Pleasant Street is safe but would operate more efficiently and safely if moved away from the Florence Street intersection by 85 feet or more. The "Future Housing" component may require a setback from Pleasant Street to provide a clear line-of-sight for vehicles exiting the driveway.

- The site access shown on Putnam Avenue is inadequate and unsafe. It is within 30 feet of the Pleasant Street intersection, which is also an established school crossing. It should be relocated to the site property line (or beyond, as a joint use with the adjacent property). If this relocation is not possible, alternative safety measures include prohibiting use of the driveway before 10:00 A.M. or prohibiting left turns from Putnam Avenue onto the site.

- The parking supply (commercial) is approximately 6 percent lower than peak parking demand analyzed by Rizzo Associates. The proponent should address this analysis and describe how proposed parking will be adequate.

In conclusion, the analysis indicates that the key signalized intersections and turning movements at unsignalized intersections are presently congested and that this condition has the potential to worsen in the future with proposed project traffic and background traffic. Existing and future traffic volumes are summarized in Table 1. As shown in the right hand column of Table 1, future traffic volumes without mitigation are predicted to have significant increases over existing 1997 volumes.

Table 1 Peak Hour Traffic Volumes

			Future (2002)		Percent Increase Over Existing		
Location	Peak Hour	Existing (1997) (vph)	Without Project[1] (vph)	With Project[2,3] (vph)	Background Traffic[4]	Polaroid Development	Total
Memorial Drive,	Weekday morning	3,155	3,374	3,451	6.9	2.5	9.4
West of Pleasant Street	Weekday afternoon	2,913	3,076	3,128	5.6	1.8	7.4
River Street,	Weekday morning	1,095	1,343	1,451	22.6	9.9	32.5
North of Memorial Drive	Weekday afternoon	1,267	1,413	1,433	11.5	1.6	13.1
Western Avenue,	Weekday morning	1,064	1,227	1,252	15.3	2.4	17.7
North of Memorial Drive	Weekday afternoon	1,417	1,876	2,031	32.4	10.9	43.3
Putnam Avenue,	Weekday morning	543	695	861	28.0	30.6	58.6
East of River Street	Weekday afternoon	863	1,097	1,280	27.1	21.2	48.3
Putnam Avenue,	Weekday morning	446	608	650	36.3	9.4	45.7
East of Pleasant Street	Weekday afternoon	792	1,017	1,102	28.4	10.7	39.1
Pleasant Street,	Weekday morning	91	100	106	9.9	6.6	16.5
South of Putnam Avenue	Weekday afternoon	245	266	305	8.6	15.9	24.5
Florence Street,	Weekday morning	49	50	62	2.0	24.5	26.5
East of Pleasant Street	Weekday afternoon	165	173	251	4.8	47.3	52.1

vph = vehicles per hour

1 Without 45,000 square feet existing building on Polaroid site

2 With adjustment in Pleasant Street assignment

3 Before mitigation.

4 Includes University Park, Bread & Circus and general background growth.

NOTE: Future volumes do not include results of traffic calming proposals under review by the city.

In summary, commitment to a comprehensive and rigorously applied mitigation program by the developer, in coordination with the city, is necessary to avoid adverse traffic and safety impacts of the Polaroid development on through roadways and residential neighborhood streets. Rizzo Associates recommends that a project mitigation plan should be comprised of three primary elements:

1. Transportation demand management (TDM) program including, among other elements as outlined in the city's report (attached), shuttle bus service to Central Square and Kenmore Square (with guaranteed ride home) and subsidized MBTA pass, to achieve a target goal of 20 percent non drive-alone mode share.

2. Transportation system management (TSM) measures including improved timing/coordination for the Western Avenue signals at Memorial Drive and Soldiers Field Road and, if warranted, signalization of the Memorial Drive/Pleasant Street intersection.

3. Changes in the site access curb cuts:

   a. **Putnam Avenue**. Relocate the curb cut away from Pleasant Street to the site's property line (or as a shared access with the adjacent property). If this relocation is not possible, alternative measures include prohibiting use of the driveway prior to 10:00 A.M. or redesigning the curb cut to prohibit left turns from Putnam Avenue onto the site.

   b. **Pleasant Street.** Relocate the curb cut towards Memorial Drive with restriction (by design and/or signage) to prohibit left turns exiting the site.

If the mitigation goals are achieved, peak hour development traffic can be reduced by 80 to 90 vehicles. The benefit to individual streets will vary, but will have the greatest percentage improvement on neighborhood streets including Putnam Avenue and Florence Street. For example, on Putnam Avenue east of River Street, the increase over 1997 volumes from the Polaroid development would be reduced from a 26 percent increase to a 20 percent increase as an average during the peak hours. With implementation of proposed Pleasant Street driveway relocation and/or turn restrictions, the predicted increases in traffic on Florence Street due to the development could be fully or nearly eliminated.

Other mitigation measures to increase capacity on Memorial Drive and discourage through traffic on Putnam Avenue can also be successful in lowering volumes on Cambridgeport roadways. The magnitude of change is difficult to predict without knowing what measures will be adopted; however, it is estimated that improvements on Putnam Avenue, for example, could reduce the predicted growth over existing 1997 volume by approximately 20 percent.

The next steps, which should proceed in collaboration between the city, the developer and CNI are as follows:

1. **Memorial Drive Improvements.** Prepare analysis and recommendations, for presentation to the MDC, on TSM improvements to Memorial Drive. The first stage should include shorter cycle lengths, increased green time for the Memorial Drive left turn to the Western Avenue bridge and for the Western Avenue bridge at Soldiers Field Road, and better coordination with the signal at Soldiers Field Road. The second stage should include a proposal to signalize the intersection at Memorial Drive and Pleasant Street, which will require a signal warrant justification study. Signalization improvements will encourage through traffic and Polaroid vehicles to use Memorial Drive instead of residential streets in Cambridgeport.

2. **Transportation Demand Management (TDM).** Based on the city's report, a package of components for a specific TDM plan, goals and monitoring program should be developed for the Polaroid development.

3. **Traffic Control/Calming.** Traffic control and calming techniques should be implemented by the city to discourage through traffic and Polaroid vehicles from using Cambridgeport streets, particularly for Putnam Avenue and Florence Street.

III Definitions

Traffic planning terms used in this memorandum are defined below.

- **Peak Hour Traffic.** The peak hour traffic is the highest traffic volume traveling along a street or through an intersection during one hour, computed as the highest total volume for four consecutive 15-minute periods. For a street, volumes are based on the total of each travel direction (i.e., for one-way streets, there is only one travel direction). For an intersection, volumes are computed by adding the vehicles entering the intersection from every direction, including turning vehicles. Thus, for example, at the intersection of Memorial Drive and Western Avenue, traffic enters from three directions.

- **Peak Hours.** The peak hours are the time periods when peak hour traffic is present. Peak hours typically occur on weekdays and reflect the surges in traffic during commuter "rush" hours. The peak hours typically occur as one hour during the period from 7:00 to 9:00 A.M. and as one hour during the period from 4:00 to 6:00 P.M. The specific hour during this period is variable by street and from day to day. On Memorial Drive, the peak hours are typically from 8:00 to 9:00 A.M. and from 5:00 to 6:00 P.M.

  Many developments (such as office buildings) have peak hours which coincide with the commuter peak hours described above. For some developments, the peak may occur during other hours or on non-weekdays (such as retail, for example).

- **Planning Horizon Year Volume.** This is the future peak hour traffic volume on the roadway system streets and intersections during the morning and afternoon peak hours. The

future analysis year selected is typically when a development is expected to be fully constructed and occupied, with a minimum of five years from the present. For the proposed Polaroid development, a five-year planning horizon was selected. The future peak hour volumes are determined as the sum of existing traffic, project traffic (trip generation) and background traffic.

- **Background Traffic.** This term refers to the predicted increases in roadway system traffic from all sources except the proposed project. It is typically determined as the combination of two components: generalized background growth and specific project background traffic. Generalized background growth is a uniform percentage increase over existing volume applied to all roadway and intersection movements for each year to the planning horizon year. It represents traffic growth due to future regional and local projects, which are not specifically known or can be presently accounted. Background growth in the Boston area is typically applied at a rate of 1 to 2 percent annually. For many projects in Cambridge, including the Central Square reconstruction and proposed Lafayette Square, as well as the proposed Polaroid development, a background growth rate of one percent annually has been used.

  Specific project background traffic refers to future traffic which is anticipated from known local development projects. For the proposed Polaroid development, specific project background traffic was assigned for the proposed Bread & Circus supermarket on River Street and the remaining University Park development in accordance with the peak hour trip cap.

- **Peak Hour Trip Cap.** This refers to a provision in the "Agreement for Traffic Mitigation," dated January 11, 1988, between the City of Cambridge, the Massachusetts Institute of Technology, and Forest City Corporation. The provision sets a maximum peak hour (afternoon) trip generation for the Cambridgeport Revitalization Development District (known as University Park) of 1,700 vehicle trips.

- **Capacity Analyses and Level of Service.** Capacity analyses are computational techniques (as described in the national standard *Highway Capacity Manual*) to determine how a roadway or intersection will operate for a given hourly volume and design. The results are given in terms of vehicle delay (seconds) for each travel direction and an associated "level of service" (LOS). The LOS is graded in a range from "A" (best) to "F" (worst). Roadways and intersections in urban areas are typically designed to achieve LOS "D" or better during the peak hours

  Capacity is LOS "E" and corresponds to the maximum volume on a roadway or passing through an intersection, although it is an unstable condition which is difficult to sustain and often deteriorates to LOS "F".

- **Vehicle Queue.** This term refers to the line of vehicles (by number of vehicles and/or total length) in stop-and-go traffic on the approach to a signalized intersection or stop sign

controlled intersection. Vehicle queue is generally proportional to the amount of delay that a motorist will experience to pass through the intersection. Average queue means that one-half of motorists will encounter a longer queue and one-half will encounter a shorter queue on that intersection approach.

Maximum queue is generally considered to mean that 95 percent of motorists will encounter that queue length or shorter, with only 5 percent of motorists likely to encounter a longer queue.

- **Trip and Trip Generation.** A trip (or person-trip) is defined as a one-way movement between two points. Thus, for example, if one person drives to work in the morning and returns home in the afternoon, this represents two trips.

  Trips may be further distinguished by mode of travel. Thus, there are automobile trips, bus trips, walking trips, bicycle trips, etc. If, for example, an automobile driver with two passengers travel from home to school, this represents one vehicle trip, but three total (person) trips.

  Trip generation refers to the total number of trips expected to result from a specific development. Trip generation rates are generally based on variables such as the development type (office, retail, etc.), size (floor area), and/or number of employees. Trip generation rate guidelines for many types of developments are given in the national standard *Trip Generation* manual. Trip generation rates are given for daily (24-hour) and peak hours.

- **Trip Distribution.** Trip distribution refers to the location of regional and local origins and destinations to and from a particular development. It describes the components of desired travel between two points, rather than the specific roadways used to make the trip. When depicted on a map, trip distribution is typically shown by straight lines (i.e., "as the crow flies") between trip origin and destination.

  Trip distribution desire lines are typically accumulated and combined for regional (or subregional) directions. Thus, for example, the desire travel lines for access to a development in Cambridge from each community on the South Shore could be combined to one "South Shore" trip distribution percentage. For a particular development, the trip distribution allocation from all directions should add to 100 percent.

- **Trip Assignment.** Trip assignment takes the trip distribution for each regional (or subregional) direction and allocates it to one or more actual street routes available to motorists. Trip assignment reflects motorist route choice and is influenced by street and intersection capacity and congestion, and by the location of parking at the destination. Moreover, the assignment of future trips should reflect the roadway system likely to be available at that time.

- **Transportation Demand Management (TDM).** This refers to programs with a goal to reduce trip generation by private vehicles occupied by only the driver (referred to as drive-alone mode). Alternative access means by high occupant vehicles are encouraged, particularly for commuting employees during peak travel times, including rapid transit, bus, vanpool and shuttle bus. Although still accessed by automobile, carpools are also a TDM measure since they have multi-person occupancy. Walk trips and bicycle access are also promoted as an alternative to motor vehicles access. TDM programs also often encompass measures to discourage access by motorized vehicle. Such measures include traffic calming along streets and at intersections, and parking controls including limiting parking supply and adopting pay parking with a fee schedule disincentive to all-day commuters. In Cambridge, these TDM programs have been successful in reducing the percentage of the drive-alone mode, with reductions averaging 20 percent, and higher in areas at major rapid transit station/bus stop hubs.

- **Transportation System Management (TSM).** This refers to measures to improve the capacity and safety of the roadway and traffic signal system, principally by fine-tuning to augment operating efficiency. These measures generally entail limited or no roadway reconstruction and relatively simple implementation with lower cost. Examples of TSM improvements are retiming of traffic signals for better coordination/progression and pavement marking/signage to encourage better utilization of available travel lanes.

- **Traffic Calming.** Traffic calming is the retrofitting of streets to make the design match the desired speed. The goal of traffic calming is to reduce the negative effects of vehicles and to increase pedestrian, bicycle, and vehicular safety.

- **Traffic Control Devices.** Traffic control devices are used to provide for the orderly and predictable movement of traffic. They include traffic signals, stop signs and other regulatory signs.

IV. Project Review

1. **Study Area and Scope.** The Vanasse study area for traffic data collection and analysis encompassed the area bounded by Memorial Drive, Pleasant Street, Putnam Avenue and Western Avenue. The seven existing intersections studied conform to the city's traffic study area and included:

    - Memorial Drive at Western Avenue
    - Memorial Drive at River Street
    - Memorial Drive at Pleasant Street
    - Putnam Avenue at Western Avenue

- Putnam Avenue at River Street
- Putnam Avenue at Pleasant Street
- Putnam Avenue at Florence Street

A scope was agreed upon prior to the Vanasse study commencing. CNI representatives participated in the discussions on the study scope. Mr. Kaiser had recommended an extension of the study area in Cambridge to Magazine Street and the analysis of two additional intersections in Boston at Soldiers Field Road/Western Avenue and Soldiers Field Road/River Street.

Rizzo Associates, Inc. believes that the Vanasse study area and intersections, as scoped by the city, is an appropriate area surrounding and impacted by the proposed development for a detailed traffic volume assessment. The farther intersections on Magazine Street and the major intersections along Soldiers Field Road will not be significantly affected in their operation by the addition of Polaroid development traffic because traffic dispersed from the Polaroid site will comprise a small percentage of existing volume at these intersections.

Other transportation elements, such as pedestrian patterns (especially school crossings) and short-cut vehicles routes, were not discussed and should be discussed by Vanasse, as these neighborhood functions will interact with site-generated traffic operations. Moreover, the components of a mitigation program may extend to farther areas, for example, in evaluating shuttle bus connection to transit stations or traffic signal coordination across the Western Avenue bridge in Boston.

2. **Description of Study Area.** The Vanasse study provides an adequate description of the existing study area roadway and intersection components, including a general description of existing site driveways. The study should provide greater detail on the widths and locations (relative to adjacent intersections) of existing site driveways.

   The study should identify nearby schools and their operating hours. They should also look at how student access routes and pedestrian volumes will change when the Morse School reopens, and include this data in the analysis. This information will identify school bus movements and pedestrian crossings at study intersections, which would not have been present during the Vanasse counts taken in August 1997. The presence of these vehicles and pedestrians will reduce intersection capacity and will signify increased hazard potential with the additional Polaroid development traffic.

3. **Existing Traffic Volumes.** The Vanasse report provides daily (24-hour) counts, by 15-minute intervals, on six roadway segments, and intersection turning movement counts on a weekday from 7:00 to 9:00 A.M. and from 3:00 to 6:00 P.M., by 15-minute interval, at seven intersections. The peak hours generally occurred from 7:00 to 8:00 A.M. and from 5:00 to 6:00 P.M. The Kaiser report focuses on the afternoon peak hour, because of the greater

availability of afternoon data and because primary congestion problems for the neighborhood occur in the afternoon.

Vanasse volumes, counted in August 1997, were adjusted upward in the report by 5 percent to reflect September (school session, non-vacation) conditions. The Kaiser report questions a blanket adjustment of 5 percent as perhaps too high for Memorial Drive and too low for Putnam Avenue. However, the resulting volumes are approximately the same or higher than actual counts taken in September 1997 for the proposed Bread & Circus project *(Traffic Impact Analysis;* Abend Associates; October 31, 1997) and are therefore judged by Rizzo Associates, Inc. to be reasonable.

Mr. Kaiser also notes in his report an apparent error in overcounting in the Vanasse report of two movements during the afternoon peak hour on northbound Memorial Drive at River Street and at Western Avenue (left turn). This data should be checked by Vanasse as a matter of reporting accuracy. However, it does not significantly affect the subsequent sections of the report since the count represents a conservative over-estimate of volume and the capacity analysis was calibrated to an effective at-capacity (i.e., lower volume) condition.

Thus, in summary, although the apparent errors noted in the Kaiser report should be checked, the Vanasse volumes are a reasonable basis for future conditions analysis. Weekday, morning and afternoon peak hour conditions, as addressed in the Vanasse report, are appropriate for an office development.

4. **Existing Vehicle Queuing.** In addition to vehicle delay and level of service, queue analysis is an important indication of intersection operation. It is particularly important for the analysis of the proposed Polaroid development, since excessive queuing encourages motorists to drive on short-cut routes on local neighborhood streets.

   The Vanasse report provides a summary of observed vehicle queues on Memorial Drive/River Street and Memorial Drive/Western Avenue during the morning and afternoon peak hours. The Kaiser report provides a depiction of existing afternoon queues. The length of observed average and maximum queues (see Definitions), especially on Memorial Drive and on Western Avenue, given in the Vanasse report should be more precisely specified (rather than, for example, 25+ vehicles). Also, comparable queue observations should have been reported on the Putnam Avenue intersection approaches. This information will assist in the evaluation of mitigation benefits to reduce queues. In addition, the queued vehicles should be equated to roadway lengths and compared to existing measured lengths to key intersections on Memorial Drive and along Western Avenue and Putnam Avenue.

5. **No-Build Conditions (Without Project) Background Traffic.** The components of background traffic applied in the Vanasse study include the specific project background traffic for the proposed Bread & Circus and University Park developments, a 1 percent annual (5 percent total for 5 years) generalized background growth, and 45,000 square feet of general office space on the Polaroid site.

For the Bread & Circus and University Park developments, it would be useful to provide the actual trip generation and assignments applied in the analysis. In particular, the University Park growth should include all remaining trips for full build-out. This methodology should be detailed in the report to clearly illustrate the impact of each project.

The Kaiser report indicates that a portion of future University Park traffic is missing from the assignment in the Vanasse study, amounting to an additional increase of about 3 percent in traffic at the Memorial Drive/River Street intersection. It is difficult to confirm this without the more detailed assignment used by Vanasse.

The generalized background growth applied in the Vanasse study is appropriate and conforms with background growth rates used in other development studies and city roadway design projects.

As defined previously, the analysis of background traffic is intended to account for potential off-site traffic growth. Thus, the Vanasse report should not augment this analysis with traffic from any different use of the site, even for an office use that was present years earlier. The Kaiser report supports this comment, noting that it is not good traffic engineering practice. The use of this methodology in the Vanasse study does not reduce the total trip generation projected for the Polaroid development but does underestimate the magnitude of impact of the development.

In summary, the Vanasse study applies background traffic in accordance with the city's scope, but inappropriately adds a component of site development as background traffic. Additional supportive data on the trip generation and trip assignments used for Bread & Circus and University Park would be helpful to confirm the accuracy of the background traffic analysis.

6. **Project Traffic.** The proposed project consists of office building space (295,000 square feet), residential townhouses (approximately 30), and parking (based on the Vanasse report, 577 garage structure and approximately 30 at-grade spaces). It is Rizzo Associates, Inc. understanding that the 30 surface spaces (which include handicapped spaces) are for commercial use and that the 577 structured spaces (which include 12 handicapped spaces) are comprised of 547 commercial spaces and 30 residential spaces. Detailed discussion of project parking is given in Comment #13, below.

   Project traffic has been calculated by the Vanasse report in accordance with trip rates contained in the ITE *Trip Generation* manual (Fifth Edition, 1991). The selected office rates conform to the allocation and use of space proposed by the developer; namely, corporate headquarters (ITE Land Use Code 714) for the front building (55,000 square feet) and one of the new office buildings (120,000 square feet), and research and development (ITE Land Use Code 760) for the second new office building (120,000 square feet). Residential townhouse rates (ITE Land Use Code 230) have been applied for the residential space (30 units). The

existing relatively low employee density at Polaroid (Tech Square) suggests the reasonable application of "corporate headquarters" trip rates by Vanasse.

The research and development category is appropriate if this is the intended occupancy. Based on the proposed parking (approximately 2.0 spaces per 1,000 square feet building area), the general office building (Land Use Code 710) category (with higher trip rates) would be unsupportable due to its associated parking demand, noted by ITE, of 3 to 3.5 spaces per 1,000 square feet.

The research and development trip rates also are consistent with Rizzo Associates' experience with vehicle trip rates for large office developments in Cambridge. As discussed in the memorandum *Trip Generation Rates* (Rizzo Associates, Inc.; July 29, 1997), Cambridge peak hour vehicle trip rates are generally 75 to 85 percent of ITE rates, which reflects citywide an overall greater availability of transit (rapid transit and bus) opportunities and other non-automobile access choices.

Table 2 compares the vehicle trip rates determined by Rizzo Associates, Inc. for large office developments in Cambridge with the trip rates used in the Vanasse report. In all instances, the Vanasse rates are approximately the same or higher than average Cambridge trip rates for office development.

Table 2 Office Trip Vehicle Generation Rates

	AM Peak Hour	PM Peak Hour
Rizzo Associates, Inc.[1]	1.31	1.24
Vanasse Traffic Study		
55,000 sf building	1.35	1.69
120,000 sf building	1.36	1.53
120,000	1.33	1.30
Total 295,000 sf	1.34	1.46

Notes: Trip rates per 1,000 square feet building area
sf: Square Feet
1 Memorandum "Trip Generation Rates" (Rizzo Associates, Inc.; July 29, 1997) for 200,000 sf.

The Kaiser *Step-1 Report* uses the Polaroid trip generation rates as given in the Vanasse report. While not directly endorsing these rates, the Kaiser report notes that "trip generation rates are a fairly established procedure, and past checks of trip generation have shown general agreement". The Kaiser report further states that in terms of understanding overall traffic impacts, there would be little value in nit-picking trip generation assumptions."

Subsequent to the *Step-1 Report*, Mr. Kaiser and other CNI representatives submitted a letter to the MEPA Unit of the Massachusetts Executive Office of Environmental Affairs (January 8, 1998) which objects to the computation of *daily* trip generation in the Vanasse report. Appendix 1 of that letter computes a potential for 3,523 total vehicle daily trips,

which exceeds one of MEPA's criteria (3,000 total vehicle daily trips) requiring preparation of an Environmental Notification Form (ENF) and Environmental Impact Report (EIR) for the project.

Rizzo Associates, Inc. disagrees with Mr. Kaiser's analysis of project daily trips, judging instead that the lower vehicle trip rate characteristics in Cambridge would reduce traffic below 3,000 daily vehicle trips whether reduced ITE general office rates or direct ITE rates are used for the proposed mix of corporate and research and development space.

In summary, the vehicle trip rates and project traffic for daily and peak periods analyzed for the proposed project are reasonable. The volume and anticipated distribution of project truck trips should be separately identified. Truck trips are not anticipated to be a significant activity at the site, approximately 10 to 15 delivery and service vehicles daily, but should be specified due to the greater impact of these vehicles in traffic circulation and routing restrictions given the truck prohibition on Memorial Drive.

7. **Additional Site Generated Trips.** Additional vehicle trips are computed in the Vanasse report as the difference between full occupancy of the existing office building on-site and the current office development proposal. Thus, the Vanasse analysis of additional site-generated trips (Tables 11 and 13, Figures 10 and 11) discounts the occupancy of the 45,000 square feet existing building. However, since this property has been substantially vacant for many years, this space should be counted as new trips. From a neighborhood and traffic impact evaluation reference, the total project trip generation is what will be added to the roadway network, without discounting potential occupancy of a currently vacant building. As noted previously, the Kaiser report supports this comment, noting that the Vanasse methodology is not good traffic engineering practice.

8. **Project Trip Distribution and Assignment.** The Vanasse report states that regional trip distribution is analyzed based on the home zip codes of the prospective 120 Polaroid employees to be at the site. An analysis of Polaroid employee zip codes was requested in the city's scope. The project trip distribution and assignment is reasonable with one principal exception.

Exiting movements from Pleasant Street onto Memorial Drive are difficult, especially during peak hours, given the unsignalized control presently at the intersection. The *Highway Capacity Manual* indicates that there is virtually no capacity at unsignalized intersections for left turns from a cross-street when two-way traffic on the major street exceeds 2,500 vehicles per hour. The projected year 2002 volume on Memorial Drive at Pleasant Street exceeds 3,100 two-way vehicles during the afternoon peak hour. It is noted that the installation of a traffic signal on Memorial Drive at Pleasant Street would stop traffic on Memorial Drive thereby creating the necessary gaps to allow Polaroid development traffic to use this departure route and not be diverted to neighborhood streets. This installation is under consideration and requires a signal warrant justification study to evaluate the future operation

with signalization. Thus, the 30 percent of site traffic predicted to use this departure route is likely overestimated. Rather, all of the exiting left turn (10 percent) would instead use Florence Street and/or Putnam Avenue and perhaps one-half (10 percent) of the right turn may encounter less delay via Putnam Avenue and Western Avenue. On a daily (24-hour) basis, these changes in assignment could increase site-generated traffic on Florence Street from 135 vehicles to up to 270 vehicles. With signalization, the exiting left turn (10 percent) would likely use Memorial Drive; however, a component of the right turn volume would still encounter less delay via Putnam Avenue due to the queue on Memorial Drive from Western Avenue.

9. **Intersection Capacity Analysis.** Much good review has been presented by Stephen Kaiser on this (and other projects) regarding the inadequacy of capacity analysis programs to properly model signalized field conditions and therefore serve as an accurate basis for the prediction of future conditions. These deficiencies apply principally when volumes are significantly above the (theoretical) capacity calculated by the model.

   Vanasse has responded to this problem by manipulating the capacity program's adjustment factors for the four analyzed signalized intersections. Rizzo Associates' comments are as follows:

   - No description is given in the worksheets of the methodology used to make the adjustments.
   - For intersections not operating at capacity in 1997 (i.e., Putnam Avenue/River Street and Putnam Avenue/Western Avenue), how was the desired volume-to-capacity ratio determined?
   - Was the queue analysis calibrated as well? The queue results in the Appendix are longer than observed queues given in Table 6 of the Vanasse report.
   - The calibrated capacity analyses for signalized intersections in the Appendix show some level of service (LOS) results which are worse than the LOS summary in Table 16 of the Vanasse report.

   The Vanasse report capacity analysis for existing conditions (Table 16) concludes that all study intersections are operating acceptably (LOS "D" or better) except Memorial Drive/River Street (LOS "E" during the morning and afternoon peak hours), Memorial Drive/Western Avenue (LOS "E" during the afternoon peak hour), Memorial Drive/Pleasant Street (LOS "F" from Pleasant Street during both peak hours), and Putnam Avenue/Pleasant Street (LOS "E" from Pleasant Street during the afternoon peak hour).

   Rizzo Associates, Inc. performed capacity analyses at the signalized intersections based on a simplified "critical movements" procedure. This methodology, together with numerous observations at the intersections, indicates that the Vanasse signalized levels of service for

existing conditions are approximately correct, with the Memorial Drive intersections closer to level of service "F" during the afternoon peak hour (as opposed to LOS "D" and "E" reported by Vanasse). Rizzo Associates recommends that a critical movements analysis be performed whenever signalized capacity procedures show a volume-to-capacity ratio exceeding 1.2 for existing volumes.

The Kaiser report reviews the inadequacies of the signalized traffic capacity model and refers to the calibration in the Vanasse report as not unreasonable. For the unsignalized intersections, the Kaiser report raises concerns about potential interference from queues overlapping the three Pleasant Street intersections at Memorial Drive, Florence Street/main site drive, and Putnam Avenue, with queues "filling the 800-feet distance between Memorial Drive and Putnam Avenue." Although some overlapping queuing may occur briefly during peak travel periods, Rizzo Associates does not agree that operations at these intersections would create such extended queuing or gridlock. Also, the Kaiser report correctly notes that the Vanasse study does not address interference of the Putnam Avenue site driveway operation upon the capacity of the Putnam Avenue/Pleasant Street intersection. Rizzo Associates addresses this issue in Comment #12, below.

In summary, it is evident that key signalized intersections and unsignalized movements in the Polaroid site vicinity are presently congested (worse than level of service "D") and that this condition will continue and be impacted in the future with proposed project traffic (with or without background growth). A comprehensive mitigation strategy (discussed below) will be warranted to lessen these impacts.

10. **Project Safety Impacts.** The Vanasse report does not address the impact of the Polaroid project upon traffic safety and pedestrian safety. This should be discussed with regard to increased accident potential, particularly at high volume pedestrian school crossing locations like Putnam Avenue/Pleasant Street and Putnam Avenue/Western Avenue.

    The Kaiser report presents a discussion of accident and safety analysis, noting the difficulty to obtain comprehensive historic records. The Kaiser report notes that accident data is not presented in the Vanasse report at the intersections of Memorial Drive/Western Avenue and Putnam Avenue/Western Avenue, but could be significant.

11. **Mitigation.** The Vanasse report briefly lists nine items agreed to by the proponent as mitigation to decrease reliance on automobile trips. As described, the proposed mitigation measures are vague and need to be more concrete and quantitative. Mitigation for this project should entail specific proposals which focus on the primary objectives to (a) reduce the volume of site-generated vehicles, (b) encourage greater use of Memorial Drive instead of neighborhood streets by site and non-site vehicles, and (c) prevent/discourage site traffic from using local residential streets such as Florence Street.

    The report on proposed transportation demand management (TDM) measures prepared by the city contains a description of TDM elements which should serve as an initial framework

to evaluate and determine the specific components applicable for the Polaroid development. All of the elements in the city's report would reduce site trips. Among the more effective measures, in the judgment of Rizzo Associates, are shuttle bus service to Central Square and Kenmore Square (with guaranteed ride home) and subsidized MBTA pass. As recommended in the city's report, the project proponent should commit to achieve a goal of a minimum of 20 percent non drive-alone mode share. This refers to trips to and from the project site which are made by MBTA, shuttle bus, bicycle, carpool or other means, other than by motorized vehicle occupied only by the driver. It is noted that the Vanasse report suggests a goal of 17 percent non drive-alone mode share for the Polaroid employee component of the development. TDM elements should be implemented and their success monitored in achieving the 20 percent goal, with additional measures implemented if necessary.

Moreover, it is important that the TDM program be implemented as soon as the site begins to be occupied. The first tenants will have an available surface parking lot supply (311 spaces), far exceeding demand (92 spaces) which will encourage a drive-alone habit and access characteristics for the development that will be difficult to change if TDM measures are not promoted from the outset. The available parking should be reduced to 92 spaces as part of the early TDM program.

Mitigation should also include a commitment for truck deliveries to exclude peak traffic hours.

With regard to traffic operations, the project proponent working with the city and CNI consultant, should commit to study/analysis and implementation of proposals to improve signal timing/coordination at Memorial Drive and Western Avenue and, if warranted, signalization of the Memorial Drive/Pleasant Street intersection.

Based on a review of the proposed site plan, mitigation is also recommended for the site access and curb cuts. These are described in Comment #12, below.

The Kaiser report also comments on the brief description of mitigation in the Vanasse report, with virtually no numerical target for completion. Mr. Kaiser has maintained that there should be no new vehicle trips generated by the site unless there is appropriate mitigation. The Kaiser report indicates that this mitigation should include improved traffic signal timing and trip reduction.

In summary, Rizzo Associates recommends that mitigation focus on (a) trip reduction items (particularly shuttle bus service to Central Square and Kenmore Square, and subsidized MBTA passes); (b) greater use of Memorial Drive (by improved signal retiming and coordination of signals), and (c) local residential street protection from through traffic from Polaroid and other vehicles by implementation of traffic control and calming techniques by the city.

12. **Site Access Plan.** The proposed garage size of 577 spaces is at the threshold at which two vehicle access points (as proposed) are desirable for more efficient entry/exit operation. Garage access via separate streets on opposite sides of the garage can reduce site traffic using the Pleasant Street/Putnam Avenue intersection, as well as site traffic which might potentially use Florence Street. However, this benefit will only be achieved if there is also sufficient vehicle capacity at the Memorial Drive/Pleasant Street intersection. As noted previously, an increase in capacity from Pleasant Street to Memorial Drive could be achieved by signalization of this intersection. Such signalization is preliminarily recommended by Rizzo Associates, Inc. to facilitate traffic to/from the Polaroid garage and Memorial Drive. However, a signal warrant study should be performed to demonstrate that such signalization is justified. An alternative to signalization is to use police officer control at the intersection during peak hours. This is listed as a possibility in the Kaiser report, but is not recommended by Rizzo Associates because of inefficiencies often experienced with police officer control and the difficulty to safely locate an officer within this intersection.

    Each driveway should be designed so that its access curb cut does not impose an operating bottleneck or hazard, and does not encourage short-cut routes on residential streets in the adjacent neighborhood. Moreover curb cuts should be designed to make pedestrian crossings as easy as possible, e.g., level with the sidewalk, providing clear sight lines, and with appropriate and clear signage. Site access design should encourage pedestrian and bicycle access, reducing conflicts as much as possible and providing high quality sidewalks and bicycle access routes. Further, the internal site plan should be designed to encourage and ease pedestrian access within the site, including walkways, signs, and clear crossings of internal roads and truck routes. Each of the garage access points (proposed by the developer at existing curb cuts) is discussed below.

    a. **Pleasant Street opposite Florence Street.** At unsignalized intersections, safer operations are achieved by properly spaced single-sided or "T" intersections, rather than four-way intersections. In instances where proper spacing between intersections is unavailable, it is then best to directly align the side street/driveway in order to avoid "T" intersections separated by short distances. For Pleasant Street, this minimum distance between intersections (street or driveway) should be 50 feet (measured from the end of one curb to the beginning of the next). A more desirable spacing is 85 feet for safe operation. These criteria are from the Massachusetts Highway Department (MHD) *Highway Design Manual* for local and collector streets.

        Driveway spacing criteria are also given in the ITE publication *Guidelines for Urban Major Street Design*. For commercial driveways, the distance from the edge of driveway to the curb line of the cross-street should be a minimum of 50 feet, with 75 feet desirable.

        On the basis of these guidelines, the Pleasant Street access presently proposed directly opposite Florence Street is safe, but would operate more efficiently and safely if moved away from the Florence Street intersection by 85 feet or more, for the following reasons:

1. **Reduction of Vehicle Conflicts.** An unsignalized four-way intersection has significantly greater vehicle turning conflicts and accident potential than two properly separated "T" intersections.

2. **Local Neighborhood Street Protection.** The curb cut location as presently configured is more likely to encourage the use of Florence Street, particularly for departure routes from the site. A relocation of this curb cut will discourage this routing, and will do so more effectively if implemented in conjunction with left turn exit restrictions (by geometric design and/or signage) from the site and signalization at the Memorial Drive/Pleasant Street intersection.

3. **Reduced Traffic Impact at Pleasant Street/Putnam Avenue Intersection.** A relocated curb cut, together with left turn exit restrictions from the site and signalization of the Memorial Drive/Pleasant Street intersection, would discourage site traffic from using the Putnam Avenue/Pleasant Street intersection and Putnam Avenue to the east.

The proposed relocation of the Pleasant Street driveway appears possible to achieve without interfering with other intersections or driveways. It would also enable the access driveway to provide a straighter alignment within the site.

For any curb cut location, the design of the site's "future housing" component should provide a clear sight line for driveway vehicles exiting onto Pleasant Street to have an adequate sight distance. This may require a setback of the housing away from the corner opposite Pleasant Street and Florence Street.

The Kaiser report also states that the relocation of the Pleasant Street driveway is desirable. The report indicates that the presently proposed design entails a difficult 135-degree right turn exiting the driveway onto Pleasant Street towards Memorial Drive. The Kaiser report states that a proper driveway relocated 70 feet toward Memorial Drive would intersect Pleasant Street at a right-angle (90 degrees) and would also reduce the tendency to use Florence Street as a by-pass to and from the Polaroid site.

b. Putnam Avenue. The proposed Putnam Avenue access is inadequate and unsafe for a number of reasons. It is within 30 feet of a four-way intersection, substantially below the minimum spacing criteria of MHD and ITE. The driveway is depicted approaching Putnam Avenue at a skewed (i.e., non-perpendicular) angle. Furthermore, the Putnam Avenue/Pleasant Street intersection is an established school crossing; thus, inadequate design may pose a hazard for school children as well as for vehicles and other users.

Although not a consideration in the MHD spacing standards, it is reasonable to interpret driveway spacing also in terms of the magnitude of driveway traffic. If the driveway were serving a single-family residence, for example, the probability of conflict and hazard would be much lower. For this site it is judged by Rizzo Associates on the basis of conflict

potential, that left turn traffic entering the site (i.e., approaching from the Pleasant Street intersection) of 12 vehicles per hour (one vehicle every 5 minutes) is a threshold for high hazard. Furthermore, hazard potential is much greater during the morning commuter period when traffic is predominantly entering the site. The traffic study predicts 36 vehicles per hour to turn left into the site during the morning peak hour.

Site driveway operation would be improved if the driveway were relocated to the site property line (or beyond, as a joint use with the adjacent property). If this relocation is not possible, alternative measures to enable a safer operation include:

1. Prohibit use of the driveway during the morning before 10:00 A.M., when traffic entering the site is highest. This measure would require all site traffic to use the Pleasant Street driveway before 10:00 A.M., thus adding traffic to the Pleasant Street/Putnam Avenue intersection. From the Vanasse report, the capacity analysis indicates a LOS "B" during the morning peak. Thus, it appears that there is sufficient capacity for this additional traffic without adverse impact.

2. Redesign the curb cut to prohibit left turns from Putnam Avenue onto the site. Left turns exiting the site would continue to be allowed. This measure would principally affect the morning peak hour and would shift approximately 36 vehicles predicted to turn left into the Putnam Avenue driveway to instead turn left onto Pleasant Street and right onto the Polaroid site. There is sufficient capacity for this additional traffic at the Pleasant Street/Putnam Avenue intersection. It is also understood that this curb cut redesign would be the same as a relocation and require review and approval by the City Council.

The Kaiser report also states that the relocation of the Putnam Avenue driveway is desirable. The report describes deficiencies at the Putnam Avenue driveway, including as a kink in its alignment, intersecting Putnam Avenue at a 60-degree (non-perpendicular) angle on a curve, and its location only 30 feet from the Pleasant Street intersection.

13. **Project Parking.** Required project parking for office development is dependent most significantly on employee density and percentage of employee access by single occupant vehicles. The Vanasse report provides an analysis of parking needs, responding to the city's scope, to support their proposed parking supply.

The Vanasse study indicates that employee density at the existing Polaroid (Tech Square) site is only 2.34 persons per thousand square feet (ksf) building area, which is lower than all office categories given by ITE (ranging from 2.47 employees/ksf for research and development to 3.85 employees/ksf for corporate office). For most ITE office categories, transit services were minimal or non-existent; access was nearly entirely by private vehicle. Vehicle occupancy, however, was measured averaging 1.20 for corporate headquarters office and research and development, which suggests some degree of carpooling and/or drop-off/pick-up activity, which would reduce parking demand.

Table 3 summarizes this data, together with the average parking rates given by ITE and at the existing Polaroid site. The surveyed data in the ITE report indicates parking rates significantly higher than existing or proposed for Polaroid. The lower employee density and greater transit available at Tech Square could account for these differences, although it is possible that some Tech Square employees may park elsewhere off-site and are therefore not included in the computed parking ratio.

Table 3 ITE and Existing Cambridge Polaroid Comparison

Category	Employees per ksf	Parking Spaces per ksf
ITE		
General office (Land Use Code 710)	3.29	3.57
Corporate Headquarters (Land Use code 714)	3.85	3.03
Research & Development (Land Use Code 760)	2.47	2.70
Polaroid –Tech Square	2.34	1.67
Polaroid – Proposed	—	1.96

Ksf = 1,000 square feet building area

It is a reasonable assumption that Polaroid's corporate headquarters' parking need is the same as at Tech Square (1.67 spaces per ksf, or 92 spaces). Consistent with the traffic analysis based on employee density, the ITE parking rate for research and development is appropriate for the two new buildings. If this rate is reduced by 20 percent to account for transportation demand management (TDM) measures (2.70 spaces/ksf x 0.80 x 240 ksf = 519 spaces), then total commercial site parking demand would equal 611 spaces. This analysis is summarized in Table 4.

In order to insure that proposed commercial parking supply (577 spaces) is adequate, the TDM program must be implemented aggressively and carefully monitored (including monitoring potential parking incursions into the neighborhood). As noted previously, parking demand can be reduced if the TDM program is implemented as soon as the site begins occupancy and the first tenants develop commuting habits which promote non drive-alone characteristics. The proponent should describe how the parking deficit analyzed above is to be addressed (i.e., by a reduction in development size or commitment to a non drive-alone mode share greater than 20 percent).

Table 4 Project Parking — Commercial Space

Development Component	Building Area (gsf)	Parking Spaces per ksf	Total Spaces
Computed			
Corporate Headquarters	55,000	1.67[1]	92
Research & Development	240,000	2.16[2]	519
Total	295,000	2.07	611
Proposed	295,000	1.96	577

1 Polaroid – Tech Square

2 Institute of Transportation Engineers (ITE), reduced by 20 percent.

The Kaiser report does not provide a parking analysis, but concludes that the Polaroid report "does not represent the parking study which was called for in the Cambridge scope."

In summary, Rizzo Associates concludes that the Vanasse report provides a methodology to analyze parking based on employee density, which is a reasonable approach. Rizzo Associates has applied this methodology with adjustment factors based on the TDM mode split goal and has derived a slightly higher peak parking demand. The proponent should address this analysis and describe how proposed parking will be adequate.

V. Review of CNI Report

This report entitled *Step-1 Report on Cambridgeport Traffic* (Stephen H. Kaiser; December 10, 1997) provides an initial assessment of the traffic and safety impacts from the various developments which could impact Cambridgeport in the riverfront area between Magazine Street and Western Avenue. These three main developments are University Park, Bread & Circus, and Polaroid. The report is designated "Step-1" because, as Mr. Kaiser states, "it does not contain all of the necessary analysis needed for a comprehensive response and traffic plan." A "Step-2" report is planned for January 1998.

There is general concurrence between the Rizzo Associates and CNI assessment of the traffic impacts of the proposed Polaroid development. Specific technical components are discussed in Section IV (Project Review) and are summarized below. Rizzo Associates agrees with all of the *Step-1 Report* findings, except as noted.

1. The *Step-1 Report* recommends an extension of the study area in Cambridge to Magazine Street and the analysis of two additional intersections in Boston at Soldiers Field Road/Western Avenue and Soldiers Field Road/River Street. Rizzo Associates believes that the farther intersections on Magazine Street and the major intersections along Soldiers Field Road will not be significantly affected by Polaroid development traffic volume and, therefore, do not require traffic volume counts and capacity analysis.

2. The *Step-1 Report* notes apparent errors in Vanasse report traffic counts during the afternoon peak hour on northbound Memorial Drive at River Street and at Western Avenue (left turns).

3. The *Step-1 Report* provides a comprehensive assessment of existing afternoon queues and notes inadequacies in the Vanasse queue evaluation.

4. The *Step-1 Report* indicates that a portion of future University Park traffic is missing from the assignment in the Vanasse study, amounting to an additional increase of about 3 percent in traffic at the Memorial Drive/River Street intersection. A more detailed assignment used by Vanasse is needed to confirm this.

5. The *Step-1 Report* concurs with the Rizzo Associates' review that the office use previously on the Polaroid site should not be counted as background traffic.

6. The *Step-1 Report* indicates general agreement with the project trip generation rates. Subsequently (January 8, 1998 letter), Mr. Kaiser indicates that daily vehicle trip generation will be higher than given in the Vanasse report. Rizzo Associates disagrees with this analysis, judging instead that the lower vehicle trip rate characteristics in Cambridge make the Vanasse analysis reasonable.

7. The *Step-1 Report* provides good review regarding the inadequacy of capacity analysis programs to properly model signalized field conditions. The alternative signal analysis (Appendix G) by "critical lane" method provides results more consistent with Rizzo Associates' review.

8. The *Step-1 Report* raises concerns about potential overlapping queues on Pleasant Street creating a gridlock condition. The Rizzo Associates' review does not predict such extended queuing or gridlock.

9. The *Step-1 Report* notes that accident data is omitted from the Vanasse report and could be significant at the intersections of Memorial Drive/Western Avenue and Putnam Avenue/Western Avenue.

10. The *Step-1 Report* notes significant safety and operating problems for the two proposed site driveways on Pleasant Street and Putnam Avenue. The report recommends relocating the Pleasant Street driveway, with a proper right-angle intersection, 70 feet towards Memorial Drive. The report states that the Putnam Avenue driveway, "if it exists at all, should be for residents only and should be located as far from Pleasant Street as possible." Rizzo Associates recommends that both driveways be provided for commercial parking access, in part to reduce traffic at the Pleasant Street/Putnam Avenue intersection. However, the Putnam Avenue access should be allowed only if relocated or redesigned, as described previously.

11. The *Step-1 Report* does not provide a parking analysis but concludes that the Polaroid report does not conform to the city scope for a parking study. Rizzo Associates believes that the Vanasse report is responsive to the city scope for parking analysis.

CNI and Rizzo Associates both conclude that the proposed Polaroid development could result in significant adverse traffic impact and that the proponent has suggested only the briefest description of possible mitigation actions.

The *Step-1 Report* recommends that mitigation encompass traffic signal timing and trip reduction. The report does not discuss or outline potential trip reduction program measures, except to recommend "membership by Spaulding and Slye or Polaroid in the Charles River Transportation Management Association."

The *Step-1 Report* does provide a detailed discussion and analysis of signalization and minor pavement marking and curbing changes for the intersections of Soldiers Field Road at Cambridge Street and Western Avenue, and Memorial Drive at River Street and Western Avenue. The report does not endorse signalization of Pleasant Street at Memorial Drive, but notes the benefits of such signalization to encourage some vehicles to use Memorial Drive (and hopefully more safely), to possibly reduce traffic on Granite Street, and to allow another point for pedestrian access across Memorial Drive. A potential safety problem is noted if left turn traffic from inbound Memorial Drive is heavy.

Mr. Kaiser has been meeting with Rizzo Associates and city staff to determine a set of improvements to timing and coordination for the Western Avenue signals. These changes will include parts of the *Step-1 Report* (Appendix I) recommendations for signalized intersections, which will be proposed to the MDC.

The *Step-1 Report* suggests additional next steps to include an analysis of recent traffic accident data (particularly at Putnam Avenue and Magazine Street). The report also recommends, and Rizzo Associates agrees, that a comprehensive street calming program for Cambridgeport should be a high priority.

\\RIZZO\MA_DATA RIZZO\project\[illegible] M14 BMP doc

CITY OF CAMBRIDGE
COMMUNITY DEVELOPMENT DEPARTMENT

SUSAN B. SCHLESINGER
Assistant City Manager for Community Development

BETH RUBENSTEIN
Deputy Director for Community Development

Proposed Transportation Demand Management Measures for 784 Memorial Drive

Introduction

The November 1997 traffic study prepared by Vanasse and Associates (for Spaulding & Slye) in connection with the redevelopment of the Polaroid site at 784 Memorial Drive included a set of transportation demand management (TDM) recommendations. While these potential measures are a good starting point for developing a TDM implementation plan, they need to be expanded to produce an overall strategy that will significantly reduce vehicle trips. The recommendations do not include a number of potentially effective TDM measures, and they do not appear to take into account the specific characteristics of the site and the employee population. In addition, the recommendations do not set specific goals, without which it will be difficult to draw conclusions about the success of the measures that are implemented. It is important to more precisely define the elements of the plan and their expected impacts on travel behavior, so that the proponent is in a position to have a meaningful effect on the congestion and air quality impacts of the project.

Given the existing level of congestion in the immediate area and Cambridge as a whole, a strong TDM plan is required to effectively minimize the traffic impacts of the proposed development. It is also in the best interests of the developer and project tenants to implement TDM effectively, to minimize lost productivity and ensure mobility and access for all those who work and live at the site. The traffic study states that Polaroid expects to achieve a drive-alone mode share of about 83%, implying an alternative mode share of about 17%. Based on previous experience and research, achieving this level of alternative mode use is quite reasonable, and could realistically be increased to about 20% and expanded to include all tenants in the development. The main recommendation of this report is that the proponent commit to achieve an alternative mode share of at least 20% for all employees at the site, and continue to implement new trip reduction measures as needed until this goal is achieved. The following sections detail the measures that are recommended to achieve this target and the process that should be used to develop, implement, and monitor the TDM plan.

Framework for TDM Plan

As mentioned above, the recommendations made in the traffic study provide a useful starting point for developing an effective TDM plan. The implementation of any TDM strategy should follow the same basic process:

- **Survey and Analyze:** It is important to start by determining the characteristics of the worksite being analyzed and the employees who will work there, using

City Hall Annex
57 Inman Street
Cambridge, MA 02139
Voice: 617 349-4600
Fax: 617 349-4669
TTY: 617 349-4621

- surveys of employees and an analysis of the existing transportation system. The traffic study that has been conducted provides a good understanding of the worksite characteristics, but it is important to gather information about the demographics and commuting behavior of the employees. This could take place in two stages, starting immediately with the Polaroid employees who are going to transfer to the redeveloped site, then including the other tenants once the space has been leased.
- **Develop, Implement, and Market TDM Measures:** Once employee and worksite characteristics have been determined, this information can be used to develop TDM measures that will appeal to specific employees and that make sense given the characteristics of the location. In addition, there are certain general TDM measures that can be offered independent of these characteristics, such as public transit subsidies, a guaranteed ride home program, and commuter information centers. It is important to market the TDM measures in a variety of ways, so that employees are well aware of their options
- **Monitor TDM Measures and Site Characteristics:** Once a package of TDM measures has been implemented, it is important to monitor the status and success of these measures to ensure that they meet the needs of employees and have the desired results. In addition, the characteristics of employees and the worksite should be regularly monitored to track changes such as employee demographics and public transit accessibility.
- **Implement New and Changed TDM Measures:** Based on this analysis of changes in employee and worksite characteristics, changes should be made to existing TDM measures and new TDM measures should be implemented, to take into account this "operational" experience. TDM does not exist in a vacuum and is not static, so regular adjustments may be necessary to ensure that the proposed target is met.

Recommended TDM Plan Elements

As discussed in the previous section, the final TDM plan that is developed for this site should take into account more detailed information about employee characteristics than is available now. However, based on the results of the traffic study, general information about the site, and experience with TDM at other locations, it is possible to recommend a number of concrete TDM actions that should be implemented at this site. These recommendations should form the basis of a fully-developed TDM implementation plan that should be submitted by the proponent to the community and the City.

Section 1 - General TDM Measures

- **Surveys and Monitoring:** The proponent should perform an initial baseline survey of all tenant employees, including both Polaroid and future tenants that are added. This survey should include questions about demographics, commute patterns, and residence location. It is recommended that the proponent work with a third party, such as CARAVAN for Commuters or an outside consultant to design and administer the survey. Following this baseline survey, follow-up surveys should be conducted on a regular basis (every one or two years) to monitor changes in employee characteristics and behavior.

- **Charles River TMA Membership:** The site is located in the service area of the Charles River Transportation Management Association (TMA). The TMA groups businesses together to solve common transportation problems, taking advantage of the inherent economies of scale. It is strongly recommended that either proponent or all tenants (or both) join the TMA, which can provide many of the TDM measures that are recommended in this report (including shuttle service, MBTA pass sales, and a guaranteed ride home program).
- **Shuttle Service:** As noted in the traffic study, the project site is located some distance from the nearest rapid transit station at Central Square. While the site is directly and indirectly served by a number of bus routes (including the 70, 70A, 64, and 47), operating a shuttle service between the site and the MBTA station will make public transit much more attractive. It is strongly recommended that service to Kenmore Square (Green Line traffic node) also be provided if employee surveys indicate a need. At a minimum, shuttle service should operate between 7:00 am and 7:00 pm, with additional hours as required by tenants. Using a single vehicle, a headway of twenty minutes should be feasible, which could be supplemented by an additional vehicle during peak hours. The proponent is also encouraged to investigate additional stops that could be added to the route to serve other desirable locations (stores, restaurants, other transit lines), as well as the potential to coordinate service with other businesses in the area (such as University Park or Osco).
- **Guaranteed Ride Home:** A guaranteed ride home (GRH) program provides a security policy for employees who need to travel in an emergency or work unexpected overtime. By providing this benefit, employers can relieve employees' worries about losing flexibility when they use an alternative mode. As the overarching entity that controls the site, the proponent should implement a GRH that is available to all employees at the site, funded through either lease payments or a dedicated collection. In general, GRHs are seen very positively by employees but are inexpensive because employees do not use them very often.
- **Incentive Programs:** Although many of the TDM measures being recommended provide an employee benefit in and of themselves, the use of cash or other incentives for employees who use alternative modes provides an added incentive for workers not to drive. The potential incentives are quite diverse, including extra personal days, direct financial rewards, or prizes and giveaways. It is recommended that the proponent and tenants commit to pursuing an incentive program that provides a benefit that is roughly equivalent to any MBTA pass subsidy that is provided.
- **Employee Transportation Coordinators:** The proponent, as well as each of the major tenants should identify an employee transportation coordinator, a full-time employee who will be responsible for distributing transportation information, updating information centers, and processing ridematch requests. In the case of the proponent, this person should also be responsible for supervising the implementation of this TDM plan, coordination with businesses at the site and in the Cambridgeport area, and promotion of existing and new TDM programs.

- **Reporting:** For the first five years after the issuance of a certificate of occupancy for the first completed building, the proponent should submit a yearly report detailing compliance with the elements of the final plan that is developed, on behalf of all tenants. After this initial period, reports should be submitted every other year. Reports should be submitted on the date that the certificate of occupancy is issued by the Inspectional Services Department.

Section 2 - Public Transit Measures

- **MBTA Pass Program:** At a minimum, the proponent and all tenants should participate in the MBTA pass program (as mentioned in the traffic study). In addition, it is strongly recommended that all employees be provided with a tax-free subsidy for their passes. At a minimum, the subsidy should be half the cost of an employee's pass, up to a maximum of $25, but a higher subsidy level is strongly encouraged. For employees who carpool or use a public transit provider other than the MBTA, a Commuter Check subsidy should also be available, while general-use passes or free tokens should be available to occasional transit users and those who use transit for work-related purposes.
- **Improved Public Transit Connections:** While a number of bus routes stop near the site, only route 64 stops directly adjacent to the site, and only in one direction (inbound to Central Square). Given this routing, MBTA bus service is not likely to be an attractive option for many of the workers at the site. While providing shuttle service to Central Square will alleviate this somewhat, the proponent should also work with the MBTA to investigate the possibility of providing direct service to the site in both directions (such an analysis could be combined with a study of how the University Park area can be better served by buses while maintaining quality service to the entire Cambridgeport neighborhood).

Section 3 - Ridesharing Measures

- **Computerized Ridematching:** In addition to the "computer-based ride-sharing information bank" that is proposed in the traffic study, the proponent and its tenants should also coordinate their ridematching information with the regional RideSource database that is maintained by CARAVAN for Commuters. This will provide a larger matching pool for both carpools and vanpools, making it easier to find matches. The proponent should also work with CARAVAN to develop and display marketing materials related to ridesharing and TDM.
- **Preferential Parking:** As discussed in the traffic study, preferential parking for carpools and vanpools should be provided, in locations that are convenient to all of the buildings. Based on experience elsewhere, at least 10% of the parking spaces that are provided should be reserved for carpools and vanpools. In addition, more spaces should be made available if and when the existing spaces are filled.
- **Incentives:** As mentioned in Section 1, an incentive program should be developed to encourage ridesharing among employees at the site.

Section 4 - Bicycle and Pedestrian Measures

- **Bicycle Parking:** As mentioned in the traffic study, the proponent should provide bicycle parking as required in the zoning ordinance (at a minimum), particularly given the site's proximity to the Paul Dudley White bicycle path along the Charles River. A mixture of long-term and short-term parking should be provided, to accommodate both employees and visitors. The long-term bicycle parking should be secure, enclosed, and kept under surveillance by building security staff. Separate long-term parking facilities should be provided in or near each of the three buildings, with at least twelve spaces provided at the existing building, and at least twenty four spaces provided at each of the new buildings at the rear of the site. In addition, short-term bicycle parking (of a quality similar to the post-and-ring design employed by the City) should be provided near the entrances to each building to accommodate visitors and messengers.
- **Showers / Lockers / Changing Rooms:** At each of the buildings, the proponent should include showers, lockers, and changing rooms that can be used by employees who walk or bicycle (or who exercise while at work).
- **Design Elements:** The design of the site should provide for pedestrian and bicycle access as much as possible. The building entrances should be easily accessible from the surrounding streets, and pedestrian and bicycle access within the site should be given priority. The proponent should analyze likely pedestrian and bicycle access routes and provide facilities, paths, signage, and other design elements as needed to make this access as easy as possible. In particular, the developer should ensure adequate pedestrian access to and from Central Square, Memorial Drive and the Paul Dudley White pathway, nearby bus stops, and the Green Line. The developer is encouraged to work with the City and the MDC to ensure that the off-site portions of these routes (i.e. sidewalks, paths, and pedestrian crossings) are designed to facilitate access to the site. At vehicle entrances to the site, curb cuts on all streets should be designed to maintain a level sidewalk to ease pedestrian crossing, and adequate sight lines should be provided to minimize conflicts with pedestrians.
- **Incentives:** As mentioned in Section 1, an incentive program should be developed to encourage bicycling and walking among employees at the site.

Section 5 - Parking Management Measures

- **Charging for Parking:** Charging employees the real cost of parking is one of the most effective TDM measure that is available. The proponent is strongly encouraged to explicitly charge workers at the site for parking (preferably on a daily, weekly, or monthly basis), rather than including this charge in leases. If the cost must be included in leases, then it should be an explicit cost item, rather than being included in any general square footage charge. All tenants should also be given the opportunity to re-negotiate the amount of parking they lease on a quarterly basis, to adjust it based on demand.
- **Reduced Parking Garage Capacity:** One of the most effective ways of encouraging employees not to drive is to not provide parking. The proponent should prepare a new analysis of the need for parking, reflecting the target of 20% of site employees

who will not be driving to the site, and reduce the size of the parking garage accordingly (from 600 spaces to 500 spaces, for example). This will also reduce the cost of the structure and the visual impact on the surrounding areas. At the very least, the proponent should consider phased construction of the garage, so that the ultimate size can be reduced if usage is lower than expected.

- **Parking Cash Out / Parking Allowance:** Tenants at the site are strongly encouraged to offer their employees the option of a parking cash out, where they can receive the value of their parking in cash if they choose not to drive, or a transportation allowance, a monthly sum for transportation costs they can spend as they see fit (and keep any money that is left over). As discussed above, the proponent should structure its parking charges to facilitate these flexible options.

Section 6 - Work Schedule Measures

- **Alternative Work Hours:** As stated in the traffic study, the proponent and tenants should implement a program of alternative work hours that will reduce the number of trips made to the site, as well as generally in the region. Possible programs include flex-time, staggered hours, a compressed work week, and telecommuting.
- **Employee Location:** As Polaroid is deciding how employees will be relocated between Cambridge and other work sites, it should take into account their resulting commute pattern. Employees should be relocated in a way that minimizes their travel distance and maximizes the availability of alternative modes for their commute trip. Other tenants that occupy the site are strongly encouraged to perform a similar analysis if they have employees at more than one site.

Section 7 - Marketing Measures

- **Mentions in Advertising:** As recommended in the traffic study, the proponent and all tenants should prominently feature the availability of public transit, pedestrian, and bicycle access to the site in all advertising and promotional materials, including both print and electronic media. An accompanying effort should also be made to minimize mentions of any visitor parking that is available.
- **Information Centers:** The proponent should install commuter information centers in prominent locations at all three buildings. The information centers should include bus maps and schedules, flyers promoting ridesharing, and information about incentive programs that are available. These information centers should be updated on a regular basis. The proponent should also investigate other means of disseminating information to workers, including a newsletter, a world wide web page, and regular email messages to employees at the site.
- **Commuter Fair:** The proponent should make space available for third parties, such as the Community Development Department, CARAVAN for Commuters, and the MBTA to conduct commuter information fairs that provide employees with information about their transportation options. The proponent is also strongly encouraged to take the lead in organizing these events.

Meeting Notes

Meeting Date: December 10, 1997
RE: Initial traffic review for 784 Memorial Drive
Attendance: Robert Vanasse, David DeBaie, David Vickery, Robert Dickey, Steve Kaiser, Barry Pell, Lauren Preston, Susanne Rasmussen, Beth Rubenstein, Susan Schlesinger, Catherine Daly Woodbury

B. Pell requested a table of assumptions used to measure background growth; add trips attributed to the 45,000 sf renovation to Figures 10 and 11; inclusion of the trips associates with the 45,000 sf renovation in 2002 No-Build appears to be misleading (Table 13) and should be omitted; Figure 9 assignment to Florence Street is too low - many trips taking a left out of Pleasant Street to Memorial Drive will choose Florence; and, review inconsistencies between LOS summary (Table 16) and diagrams.

Trip generation rates were agreed to be appropriate, but not thought to be conservative.

S. Kaiser raised concern with the calibration of the computer model and requested that the assumptions be reviewed and an explanation of the methodology provided in writing. He also recommended that results should focus on reduction of queues. Analysis should include queue numbers.

The following mitigation measures were discussed:
- Signal timing changes - give more time to Memorial Drive at the expense of Western Avenue (put queues on Western Avenue), shorten the signal phase, consider splitting phasing of light allowing inbound and outbound movements separately.
- New signal at Pleasant/Memorial Drive
- Change Polaroid driveway locations

The above measures should consider adding pedestrian phases, inclusion of the Soldiers Field Road intersections, and approach changes incrementally (Step 1: changes to Cambridge intersections, Step 2: changes to intersections in Boston). Traffic engineers should agree on measures affecting Cambridge only and then meet with the MDC to discuss how they can be achieved. S. Kaiser emphasized importance of including the City of Boston in discussions.

Transportation demand management for the site should include:
- shuttle bus services coupled with subsidized T-pass sales
- surveys of future employees
- a designated TDM manager
- joining or forming a new TMA

Information presented at the community meeting should include:
- driveway changes

- potential actions for protection of neighborhood streets - Florence Street e.g. one-way, traffic calming
- need to collectively find solutions and meet with the MDC
- Spaulding & Slye commitments to include TDM measures

Subcommittees will be formed to address: TDM (S. Rasmussen), Florence/Pleasant Streets protection (S. Kaiser), Traffic (S. Kaiser, Vanasse, Rizzo, Traffic & Parking). First meeting is scheduled for January 7, 1998 at 10:00 to discuss signal timing and phasing possibilities, and updates on TDM and Florence/Pleasant Streets.

Memorandum

To: Beth Rubenstein
Cambridge Community Development Department

Fr: Barry M. Pell, P.E.
Rizzo Associates, Inc.

Re: **Meeting Notes — December 17, 1997**

Dt: January 12, 1998

Meeting held on Wednesday, December 17, 1997 to discuss mitigation for the proposed Polaroid development, specifically pertaining to signalization and related intersection improvements.

Attendees:

- Lauren Preston, Cambridge Traffic, Parking, and Transportation Department
- David DeBaie, Vanasse & Associates, Inc.
- Stephen Kaiser, Cambridge Neighborhood Initiative
- Barry M. Pell, Rizzo Associates, Inc.

Discussion focused on traffic signal operations at the four intersections on Memorial Drive and Soldiers Field Road at River Street and Western Avenue.

The goals were expressed to determine mitigation improvements to optimize signal operation, encourage the greater use of Memorial Drive by Polaroid and other traffic, and enhance street crossing opportunities and safety for pedestrians.

The required technical analyses to achieve these goals should consider shortening the signal cycle length from 110 seconds to 80 or 90 seconds, revising the offset (i.e., beginning of green indication) at the Western Avenue signals to favor more efficient flow from Memorial Drive across the Western Avenue bridge, and modifying the split (i.e., amount of green time allocated

to each roadway) given to Memorial Drive at Western Avenue and to Western Avenue at Soldiers Field Road. The potential to add an exclusive pedestrian crossing phase (i.e., time during which all vehicles are stopped) should also be analyzed. It was agreed that the afternoon peak hour was the more critical for operations analysis purposes.

The potential for new signalization at Memorial Drive/Pleasant Street was discussed. Also discussed were other potential improvements at Memorial Drive/Western Avenue, including signage to encourage more efficient use of available lanes on Western Avenue and radius changes/neckdowns to reduce crosswalk lengths.

It was agreed that any changes, which will require MDC review and approval, should be presented in a phased manner. The first and immediate phase should address the Western Avenue signals, with recommendations potentially limited for simplicity to the Memorial Drive/ Western Avenue intersection.

Analysis methodology was briefly discussed. No specific analysis technique was identified; however, there was general agreement the analysis should be easy to follow and based on real conditions/constraints. No analysis responsibility was assigned. David DeBaie indicated that he could not perform any additional work without client authorization.

C: Meeting Attendees

G:\PROJECT\3995\3995-01\399501_M13_BMP.DOC

Meeting Notes
January 7, 1998

Polaroid - 784 Memorial Drive
Project Update

Attendance: David DeBaie (Vanasse Associates), Steve Kaiser (CNI), Stuart Dash (CDD), Elie Yarden (CNI), Susanne Rasmussen (CDD), Barry Pell (Rizzo Associates), Beth Rubenstein (CDD), Joseph Barr (CDD), Rob Dickey (Spaulding & Slye), Lauren Preston (TP&T), Stash Horowitz (CNI), Sue Clippinger (TP&T), Catherine Daly Woodbury (CDD)

Notes prepared by: Catherine Daly Woodbury

B. Rubenstein opened the meeting and suggested the following updates be the agenda for the meeting:

- MDC issues and program of action
- Florence Street traffic calming
- Transportation Demand Management (TDM)

MDC Issues and Actions

- It was agreed to develop a concrete and simple set of recommendations to take to the MDC for their review and response.
- A program for signal timing changes needs to be developed which will look at: shortening cycle length (90 seconds maximum); modifying the amount of time given to various phases with an eye towards increasing the amount of time for the left turn onto the bridge from westbound Memorial Drive at the expense of the Western Avenue signal phase; evaluation of Western Avenue and Soldiers Field Road signal phases to ensure that they allow vehicles to clear through the bridge; and, better progression for westbound Memorial Drive approach to bridge. It is a goal to achieve improvements to the intersections working within the capacity of the existing signal equipment.
- Concern was raised with the lack of LOS methodology that measures improvements in queue and conditions when existing LOS analysis is at/beyond LOS F. A meeting with the four traffic engineers {Barry Pell (Rizzo/City), Lauren Preston (TP&T/City), Steve Kaiser (CNI), David DeBaie (Vanasse/Spaulding & Slye/Polaroid)} will follow this meeting where the scope and methodology will be defined.
- Vanasse Associates will review scope with S&S for funding consideration.
- The City and Kaiser's roles will be as reviewers of the analysis performed by Vanasse Associates.
- Additional improvements to be analyzed include the signalization of Pleasant Street at Memorial Drive and non signal changes e.g. signange at Western Avenue and Memorial Drive. It was agreed that a signal would benefit the project, but concern was raised that it may also act to attract cars to Pleasant Street to get to Memorial Drive. This issue needs further review.

Florence Street

- S. Kaiser suggested the best protection for Florence Street would be to change the curb cut location on Pleasant Street closer to Memorial Drive.
- It was agreed that the neighborhood and the project would benefit from a change in the curb cut locations, disagreement remains on the time frame for applying for changes to curb cut locations and the conformity of the existing curb cuts.
- Any traffic calming measure e.g. on-way streets, do-not-enter, will require further review as it relates to impacts on other residential streets. It is not the intention of the City or the residents present to negatively impact one neighborhood to relieve another.
- The cut-through traffic from the Micro Center parking lot through to Florence Street (Extension) is an existing problem. An inability to take a left onto Memorial Drive from Pleasant will likely send additional traffic to Florence Street through this cut-through route. Addition impact on Florence Street should be a point of mitigation addressed by this project, the City should address the existing cut-through traffic problem from the Micro Center.
- Restricting access from the proposed parking garage to Florence Street, possibly by restricting turning movements, was suggested as a way to protect Florence Street.
- It was pointed out that a draw back of making streets one-way is that it often facilitates the movement of traffic and a narrow two-way road provides better traffic calming.
- It was noted that pedestrian volumes at Pleasant and Putnam were under reported in the Vanasse report and that pedestrian traffic will increase in this area. This is an important school crossing area.
- It was noted that presently trucks trying to make the turn from Pleasant to Putnam can not do so easily and this results in back ups along Putnam.

Transportation Demand Management (TDM)

- Susanne Rasmussen gave an overview of the TDM report prepared by the Community Development Department for this project. The main goal of the plan is to achieve an alternative mode share of at least 20% for all employees at the site. Further it must be acknowledged that it is difficult to design TDM measures without knowing the needs of the employees and therefore a commitment should be made to identify employee journey to work characteristics through an employee survey with continuous monitoring and adjustments to the TDM plan as necessary. A TDM plan should be in place on day one for each phase of the project.
- The City does not have the ability to require that Spaulding & Slye accept all of the measures outlined. Presently the TDM proposed ordinance is before the City Council which would require most project proponents to work with the City on an approved TDM plan for their site.
- A question was raised whether reducing the size of the garage is an appropriate TDM measure. Rob Dickey responded that Spaulding & Slye will work with the City to implement a TDM plan even though they are not required to do so. TDM is important to their project. Presently there is only one identified tenant, Polaroid, and they have a commitment to use 90 parking spaces. Spaulding and Slye will make provisions on site to sell food to discourage additional trips during the day. Mr. Dickey did not agree with the

concept of reducing the size of the garage since it will impact the marketability and financing of the project, especially since major tenants are still unknown and discussions with potential tenants have indicated the desire for 2 - 2.5 spaces per 1000 square feet. High density users have already rejected this location and the project will only be able to attract lower density working populations.

- It was pointed out that the TDM plan should be used as part of the marketing of the project.
- It was noted that it will be difficult to get good TDM participation from the employees of the front building.
- There will be 577 spaces for the commercial buildings. Polaroid will park on site prior to the construction of the garage. The garage will be built when there is a need for the garage e.g. when the next building is built.

Other Comments

- A question arose as to the ownership of the site. It was stated that the project is a partnership and joint venture.
- A question was raised about who was on the TDM Sub-committee. The TDM plan was written by Community Development Department staff and the report will be revised to include the date and origin of the proposed TDM measure.

Next Steps

- Get a scope of work agreed to by the traffic engineers reviewing this project and meet again in three weeks to discuss status of their efforts - January 28th at 10:00.
- Discuss timeframe to met with MDC.
- Discuss target date for brining updates back to the community.
- Response from S&S/Polaroid on the TDM report.
- Spaulding & Slye's recommendations for traffic calming measures for Florence Street.
- Vanasse Associates to discuss process and effort to evaluate impacts of a traffic signal at Pleasant/Memorial Drive.
- Report by the CNI on discussions with neighbors on their views of a traffic signal at Pleasant/Memorial Drive.
- A copy of the meetings notes will be provided to all of the participants.

Distribution: Meeting attendees

Meeting Notes
Wednesday, January 7, 1998

Polaroid - 784 Memorial Drive
Traffic Engineering

Attendance:
- David DeBaie, Vanasse Associates, Inc.
- Steve Kaiser, Cambridgeport Neighborhood Initiative
- Barry Pell , Rizzo Associates, Inc.
- Lauren Preston, Cambridge Traffic, Parking & Transportation Department
- Catherine Daly Woodbury, Cambridge Community Development Department

Notes prepared by C. Woodbury

Discussion focused on the scope of work that would be included in a proposal developed by Vanasse Associates for consideration by Spaulding & Slye. The work would be the basis for recommendations made to the MDC to improve signal operations along Memorial Drive at Western Avenue and Soldiers Field Road.

The scope of work would include:
- a summary of existing conditions,
- calculation of the existing queue,
- impacts on queue with changes in cycle timing and offsets, and
- evaluation of both the Western Avenue and Soldiers Field Road intersections.

Goals of the signal timing effort will include:
- making limited changes on the Boston side
- improving the progression from Memorial Drive over the Western Avenue Bridge into Boston, and
- looking at intersections separately and then with time offsets between the intersections.

The numbers used in the 1992 VHB/Genzyme report will be used as a starting point for numbers on the Boston side of the river.

A meeting to discuss the findings should include both Julia O'Brien and Ken Kerwin at the MDC.

Next meeting of the subgroup on Traffic Engineering will be January 21st.

Copies: List of Attendees

Meeting Notes
January 21, 1998

Polaroid -784 Memorial Drive
Traffic Engineering

Attendance:
Steve Kaiser, Cambridgeport Neighborhood Initiative
Barry Pell, Rizzo Associates, Inc.
Catherine Daly Woodbury, Cambridge Community Development Department

Notes prepared by: Catherine Daly Woodbury

David DeBaie has not been authorized to incur additional costs on this project and therefore will not be attending meetings until such time as he is authorized to do so. It is agreed that the scope of work laid out previously is still an effort that should be pursued even without the participation of Vanasse Associates and a meeting with the MDC is the also to be pursued.

It was agreed that the process to look at timing changes would:
- first examine the Boston side, evaluating queue and LOS
- second evaluate the Cambridge side
- then determine where offsets can be made that will favor the left from Memorial Drive.

The V/C ratio for the Boston side is .75 based upon current signal timing.

It is unknown if there are any loops on Western Avenue approaching Memorial Drive on Cambridge property. This needs to be looked into by the City.

It doesn't appear that the bridge is actuated. Soldiers Field Road is semi-actuated. It appears that there is too much green time on the ramps which could be caused by setting the minimum timing too high.

Western Avenue may have approximately 15 seconds of wasted time traveling from Boston to Cambridge. The middle two lanes carry significantly less cars than the far left lane thus indicating a waste in storage capacity.

Western Avenue (both in Boston and Cambridge) is presently on a 100 second cycle for both the a.m. and p.m. peaks and 80 second cycle for off-peak. Could consider looking at a 90 second cycle length during peak hours.

The River Street intersections are not part of the analysis or recommendation to MDC now.

The analysis will include looking at a 90 second cycle length on Western Avenue (both intersections); shifting 5 seconds from both Soldiers Field Road ramps; and set a maximum on the offset.

If the progression from Memorial Drive over the bridge can be improved it is believed that it would improve traffic through Cambridgeport.

Take 5 seconds from each in-bound Memorial Drive and Western Avenue cycle and give the 10 seconds to the left turn from westbound Memorial Drive, then look at the offset between Memorial Drive left onto the bridge (delay light on bridge slightly, depending on queue you may end up with a 0 offset).

First step is to start with showing the effects of timing and cycle lengths.

Steve suggested getting feed back from Dave Bryant. Dave will review all proposed timing changes.

Steve will put together diagrams showing timing flows and queues from Memorial Drive left to Western Avenue. Focus is on p.m. peak.

Steve distributed the following papers/memorandums prepared by him as additional information:

- Interconnection options for Western Avenue Bridge, dated January 20, 1998
- Inefficiencies in Traffic Operations, dated January 20, 1998
- Reference Materials on Signal Interconnection, dated January 20, 1998
- Analysis of HCS Model Failure - Permissive Left Turns, dated January 20, 1998, to Efi Pagitsas, CTPS

Copies of the above materials and a copy of these meeting notes will also be forwarded to Lauren Preston and David DeBaie.

Distribution: Meeting attendees
David DeBaie, Vanasse Associates
Lauren Preston, Traffic, Parking & Transportation
Susanne Rasmussen, CDD
Beth Rubenstein, CDD

Meeting Notes
Wednesday, January 28, 1998

Polaroid - 784 Memorial Drive
Traffic Engineering

Attendance:

- Steve Kaiser, Cambridgeport Neighborhood Initiative
- Barry Pell , Rizzo Associates, Inc.
- Lauren Preston, Cambridge Traffic, Parking & Transportation Department
- Beth Rubenstein, Cambridge Community Development
- Catherine Daly Woodbury, Cambridge Community Development Department

Notes prepared by C. Woodbury

Lauren Preston clarified that the loops on Western Avenue are counting loops only and do not contain any signal actuation devices.

Discussion focused on a schedule and manner in which to approach the MDC with findings and recommendation. It was agreed that a meeting would be set up before February 11th with both Julia O'Brien and Ken Kerwin. The meeting would be used to introduce the issues identified through our review of the Polaroid project including signal timing inefficiencies, vehicle queues and concern with the lack of pedestrian crossings. Additionally, we would discuss with them our goals for signal timing improvements, study scope and methodology. A second meeting would be set up with the MDC after we transmit our recommendations on changes to the existing signal timing.

The following is a proposed schedule:

- Review of operations of the Soldiers Field Road ramps and draft timing recommendations - January 30th
- Draft analysis and recommendation letter to the MDC - February 6th
- Initial Meeting with MDC - February 9th or 10th
- Analysis and recommendation letter to MDC - February 25th
- Follow up meeting with MDC - late March

The letter to the MDC will ask that the improvements be done on a 30 day trial period with trial implementation targeted prior to summer traffic conditions. We will need to determine a monitoring and follow up program.

It is presently anticipated that the overall improvements to the Memorial Drive/Western Avenue intersection will be at 10%, westbound Memorial Drive should see a 20% improvement, and Western Avenue will not be improved.

The next issues to review are how to handle pedestrian crossings and a potential new signal at Pleasant and Memorial Drive. These topics will be a phase II discussion with MDC.

Next meeting will be with the full group on Wednesday, February 4th at 10:00 in the Traffic and Parking conference room.

Copies: List of Attendees
David DeBaie, Vanasse Associates
Susan Clippinger, TP&T
Susanne Rasmussen, CDD

The Cambridge Hospital

1493 Cambridge Street, Cambridge, Massachusetts 02139 (617) 498-1000

To: **Robert W. Healy, City Manager**
From: **John G. O'Brien, CEO, Cambridge Public Health Commission**
Subject: **Response to City Council Order #101**
Date: **January 30, 1998**

Issue:
The following report responds to the Council order #101 that was issued on June 26, 1997 that the Cambridge Public Health Department investigate illnesses on Pleasant Street and their relation to chemical contamination from 784 Memorial Dr.

Background of the Site's History and Clean Up:
Summary:
The site at issue is the 4.5 acre piece of property along Memorial Dr. between River St. and Pleasant St. The boundaries are shown in the attached map. The Cambridgeport community lines the southern border of the property along Pleasant St. Over the past century the site has been owned by four companies that use chemicals in their work including Dover Stamping & Manufacturing, F.A. Bartlett Tree Co., B.B. Chemical Corp., Polaroid Co., and a filling station operated by Beacon Oil and then Exxon. Polaroid has conducted two cleanups of the site for a toluene leak on the 784 Memorial Dr. parcel and a petroleum leak on the 722 Memorial Dr. parcel. Both releases were contained within a small area on the site. After the cleanup, the site has categorized as S-1 under the state's Method 1 standards. In other words, it satisfies the requirements for residential development. The 722 Memorial Dr. parcel completed a series of risk assessments and satisfies safety requirements.

Polaroid plans to develop the site as its future world headquarters before its lease at Tech Squares runs out in 1999. Its plans include renovating Building 1, demolishing the 9 support buildings, and constructing two six-story buildings, a 550 car parking garage, and 25-30 town houses along Pleasant St.

Definitions:
bioremediation soil treatment process which extracts water from edges of property, re-injects it into the center of the site to flush the soil and also injects nutrients and oxygen
DEP State Department of Environmental Protection
DPH State Department of Public Health
GZA GZA Geoenvironmental Inc.: Environmental Consulting Firm contracted by Polaroid
RAM Release Abatement Measure: Environmental Clean Up plan that must be submitted to DEP
RAO Response Action Outcome: Report of completed environmental clean up
1,1 DCE 1,1 dichloroethane

Activities of Cambridge Department of Public Health:

At this early stage, the Health Department has familiarized itself with the issue and assessed appropriate and feasible actions. Our approach to assessing the relation of illnesses to the Memorial Dr. parcels is to:1) speak with persons reporting illness, 2) determine possible exposure pathways for chemical contaminants to be passed into the community, 3) identify chemicals that could travel through these pathways, and 4) determine if such chemicals were cleaned up.

The department has begun to identify persons who reported illnesses and to conduct interviews with them. We also assessed the cleanup performed by Polaroid in the 1990s by analyzing their reports submitted to the DEP and speaking with representatives from Polaroid.

During the cleanup process, samples of ground water and subsoil were taken throughout the site. Because contaminants did not spread into neighboring wells, the chemical contamination seemed to be contained. Polaroid did successfully satisfy the State's Method 1 standards which allows Polaroid to construct residential property on the site.

Concurrently, we spoke with experts in the epidemiology and environmental fields about what kinds of actions could answer the questions being raised by the community. A meeting with Dick Clapp, PhD, David Ozonoff, PhD, Rose Goldman, MD, Melvin Chalfen, MD, Kathleen Brown, and Harold Cox, discussed appropriate and possible environmental assessments that can address this issue. We discussed performing a health study of the Cambridgeport community with the Cambridge Public Health Department's epidemiologist, Cheryl Wold. At this time, such an extensive study seems unwarranted and unlikely to produce clear answers to the question of whether chemical contamination at this site has produced illness in the community.

Next Steps Department of Public Health Considering:

We now have a good understanding of the clean up process, however we have much to learn about the reported illnesses. We plan to interview more people with complaints in the coming weeks. In addition, the Department hopes to conduct an informational meeting within the next few weeks where the affected community can ask questions of environmental and medical professionals.

Clean Up for 784 Memorial Dr.

DEP filings and events on 784 Memorial Dr. (Polaroid Site)

YEAR	FILING/EVENT
Jan 15, 1989	DEP cites as "location to be investigated," due to leakage at Exxon site.
Dec. 1989	Polaroid notifies DEP that Toluene present in Ground Water
Dec 89– Jan 90	6 Underground Tanks near Building 7 removed.
June 1994	GZA perform Initial Site Investigation Concludes that RAM and RAO should be performed
June 1994	RAM submitted to DEP
Sept 1994	RAO submitted, GZA classifies site as Method-1 or safe enough for residential housing.

Key Points

In 1989, after Polaroid was listed as a "location to be investigated" due to the contamination from the Exxon site, it began sampling the site. Chemical contaminants were identified in the ground water near Building 7. These findings were reported to DEP at the end of 1989 and the underground tanks were subsequently removed by **Clean Harbors Inc.** Polaroid began a clean up of contaminated soils in 1993.

The Phase I: initial site investigation found high levels of toluene and 1,1 DCE in the ground water at one sampling well and petroleum contamination in the soil of another well. These contaminants seemed to be localized because levels of contaminating chemicals in neighboring wells were within standards.

GZA, the contracted firm, completed a RAM to 1.) remove the contaminated soil below the water table in the vicinity of the tanks, and 2.) remove the petroleum contaminated soil identified in the Phase 1 assessment.

In September of 1994, the RAM was completed and in an RAO report submitted to DEP, GZA reported that concentrations of soil and ground water contaminants satisfied Method 1 Risk Characterization standards. This meant that according to state standards, the area was safe for any development such as residential housing, school, etc.

Polaroid used **Building 10** as a storage facility for raw materials between 1967 and 1994.

Clean Up for 722 Memorial Dr.

DEP filings and events on 722 Memorial Dr. (Exxon Site)

YEAR	FILING/EVENT
1982	Steel Underground Tanks (USTs) removed due to leak, replaced with fiberglass USTs
1986	Fiberglass USTs removed, leakage again noticed
1988	Waiver of DEP approvals submitted for cleanup of Exxon site
1990	Polaroid buys Exxon site with intention to clean up
Dec 10, 1990	Waiver of DEP approvals accepted by DEP
Summer 1991	Terra Vac began installing bioremediation (BR) system to clean soil
Dec. 1992	BR system began operating
July 1994	Waiver Completion & Remedial Response Action Statement filed by Polaroid and subsequently accepted by DEP
July 1994	Area landscaped as green space

Key Points:
In the 1991 Phase II Risk Assessment, the environmental consulting firm, GZA, characterized the Exxon site and evaluated the potential for on site exposures to the chemicals. They found no significant risk of on-site exposure before the clean up.

In 1992, Terra Vac, installed a bioremediation system on the site that flushed the soil with water, nutrients, and oxygen. The water was then pumped away from the site.

In 1994, Terra Vac submitted a Waiver Completion & Remedial Response Action Statement which reported that the site was now clean and levels of petroleum related compounds were well within safety standards. They also performed a risk assessment for potential exposures for off-site workers and contamination of the Charles River. Terra Vac determined that no significant risk existed for these groups as well.

History

History of 722 Memorial Dr. (Exxon Site)

YEAR	OPERATOR
1926	Beacon Oil Service Station with Steel Underground Tanks (USTs)
1950	Became Exxon Service Station
1990	Polaroid Bought Site

History of 784 Memorial Dr. (Polaroid Site)

YEAR	OPERATOR
1894	Dover Stamping & Manufacturing and Coal & Wood Yard in the NW region
1900	Undeveloped Tidal Flats in the southern region: filled in for Memorial Dr.
1930	Gas station, Paramount Dance Hall, Bowling Alley, etc. demolished social buildings in 1937
1936	B.B. Chemical Co.
1967 - today	Polaroid Corp.

Major Companies Operated on Site

Dover Stamping & Manufacturing performed stamping and other metal working activities. The Dover buildings were demolished between 1962 and 1966. A parking lot now covers the area.

B.B. Chemical Co., a subsidiary of United Shoe Machinery Corp., which produced adhesives for shoes and other industries. Between 1936 and 1950 it constructed the ten buildings on the site.

Polaroid has operated the site since 1967 and purchased it in 1979 from MIT. In subsequent years, Polaroid bought 3 adjoining parcels of land including F.A. Bartlett Tree Co., an Exxon filling station, and the old Dover site. Polaroid plans to develop the site as a new world headquarters before its lease at Tech Squares runs out in 1999.

Key Buildings Involved with the Issue

Building 1 (faces the Charles with the clock tower) was placed on the National Register of Historic Buildings in 1982 as an early example of the International Style.

Building 7 was the site of the toluene and 1,1DCE releases. The leak originated in 1 of 6 underground tanks installed under the building by B.B. Chemical Co.

Building 4 and 7 were both used for cement adhesive production at B.B. Chemical Co.

Spaulding & Slye
Comprehensive Real Estate Services

Colliers International

125 CambridgePark Drive
Cambridge, MA 02140-2314
Tel: (617) 523-6000
Fax: (617) 497-4848

February 5, 1998

Mr. Robert W. Healy, City Manager
City Hall
795 Massachusetts Avenue
Cambridge, MA 02139

RE: 784 Memorial Drive

Dear Mr. Healy:

Thank you for the several meetings you have arranged regarding curb cuts for our 784 Memorial Drive project, and we have taken into consideration the concerns you have articulated. As you know 784 Memorial Drive LLC is developing the property known as 784 Memorial Drive. This project involves the rehabilitation of the building fronting on Memorial Drive which is on the National Register of Historic Buildings. Once the rehabilitation is completed it will be occupied by the Polaroid Corporation as its world-wide corporate headquarters. The development will also involve the construction of a 577 car parking garage and two new office buildings containing in the aggregate approximately 240,000 square feet. Additionally, approximately 30 units of housing will be built on the east side of the site along Pleasant Street.

We are now in the process of rehabilitating the historic building and we intend to demolish the other buildings on the site this month. The Cambridge Historical Commission determined that these remaining buildings are not preferably preserved and Cambridge Inspectional Services issued a permit for this demolition project on January 15, 1998.

The site currently has several driveways which have been historically used by Polaroid. One of these driveways exits onto Pleasant Street near the intersection of Florence Street and the other exits onto Putnam Avenue. In response to questions raised at meetings discussing the traffic impacts of the project and our permit application for the new parking facility we have stated that we would not object to relocating these two driveways. Any driveway relocation would be subject to curb cut approval by the Cambridge City Council.

The plan is for Polaroid to move its headquarters to the front building this summer and to utilize a temporary surface parking lot on the site. As use of the Pleasant Street driveway in connection with Polaroid's use of the front building will be less intensive than it has been historically, we anticipate continued use of this driveway for the front building prior to the construction and completion of the parking garage.

Spaulding & Slye

Comprehensive Real Estate Services

Today, with the issuance of the building permit for the parking garage we have submitted an application for the relocation of the Putnam Avenue driveway and the Pleasant Street driveway (opposite Florence Street) with the Inspectional Services Department for its review and submission to City Council. We have applied to relocate these driveways to locations determined by the City's Traffic Engineer's analysis to be both safer and better for traffic management.

However, if we are unable to obtain new curb cuts, we have not abandoned our existing curb cuts and would pursue the right to use them. On behalf of Polaroid and Spaulding & Slye's joint venture, we appreciate your negotiation of a positive resolution of these issues.

Please contact me should you have any further questions.

Sincerely,
784 Memorial Drive LLC

David R. Vickery
Senior Vice President

cc: Susan R. Schlesinger, Assistant City Manager, Cambridge Community Development
Susan Clippinger, Director of Traffic and Parking, City of Cambridge
William O'Neill Jr., Executive Vice President/CFO, Polaroid Corporation
Ralph Norwood, Vice President /Treasurer , Polaroid Corporation
Lauren Preston, Engineer, City of Cambridge
Robert Dickey, Vice President, Spaulding & Slye
Robert Bersani, Commissioner, Inspectional Services

6.

CITY OF CAMBRIDGE
CAMBRIDGE, MASSACHUSETTS 02139
TEL. 349-4300
FAX. 349-4307

EXECUTIVE DEPARTMENT
ROBERT W. HEALY
City Manager

RICHARD C. ROSSI
Deputy City Manager

February 9, 1998

To the Honorable, the City Council:

In response to Awaiting Report Items #1, 5, and 7, enclosed please find reports from Sue Clippinger, Director of Traffic, Parking , and Transportation, Susan Schlesinger, Assistant City Manager for Community Development, Barry Pell, P.E. of Rizzo Associates, and John O'Brien, CEO of the Cambridge Public Health Commission.

These reports address those issues that are legally within the purview of the City of Cambridge relating to the proposed project at 784 Memorial Drive.

Robert Bersani, Commissioner of Inspectional Services has concluded that there is no legal basis upon which to deny demolition permits which have been sought for several existing structures on the site. He has also concluded that there is no legal basis for denying a building permit for the proposed parking structure on the site.

There are two existing curb cuts at the site which the owner proposes to use for entering and exiting the proposed parking structure. The conclusions reached by Sue Clippinger, supported by the consultation with Rizzo Associates, identify safety concerns regarding the existing Putman Street curb cut because of its proximity to the intersection of Putnam and Pleasant Streets, while concluding that the Pleasant Street curb cut operates safely from a traffic engineering perspective. Accordingly, Commissioner Bersani has issued the building permit based upon the recommendations provided by the Traffic, Parking and Transportation Department.. As explained at the City Council meeting of January 12, 1998 by the Law Department, in the context of an application for a building permit, for zoning purposes, it is sufficient if a landowner demonstrates a legal access point from the public way to any required off-street parking and loading facilities. Despite the fact that the curb cut may not provide for optimal traffic management at the site, it is evidently sufficient to obtain a building permit.

Clearly, based on the in-house analysis supported by the Pell report, relocation of both curb cuts would provide for both safer and better traffic flow to and from the site. I

met with the developer on several occasions and strongly encouraged immediate application for the relocation of the access points to the more appropriate locations. I am attaching a letter dated February 5, 1998 from David Vickery indicating that the developer agreed to and has applied for relocation of the curb cuts to the preferred locations.

The "as of right" status of this project imposes limitations on the City's ability to require changes in the developer's proposal. I believe that all parties are persuaded that the relocation of curb cuts as proposed will provide the best traffic management option for the permitted development at the site.

Very truly yours,

Robert W. Healy
City Manager

Consent Agenda #6

Cal 4 S175

Relative to Awaiting Report Item Numbers One, Five and Seven, regarding Polaroid development project issues.

In City Council February 9, 1998

Charter Right exercised by Councillor Triantafillou.

February 23, 1998 Tabled for one week on motion of Councillor Triantafillou

3/2/98

NO Action Taken

3/16/98

Reports Accepted. Placed on File. Order #62. Adopted.