

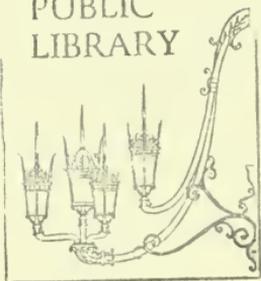
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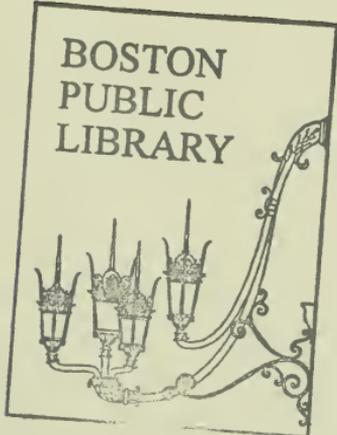
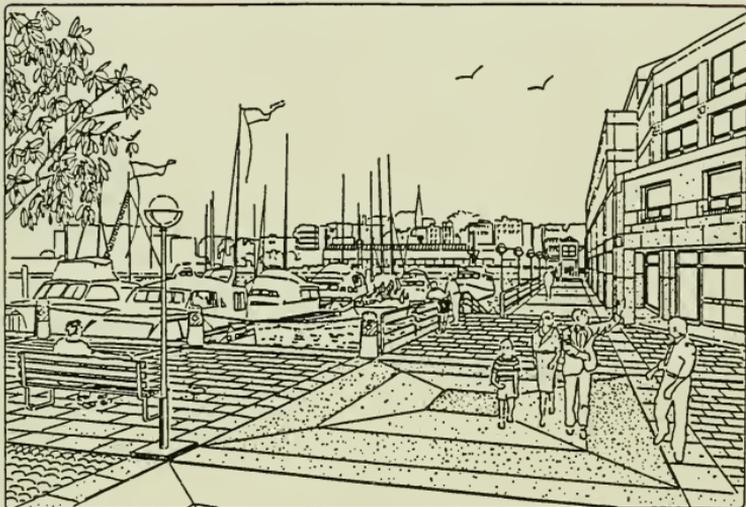
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Draft Project Impact Report

~~SECRET~~

TUDOR WHARF Charlestown, MA



SUBMITTED TO:
Boston Redevelopment Authority

SUBMITTED BY:
Myerson/Allen and Company, Inc.

PREPARED BY:
Fort Point Associates
300 Congress Street
Boston, MA 02210
(617) 357-7044

October, 1989

Myerson/Allen and Company, Inc.

306 Dartmouth Street
Boston
Massachusetts
02116

617-247-1400

October 16, 1989

Mr. Paul Barrett
Assistant Director
Harbor Planning and Development
Boston Redevelopment Authority
One First Avenue
Charlestown Navy Yard
Charlestown, MA 02129

Dear Paul:

Enclosed is the Draft Project Impact Report for the Tudor Wharf project. In addition to the bound report, a supplemental section is provided that updates some subjects, as well as cross-references the report. The requested financial information and full scale drawings are being submitted under separate cover to your office.

While this is a voluntary submission under Article 31 of the Zoning Code, I think it is important to utilize that process in order to consolidate review of the proposed project into one process with complete documentation.

The transportation component is of particular concern and detail. The scope for our study was jointly developed by the Boston Transportation Department and the Massachusetts Environmental Protection Act unit. As the study area is currently under construction, and with anticipated additional development under consideration in the area, we feel traffic and parking issues are best addressed in the larger context, and intend therefore, to participate fully with the community, City and State to address those issues.

I believe Tudor Wharf will significantly improve the City Square entrance to Charlestown and we are anxious to move forward with the project. I welcome the opportunity for further discussions with the BRA and the community. If you have any questions concerning this Report, or in connection with your review of the proposed project, please contact David Keller or me.

Sincerely,



John L. Allen

JLA:jmb
Enclosures 24 copies, DPIR

TUDOR WHARF

DRAFT PROJECT IMPACT REPORT

OCTOBER, 1989

Prepared for:

MYERSON/ALLEN AND COMPANY, INC.
306 Dartmouth Street
Boston, Massachusetts 02108

Prepared by:

FORT POINT ASSOCIATES
300 Congress Street
Boston, MA 02210

This Draft Project Impact Report has been prepared for Myerson/Allen and Company, Inc. by Fort Point Associates with assistance from CBT - Childs Bertman Tseckares & Casendino, Inc., Bruce Campbell & Associates, Inc., Lelito Environmental Services, Shooshanian Engineering Associates, Haley and Aldrich, Inc. and DiCara, Selig, Sawyer and Holt.

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The Commonwealth of Massachusetts

Executive Office of Environmental Affairs

100 Cambridge Street

Boston, Massachusetts 02202

MICHAEL S. DUKAKIS
GOVERNOR

JAMES S. HOYTE
SECRETARY

October 26, 1987

CERTIFICATE OF THE SECRETARY OF ENVIRONMENTAL AFFAIRS
ON THE
ENVIRONMENTAL NOTIFICATION FORM

PROJECT NAME : Tudor Wharf
PROJECT LOCATION : Charlestown
EOEA NUMBER : 6744
PROJECT PROPONENT : Myerson/Allen and Company, Inc.
DATE NOTICED IN MONITOR : September 24, 1987

Pursuant to the Massachusetts Environmental Policy Act (G.L.c.30.s.61-62H) and Sections 11.04 and 11.06 of the MEPA regulations (301 CMR 11.00). I hereby determine that the above project requires the preparation of an Environmental Impact Report.

The proposed, mixed-use waterfront development is considered to be categorically included for the preparation of an Environmental Impact Report (EIR). A waterways license for non-water dependent use of more than two acres of tidelands is needed. 301 CMR 11.25 (4).

The Draft EIR should generally follow the outline in the MEPA regulations, 301 CMR 11.07, and it should include a copy of this scope. Written and oral comments received during the ENF review will provide guidance and support for the issues framed herein.

SCOPE

Alternatives

A thoughtful analysis of alternatives will be a key component of the Tudor Wharf EIR. This analysis should be especially useful in helping to develop a program of activities on and offsite, which would be best suited to the public and private interests represented.

MYERSON/ALLEN

NOV 09 1987

The proponent has recommended two development alternatives in the ENF, which should be analyzed, and compared with the No Build Alternative. The proponent is also invited to evaluate other alternatives that represent a reduction in scale or massing.

Within these primary development schemes, there are program options that should be evaluated and compared. Include:

- i. an analysis of the build alternatives with and without the proposed activities under the Charlestown Bridge;
- ii. an affordable housing option that satisfies the goals established for housing in tidelands; and
- iii. an assessment of the open space, public access, and public amenities options.

Traffic

The scope for the traffic analysis will be the same as the Transportation Access Plan, which is required by the City of Boston. A copy is attached, and is to be considered a part of this Certificate.

It is also worth noting that the traffic analysis will be based on the roadway conditions that will be expected after completion of the Central Artery/North Area (CANA) project, even though that project is not likely to be completed before Tudor Wharf.

Parking

The parking demand should be estimated. The assumptions used to quantify that demand must be explained and supporting documentation should be presented.

The EIR should show where the parking demand can be accommodated on site. It was mentioned at the Scoping session that office users would be able to share spaces with marina users, because these activities are noncontiguous. The EIR should present a clear parking turnover analysis to show that these uses don't compete for parking spaces. Consideration should be given to the adequacy of the available parking, with and without the surface parking under the Charlestown Bridge. The status of the land under the bridge should be reported on, in conjunction with a status report on the CANA project.

If there is a potential for a parking shortfall, the report should be forthcoming, and overflow parking areas offsite should be identified.

Plans should be presented showing all surface and underground parking spaces, access and egress driveways, and space allocation by user group. Spaces dedicated for public use should be identified. The EIR should also present additional detail about the subterranean parking garage, such as volumes of excavate, quality of the material and disposal options, structural considerations, etc.

c.91 - Tidelands Licensing

A chronology of the tidelands licensing history of all existing structures and fill on site should be provided. Include copies of licenses, title documents, and permits in a technical appendix. From this historical license review, plans should be presented to show the most landward position of record of the historical high water and extreme low water marks at the site. The EIR should evaluate the historic records, and the bounds of the Commonwealth tidelands should be delineated at a sufficient scale to visually understand which activities have been proposed in those tidelands. Commonwealth tidelands should also be clearly distinguished from any private tidelands that might exist at the site.

Elements of this project are non-maritime-dependent. Therefore, the tidelands analysis should address itself to the public's interests in those tidelands. For the non-water-dependent aspects of the project, it should be demonstrated that the project serves a proper public purpose, that there is a net public benefit, and that the project is consistent with the policies of Coastal Zone Management.

The public access plan, site edge treatment, and alternatives should be presented in context with c. 91 licensing issues. A detailed description of the potential accessways, open spaces areas, public amenities, and features should demonstrate that the program conforms with and enhances the standards and objectives of the Harborpark Plan and other applicable neighborhood plans.

This site is uniquely situated, in relationship to important Boston historical parks and landmarks. As has been pointed out in a number of comments, this site offers special opportunities and challenges with respect to public access. The potential for linkage of this site with the Freedom Trail, and the Paul Revere Landing Park has been identified by the proponent. Also within

walking distance is the Charlestown Navy Yard Park, the Charles River Basin waterfront park system, Winthrop Square, Monument Square, and John Harvard Mall.

The EIR should demonstrate clearly that the program and design of the public access plans will form a relationship to the key public areas off site. Particular interest has been expressed in the potential for linkage of this site under the reconstructed Charlestown Bridge to the Paul Revere Landing Park.

At the scoping session, the CZM staff recommended that a central theme be conceived to draw the public to Tudor Wharf. Anonymous retail space is considered to be an insufficient draw for this particular site.

Shadow impacts on open space areas, pedestrian walkways, public areas, the marina, and other marine related activities should be evaluated.

Marine-related Activities

Details regarding the proposed marina and other water related activities are needed. Include the number of slips, marina layout in relationship to the Constitution marina, range of sizes of boats that will be moored, and the number of transient slips. Related activities, such as the ferry landing, boat rental, chandlery, pump out facilities, fueling and servicing facilities, shower and sanitary facilities, etc. should also be described, and plans should be shown.

The water transportation service proposed should be evaluated, and on site facilities for water transit users should be described. Analyze how this site might "fit" into an overall plan for water transportation in Boston Harbor.

The EIR should provide an insightful assessment of the potential impacts of project on the maritime related aspects of the project.

Wake and wave impacts on the marina should be analyzed. The study should take on site measurements of wake effects from a representative fleet, during a range of wind conditions.

The potential for navigational conflicts between the boats in this marina and the Constitution marina should be investigated. The potential for conflicts with other navigation interests should also be taken into account in the EIR.

Flood Hazard

The EIR should present a complete and detailed flood analysis, which fully documents the preconstruction and postconstruction flooding characteristics of the project site for the 10, 50, and 100 year storm events. The study should take into account incident wave heights, overtopping wave heights, flood elevations, flow velocities and direction. It should be demonstrated that the pier and project components will withstand storms of record.

The proposed drainage plan for the project site should be described and plans presented. Techniques to minimize harbor pollution, directly related to site runoff should be explained.

Visual Impacts

Important views to, from, and across the site were identified at the scoping session. The longshore views should not be overlooked in the analysis as pointed out by the MCZM staff. An analysis of the existing view corridors and postdevelopment changes should be presented.

Drawings, sketches, and overdrawn photographs should be provided to show the extent to which views are obstructed at both street level and from elevated structures. Several key views that were recommended for consideration are: the views from Warren Street, from the Charlestown Bridge and Rutherford Avenue, from Paul Revere Landing Park, views to City Square, to the U.S.S. Constitution, to Boston Harbor and the waterfront, to the Bunker Hill Monument, and other historic structures in the Charlestown Navy Yard.

The analysis must take into consideration the building heights, massing and scale, and building orientations.

Dredging

Locus plans at a sufficient scale should be provided to show the areas to be dredged. Include pre- and post- dredge elevations, side slopes, natural features, and sample site loci. The volume of material to be dredged should be quantified and qualified. The EIR should provide a bulk sediment analysis, including PAH testing, and a grain size analysis. Based upon the results of these tests, it may also be necessary to provide, elutriate testing, and bioassay and bioaccumulation studies.

The EIR should identify a disposal option for the dredged material. If upland disposal is recommended, the report should demonstrate that the material is suitable.

The potential for surges from the Charles River Dam affecting turbidity during the dredging operation should be evaluated. Mitigation measures for potential turbidity impacts should be recommended.

Sewer/Water

Describe the existing infrastructure, both sewer and water, serving the site. Evaluate the adequacy of the existing systems to handle the volumes of sewer and water estimated for the project. These analyses should take into account proposed developments within the service area. Any capacity or system inadequacies should be pinpointed and remedial action recommended as part of the project.

Construction Impacts

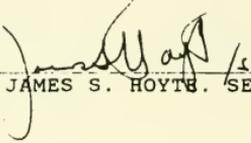
Pier reconstruction should be described in terms of the number of piles to be removed, the structural replacements and additions, and seawall reconstruction. Consideration should be given to the potential for water quality impacts resultant to pier and seawall construction activities.

The handling and disposal of demolition debris during construction should be described. The EIR should explain how debris and fugitive dust, in particular asbestos materials, will be controlled from accidental release into Boston Harbor. The volumes of demolition debris to be disposed should be quantified and appropriate disposal sites should be identified.

Construction staging areas, equipment parking areas, and construction worker parking areas on and off site should be identified. Potential construction traffic conflicts with nearby activities should be assessed, particularly the CANA project.

October 13, 1987

DATE


JAMES S. HOYT, SECRETARY

Attachment: Transportation Access Plan, Tudor Wharf Development,
Boston, Massachusetts, 10/22/87

TRANSPORTATION ACCESS PLAN
TUDOR WHARF DEVELOPMENT
BOSTON, MASSACHUSETTS

SCOPE OF SERVICES

A. DESCRIPTION OF SERVICES

Preparation of a Transportation Access Plan for the proposed Tudor Wharf Development will include the following transportation planning and engineering tasks:

- o A definition of existing traffic, parking, pedestrian and transit conditions in the study area.
- o An evaluation of the project's short-term traffic impacts related to construction activity.
- o An evaluation of long-term impacts on traffic, parking, public transportation and pedestrians.
- o Consideration of loading, service and parking access.
- o Identification of appropriate measures to mitigate project impacts.
- o Monitoring of long-term travel behavior.

Any previous or ongoing transportation studies conducted in the area will be reviewed. In particular, all traffic studies regarding the Central Artery North Area (CANA) project and the development of the Navy Yard will be explicitly considered in the study.

B. DEFINITION OF TASKS

Task 1 - Data Inventory/Baseline Transportation Conditions

Data on existing supply and usage characteristics of the various transportation systems within the study area will be compiled.

- 1.1 Traffic. The description of existing traffic conditions will be based on existing studies of the area done for the CANA project. Because of extensive street pattern and circulation changes which will result from the CANA project, only limited new traffic data will be collected as part of this effort.

- 1.2 Parking. Parking characteristics in the study area in proximity to the site will be defined. Of particular interest will be an identification of the supply of parking, both on- and off-street which serves the site.
- 1.3 Transit. Data will be gathered on public transportation usage levels and improvement plans for commuter rail; rapid transit; shuttle, local and express bus; and water transport services identified. Other baseline transportation data will be derived from previously compiled information and reports. Mode split information will also be gathered from existing sources or through surveys with particular emphasis placed on studies for the Charlestown Navy Yard.
- 1.4 Pedestrian. Observations of pedestrian activity in the vicinity of the site will be made, particularly on paths between the site and Downtown Boston and the site and the Navy Yard. Special attention will be given to tourist paths, including the Freedom Trail.

Task 2 - Evaluation of Long-Term Transportation Impacts

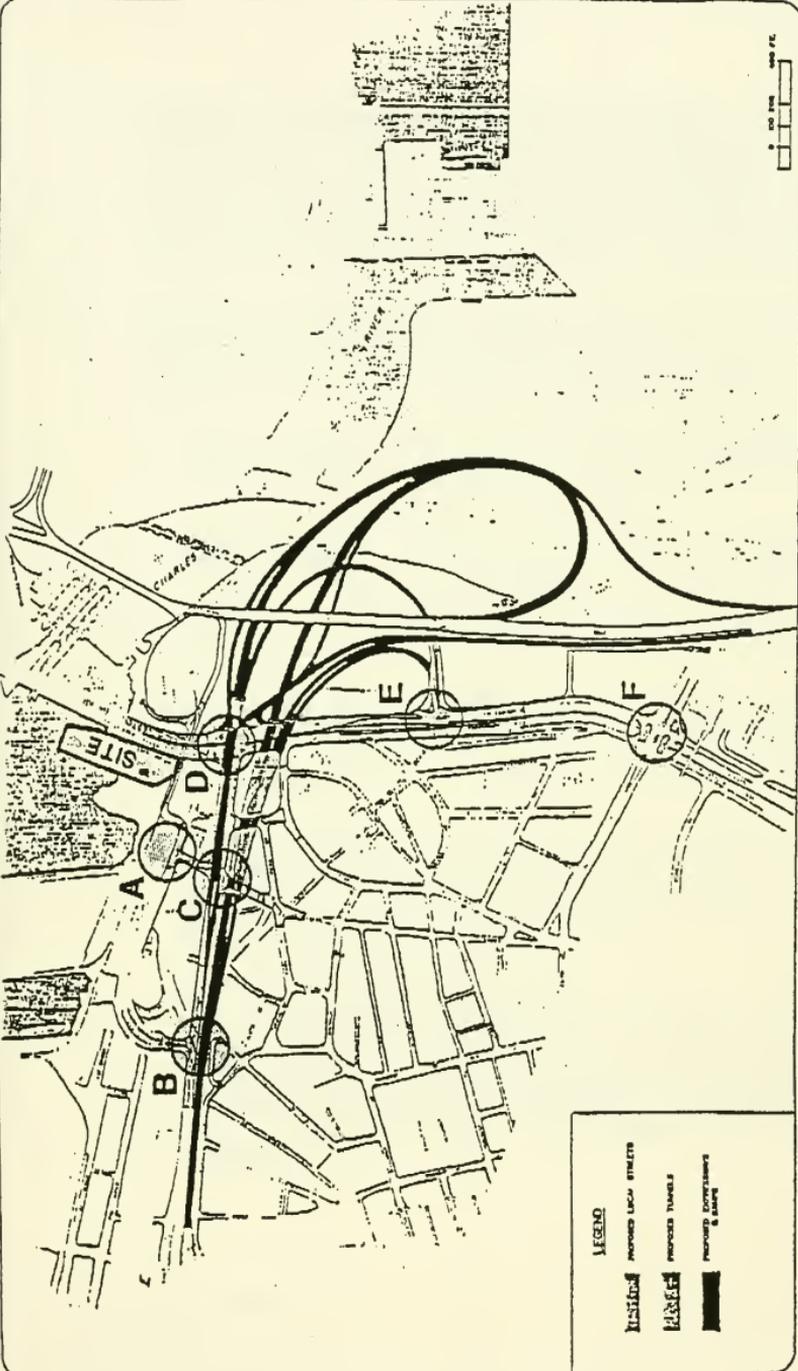
Expected long-term transportation impacts in the study area will be estimated and evaluated.

- 2.1 Trip Generation. The development program will be analyzed to estimate peak period and daily impacts of the project on traffic, pedestrians, parking and public transportation.
- 2.2 Conditions to be Analyzed. The following time frames will be analyzed:
 - o No-Build on post-CANA roadway network - 1991.
 - o Full Build with addition of project-related impacts on post-CANA roadway network - 1991.

The following post-CANA intersections will be analyzed:

- A. Water Street/Warren Street
- B. Water Street/Chelsea Street
- C. Chelsea Street/Warren Street
- D. Chelsea Street/N. Washington Street/Rutherford Avenue
- E. Rutherford Avenue/Route 1 Northbound Ramps (Sandgrav Road)
- F. Rutherford Avenue/John Gilmore Bridge/Austin Street

Figure 1 indicates the specific locations to be analyzed.



LEGEND

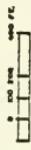
-  PROPOSED LOCAL STREETS
-  PROPOSED TUNNELS
-  PROPOSED INTERCHANGES & RAMP

N
NORTH AREA / CENTRAL ARTERY
 A STUDY FOR THE
 MASSACHUSETTS DEPT. OF PUBLIC WORKS
 BY SAAR, SEIBER & ASSOCIATES, INC.



PROPOSED NORTH AREA IMPROVEMENTS

ENRST TV-2



SOURCE: North Area Central Artery Final Report

 Intersections to be Analyzed

FIG. 1

- 2.3 Background Development and Transportation Projects. The No-Build network will be based on post-CANA traffic networks developed for the CANA project. These networks are currently being reviewed by Vanasse Hangen Brustlin, Inc. for the City of Boston. These networks, as revised and accepted by the City of Boston, will form the basis of the 1991 No-build analysis. The current review will assure that the networks reflect the impact of all development and roadway improvements planned in the area.
- 2.4 Evaluation of Transportation Impacts. New trips expected to be created by the proposed development will be added to demands expected to be carried by the post-CANA transportation infrastructure. AM and PM peak hour and daily increases will be developed and analyzed for all travel modes, as described below:
1. Traffic Impacts - Volume/capacity ratio (V/C), Available Reserve Capacity (ARC), and Level of Service (LOS) calculations at key study area intersections.
 2. Parking Impacts - Increased parking demand will be compared with existing and projected available supply to identify any potential deficiencies. The analysis will discuss long term vs. short term parking needs, provisions for carpools and vanpools, and the possible location of parking under the Charlestown Bridge.
 3. Public Transportation - Increased ridership and its impacts on the area's rapid transit, commuter rail, local and express bus, and water transport services will be identified. The possible provision of docking facilities for water transport will be investigated.
 4. Pedestrian Impacts - An evaluation of pedestrian volumes on pathways to the site will be conducted. Pedestrian pathways and linkages to other major area generators, MBTA stations, adjacent neighborhoods and Paul Revere Park will be identified, including the Freedom Trail and access to and from the Charlestown Bridge.
 5. Loading/Service/On-site Circulation - Truck and service vehicle traffic to the site will be estimated. On-site circulation patterns and parking access will also be described. Performance of the proposed loading and service configuration will be evaluated in terms of the demands identified. The adequacy of the intersection of Charles River Avenue and Water Street, which will serve as the site driveway, will also be evaluated.

6. Taxi - Taxi services to the site will be evaluated.

Task 3 - Evaluation of Short-Term Impacts (construction period). The transportation assessment will evaluate the impacts of the project during the construction period, including the following:

1. Mode of arrival for construction worker trips.
2. Parking provisions for construction workers and construction materials deliveries.
3. Frequency, times and routes of truck movements and construction activities.
4. Temporary storage of construction equipment and materials.
5. The need for full or partial street closures or street occupancy during construction will be defined.
6. Coordination with the ongoing CANA project and Charlestown Bridge reconstruction.

Task 4 - Mitigation Measures/Access Plan Development. Mitigation measures which would lessen the impacts of the proposed project on the transportation infrastructure will be identified. The resultant effect of these measures will be determined either through application of analysis techniques identified under Tasks 2 and 3 or through appropriate qualitative review.

Mitigation measures to be addressed in the Access Plan component of the study will include:

- Travel demand modifications (e.g. alternate work hours, ridesharing, and transit subsidies);
- Roadway/traffic operation improvements;
- Pedestrian connections/improvements;
- Construction management plan.
- Coordination with Shuttle bus service between Charlestown Navy Yard and Downtown Boston.

Specific commitments to be made by the developer will be identified.

Task 5 - Long-Term Monitoring (following completion of the project). A long-term program to monitor the travel behavior of project residents, tenants and other users of the site upon project completion, will be developed. The program will outline the procedure to be used to collect the following information:

- Travel mode
- Vehicle occupancy rate
- Employee origin-destination surveys

Task 6 - Report Preparation. The results of the above effort will be incorporated into a document entitled "Transportation Access Plan" which will describe the work performed during the study and document the study process, procedures, and findings for use by the Boston Redevelopment Authority and the Boston Transportation Department. This same information will be submitted in the EIR in accordance with MEPA requirements.

1.0 Project Summary

The proposed Tudor Wharf complex is a mixed use retail, commercial, office space and water dependent use project located on Boston Harbor adjacent to the Charlestown Bridge in Charlestown, Massachusetts. Commonly known as the Rapids Furniture Warehouse, the existing site consists of a pier and several buildings. From the site's first development in the early 1700's through its most recent use as the Rapid's Furniture warehouse, the property has supported a wide range of water related and non-water related uses, reflecting the historical changes in business, commerce and the local economy.

The proponents of the Tudor Wharf project plan to reconstruct the existing pier, build two commercial office buildings (one on the pier, one on the land) construct an underground parking garage and make substantial improvements to the site that will permit public access and a return of water dependent uses to the site. The project includes substantial public amenities and retail/commercial uses at the street level. Tudor Wharf

Associates has approached the Massachusetts Port Authority to determine the availability of the Constitution Plaza overflow parking lot for development. Initial indications are promising and as a result an alternative plan has been developed which incorporates the Massport parcel into the project.

The public access and water related components of the project include:

- Public access to 65% of the site by means of walkways, open plazas, retail space and a restaurant.
- The construction of a water taxi dock.
- A public landing.
- A dinner boat/excursion boat dock.
- A historic ship exhibit on the south side of the pier.

The completion of the Tudor Wharf project will open up the Charlestown waterfront in an area that has not previously permitted public access.

The two buildings will be built primarily on the footprints of the present landside and wharf buildings. The landside

building will be seven stories tall, with 135,600 square feet of space inside. The height of the main body of the building will be 74 feet tall. The building will also have a small, twelve foot high tower/mezzanine level on the top. The landside building will be built on the top of a three level underground parking garage. On the reconstructed pier, a five story building will be constructed. This building will be 62 feet tall and will have 88,060 square feet of space on five floors. With the Massport parcel, the Landside building would be 209,820 s.f., an increase of 73,920 s.f.

The buildings' architecture respects the Charlestown traditions in building character, flavor and materials. The exterior materials, red brick, trim, etc., are very similar to what is found in many older Charlestown buildings. The buildings are also the first new buildings in an area that will be centered around the new City Square. It is therefore a transitional building and it will look new and different from what exists today.

The first floors of the buildings will be devoted to public space, retail and commercial uses. Uses planned include office and retail space and a seafood restaurant. The restaurant will

be located on the ground floor level at the end of the pier building. Service will be available both indoors and on the pier end. The retail and commercial space is proposed to be leased to neighborhood types of businesses. These include doctors' offices, insurance sales, a small convenience store, day care center, a barber and/or hair stylist, a bank, video rentals, a camera shop, dry cleaner and a pharmacy.

Many outdoor public amenities will be incorporated into the site. These include a water taxi dock and a public plaza with seating and views of the harbor and North End.

The water taxi dock will permit water taxi operators to pick up and discharge passengers from Tudor Wharf and Constitution Plaza and will also serve as a public dock for the Charlestown neighborhood.

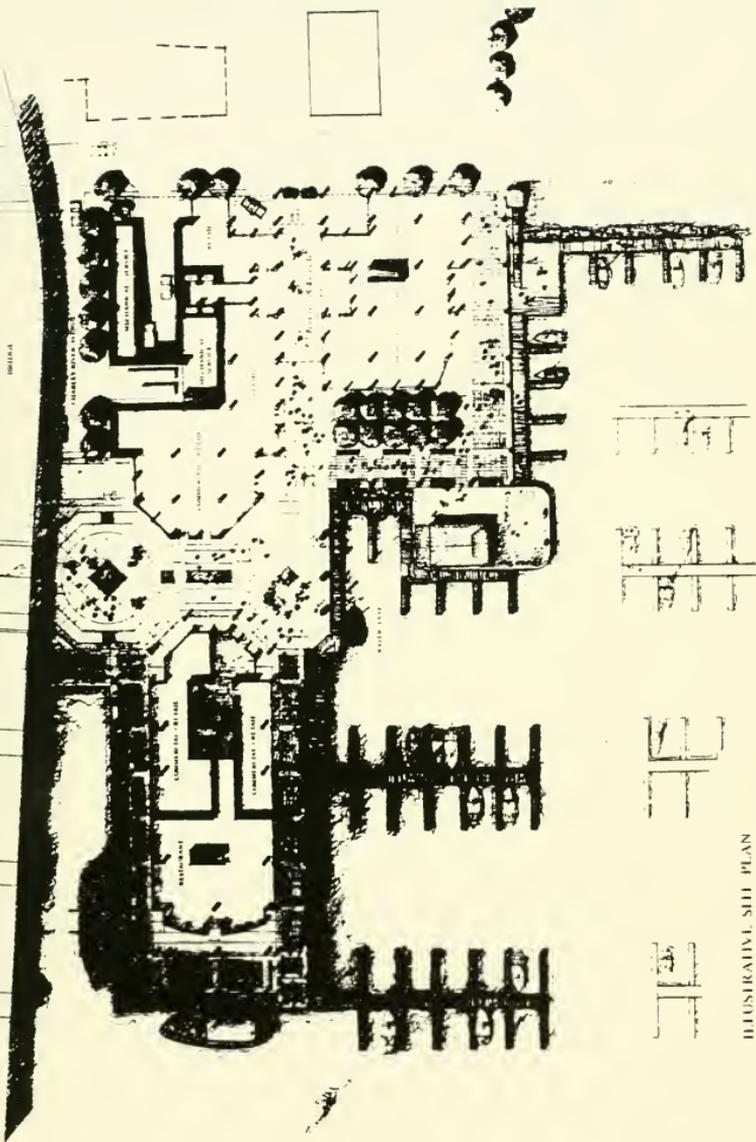
The public plaza will be landscaped with trees, grass, tables and benches. The public will be encouraged to use the plaza for viewing harbor related festivities as well as for quiet viewing of passing boats and other water related activities. The plaza will offer areas of shade to escape the sun. For night time

safety and enjoyment of the public areas, the site will be lit at night.

The proponents propose the reconstruction of Charles River Avenue, the construction of stairs from the Charlestown Bridge down to the site, dredging for a historic ship exhibit and the installation of docks.

The Tudor Wharf project proposes to improve the pedestrian connection between Paul Revere Park and Tudor Wharf by opening up the first bridge vault to pedestrian traffic. The remaining bridge vaults are proposed to be used by the water-dependent users of the Tudor Wharf site for storage of supplies, maintenance, and the repair of their boats and exhibits. This space will increase the viability of the water dependent users of Tudor Wharf by offering large areas of workspace at relatively low cost.

The estimated project schedule calls for a construction period of two and one half years. This period is estimated to begin in June, 1990 and completion is scheduled for Spring, 1993. If the Massport parcel is included in the plan, the construction period will increase by six months.



ILLUSTRATIVE SITE PLAN

DATE: 11/11/01

TUDOR WHARF

PREPARED BY: CHILDS BERMAN EMCKE REIS & CO. ARCHITECTS

Exhibit 1 Site Plan (Alternative #2)

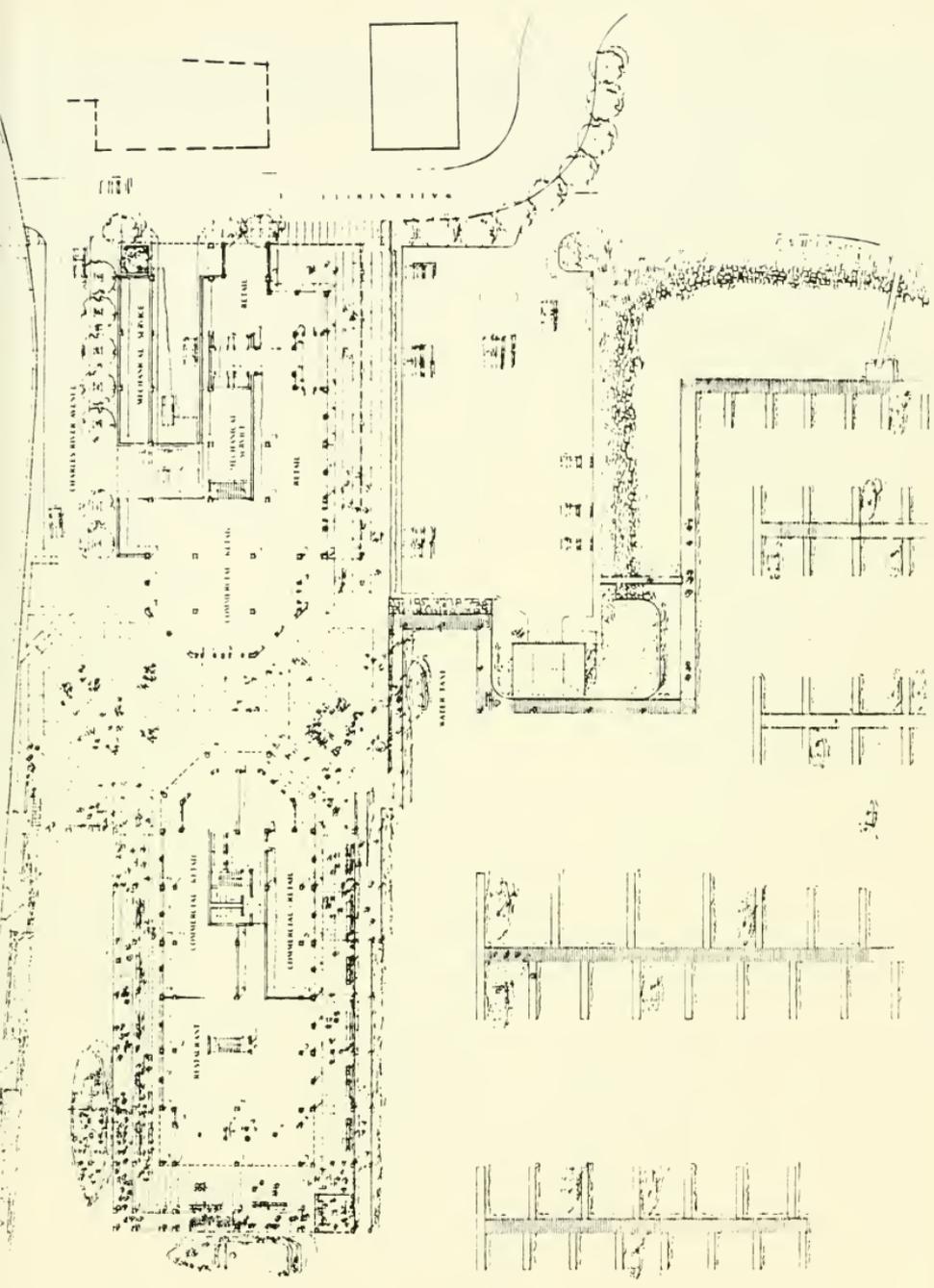


Exhibit 1A Site Plan (Alternative #1)

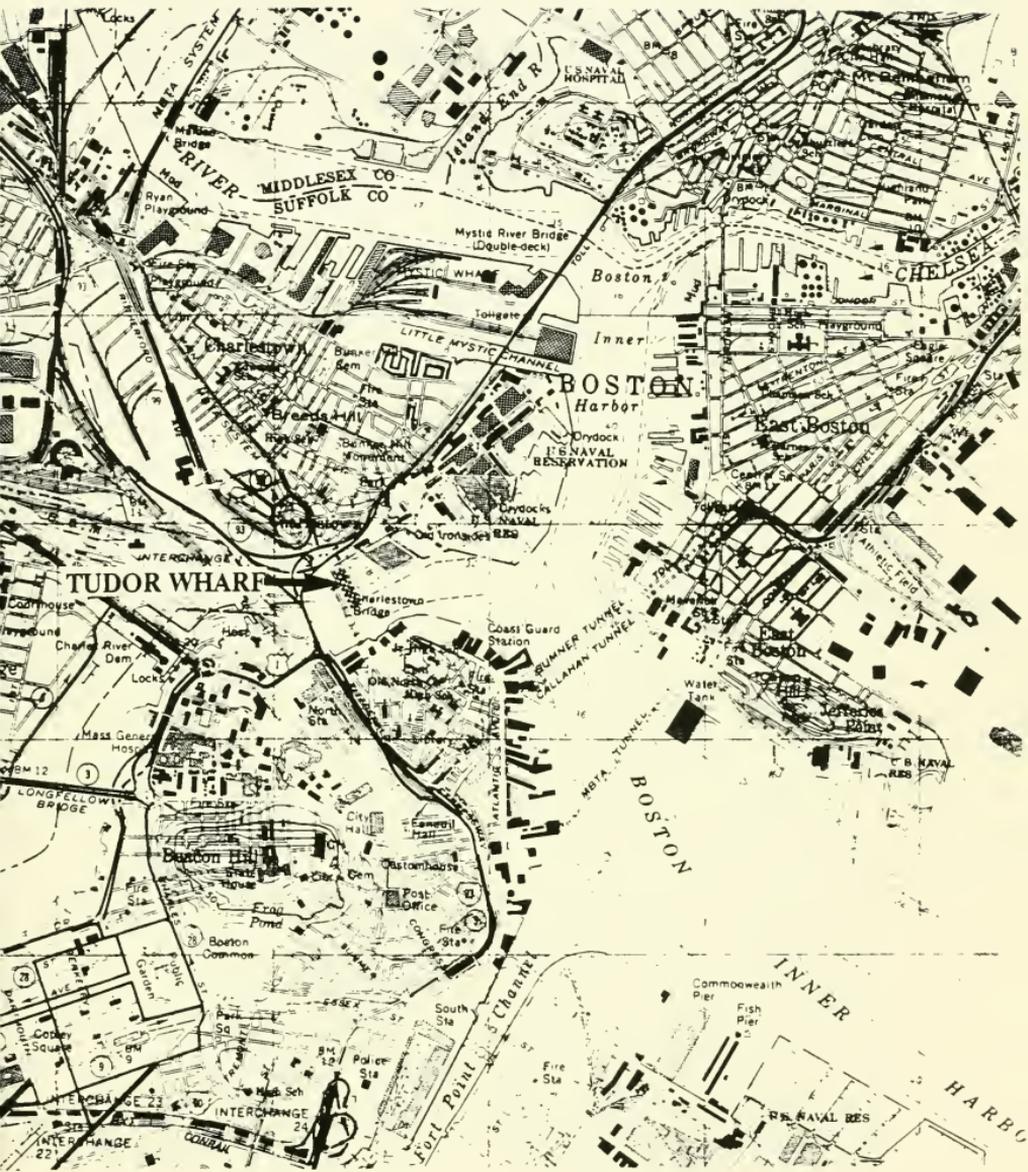


Exhibit 2
Locus Map

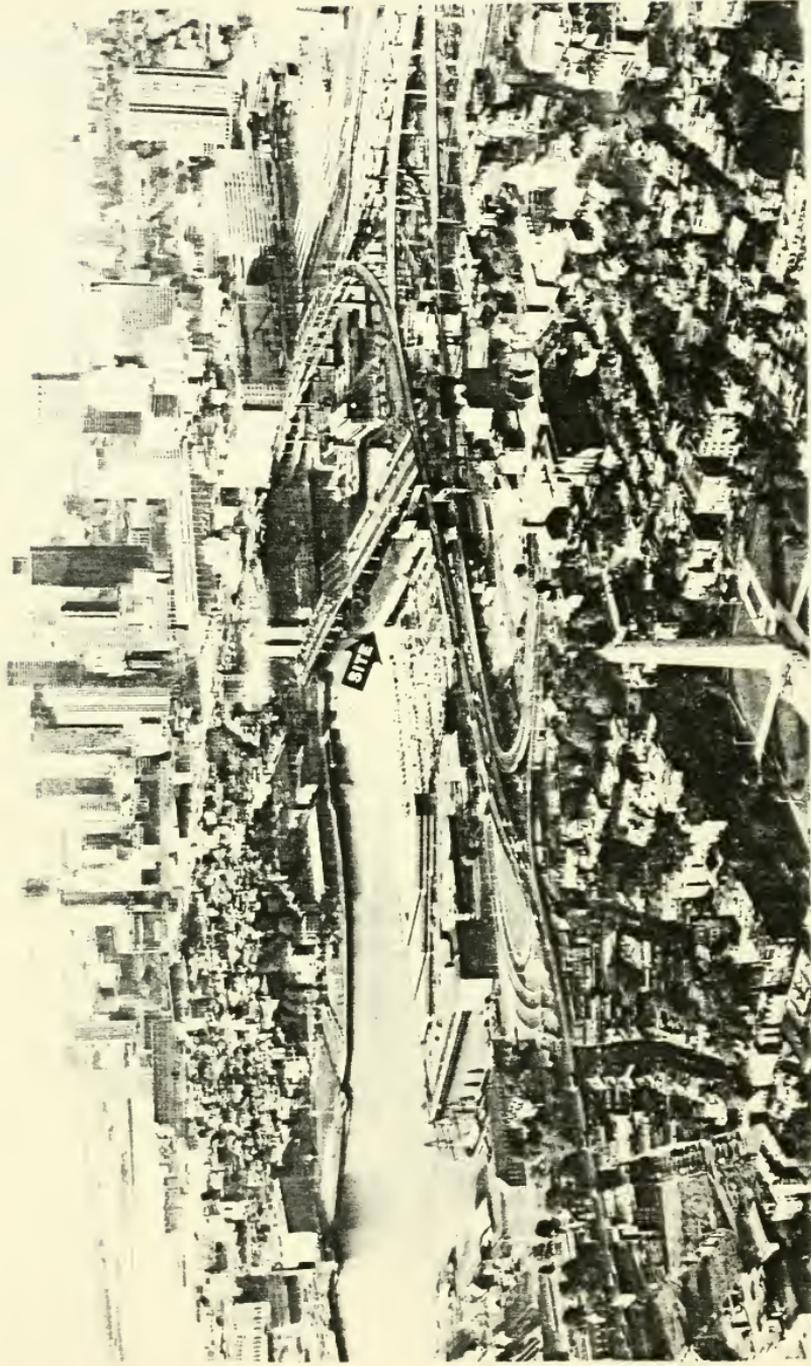


Exhibit 2 (cont)
Locus Photograph

1.1 Project Name and Number

The project is known as the Tudor Wharf development. The Executive Office of Environmental Affairs number is 6744.

1.2 Project Proponent

The project proponent is Myerson/Allen and Company, Inc., 306 Dartmouth Street, Boston, MA.

1.3 Certificate of the Secretary on the Environmental Notification Form.

The Environmental Notification Form (E.N.F.) filed for the Tudor Wharf project on September 15, 1987 outlined plans for an office/residential project with 50 units of housing and 140,000 s.f. of office space. The parking for this plan was both underground and in the bridge vaults. The water dependent uses planned for the project included a 20 slip marina and a small boat rental center. The Certificate resulted from comments, both written and oral, and the E.N.F. The Tudor Wharf project, as reflected in this E.I.R. has been modified to eliminate residential use, increase office and commercial use and provide a different set of water related uses.

1.4 Summary of Environmental Issues

The proposed project was categorically included for the preparation of an Environmental Impact Report. The categorical inclusion is due to the need for a Chapter 91 License for non-water dependent use of tidelands.

The Certificate asked for an analysis of several issues. They include alternative project plans, a traffic and parking study, a review of the tidelands licensing issues and marine related activities, flood hazard, visual impacts, dredging, sewer and water impacts and construction impacts.

Alternative projects considered for this site include various mixes of residential, commercial and water related uses. The site was found to be unsuitable for heavy marine related uses such as ship repair or as a cargo terminal. A full residential complex was also explored, as was the building of one residential building and one commercial office building on the site. Different heights and masses were explored as well.

A full traffic and parking study has been performed and is included in this report. There are two studies within the traffic and parking report. Part one of the

report shows the traffic and parking impacts of the project based on the project only using the present Rapids Furniture site, part two deals with the project if the Massport parcel is included. The project is expected to add 1,767 trips per day to the area and level of service analysis shows that the project will have little effect on the surrounding area once the CANA project is complete. The intersection of Chelsea Street/Warren Street, which will handle the greatest numbers of Tudor Wharf vehicles, will operate at LOS B/C. At the other intersections, the level of service will not change as a result of the addition of Tudor Wharf traffic. There will be enough parking on site to meet the project demands. Many of the demands of the adjacent marina, if the present marina parking lot is built on can also be met. The marina parking demand can be met at all times - winter, summer weekends, and weekday evenings, except the summer weekday daytime period.

The site is 1/2 mile from the many public transit alternatives available at North Station. These include the North Shore Commuter Rail station, the Green Line and the Orange Line. The walking time from North Station to Tudor Wharf is estimated at 7.7 minutes. There are also several

MBTA bus lines and shuttle services available in the area of Tudor Wharf.

With this high availability of public transportation, the peak hour mode split has been estimated at 40% automobile and 60% non-automobile. A 40-60 and 30-70 mode split have been used at other approved developments in and near the Boston Central Business District (CBD) with similar walking distances to transit stations. Of the 60% non-automobile, 73% are expected to arrive by rail transit and 11% by bus. There is also the possibility of water taxi service providing an additional means of site accessibility.

A review of Department of Environmental Quality Engineering records was made and three Chapter 91 licenses for the site were found. These licenses were for extending the pier structure, repairing the pier structure and strengthening a section of it. A site history survey also revealed that the site had not been used for marine related activities for the past 40 years. The proponents have planned to return water related uses to the site and will provide the public with access to 65% of the site. The proponents have incorporated a restaurant, retail

establishments, large plazas and walkways for public enjoyment.

During a site visit by boat, a group of black-crowned night herons were discovered to be roosting under the pier structure. A site evaluation and literature search regarding the natural history, habitat use and seasonal distribution of the Night Heron was conducted. The study suggests that Tudor Wharf is not a breeding area for these herons and that, at best, it is utilized as a daytime roosting, or loafing, site during the non-breeding season by these nocturnal birds.

There was concern expressed in comment letters on the Environmental Notification Form that the project would severely alter views and sight lines in the Charlestown area. This report reviews the present conditions and proposed views of the Charlestown area. Perspectives from ten different locations show the present and proposed views of and through the site. While some views change as a result of the project, many views will improve dramatically with the building of Tudor Wharf.

The project description contained in the Environmental Notification Form suggested that the proponents would be dredging an

undetermined amount of material for the docking facilities that were proposed. The project has been modified since publication of the E.N.F. The current proposal is to dredge approximately 6,600 cubic yards of material along the southeast side of the pier in order to accommodate a historical ship. The berth will be 200 x 30 feet and dredged to 15 ft at MLW. The proposed historical ship berth will be 200 feet long, 30 feet wide and 15 feet deep at low tide. At low tide, the proposed berthing area is currently exposed mudflat and shallow water that will need dredging. There will be 6,655 cubic yards of dredge spoils.

Two dredge material disposal options are being evaluated. One is to dispose of the spoils at the Massachusetts Bay Foul Area 15 miles east of Marblehead. The second is to dispose of it in a landfill.

A sediment analysis has revealed that the spoils contain trace levels of arsenic, cadmium and chromium, higher levels of mercury and a high level of lead.

The project as proposed will generate approximately 22,000 gallons per day of wastewater. This area is served by the Boston Water and Sewer Commission and the Massachusetts Water Resources Authority.

1.5 Permit Status List

As of publication of the Draft E.I.R., the only license or permit that has been applied for is the D.E.Q.E. Chapter 91 license.

The following is the list of permits and licenses that will be applied for prior to construction of the project.

Local Permits

BW&SC Sewer Connection Permit
BW&SC Water Connection Permit
Harborpark IPOD Permit
ZBA/BRA Approval
Conservation Commission Order of Conditions
Public Improvement Commission, Street Discontinuance
Fire Department, Underground Flammable Storage Permit.

State Permits

MWRA Sewer Connection Permit
DEQE Water Quality Certificate
CZM Consistency Review
Chapter 91 Tidelands License
DWPC Sewer Connection Permit
DEQE Surface Water Discharge Permit
Massport Lease

Federal Permits

Army Corps of Engineers (ACOE)
Section 10
Section 404
Section 401

1.6 Alternative Site Plans

In the following section, the alternatives presented in the Environmental Notification Form are reviewed, the original water related uses are explained and the No-Build option is explored.

1.6.1 Housing/Office Alternative

At the publication of the ENF in September, 1987, two alternatives, along with the no build alternative were outlined. The preferred alternative at that time was a mixed use project, consisting of 50 units of housing and 140,000 s.f. of office, commercial and retail space. This plan envisioned a 50 unit residential building to be built on a new pier structure, and a 140,000 s.f. office building to be built on the landside portion of the site. This plan differed in many ways from the present two alternatives under consideration.

The plan considered using only the Rapids Furniture Warehouse site and did not consider the possibility of also building on the Massport land. The plan called for 320 parking spaces of which 270 were in an underground structure under the landside building. The other 50 spaces were to be in the bridge vaults under the

Charlestown Bridge western approach that abuts the site.

The water dependent uses planned for the project were also different. The plans included an approximately 20 slip marina, independent of the adjacent Constitution Marina, to be built along the southern and northern edges of the pier building. The easternmost bridge vault, and the water adjacent to it were designated as a small boat rental center. The end of the pier was designated as a water taxi stop and ferry landing.

The 50 residences were to be built in a 75 foot high building. The pier structure would have a 12-20 foot wide walkway around it permitting public access to the pier end. The amount of public space in this E.N.F. plan would be less and the amount of public space that the public felt welcome in would be less. The pier building would have offered residents a secure residential setting, and this would limit the public to a small lobby area. The proponents believe that the public purpose requirements for the Chapter 91 license would have been more difficult to meet with residential use on the site.

The plans for a residential project as outlined in the Environmental Notification Form have been rejected by the proponent for a variety of reasons including:

1. The costs of acquisition and construction on the Tudor Wharf site are high, and therefore the project would be aimed at the luxury market. The luxury market is soft at this time.
2. The site is severely impacted by the traffic noise from and the view of the Charlestown Bridge. Office use is much less sensitive to these constraints than residential use is.
3. Site proportions and dimensions are such that residential use would result in a significantly reduced amount of square footage for the whole development, affecting the economic viability of the project.
4. Given the variety of uses planned for the site - restaurant, historic ship exhibit, water taxi landing, harborwalk, and as a primary pedestrian commuting path between Boston and Charlestown, it was deemed unnecessary to include residential use in the project as a method of insuring activity during non-working hours. The developers are

encouraging public access and public use of this site in their plans.

5. The affordable housing component required of waterfront projects by the Executive Office of Communities and Development would have made the economic success of the project unlikely. Of the 50 residential units, 12 or 13 would have been affordable units making the remaining units significantly more costly than the market would support.

Several of the water related uses planned for the site have been eliminated for reasons of safety and economics. A twenty slip marina is at best a marginal economic proposition. The requirements for sewage pumpout, shower and sanitary facilities and the management of such a small facility are too burdensome when spread over just 20 slips. The location of this marina would also present navigation problems to novice boat operators. Located directly above the bridge are the discharges of the Charles River Dam. This dam is used to control flooding throughout the Charles River Basin. The occasional heavy flows discharging from the Charles River Dam cause boat operators problems at the Constitution Marina. As the Tudor Wharf site is even closer to the dam, more problems are likely. This was also one of

the reasons a small boat rental operation was felt to be hazardous. In addition, there is heavy large and small boat traffic through the Charles River Locks, and additional small boat traffic would increase the likelihood of accidents.

The use of the bridge vaults for parking was ruled out in response to concerns expressed by several reviewing agencies. The proponents have enlarged the proposed underground parking structure to accommodate up to 303 automobiles. However, the proponent does remain concerned that the bridge vaults be used for uses consistent with the proposed project. Water dependent uses are seen as consistent with the project.

1.6.2 No Build

The No-Build alternative would leave a deteriorating site without any of the many benefits outlined in this report. The site currently is not conducive to public activities and is essentially off limits.

The No-build option means reduced taxes for the City and Commonwealth. The No-build option also reduces the impacts this project will have on the infrastructure. There would be 20,125 gallons per day less water consumed and

wastewater generated .There would also be a reduction in the traffic if the project is not built. As the project is predicted to generate 1,800 trips per day, under the no build scenario, these trips would not occur.

Providing office space, commercial and retail space and the restaurant will have a beneficial effect on the City Square environment and Charlestown as a whole. Boston is a growing city and the demand exists for the space. As outlined in this report, the completion of the project will bring many public improvements to the Charlestown waterfront in an area of high traffic and high visibility.

2.0 Project Description

The following section provides information on the history of Charlestown, the Central Artery/North Area (CANA) highway construction project, the redevelopment efforts in Charlestown, a site history and detailed project plans. The Tudor Wharf project is presented as two alternatives. Alternative #1 uses only the present Rapids Furniture Warehouse site and Alternative #2 includes a parcel of Massachusetts Port Authority property adjacent to the warehouse site.

2.1 History of Charlestown

Charlestown is the site of the first settlement of Massachusetts Bay Colonists in Boston. The first settlers from Salem arrived in 1629 and chose the Charlestown peninsula as the site of their first settlement. It offered abundant natural resources and was easily defensible. Fishing grounds and shellfish beds were nearby and game was plentiful. A fort, meetinghouse, government building and a governor's mansion were soon built. A large protected deepwater cove, no longer in existence, provided ships with a safe harbor for unloading supplies.

By 1638 about 70 houses had been built. Charlestown, while primarily a farming community, had tailors, brickmakers, ropemakers, wheelwrights and blacksmiths. Waterfront development included a few wharves jutting into Town Dock cove. This cove has been filled in and lies under the area of the Tobin Bridge's southern approach. A rowboat ferry service shuttled passengers between Boston and Charlestown.

By 1775, Charlestown had over 400 homes and public buildings. The town was a major port in Massachusetts, second only to Boston. The waterfront flourished with new wharves and warehouses.

Charlestown burned to the ground on June 17, 1775, when British ships opened fire on the fortified hills of Charlestown. Only the street pattern and the cemetery survived. After the Revolutionary War, streets were straightened and widened and new homes gradually appeared. The Town bought up land surrounding City Square to make it bigger and a new Town Hall was built. In 1786 a bridge was built from Charlestown to Boston to replace the ferry. The new Charles River Avenue bridge, adjacent to the proposed Tudor Wharf site, improved access to both towns and increased traffic through City

Square. A second bridge over the Mystic River to Chelsea was built in 1802.

In 1800, the Federal Government bought the then existing shipyard as the first naval shipyard in the country. In the 1820's, traffic had increased to the point that another bridge to Boston became necessary. The result was the Warren Avenue Bridge which was built in 1828. This bridge was built where the Metropolitan District Commission's Gridley Locks and Charles River Dam now stand.

Exporting ice to southern ports became a major industry in the 1840's. A railroad was built to bring ice from local ponds to the waterfront wharves, including the proposed project site wharf, for transfer to ships. Icehouses holding over 100,000 tons were built in Charlestown Square. The Fitchburg Railroad was connected to this ice railroad bringing even more commerce to the waterfront. The 1840's saw the construction of two railroad terminals in Charlestown, one for passengers and one for freight.

In the 1840's, the town of Charlestown became a city and Charlestown Square was renamed City Square to mark the occasion.

By 1860, Charlestown was a booming urban city of 25,000. Streetcars made commuting to Medford, Somerville and Chelsea convenient and inexpensive. The fare was five cents. During and after the Civil War, Charlestown again grew rapidly. Commercial activities were dominated by the Navy Yard and shipping enterprises.

In 1872, Charlestown was annexed by the City of Boston.

With the turn of the century, a new era in transportation was ushered in. The elevated rapid transit line from Boston was run to City Square and greatly improved access to Downtown Boston. The line ran over the Charles River on a new bridge built for both rapid transit and pedestrian and carriage traffic. This bridge, the Charlestown Bridge, is still in place today. The Boston and Maine Railroad boasted of the largest facilities for the shipment of Maine potatoes in Charlestown and their growing rail yards served commuters and long distance passengers alike. The Navy Yard continued as a major employer and during World War II employed upwards of 47,000 persons.

Major changes in the character of City Square took place with the opening of the Mystic-Tobin Bridge in the 1950's. In

1975, the El was removed from City Square and replaced with a new underground line south of the alignment that ran to Sullivan Square and beyond. Removal of the El reduced pedestrian traffic in City Square tremendously. The elevated highways and resulting high volumes of traffic also had a disastrous effect on City Square. The 1970's saw the decommissioning of the Navy Yard and a further decline in Charlestown's economic health. The El was torn down in 1975 and the Warren Avenue Bridge was destroyed by fire in the 1970's.

2.2 Charlestown Redevelopment

There are several projects that are part of the redevelopment effort of Charlestown. These include the redevelopment efforts of the Boston Redevelopment Authority in the Charlestown Navy Yard, north of the Tudor Wharf Site, and the Central Artery/North Area (CANA) highway project adjacent to the Tudor Wharf site. The redevelopment of the Navy Yard is adding new residential and commercial uses to Charlestown. The CANA project will completely change the City Square area from a blighted, noisy, congested intersection into a much more pleasant urban environment. The improved transportation system will greatly reduce congestion and noise in the area and the

private and public improvements to buildings in the area are improving Charlestown's quality of life. The Tudor Wharf project, one of the lead projects in the City Square area, will dramatically improve the visual aspects, pedestrian routes and urban environment of both the waterfront and the Square.

The Charlestown redevelopment efforts consist of the following:

1) Boston National Historic Park, Charlestown Navy Yard Unit. The southwest corner of the former Shipyard is a national park totalling 29 acres. Over 900,000 visited the U.S.S. Constitution and the museum last year.

2) Charlestown Navy Yard. In 1973 the U.S. Navy decommissioned the Charlestown Navy Yard. The site is being redeveloped as a National Park site, featuring the USS Constitution. Under the auspices of the Boston Redevelopment Authority, the remaining land and piers are being developed into a mixed use development incorporating institutional, government, commercial and light industrial uses along with housing. A 600 space marina is also a part of the development. Many of the former shipyard buildings have already been converted to other uses. These include housing, office space,

medical research areas, multi-level parking and light industrial space. Plans call for additional buildings to be converted into a variety of uses, including hotel, retail and restaurant space, more light industry and water related industry.

3) Hoosac Pier Area. The Massachusetts Port Authority has leased the former wharf and grain elevator site, and two buildings have been constructed housing office and restaurant space. The 250 slip Constitution Marina is also part of this parcel.

4) Paul Revere Landing Park and Charles River Dam. The new Charles River Locks and Dam facility were completed in 1984 and have improved flood control and navigation on the Charles River. Paul Revere Landing Park, adjacent to the dam, is being used as a CANA project construction staging area. Upon completion of the CANA project, the area will be returned to parkland as part of the Charles River Esplanade.

5) City Square. At completion of the CANA project, 12 acres will be reclaimed from the overhead highway system. Early stage planning has outlined possible development of this parcel as shown on Exhibit 3. Pedestrian improvements will

include traffic crossing signals, and a newly marked Freedom Trail linking the Constitution to the Bunker Hill Monument. Better links between the National Park, Winthrop Square and other places of historic interest in the residential areas of Charlestown will also be built.

6) Chelsea-Water Street Connector. A new road between City Square and the Moran Terminal completed a perimeter arterial truck route around Charlestown. Construction included the building of a new bridge over Little Mystic Channel. The result has been less truck traffic on residential streets and better access to the soon to be developed "Northern Naval Shipyard" area.

2.3 Central Artery/North Area project (CANA)

The Massachusetts Department of Public Works has recently started a major public works project known as the Central Artery/North Area (CANA) project. This project is the reconstruction of the intersection of the Central Artery/I-93 highway and the Tobin Bridge/Route 1 interchange. The \$290 million project, started in 1987, is the largest construction project in DPW history. The project is currently scheduled for

completion in December, 1993. The project seeks to:

1. Reduce accidents.
2. Improve regional traffic flow.
3. Improve local traffic flow.
4. Improve access between Charlestown and the expressways.

A number of the major expressways serving the region converge in Charlestown. Route 1 to the north provides a direct route to the Massachusetts North Shore, New Hampshire and Maine. The I-93 expressway serves areas north of Boston and the central city. Storrow Drive and Memorial Drive are nearby. This concentration of major regional transportation routes has led to congestion and unsafe driving conditions. The CANA intersection has the highest accident rate in the state's highway system.

The construction program will include straightening the S-curve at the foot of the Tobin Bridge, construction of two tunnels under City Square and two new loop ramps to connect to I-93, removing existing elevated expressway ramps over City Square and improving vehicular and pedestrian circulation in City Square and adjacent city streets. There will also be a realignment of the Charlestown Bridge

and Rutherford Avenue. The new interchange will put most of the ramps on the south side of Interstate 93. Route 1 traffic will travel under City Square in the two tunnels (See Exhibit 3). The elimination of the overhead ramps in City Square will open up the Square. The elimination of the ramps will also free up 10 to 12 acres. The land is now the property of the DPW but will most likely be deeded to the BRA for private development and may be available in the late 1990's. The CANA project will greatly improve the City Square area. The tunnels that will replace the overhead highway system will result in more sunlight and less noise from regional traffic. City Square will have an improved local street system and excellent access to the regional highway system. The Tudor Wharf project will complement the improved City Square through its large areas of public space, access to the water's edge and the retail, commercial and office space that will draw people back to the area after an absence of thirty years.



Exhibit 3

CANA Project, Before



Exhibit 3A

CANA Project, After

2.4 Site History

The site is known at present as the Rapids Furniture Warehouse. Rapids Furniture has moved its warehouse operations to Norwood and the site has most recently been used by Warner Brothers for the Spenser for Hire television series as a studio.

The first wharves were constructed on the site in the late 18th century. The first wharf was built by the Austin family in 1795 adjacent to the nine year old Charles River Avenue bridge to Boston. The wharves were used for the loading and unloading of trans-Atlantic cargoes. In 1846 the site was known as Todd's Wharf, in 1852 by the name of Thompson's Wharf and by 1870, Tudor's Wharves.

Frederick Tudor, known as the "Ice King", was a local entrepreneur who took two nearly worthless commodities, ice and sawdust, and built a major business. He shipped ice, using the sawdust as insulation, from Charlestown to southern states, the West Indies, Japan, China and Australia. In 1874, Frederick Tudor purchased the site for his growing ice business. A railroad spur was constructed

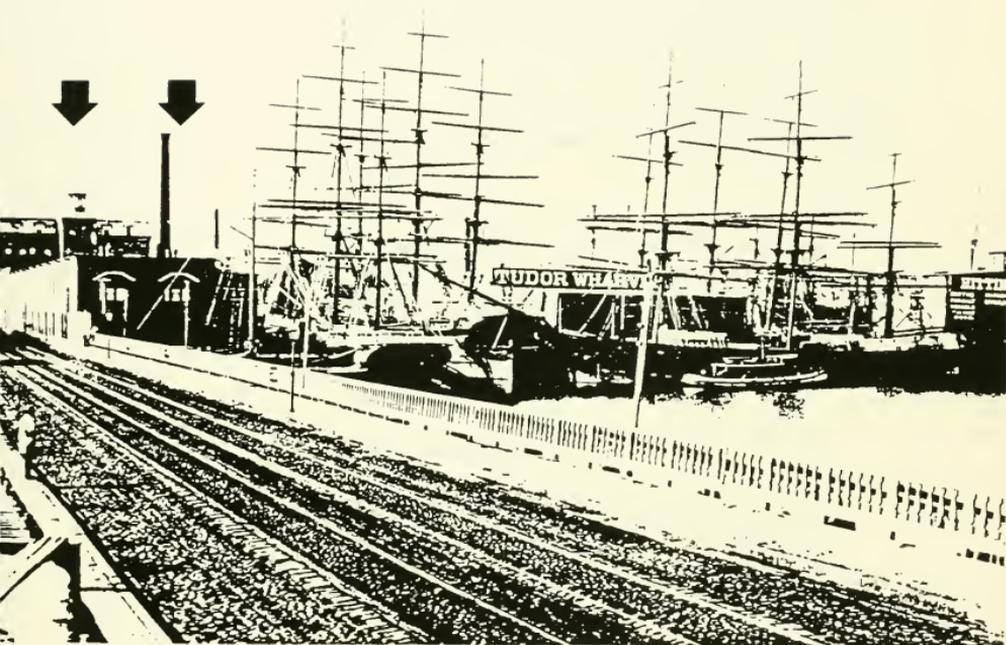
on site and two structures existed on the site. There was a 5 story, 60 foot high, brick grist mill on the upland area and a two story, twenty four foot high, brick warehouse on the pier. (See Exhibit 4)

With the advent of artificial ice making machines in the latter part of the century, the ice business melted away. In 1901, the Tudor Wharf Company (so called after the wharf, not the former owner), purchased the site for general mercantile storage. In 1902, the Potter-Wrightington, Inc. cereal department and offices were located in the former grist mill.

In 1912, the Charlestown bridge was constructed on its present location and the Charles River Avenue bridge removed.

The cereal business remained until 1937. From 1930 to 1937, the Boston Globe leased space for paper storage. In 1937, the two brick structures were demolished and a woodframed warehouse structure (still standing) was constructed on the existing pier structure. Between 1932 and 1941, Jason O'Connor operated a livery boat service out of the east side of the pier.

In 1944 the Boston Globe resumed leasing space for paper storage and remained until 1962. In 1952 the concrete block building on the uplands was built to accommodate additional Boston Globe needs. This building exists today. The space has also been used to warehouse cat food and IRS forms. Rapids Furniture purchased the site in 1962 and used the facility to store furniture through 1985 when the warehouse operation was moved to Needham. Since then, Warner Brothers Television has used the space for filming inside scenes of the recently cancelled television action show "Spenser, for Hire".



Photograph shows Charles River Avenue Bridge to Boston, no longer in existence. Site consists of two buildings to the left of smokestack.

Exhibit 4

Original Tudor Wharves

2.5 Objectives and Benefits

The major benefits of Tudor Wharf include:

- 185,000 s.f. of retail, commercial and office space,
- Public access and public facilities for enjoyment of the water's edge.
- A return of water dependent activities. including a water taxi dock and dinner boat dock.
- Boston linkage fund payments of approximately \$740,000, of which \$121,700 would be for the jobs program and \$618,300 would be for the housing program.
- Underground parking for site needs.
- A moderately priced restaurant with views of Boston Harbor, and retail establishments.
- New pedestrian routes from Charlestown to Boston, including a alternate route to the Freedom Trail and new Harborwalk routes.

The areas available to the public will total 64,066 s.f. The alternate route of the Freedom Trail along the water's edge and away from City Square will improve the Trail's attractiveness. The restaurant, retail shops, excursion boat and historic boat exhibit will add features and services to the Freedom Trail that can be enjoyed by tourists, employees and residents of Charlestown alike. The project will create a water taxi dock. The facilities will include floats, ramps, restrooms and a waiting area.

The proposed development will completely rebuild a blighted, inaccessible and deteriorated pier and open it up to extensive public use and water dependent use. The development provides continuous public access along the entire waterfront, encouraging both employees and visitors to enjoy the water and its views. The development will be an integral link in the City's Harborwalk project, which is seeking to provide waterfront walkways from Charlestown to South Boston. The development will also rebuild Charles River Avenue, which abuts the site to the west and is in poor condition. The rebuilding will include new surface treatment, lighting, signage and sidewalks.

2.6 Physical Description and Site Plan

Existing Conditions:

The two acre Tudor Wharf site is located at 44 Charles River Avenue and is bounded on the north by the former Hoosac Spur rail line, to the east by Hoosac Pier and Constitution Marina, on the west by Charles River Avenue and the Charlestown Bridge. Tudor Wharf extends south into Boston Harbor. The area under Alternative #1 is 84,563 square feet (s.f.) of land and 15,960 s.f. of watersheet. The Massport property is 28,046 s.f., which would be used under Alternative #2. The warehouse structure on the site is partially on land and extends southerly over the harbor. Portions of the site to the south and west of the warehouse structure consist of a level, asphalt paved truck loading area. This pavement is bounded to the south by a granite block seawall which runs east-west completely beneath the warehouse structure. (See Exhibit 5)

The existing warehouse consists of a two buildings, one a two story high masonry structure constructed on land and a single story wood frame building over the water. The structure build over water is on supported on timber piles. In 1944 and

1962 repairs to the pile foundations were made. The piles at present are in fair to poor condition. Many are necked down at the mudline, several are missing and some are rotted at the butt. In addition, many of the floor joists are charred.

The land portion of the warehouse was constructed in 1952 and consists of a two-story high concrete block structure. The structure is supported on oak timber piles. These 15 ton capacity piles support both the building, columns and a concrete structural floor slab. This portion of the warehouse appears to be in sound structural condition. (See Exhibit 6)

Subsurface Conditions The subsurface explorations performed by Haley and Aldrich for the proponent reveals the following general sequence of strata in order of increasing depth from ground surface.

- * Miscellaneous Fill
- * Organic Silt and Peat
- * Marine Sands
- * Glacial Till
- * Bedrock (Assumed)

These strata are generally described in order of deposition as follows:

Bedrock According to available geologic maps, bedrock in this area is assumed to consist of Cambridge Argillite. Bedrock was not encountered in any of the test borings.

Glacial Till Predominantly an unsorted mixture of clayey sand and gravel to sandy clay with occasional cobbles and boulders. This strata was deposited, typically directly above bedrock, by the advance of glacial ice sheets during the Pleistocene Epoch. The top of this strata was encountered between El 1.5 and El - 10.5 (Boston City Base (BCB)). The thickness of this strata was not determined as none of the available test borings were advanced into underlying bedrock.

Marine Sand A layer of silty fine sand was found to overlie the glacial till deposits which is typically deposited as the result of fluctuating harbor levels. This stratum ranges in thickness up to 12.0 ft where encountered, with the top of the stratum was found to range from approximately El 0.5 to 9.0 (BCB).

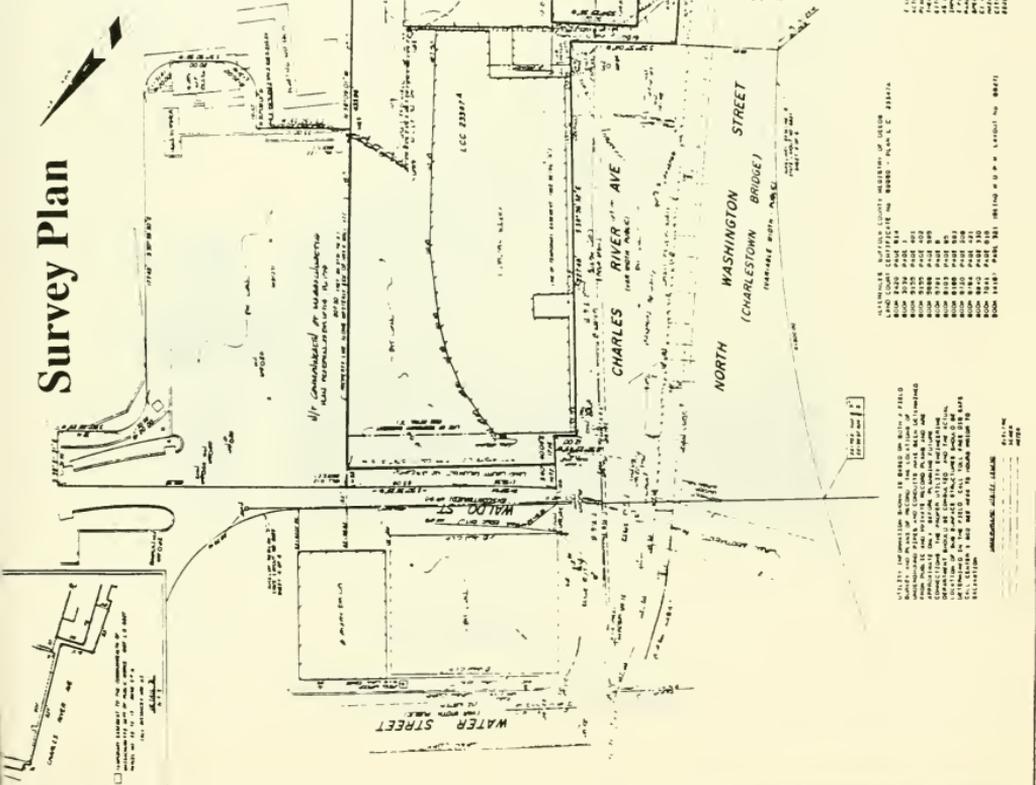
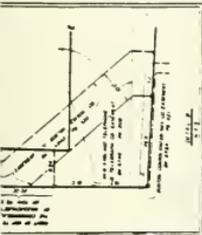
Organic Soils A stratum of organic soils consisting primarily of organic silt and peat was found to overlie the glacial till or marine sands. This strata was

typically deposited as the result of tidal action or in marsh areas along the shore line of a slowly rising sea. This organic soil strata ranged up to 14 ft. in thickness where encountered with the top of the strata noted from E. 4.5 to El. 14.5 (BCB).

Miscellaneous Fill A man-made layer of fill was placed across the site to the present grade. This fill layer consists primarily of an unsorted mixture of medium to fine sand, silt and clay with varying amounts of cinders, brick and cobblestone and was found to vary from approximately 4.5 to 18.5 ft thickness.

Groundwater Conditions Groundwater levels noted in the available subsurface data indicate groundwater levels ranging from El. 3.8 to El 8.5 (BCB). Note that due to the granular nature of the miscellaneous fill soils and the close proximity to Boston Harbor, groundwater levels are anticipated to reflect changing tide levels.

Survey Plan



- LEGEND
- 100m = 100m
 - 200m = 200m
 - 300m = 300m
 - 400m = 400m
 - 500m = 500m
 - 600m = 600m
 - 700m = 700m
 - 800m = 800m
 - 900m = 900m
 - 1000m = 1000m
 - 1100m = 1100m
 - 1200m = 1200m
 - 1300m = 1300m
 - 1400m = 1400m
 - 1500m = 1500m
 - 1600m = 1600m
 - 1700m = 1700m
 - 1800m = 1800m
 - 1900m = 1900m
 - 2000m = 2000m

NOTES

1. All measurements in meters.
2. Datum: Mean Sea Level.
3. Projection: UTM Zone 18N.
4. Units: Meters.
5. Date: 1985.
6. Surveyor: [Name].
7. Client: [Name].
8. All measurements are to the center of the lot.
9. All measurements are to the center of the street.
10. All measurements are to the center of the river.
11. All measurements are to the center of the bridge.
12. All measurements are to the center of the wharf.
13. All measurements are to the center of the building.
14. All measurements are to the center of the fence.
15. All measurements are to the center of the wall.
16. All measurements are to the center of the gate.
17. All measurements are to the center of the door.
18. All measurements are to the center of the window.
19. All measurements are to the center of the roof.
20. All measurements are to the center of the ground.

TOPOGRAPHIC PLAN OF LAND
TUDOR WHARF
BOSTON (CHARLESTOWN) MASS

SCALE: 1:1000
DATE: 1985
SURVEYOR: [Name]
CLIENT: [Name]

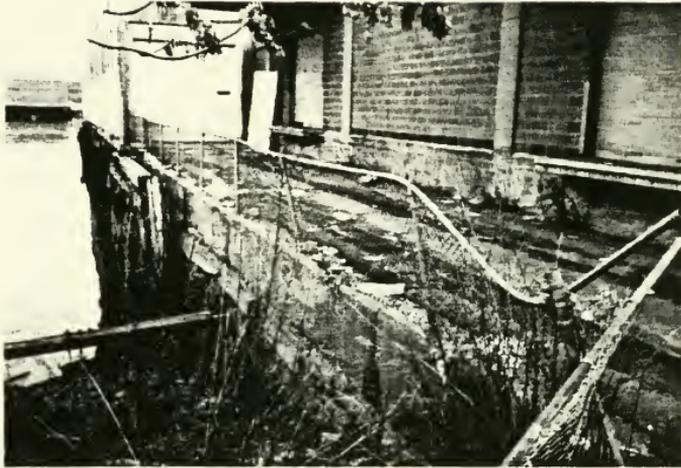


Exhibit 6
Present Conditions

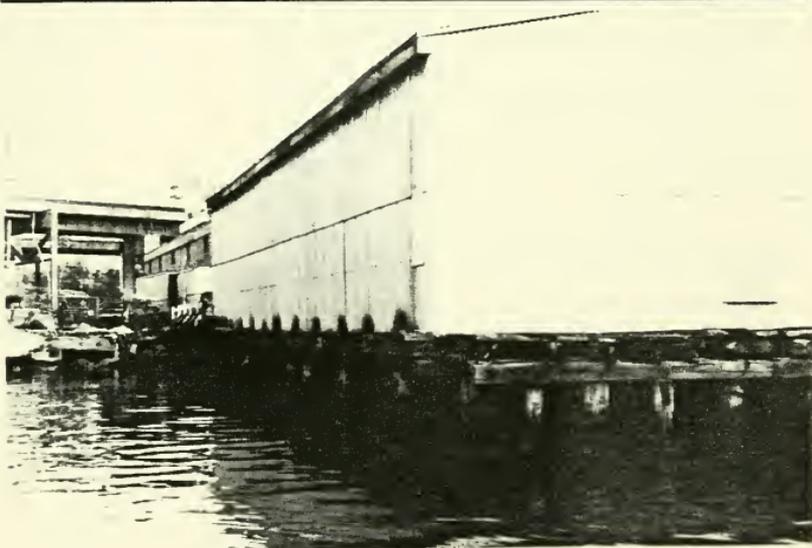


Exhibit 6 (cont)
Present Conditions

2.7 Site Plans under consideration

Two alternatives are under consideration. Alternative #1 includes the land and water now owned by Rapids Realty Corp. Alternative #2 includes the above parcel and an additional parcel of land now owned by the Massachusetts Port Authority (Massport). (See Exhibits 7 and 8)

2.7.1 Site Plan (Alternative #1)

The completion of the Tudor Wharf project will open up the Charlestown waterfront in an area that has not previously permitted public access. The construction plans include the demolition of the existing building, construction of two new buildings, rebuilding of the bulkhead, construction of an underground parking facility and construction of open air plazas and walkways. Docking facilities for water taxis, an excursion boat dock and a historic ship berth are also proposed.

The two buildings will be built primarily on the footprints of the present landside and wharf buildings. The landside building will be seven stories tall, about 86 feet, with 135,600 square feet of space inside. The height of the main body of the building will be 74 feet tall. The building will also have a

twelve foot high tower/mezzanine level on the top. This tower will be 4,450 s.f. and will cover only 13% of the building footprint. The landside building will be built on the top of a three level underground parking garage that has 252 spaces. The first floor of the landside building will be devoted to public space, retail and commercial uses and some mechanical spaces. There will then be five floors of space devoted to office space. The tower/mezzanine level will also be office space.

The buildings' architecture respects the Charlestown traditions in building character, flavor and materials. The exterior materials, red brick, trim, etc., are very similar to what is found in many older Charlestown buildings. The buildings are also the first new buildings in an area that will be centered around the new City Square. It is therefore a transitional building and it will look new and different from what exists today.

Because the present pier deck is badly deteriorated and of little use, a new pier deck structure will be constructed. Piles will extend from the bulkhead to a line ten feet short of the U.S. Pier and Bulkhead line. On this, a concrete deck will be placed. This deck structure will

CHARLESTOWN BRIDGE

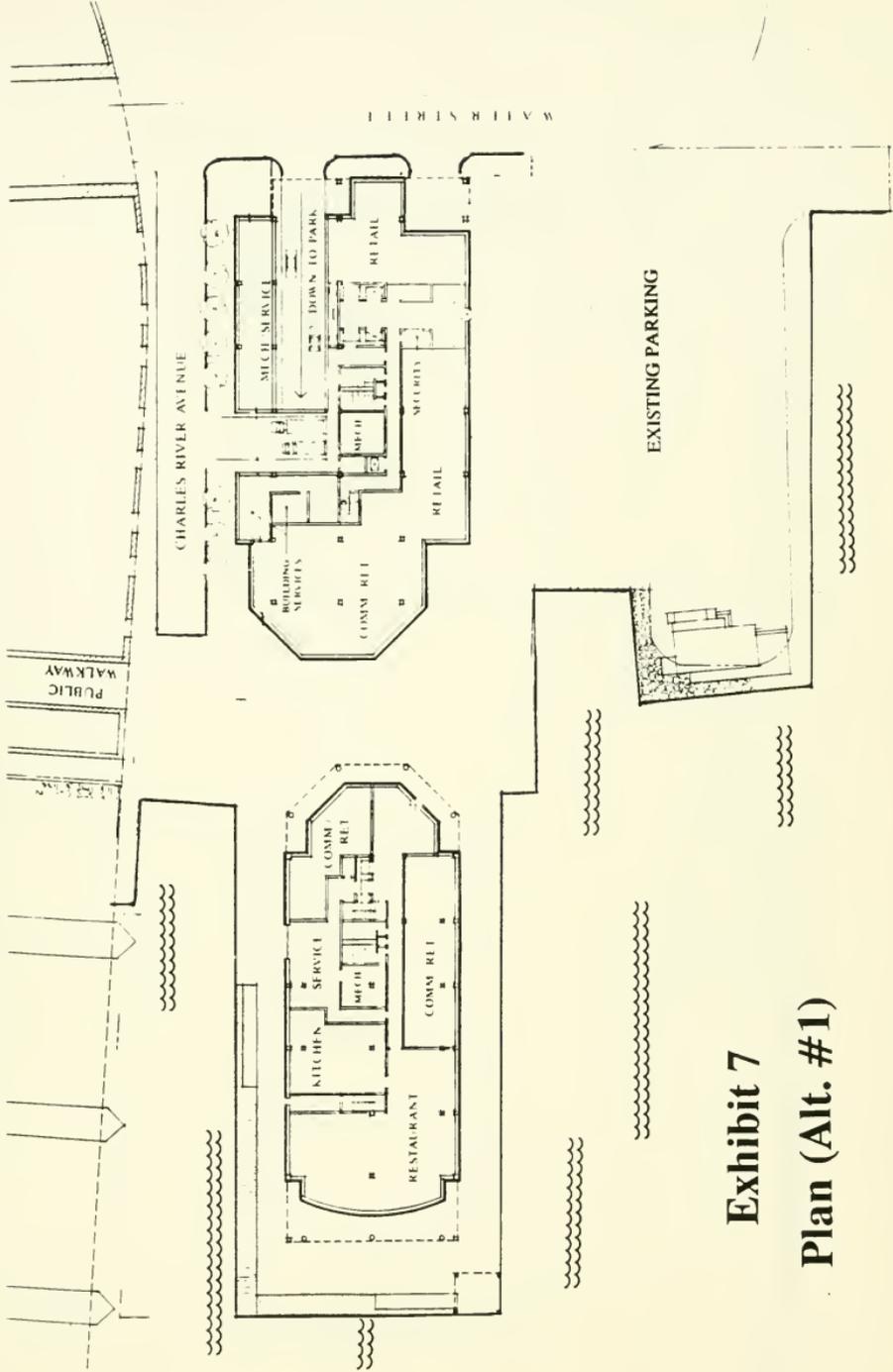
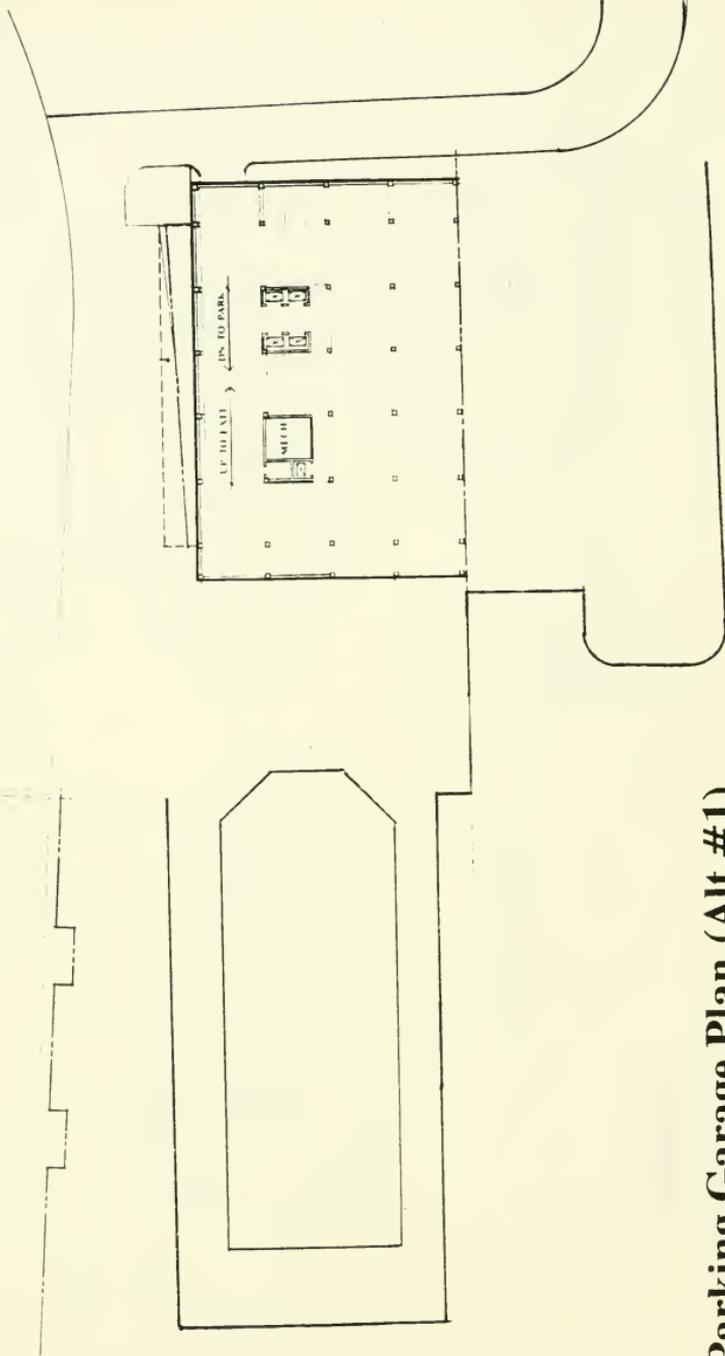


Exhibit 7
Plan (Alt. #1)



Parking Garage Plan (Alt #1)

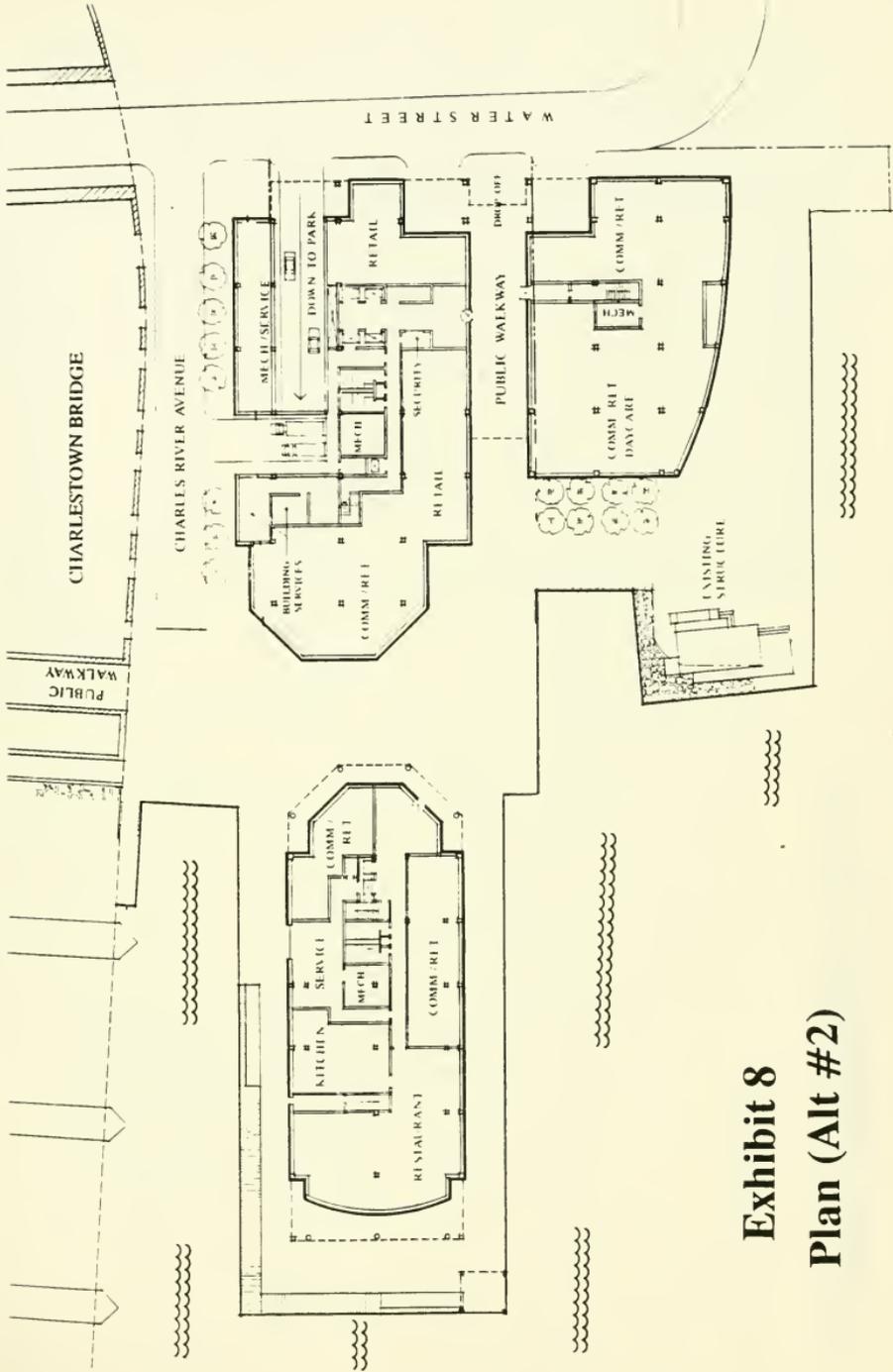
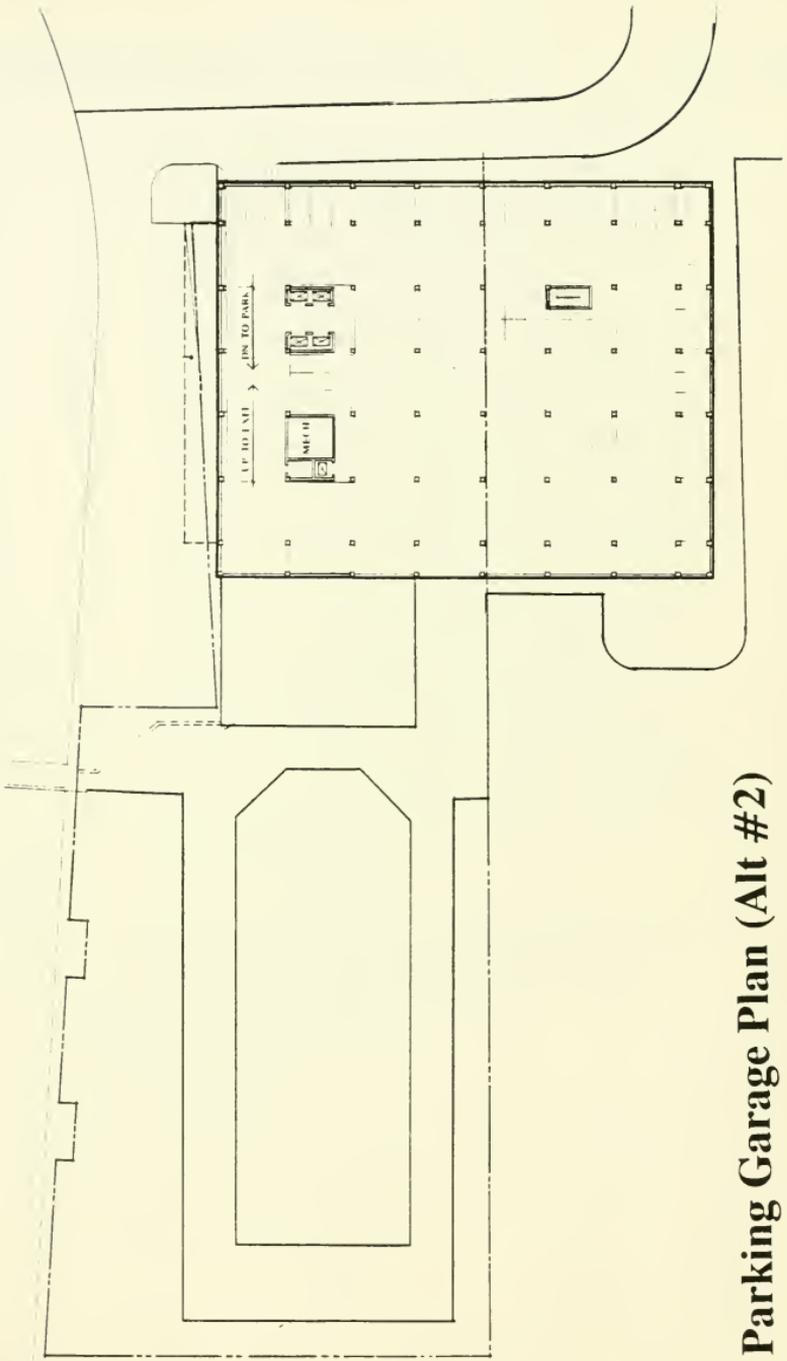


Exhibit 8
Plan (Alt #2)



Parking Garage Plan (Alt #2)

be 210 feet long and 120 feet wide. A five story building will be constructed on this deck. This building will be 62 feet tall and will have 88,060 square feet of space on five floors.

Uses planned for both of the buildings include office and retail space and a seafood restaurant. The restaurant will be located on the ground floor level at the end of the pier building. It will be a moderately priced establishment and service will be available both indoors and on the pier end. The retail and commercial space in both buildings is proposed to be leased to neighborhood types of businesses. These include doctors' offices, insurance sales, a small convenience store, day care center, a barber and/or hair stylist, a bank, video rentals, a camera shop, dry cleaner and a pharmacy.

Under Alternative #1, the Pier Building and Landside Building will have the following square footages per floor.

<u>FLOOR</u>	<u>PIER BLG.</u>	<u>LANDSIDE BLG.</u>
Ground	16,300	19,920
Second	19,780	24,505
Third	18,350	24,505
Fourth	16,815	24,505
Fifth	16,815	18,460
Sixth	n/a	18,460
Mezzanine	<u>n/a</u>	<u>5,245</u>
TOTAL	88,060 s.f.	135,600
	GRAND TOTAL	223,660 s.f.

The Landside Building will also have a three level parking garage below grade. Each level will have 84 spaces, for a total of 252 parking spaces. There will be no at-grade parking at Tudor Wharf. The E.N.F. had suggested that the bridge vaults under the Charlestown Bridge would be used for parking. This plan has been eliminated in favor of the three level underground garage.

2.7.2 Site Plan (Alternative #2)

Conversations with the Massachusetts Port Authority (Massport) have explored the possibility of combining the Tudor Wharf site with an adjacent parcel of 28,046 s.f. This site is presently used for

overflow parking for Hoosac Pier/
Constitution Plaza.

If these negotiations are successful, the proponent will expand the Landside building onto the Massport property. Without this parcel, the Landside building is projected to be 135,600 s.f. With the Massport parcel, the Landside building would be 209,820 s.f., an increase of 73,920 s.f. In addition, there are changes in the location of the water taxi dock, a revision of the float plan of the adjacent Constitution Marina and the incorporation of the marina offices into the first floor space of the additional structure. There would be no change to the pier building, the pier platform or the public areas on the pier.

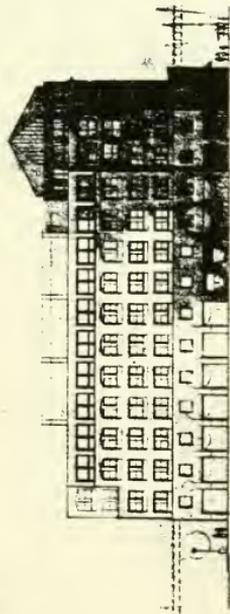
Architecturally, with the Massport parcel, the major change in outside appearance of the Landside building is that it would be "L" shaped. There would be additional first floor retail space (to 9,143 s.f. from 5,333 s.f.) and in retail space (to 9,143 s.f. from 5,333 s.f.). The building would remain the same height.

<u>FLOOR</u>	<u>GROSS SQUARE FEET</u>
Ground	32,070
Second	36,655
Third	36,655
Fourth	36,655
Fifth	31,270
Sixth	31,270
Mezzanine	<u>5,245</u>

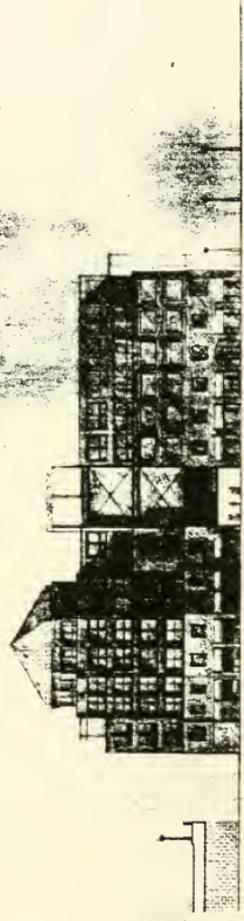
TOTAL 209,820 s.f.

With this alternative, there will be an open air passage through the Landside Building. This passageway will run perpendicular to Water Street and permit pedestrians to walk from Water Street, through the building, across the plaza and to the bulkhead. The walkway will be 30 feet wide, 100 feet long and two stories high. Pedestrians will be able to continue in a straight line out onto the north side walkway on the pier. The public areas facing the water will also be larger. The land area between the bulkhead and the new wing will be available as public space.

For Alternative #2, the parking garage will have three levels of 101 spaces for a total of 303 parking spaces.

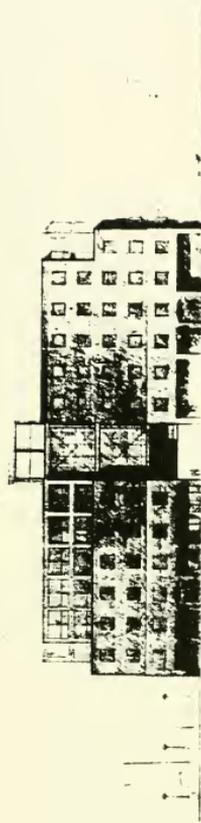


VIEW FROM BRIDGE

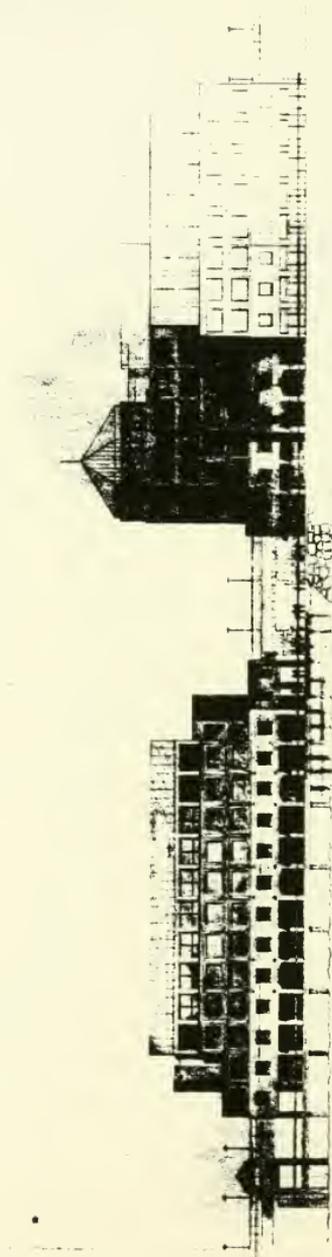


ELEVATION OF TOWER

Exhibit 9 Site Elevations

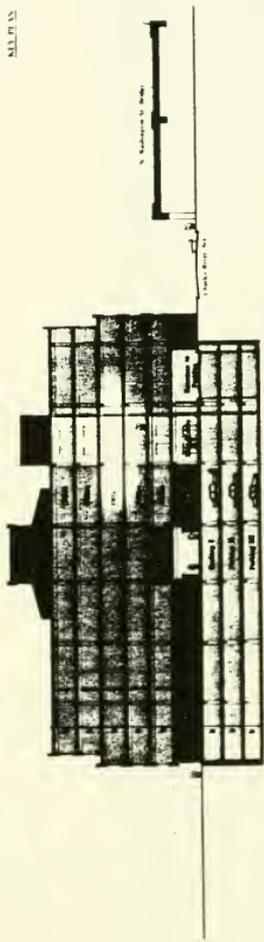
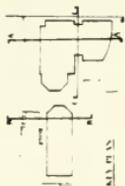


WATER ST. ELEVATION



VIEW FROM MARINA

Exhibit 9A Site Elevations



SECTION A-A : THRU LANDSIDE BUILDING



SECTION C-C : THRU LANDSIDE BUILDING

SECTION B-B : THRU PIER BUILDING

Exhibit 10 Sections

In Alternative #2, there are changes in the locations of some of the water related activities at Tudor Wharf. Alternative #2 uses land now used for access to the marina and the marina offices that result in changes in the location of the marina offices, marina dropoff area and marina parking. The marina offices will be moved to the Landside Building and the dropoff area for the marina would be moved to Water Street. Parking for the marina would be in the Tudor Wharf parking facility.

Both alternatives propose the reconstruction of Charles River Avenue, the construction of stairs from the Charlestown Bridge down to the site, dredging for a historic ship exhibit and the installation of docks. Improvements to the bridge vaults are also proposed.

2.8 Timetable, Costs

The estimated project schedule calls for a construction period of two and one half years. This period is estimated to begin in June, 1990 and completion is scheduled for Spring, 1993. If the Massport parcel is included in the plan, the construction period will increase by six months.

The proposed project will be constructed in several phases. Phase One of the project will be the removal of the existing buildings. As a temporary parking lot and staging area, a temporary concrete deck will be poured on the existing timber pier. Phase Two will be the construction of the underground parking facility, Phase Three, the construction of the Landside Building, Phase Four, the construction of the pier and pier building and the dredging for the historic boat.

The estimated cost for the project is \$45 million. If the Massport parcel is used, the estimated cost is \$65 million.

For either alternative, about sixty thousand yards of excavate will be removed and trucked away. It is estimated that 3,000 truckloads of 25 cubic yards each will be required over a three month period to remove the excavate. The buildings will be of conventional construction - a steel frame with a masonry exterior and will take one year to build. The demolition of the existing structure and construction of the new pier will begin in month 18. It is estimated that 2,000 yards of material will be removed.

The construction of the pier building will begin in month 25.

The reconstruction of Charles River Avenue, the construction of the Charlestown Bridge stairs, public areas, dredging and dock installation will all be constructed next. Finally, the improvements to the bridge vaults will be made.

2.9 Other Nearby Construction Projects

Central Artery North Area Project

By far the most significant construction project affecting the Charlestown area is the reconfiguration of the Route 1 and Interstate 93 intersection.

The Massachusetts Department of Public Works is reconstructing the intersection of the Central Artery/I-93 highway and the Tobin Bridge/Route 1 interchange. The \$290 million project is scheduled for completion in December, 1993. The concentration of major regional transportation routes at or near City Square has led to congestion and unsafe driving conditions in the City Square area. The Central Artery/I-93 elevated intersection has the highest

accident rate in the state's highway system.

The construction program will include straightening the S-curve at the foot of the Tobin Bridge, construction of two tunnels under City Square and two new loop ramps to connect to I-93, removing existing elevated expressway ramps over City Square and improving vehicular and pedestrian circulation in City Square and adjacent city streets. Route 1 traffic will travel under City Square in the two tunnels. The elimination of the overhead ramps in City Square will open up the Square. The elimination of the ramps will also free up 10 to 12 acres. These acres will be divided into 5 development parcels and a park. The land is now the property of the DPW but will most likely be deeded to the Boston Redevelopment Authority for development.

3.0 Public Amenities

The following section provides information on the areas of the project that are available to the public. The section outlines the amount of public open space, catalogs the public amenities provided by the developers and explains the water related and water transportation features of the project.

3.1 Open Space

The Tudor Wharf site encompasses 84,563 s.f. of existing usable land and pier area, and 15,960 s.f. of watersheet. The building footprint is 29,855 s.f. This leaves 54,708 s.f., or 65%, of out of doors land and pier area that will be open.

<u>AREA</u>	<u>SIZE</u>
Total site area	84,563 s.f.
Building footprint	36,028 s.f.
Outdoor public area and circulation area	28,855 s.f.
Sheltered public space	5,546 s.f.
Watersheet	15,960 s.f.
Roads and dropoff	10,239 s.f.
Greenspace	2,466 s.f.

With the Massport parcel, the program calculations are:

<u>AREA</u>	<u>SIZE</u>
Total site area	112,609 s.f. #
Building footprint	46,998 s.f. #
Outdoor public area and circulation area	42,515 s.f. #
Sheltered public space	5,546 s.f. *
Watersheet	15,960 s.f. *
Roads and dropoff	11,198 s.f. #
Greenspace	6,352 s.f. #

Indicates increase from Alternative #1

* Indicates no change from Alternative #1

3.2 Public Access

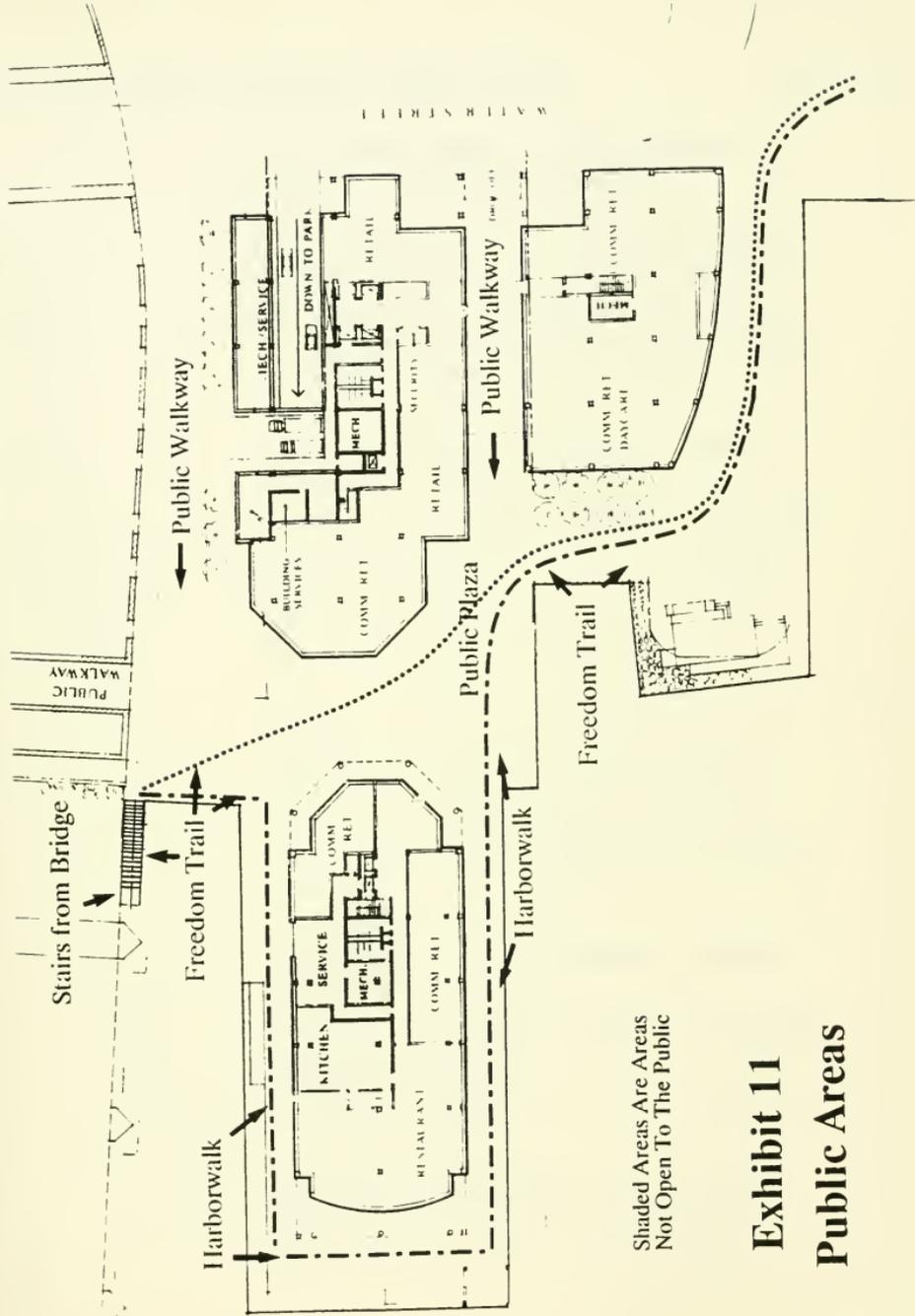
The proponent will provide large areas of open space, access to the water's edge and walkways throughout the site. The public will be permitted access to all of the out of door areas and much of the first floor building areas. The areas of open space will be landscaped with trees and grass and will offer seating. Lighting will also make the areas accessible and safe at night. (See Exhibit 11)

A twenty foot wide walkway will be constructed on the north side of the pier building. At the harbor end of the

building, the open area will expand to the full width of the new pier, 120 feet, and extend 35 feet to the end of the pier. There will also be 14 feet of public open space under the harbor end nose of the building. The south side of the building will have a 16 foot wide walkway.

The first floor uses planned for the pier building include a 6,618 square foot restaurant, 2,835 s.f. of retail space, 2,835 s.f. of commercial space and the building lobby and elevator area of 5,787 s.f. Of the 16,300 s.f. of first floor pier building space, 93% will be open to the public. The remaining space is commercial space and mechanical space. Between the pier building and the landside building a pedestrian corridor will be maintained. This corridor will allow pedestrians to walk parallel to the water's edge. At the ground level the area where pedestrians may walk between the pier building and the landside building will be 70 feet wide. This walkway will extend from the Charlestown Bridge to the northern property line.

Pedestrians will also have access to the former Charles River Avenue paralleling the present Charlestown Bridge. In addition, a pedestrian link to Paul Revere Park is proposed for under the



Shaded Areas Are Areas
Not Open To The Public

Exhibit 11 Public Areas

Charlestown Bridge by opening up and using one of the bridge vaults.

In Alternative #1, 94% of the at grade project land and pier area will be in public use. Seventy two per cent of the first floor building areas will be public space as well.

<u>Use</u>	<u>Public</u>	<u>Private</u>	<u>Total</u>
Building	26,119sf	9,909sf	36,028sf
Vehicular	10,239	0	10,239
Maritime	15,960	0	15,960
Open Space	48,106	0	48,106

In Alternative #2, 91% of the at grade project land and pier area will be in public use. Sixty eight per cent of the first floor building areas will be public space.

<u>Use</u>	<u>Public</u>	<u>Private</u>	<u>Total</u>
Building	29,929sf	13,719sf	43,648sf
Vehicular	11,198	0	11,198
Maritime	15,960	0	15,960
Open Space	65,611	0	65,611

The Charlestown Bridge is part of the Freedom Trail. From the North End's Copp's Hill Burial Ground, the Trail

takes walkers across the bridge, into City Square and then to the U.S.S. Constitution. A more scenic route would keep pedestrians nearer the water's edge. The proponent will, as part of the project, build steps from the Charlestown Bridge sidewalk down to the Charles River Avenue level, a vertical distance of 21 feet. This is the project level. Pedestrians from Boston will then be able to cross the Charlestown Bridge, walk down the steps onto the Tudor Wharf site, walk between the Pier building and the Landside building and on to the Constitution and the Navy Yard. Similarly, Charlestown residents will have a more pleasant and direct pedestrian route by transiting the site, climbing the stairs and crossing the Charlestown Bridge to Boston. A ramp to permit the handicapped access to the site directly from the bridge was considered and ruled out as impractical. The slope requirements and the height of the bridge would require a ramp structure 300 feet long. This is almost the distance from the proposed stairs to the Water Street overpass. Full handicapped access to the waterfront is available by using the present Freedom Trail route.

3.3 Public Amenities

Many outdoor public amenities will be incorporated into the site. These include a water taxi dock and a public plaza with seating and views of the harbor and North End.

The water taxi dock will permit water taxi operators to pick up and discharge passengers from Tudor Wharf and Constitution Plaza and will also serve as a public dock for the Charlestown neighborhood.

The public plaza will be landscaped with trees, grass, tables and benches. The public will be encouraged to use the plaza for viewing harbor related festivities as well as for quiet viewing of passing boats and other water related activities. The plaza will offer areas of shade to escape the sun. For night time safety and enjoyment of the public areas, the site will be lit at night.

There will also be indoor public areas and amenities at Tudor Wharf. In alternative #1, they include:

- 8,168 square feet of retail space,
- a 6,618 s.f. restaurant.

- 5,787 s.f. of additional indoor public facilities including public restrooms on the ground floors of both buildings.

The retail space will be located on the first floor levels of both buildings. The retail space is proposed to be leased to neighborhood types of businesses such as doctor's offices, insurance sales offices, a small convenience store, day care center, a barber and/or hair stylist, a bank, video rentals, a camera shop, dry cleaner and a pharmacy.

In alternative #2, the project including the Massport parcel, the amenities include:

- 11,978 square feet of retail space, an increase of 3,810 from Alternative #1,
- a 6,618 square foot restaurant, which is the same size as in Alternative #1,
- 7,593 s.f. of additional indoor public facilities including public restrooms on the ground floors of both buildings, an increase of 1,806 from Alternative #1.

The 6,618 square foot restaurant will be located at the end of the Pier building. The restaurant will offer views of the

harbor and the marina. During the warmer months, patrons will also be served outside on the pier.

Restroom facilities will be made available to pedestrians transiting the site. Both the pier building and the landside building will have rest room facilities in their lobbies. Signs will be placed announcing the availability of restroom facilities to pedestrians walking through the site. These facilities will be open to the public from 7 AM to 9 PM seven days a week.

The Tudor Wharf project will improve the pedestrian connection between Paul Revere Park and Tudor Wharf by opening up the first bridge vault to pedestrian traffic. At the present time, the five bridge vaults are rented out by the City of Boston. Two of the vaults are rented by Rapids Realty Company, Inc., the owners of the Tudor Wharf site, for storage space. The other three are rented to Tony's Box Company, a distributor of wooden crates and pallets. The CANA project involves the reconstruction of the entire western approach to the Charlestown Bridge and both parties will be evicted for the construction period. At the completion of the bridge approach reconstruction, the Tudor Wharf proponents propose to open the

easternmost bridge vault as a pedestrian walkway from Paul Revere Park to Tudor Wharf. The 100 foot long vault would be open during daylight hours and locked up at night for the safety of pedestrians.

The remaining bridge vaults are proposed to be used by the water-dependent users of the Tudor Wharf site for storage of supplies, maintenance, and the repair of their boats and exhibits. This space will increase the viability of the water dependent users of Tudor Wharf by offering large areas of workspace at relatively low cost. The developers will provide basic renovations to the vault areas. Proper electricity, sanitation, fire safety equipment and heating will be installed.

3.4 Linkage Funds

The proponent will contribute to the Development Impact Project program. The Alternative #1 project plans call for 223,660 s.f. of space to be built. Using the City's formula for calculating the Linkage funding, the Alternative #1 linkage payments total \$741,960. Of this amount, \$123,660 will be contributed to the jobs program and \$618,300 for the housing program.

Under the Alternative #2 plans, the linkage funds would total \$1,185,480. The housing program would receive \$987,900 and the jobs program would receive \$197,580.

3.5 Freedom Trail

The National Park Service Freedom Trail winds from Boston Common, through downtown Boston and the North End, over the Charlestown Bridge to the USS Constitution. Along the way it passes such notable sites as King's Chapel, the Old State House, Faneuil Hall, the Paul Revere House, Old North Church and ends at the USS Constitution. While not part of the Freedom Trail, the Bunker Hill Monument is often visited by Freedom Trail walkers. (See Exhibit 12)

Tudor Wharf lies on the Freedom Trail. At the present time, the Trail crosses the Charlestown Bridge, passes Tudor Wharf while on the bridge approach, turns right on Chelsea Street, right again on Joiner Street and then left on Constitution Avenue to the USS Constitution.

At the completion of Tudor Wharf, pedestrians using the Freedom Trail will be given the option of crossing the Tudor Wharf site. The public benefits of this are many. For the next six years the CANA

project will close off City Square to pedestrian traffic. The present plans are to move the Freedom Trail to a temporary walkway and staircase on Water Street. This will put pedestrians at the edge of the CANA construction zone. Providing an alternative to the Trail through the Tudor Wharf site will put pedestrians further away from the construction project for the three years after the Tudor Wharf project is finished but CANA is not. Pedestrians will also cross a fully developed site with public amenities that will make the trip more enjoyable. They will be nearer the water's edge, restrooms will be available and seating will be available for rest and relaxation. The alternative route through Tudor Wharf will offer a more direct and scenic route between the North End and Charlestown and will be 825 feet shorter than the present Freedom Trail route. (See Exhibit 13)

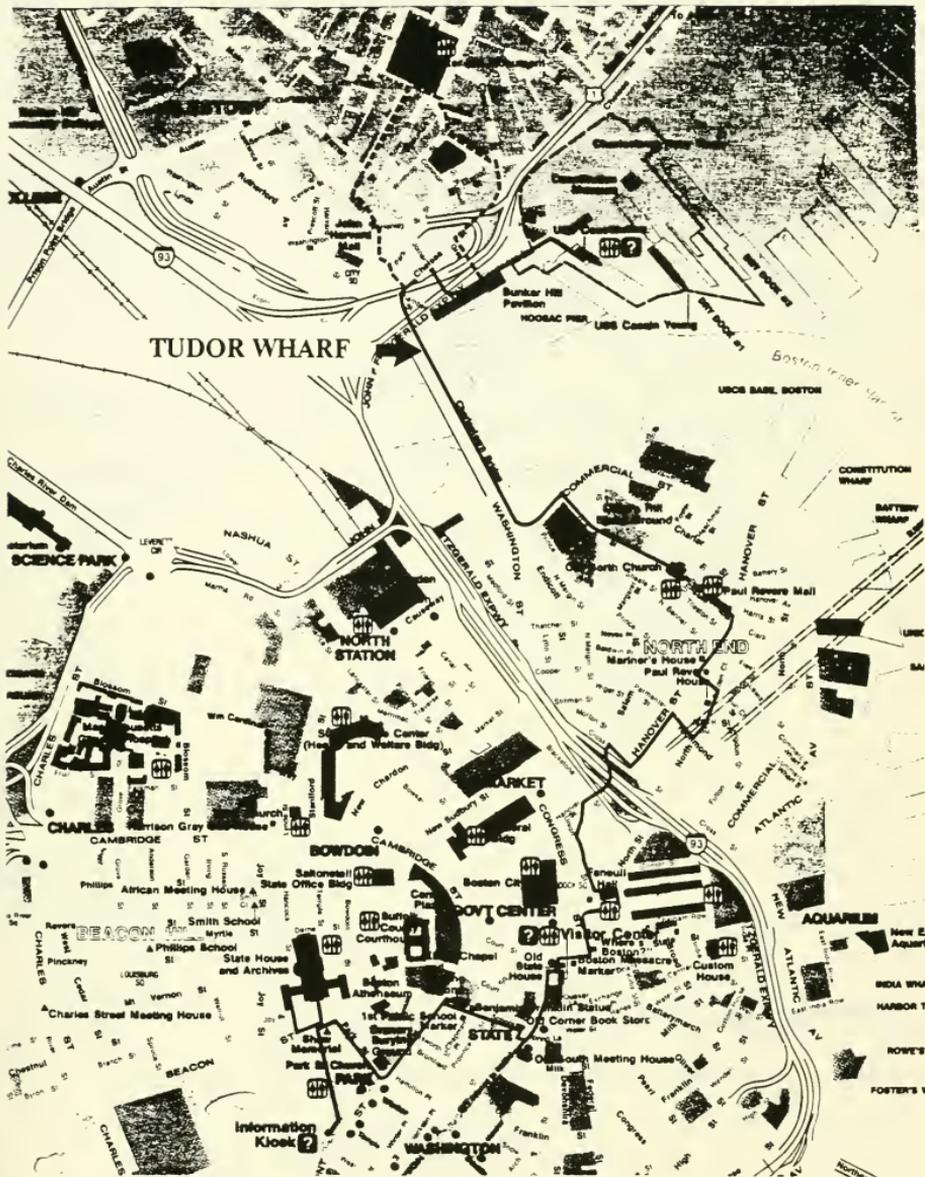


Exhibit 12
Freedom Trail

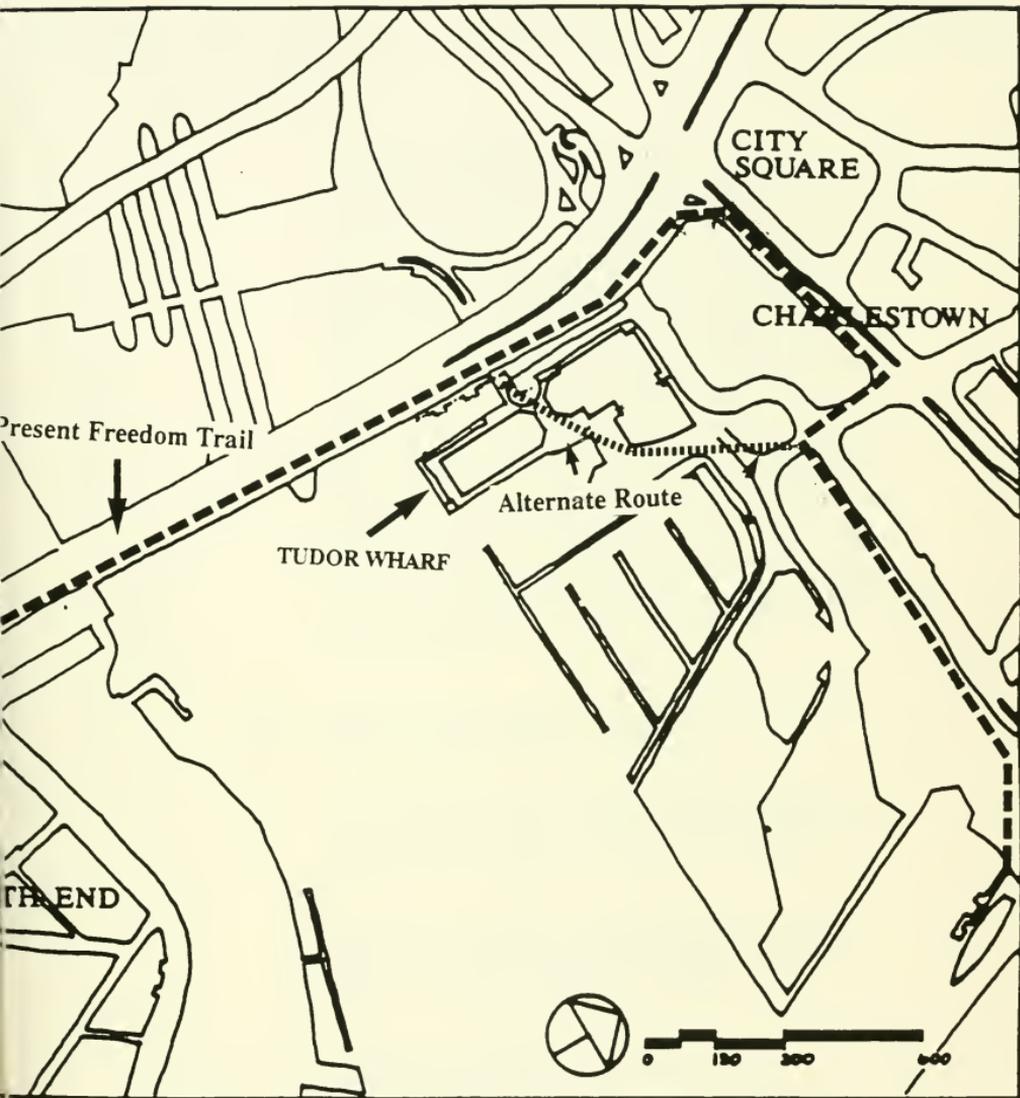


Exhibit 13
New Freedom Trail

4.0 Tidelands Licensing

The Certificate on the Environmental Notification Form requests a chronology of the tidelands licensing history, including copies of the licenses, title documents and permits. This section provides information in the Chapter 91 licenses that have been issued, the locations of historic high and low water lines and a review of the public access issues in light of Chapter 91. Appendix C includes the previously issued tidelands licenses. This section also responds to the Certificate's request for information on the proposed marine related activities on the site.

4.1 Tidelands Licensing History

In 1887 the Tudor Wharf Company applied for and received a Chapter 91 license to extend their wharf.

Harbor and Land Commissioners License #1986, issued January 27, 1887.

License #1986 permitted the Tudor Wharf Company to extend their wharf an additional 81 feet to the 1880 Harbor Line. It is presumed that the business of loading and unloading cargoes was good enough to warrant the building of

additional pier space. Eight years earlier, the Harbor Line had been extended and the Tudor Wharf Company was taking advantage of the additional watersheet that could be built upon.

Harbor and Land Commissioners License
#2877, September 22, 1904.

License # 2877 permits the Tudor Wharf Company to rebuild the original pier structure, but does not include any work on the pier extension constructed seventeen years earlier under license # 1986. This was the older section of the pier and it is presumed that after years of use, it needs reconstruction.

Department of Public Works License
#2667, July 5, 1944.

License # 2667 permits the Tudor Wharf Company to repair and strengthen the pier. This work was for railroad track support on the extended portion of the pier built in 1904. (See Appendix C for copies of these Chapter 91 licenses).

4.2 Chapter 91 Jurisdiction

The delineation of public and private tidelands is an important issue in the Chapter 91 licensing process, as substantially different standards and

objectives apply to public and private tidelands. The important delineations to make are the historic high water line and the historic extreme low water line. These division separate uplands, private tidelands, and Commonwealth or public tidelands.

"Uplands" is defined as the area landward of the historic mean high water line. This land is not subject to tidelands licensing.

"Public Tidelands" or "Commonwealth Tidelands" is the area seaward of the historic extreme low water line. This area is held in trust by the Commonwealth for the benefit of its citizens and is subject to tidelands licensing.

"Private Tidelands" is the area between the historic high water line and the historic extreme low water line. The Commonwealth has reserved certain public rights within this area. They are the rights of fishing, fowling and navigation.

The site is located on a small peninsula jutting out from shore towards Boston. This point was the closest point of land to Boston and was a logical location for the first ferry service between the two

towns, and the subsequent location for the bridges that connected them.

A review of historic maps and site plans dating back to the early 18th century was conducted. These documents cover the development of Charlestown from 1707 to the present. Based on the best available information, the approximate locations of the historic high and low water lines dating back to 1775 have been determined. A compilation of these maps is shown as Exhibit 14.

The earliest determinable high water line, from 1775, is approximately where Water Street is today. This location is also consistent with official DEQE Division of Waterways Regulation maps showing the historic shoreline. Thus, none of the property within the project site is considered to be uplands, and the entire site is subject to tidelands licensing. The plans also show little or no change in the mean low water from 1775 to 1835.

The historic maps also show the historic extreme low water line to be approximately in the location of the 1840 harbor line. The historic extreme low water line has been determined by survey to be approximately 200 feet from the present bulkhead. Thus, all of the site

from Water Street to the historic extreme low water line are considered to be "private tidelands". The area between the US Pierhead and Bulkhead line and the 1984 Harbor line are considered to be "Commonwealth tidelands".

The present extreme low water line differs from the historic extreme low water line in several respects. Dredging of the slip between Tudor Wharf and the former Hoosac Pier complex (now Constitution Marina) during the late 1800's shifted the low water line landward, under the Tudor Wharf pier. Some filling or accretion has also apparently occurred, shifting the low water line seaward on the westerly side of Tudor Wharf.

Early maps and charts of the Charlestown area and Boston Harbor show development at the Tudor Wharf site as early as 1775. The area of Tudor Wharf was the closest to Boston and was therefore the locale of the first ferry crossing between Boston and Charlestown. The first bridge, the Charles River Avenue Bridge was later built adjacent to the Tudor Wharf site.

The Harbor Commissioner's Plan of the Harbor in 1835 and the Charlestown Branch Railroad map of 1839 show the Charles River Avenue Bridge and Austin's Wharf,

as the Tudor Wharf site was then known. These maps suggests that filling had taken place on the site, in addition to the building of the pier structure. From Water Street, the location of the historic high water line, there are filled tidelands for a distance of 300 feet to the bulkhead. Austin's Wharf extended from the bulkhead to the 1840 Harbor line, a distance of 145 feet. Subsequent maps, from 1847 and 1885, as well as present, suggest that the filled area on the site has remained stable since the 1840's. The map study also suggests that the site was dredged along the eastern edge of the pier. This dredging permitted large vessels to load and unload cargoes at Tudor Wharf and Hoosac Pier.

As stated earlier, all of the project is in either private tidelands or Commonwealth tidelands. The planned uses for the Commonwealth tidelands area include an excursion boat dock, part of the historic ship exhibit dock, and the pier end, which will be public open space. There will be no private use of the Commonwealth tidelands area.

The first floor uses planned for the private tidelands area include the restaurant, retail and commercial space,

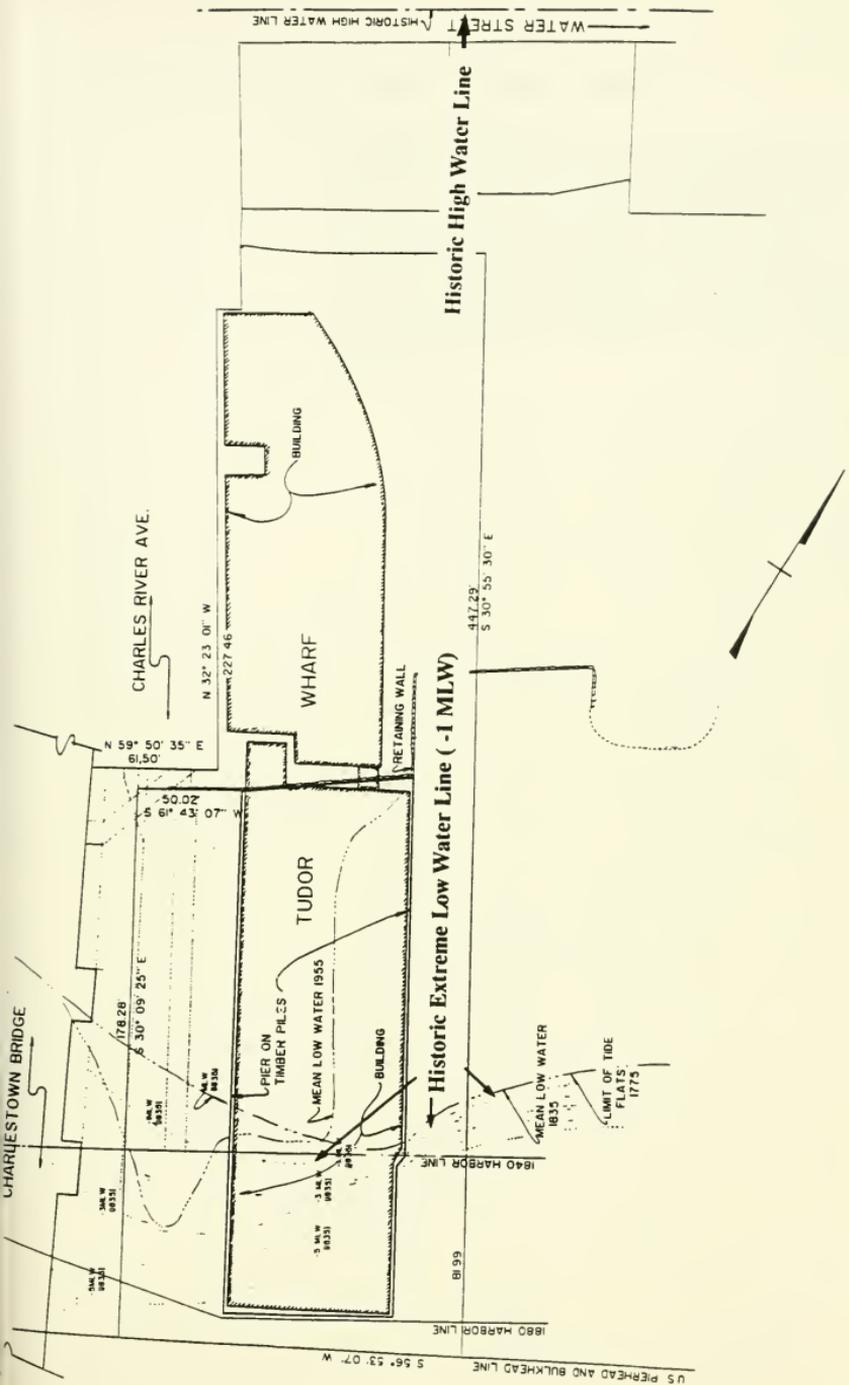


Exhibit 14
High/Low Water Lines

lobbies, the water taxi dock and waiting area, the public plazas, dropoff and parking garage entrance areas and building service areas. All of these areas, except the commercial space and building service areas are fully open to the public.

4.3 Water Dependent Uses

In consideration of the project's location in Boston Harbor, the proponents have attempted to accommodate a variety of water-dependent and water-enhanced uses.

During the early stages of planning for the acquisition of the site, thought was given to the likelihood of using the site for just water dependent business activity. The planning study looked into the possibility of using the site for commercial shipping, as a commercial fishport, and as a maritime museum. Commercial shipping in Boston Harbor has taken on a different dimension since the times when the site was used for cargo handling. The containerization of freight limits the loading and off-loading of container ships to large terminals with the proper handling equipment. Two such facilities exist in Boston Harbor, Conley and Moran Terminals, and are many times the size of the Tudor Wharf site. The small size of the site also limits its use as a fishport or fish handling facility. The Massport Fish Pier will provide capacity for handling fish for many years in the future and a second facility is unneeded. The Tudor Wharf site is near the Constitution Museum and the USS Constitution, both of which would

provide competition for any type of static interior museum display. The historic ship exhibit is seen as being complementary to the existing museums of Charlestown and providing a water dependent use consistent with the Chapter 91 program.

The project has integrated water-related uses into the project design and has utilized virtually the entire water's edge for such uses. Regardless of which alternative is the final design, the planned uses for the water's edge remain as follows.

- Water taxi dock,
- Historic ship exhibit, dock and educational center,
- Berth space for dinner/excursion boat.

The proponents of Tudor Wharf will provide docking facilities, restrooms and an enclosed waiting area for water taxi operators to pickup and discharge passengers.

Space will be provided for a historic ship exhibit. This ship, yet to be chosen, will have a permanent berth at Tudor Wharf.

The proponents of Tudor Wharf have also designated the pier end as dockage for a dinner/excursion boat. A company offering one to three hour daytime cruises, lunch and dinner cruises and evening cruises of Boston Harbor will be sought as a tenant.

4.3.1 Water Taxi Landing

The water taxi landing will be located on the northern edge of the pier building and close to the bulkhead. This location will be more accessible and visible from the landside, and will be closer to public restrooms and the pier building lobby, which will serve as a sheltered waiting area. This location is also the most protected from wind and waves which will make boarding much easier. (See Exhibit 15)

In Alternative #1, the use of this location also precludes the use of the northern edge of the pier structure for the docking of any other vessels as the widening of the pier for pedestrian access in effect gives up use of the pier edge for berthing of boats. The Tudor Wharf watersheet will be needed by the taxi vessels to get in and out of the docking facility.

In Alternative #2, the taxi dock will remain in the same location but the float plan for the marina will change. In this alternative, the marina float plan will change from a side channel configuration to a center channel configuration. This means that the fingers will extend perpendicular from the edge of the Tudor Wharf pier. The taxi dock will remain in the same location. Water taxis approaching the landing will enter the center channel and make a left turn between the float fingers to get to the dock.

The landing will be made available to any and all water taxi services in use or planned for in Boston Harbor. It will have the appropriate floats, ramps and other conveniences necessary for small 25-35 foot water taxi boats to board and discharge passengers. The specific design details will be reviewed with the Water Transportation Task Force and vessel operators. The plan will be reflected in the final Chapter 91 license.

This project, by itself, will not generate sufficient demand to support water taxi service, nor does it require the use of water transportation services. The landing is being provided as a public service to Tudor Wharf tenants, site visitors and Charlestown residents. It is

expected that access to the landing will be primarily made on foot. In Alternative #1, the turnaround area on Charles River Avenue will also serve as a dropoff point for those arriving by taxi or private automobile. In Alternative #2, a dropoff point on Water Street near the taxi dock will be built.

The projected water taxi demand for the Tudor Wharf site is not known at this time as on-demand water taxi service in Boston Harbor is non-existent. While water taxi services are not now offered, there are water transportation alternatives in Boston Harbor. These include the airport water shuttle, the Long Wharf-World Trade Center shuttle and the Long Wharf-Charlestown Pier 4 service.

Downtown Boston and the Charlestown Navy Yard are water taxi destination points and are also very convenient for pedestrians to access from Tudor Wharf. Less convenient from Tudor Wharf is the airport, however, it is unlikely that the project will generate enough traffic for dedicated shuttle service to the airport. There is greater likelihood that a harborwide water taxi service will receive traffic from the Tudor Wharf site and the City Square area.

4.3.2 Historic Ship Exhibit

The proponents of Tudor Wharf have sought to provide a water related link between the site and the harbor that would be educational, make a positive impact on the harbor and have some historical significance. The southern edge of the pier structure is proposed as a historic ship exhibit area. This site, being on the Freedom Trail, is highly visible and lends itself well to educating people about the maritime history of Boston. Due to the narrow width of the slip and the strong currents from the Charles River Dam, active use of the berth would be problematic. An historic exhibit ship that moves infrequently is the best use of the berth.

There are several vessels within Boston Harbor that meet the criteria established by the developer for inclusion in the project. Vessels currently under review include the "Luna" and the "Venus", now located in the lower Charles River Basin and the former Boston Pilot schooner now located in Charlestown. These historic vessels are in need of permanent berthing space, visibility and landside support space that Tudor Wharf can offer.

4.3.3 Dinner/Excursion Boat Dock

This will be the first development in Boston to offer space on a permanent basis to a small excursion vessel operator. Other designated passenger facilities in Boston Harbor that are used for excursion boats are either leased by large fleet operators, such as at the Long Wharf facilities, or can only be used for pickup and dropoff of passengers, such as at the facilities at Rowe's Wharf. Operators utilizing Rowe's Wharf must also have maintenance and storage facilities elsewhere. The cost of maintaining two facilities is prohibitive for the small operator. This leaves few alternatives to operators who offer a service to a smaller segment or percentage of the market than do the large fleets. These operators include the dinner boats and those companies with only one or two boats. Tudor Wharf, by providing space to such an operator, will help to offer more choices for enjoyment of the harbor.

The Tudor Wharf location is an excellent location for a dinner/excursion boat operation in terms of access and visibility. The proponents are offering the pier end as a docking location from which an operator may conduct his business. Office and storage space will

also be available in the pier building and in the bridge vaults.

The typical boat operator offers harbor cruises evenings and weekends. These hours are off-peak in terms of parking demand for the office uses at Tudor Wharf. During the evenings and on weekends, there will be more than sufficient parking space for the excursion passengers.

Due to the heavy currents from the Charles River Dam, the proponents are concerned about the navigational ability of boats in this area. The Environmental Notification Form designated the water between Tudor Wharf and the Bridge for a small boat rental center. Further analysis of the high current velocities in this area has led to a rejection of this plan. Larger boats would be affected less by these currents than smaller boats. At times the currents approach three knots, and a licensed captain knowledgeable of his boat, the dock and the currents is much less likely to encounter difficulties in this area.

4.3.4 Tall Ship Wharfage

Due to the public walkway surrounding the pier building and the needs of the marina for an adequate channel, the use of the

northern edge of the pier for boat tie-up is considered impracticable on a day to day basis. The proponents have also given thought to using this narrow watersheet as a temporary dock for the small Tall Ships when they visit Boston Harbor. Such a use would be limited to small Tall Ships for several reasons. Tall Ships are usually square-rigged vessels and their spars extend far beyond the sides of the ship. Given that the pier building is 20 feet back from the water's edge, there are dangers involved if a large square rigged vessel is tied to the eastern edge of the pier. There is also the possibility of eliminating access to the marina if a beamy ship is docked at Tudor Wharf. If and when Tall Ships arrive in Boston, the proponents of Tudor Wharf would welcome the initiation of discussions between the ships' agents, the adjacent marina and Tudor Wharf to provide dockage for Tall Ships on a case by case basis.

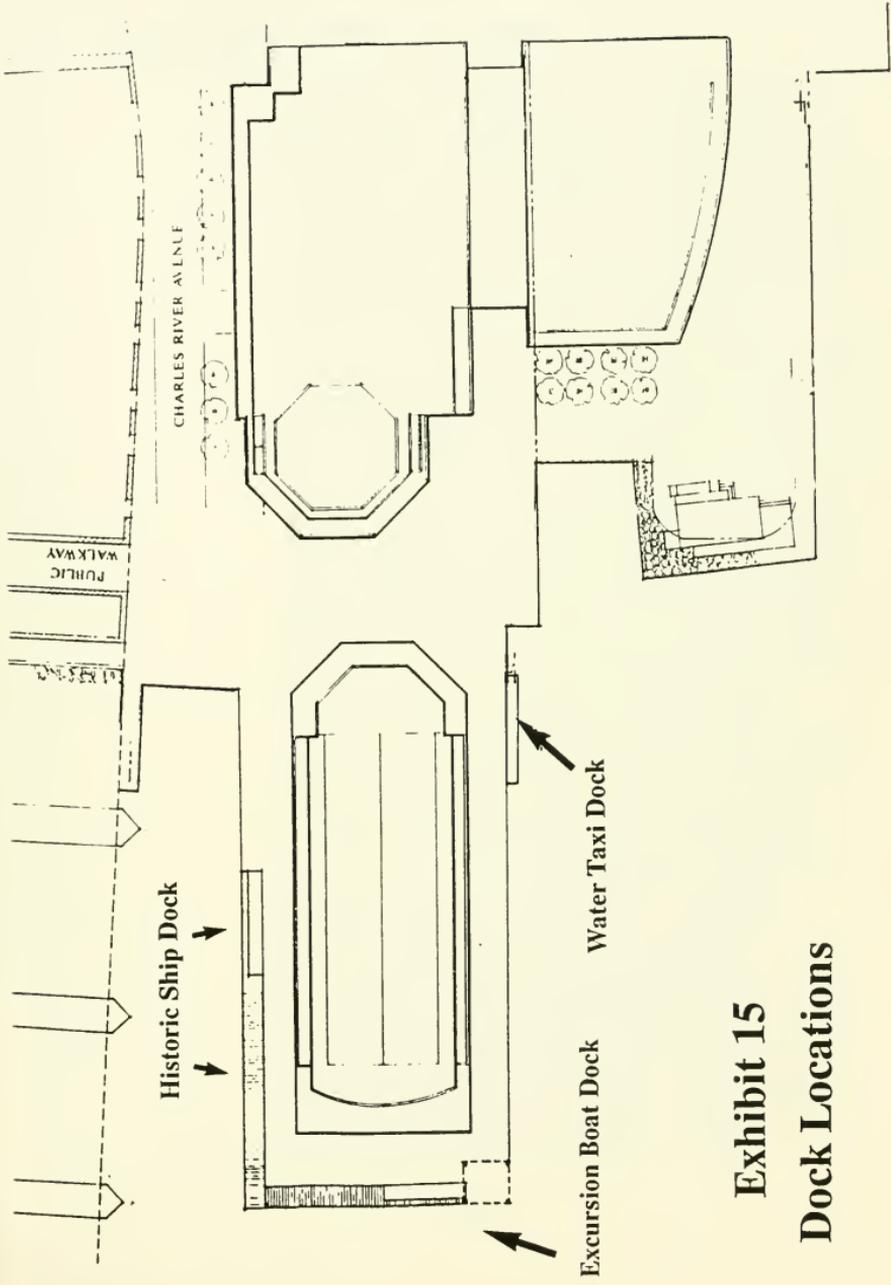


Exhibit 15
Dock Locations

4.4 Navigation Issues with Existing Marina

Directly to the north of the Tudor Wharf site is the Constitution Marina. This marina offers 250 slips to recreational boaters in Boston Harbor. The slip system is configured in such a way that many of the boats docked at the marina must pass between the Tudor Wharf site and the marina float system to reach their slips. From the eastern edge of the present pier structure at Tudor Wharf to the nearest float at the marina is 80 feet. As there are usually several 15' wide boats tied to the floats, the channel is effectively 65 feet wide. The proposed pier structure will reduce the width between the floats and the pier to 66 feet from the present 80 feet. This will reduce the channel, if boats remain tied up to the floats, to 51 feet. If boats are no longer tied up there, the channel will be one foot wider than it is today, i.e., 66 feet. Of the 66 feet between the southernmost floats and the new pier structure, 50 feet of this width will be Constitution Marina watersheet and 16 feet will be Tudor Wharf watersheet. The proponent is committed to maintaining sufficient width for navigational access to the marina. In addition, Myerson/Allen and Company and Bosport Docking, dba Constitution Marina, are investigating a float configuration plan which would provide a center

4.5.1 Wave and Wake Analysis

In planning for the development of the Tudor Wharf site, great consideration has been given to the characteristics of the maritime environment of the site. The nature of the water sheet of the site, water depths, current flows, navigation routes and wave and wake regime have been analyzed to determine the opportunities and constraints which exist for the maritime use of the Tudor Wharf structures and surrounding waters.

The Tudor Wharf site has been used in the past forty or fifty years for non-maritime activities. From the early days of the settlement of Charlestown to the early 1900's the site was used to support commercial shipping activities. The former maritime use of the site was for relatively large seagoing ships handling a variety of cargoes. In the last twenty years, the adjacent Hoosac Pier area has been used as a recreational marina.

The most significant factor in determining the proposed program for the site is the proximity of the site to the Charles River dam and the Charlestown Bridge. These structures constrain the possible maritime uses of the site by generating moderate currents at the site during normal flow conditions of the

Charles River and by seriously limiting navigational access to the west side of the pier structure. Other factors which have importance to the design of the project include the adjacent Constitution Marina, boat traffic up the Charles River, and water depths. The wave environment and flooding characteristics of the site are favorable for the use of the site for a variety of maritime uses.

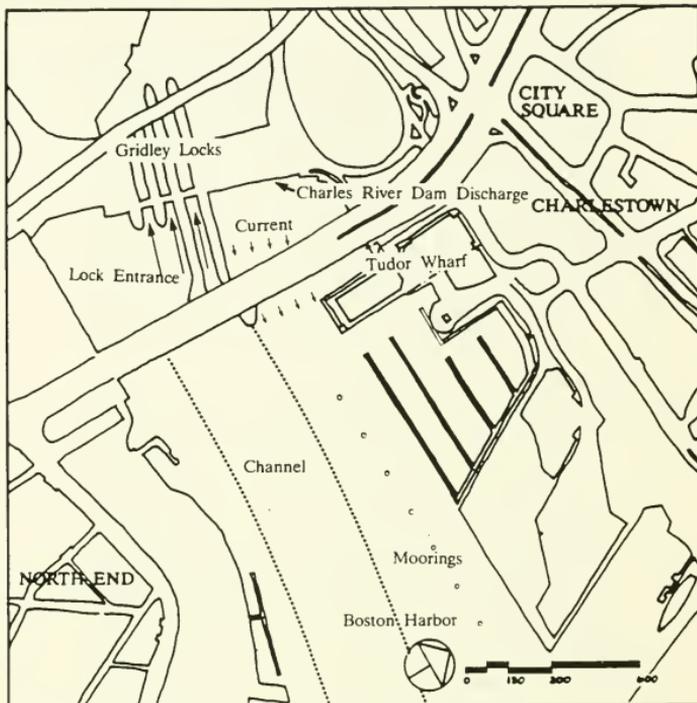
Wave, Wake and Current Environment

A variety of sources of information have been used to assess the potential wave and wake characteristics of the site. Previous studies of the wave climate in Boston Harbor and a recently released preliminary draft of the Federal Emergency Management Agency's "Flood Insurance Study" have been reviewed. Extensive observations of the site have been conducted during a range of tidal and storm conditions and, most importantly, first hand knowledge of the site has been obtained from the owners of Constitution Marina.

The Tudor Wharf location is distinguished by the extremely sheltered nature of the site. The presence of the Charles River Dam to the west, the Charlestown Navy Yard to the east and the North End to the south almost completely enclose a basin

of protected waters. The extension of Navy Yard and Coast Guard piers into the harbor leave only a relatively narrow opening to the Inner Harbor from the Tudor Wharf site. The sole direction of exposure to the Inner Harbor is to the southeast, with a total fetch of less than three quarters of a mile. In the Boston area on an annual basis, winds are least likely to occur from the southeast direction, and when they do occur, are generally less strong than winds from other directions.

The sheltered nature of the site is confirmed by the recent Federal Emergency Management Agency (FEMA) study. The waters surrounding the Tudor Wharf site are identified as Zone A-2, meaning that they are subject to most flood conditions, but not subject to significant wave action during a 100 year storm condition. In addition, Constitution Marina, abutting the site is known as the most sheltered marina in Boston Harbor, and as a result is the favored location for "live-aboard" boats. While the Tudor Wharf site is relatively quiet from a wind generated wave perspective, the area is subject to wake action from pleasure craft transiting the Charles River. During the summer months,



there is a fair amount of boating traffic through the Charles River Dam, past the site and into the Inner Harbor. Visual observations and discussions with the owners of Constitution Marina have confirmed that wake action can be a problem for the outer row of vessels berthed at the marina. The primary responsibility for the generation of wakes lies with the operator of the vessel. Generally, vessels adhering to the established speed limits of 5 m.p.h. in this waterway do not generate any

significant wake. Unfortunately, there are some operators who transit the area at a high rate of speed, causing wakes in the range of one to two feet in height. The operators of Constitution Marina have been fairly successful in minimizing the wake problem by educating boaters passing through the locks, posting speed limits and working with the harbor master to control irresponsible operators.

Navigational constraints of the site are generated primarily by the abutting Charlestown Bridge and the currents flowing from the Charles River Dam. The abutments of the Charlestown Bridge and shallow water depths preclude the opportunity to navigate past the Tudor Wharf site, under the bridge and through to the locks. The route of vessel traffic past the site is located approximately 300 feet seaward of the end of Tudor Wharf, a sufficient distance to preclude possible navigational conflicts with vessels utilizing Tudor Wharf. Recently, Constitution Marina received permission from public agencies to install guest moorings at a distance of approximately 100 feet seaward of the marina, again demonstrating the adequacy of navigational access in the general vicinity. Navigational access to the marina itself is assured by the thirty foot setback of the marina floats from

the Tudor Wharf/Constitution Marina property line. In addition, the Tudor Wharf plan calls for an additional setback on the Tudor Wharf side of 16 feet.

In discussions with the owners of the marina, consideration is being given to the relocation of the main access channel to the marina, should the Tudor Wharf project include the " Massport parcel". The inclusion of the parcel would suggest that the entire complex be planned as a single entity, and would allow an expansion of the number of existing marina slips. By locating the entrance to the marina down a center aisle, a shorter and more direct access to marina slips would be possible, both for boat owners walking out to their berths, and for boats coming in and out of the marina. This more efficient layout would be possible only if the Massport parcel is included in the proposed development.

Currents at the Tudor Wharf site are somewhat stronger than at Constitution Marina, due to its proximity to the Charles River Dam. The routine discharge from the Dam generates a current in the range of one to two knots at the Tudor Wharf site. During wet weather situations where the pumps are operating at capacity, currents are estimated to be

in the range of three knots. The current activity makes utilization of the Tudor Wharf by small or single screw vessels difficult at best. The currents also make the use of the west side of Tudor Wharf problematic, as the currents push vessels broadside into the pier.

Summary

The above mentioned constraints to the use of the water sheet have caused the modification of the original program for the water-side use of Tudor Wharf. Specifically, the strong currents and possible wakes from passing pleasure craft have precluded the use of the site for small, manually propelled or sail powered boats. The original concept of a rowing club or small boat marina has been eliminated as a viable option. In its place, consideration is being given to berthing a larger stationary historic vessel on the west side of Tudor Wharf. This highly visible and accessible location would be an asset to the historic vessel and the infrequent need to move the vessel would be in keeping with the navigational difficulties in using the pier.

On the southern end of the pier, the area has been reserved for the use of a dinner excursion type vessel and/or a water

taxi. These vessels are likely to be larger, powerful twin propeller vessels, capable of maneuvering under the wake and current conditions which exist in this location. On the east side of the pier, the wharf will be used for either an expansion of the existing marina if the Massport parcel is obtained, or the area will be maintained as an access route to the existing Constitution Marina, with a water taxi landing at the inland end of the pier.

4.5.2 Flood Hazard

The recently issued Federal Emergency Management Agency "Flood Insurance Study (Preliminary Draft)" has reviewed the potential for flooding at various locations throughout Boston Harbor. This study specifically examined the potential for wave induced damage, in addition to general flood damage. The results of the study have placed portions of the Inner Harbor in a velocity zone, an area in which additional hazard exists due to the effects of wave action on the stability of structures.

The newly revised maps place the Tudor Wharf piers and upland in Zone C, an area of "minimal flooding". This classification covers areas that are

beyond the reach of a 500 year return period storm event. Based on this analysis the flood hazard potential to the Tudor Wharf project is negligible. All structures will be designed in compliance with the federal, state and local ordinances relating to flood hazard.

The water area surrounding the site is classified as a Zone A2. This zone is indicative of an area that is subject to flooding during an 100 year storm event to a stillwater flood elevation of 10.0 Mean Sea Level or 15.65 Boston City Base. The area is not subject to flood hazard generated by wave action. All structures, floats, and water related facilities will be designed to accommodate the potential for flood levels at the 100 year storm elevation.

4.6.1 Tidelands Licensing Issues

The public access and water dependent uses envisioned for Tudor Wharf are designed to encourage uses of the site during non-office hours. The arrivals and departures of the evening excursion boats and water taxis, occasional sailings of the historic vessel and the evening patrons of the restaurant and retail stores will help insure that Tudor Wharf is not abandoned at 6 o'clock each evening. As the site will offer a shortcut between the Charlestown Bridge and the Navy Yard, pedestrian traffic commuting between Charlestown and Boston, or visa versa, will be high during early morning and evening hours. Tourists walking the Freedom Trail will also add to the site population during daylight hours and quite possibly evening hours as well.

In consideration of the previous sections outlining the project's benefits to the public in terms of public access, public open space and public water related activities, the public purpose of the project as it may relate to the issuance of a Chapter 91 license is clear. The site presently is closed to the public, decaying and offers no water-dependent uses whatsoever. Through the private

redevelopment of the site, a significant and proper public objective is achieved.

The proponent expects to spend \$8 million on public improvements as described in detail elsewhere. These improvements include public walkways, public open space, and a water taxi landing. The utilization of the entire water's edge for marine-related uses and public access is of paramount public purpose.

An important issue in the Chapter 91 licensing process is a finding that the public benefit outweighs the public detriment. The public benefits of the project have been previously found to include the elimination of a non-accessible, decaying waterfront site, the granting of public access to the water's edge, the creation of a public water taxi landing and an increase in the tax base.

The detriments to the public interest by virtue of the project are less apparent. The project will, for the most part, occupy existing footprints and areas previously used for wharves and piers, and therefore will not adversely affect the public rights to navigation. The area has limited utility for the public rights of fishing and fowling, due to the existing man-made modifications to the site, and the extent of environmental

degradation in Boston Harbor. To the extent that fishing is of interest, the proposed project will significantly improve the opportunities to take part in this activity. The public benefits of allowing the non-water-dependent use of the tidelands, commercial office space, retail and restaurant space and underground parking, clearly outweigh any public detriments because, in this particular project, the proponent has provided significant physical improvement and amenities for the public use and enjoyment.

4.6.2 CZM REGULATORY POLICIES

A complete review of the project has been conducted in light of the provisions of the Massachusetts Coastal Zone Management Program (MCZM). Consistency with the provisions of the program are necessary for the receipt of many of the licenses and permits for the project.

Policy 1 - Protect ecologically significant resource areas (salt marshes, shellfish beds, dunes, beaches, barrier beaches, and salt ponds) for their contributions to marine productivity and value as natural habitats and storm buffers.

The Tudor Wharf site is a fully developed site with no ecologically significant resources.

- Policy 2 - Protect complexes of marine resource areas of unique productivity (Areas of Preservation or Restoration [APRs]/Areas of Critical Environmental Concern [ACECs]); ensure that activities in or impacting such complexes are designed and carried out to minimize adverse effects on marine productivity, habitat values, water quality, and storm buffering of the entire complex.

This policy is not applicable to the Tudor Wharf project.

- Policy 3 - Support attainment of the national water quality goals for all waters of the coastal zone through coordination with existing water quality planning and management agencies. Ensure that all activities endorsed by CZM in its policies are consistent with federal and state effluent limitations and water quality standards.

The Tudor Wharf project will protect water quality through the use of oil and grease traps for all on-site runoff.

- Policy 4 - Condition construction in water bodies and contiguous land areas to minimize interference with water circulation and sediment transport and to preserve water quality and marine productivity. Approve permits for flood or erosion control projects only when it has been determined that there will be no significant adverse effects on the project site or adjacent or downcoast areas.

The proposed dredging of 6,600 cubic yards will have little to no effect on water circulation and sediment transport in Boston Harbor.

- Policy 5 - Ensure that dredging and disposal of dredged material minimize adverse effects on water quality, physical processes, marine productivity and public health.

Siltation curtains, containment booms and other mitigation measures will be used during the dredging project to lessen the impacts of the project on Boston Harbor.

- Policy 6 - Accommodate offshore sand and gravel mining needs in areas and in ways that will not adversely affect marine resources and navigation.

This policy is not applicable to the Tudor Wharf project.

- Policy 7 - Encourage the location of maritime commerce and development in segments of urban waterfronts designated as port areas. Within these areas, prevent the exclusion of maritime dependent industrial uses that require the use of lands subject to tidelands licenses.

The Tudor Wharf site is not in Designated Port Area. However, the project seeks to return water dependent uses to an area of the Harbor that has not had water dependent uses in over 40 years. These uses include a water taxi dock, excursion/dinner boat facility and historic ship exhibit.

- Policy 8 - For coastally dependent energy facilities, consider siting in alternative coastal locations. For non-coastally dependent energy facilities, consider siting in areas outside of the coastal zone. Weigh the environmental and safety impacts of locating proposed energy facilities at alternative sites.

This policy is not applicable to the Tudor Wharf project.

- Policy 9a. - Accommodate exploration, development and production of offshore oil and gas resources while minimizing impacts on the

marine environment, especially on fisheries, water quality and wildlife, and on the recreational values of the coast, and minimizing conflicts with other maritime-dependent uses of coastal waters or lands. Encourage maritime dependent facilities serving supply, support or transfer functions to locate in existing developed ports.

This policy is not applicable to the Tudor Wharf project.

- Policy 9b. - Evaluate indigenous or alternative sources of energy (coal, wind, solar and tidal power) and offshore mining to minimize adverse impacts on the marine environment, especially with respect to fisheries, water quality, and wildlife, and on the recreational values of the coast.

This policy is not applicable to the Tudor Wharf project.

- Policy 10 - All development must conform to existing applicable state and federal requirements governing sub-surface waste discharges, sources of air and water pollution and protection of inland wetlands.

The Tudor Wharf project will dispose of sanitary waste through the existing BW&SC/MWRA collection and treatment

system. There will be no sub-surface waste discharges. The development of Tudor Wharf will conform to all existing applicable state and federal requirements related to air and water pollution. This site does not contain inland wetlands.

Policy 11 - Protect designated scenic rivers in the coastal zone. Support designation of areas for preservation or restoration as "sign free areas."

At the present time, a large billboard faces Charlestown Bridge traffic. This sign will be removed.

Policy 12 - Review proposed developments in or near designated or registered historic districts or sites to ensure that federal, state, and private actions requiring a state permit respect their preservation intent and minimize adverse impacts.

The Tudor Wharf project is near several designated or registered historic districts, including the Bunker Hill monument and the USS Constitution. The project will open up the waterfront to the public and reroute the Freedom Trail. The Tudor Wharf project will enhance the Freedom Trail experience and greatly

improve the pedestrian routes between Boston and Charlestown.

Policy 13 - Review developments proposed near existing public recreation sites in order to minimize their adverse impacts.

The project itself is located beside the Freedom Trail which runs across the Charlestown Bridge. The closest public recreation sites are the Bunker Hill Monument, U.S.S. Constitution, Pier 4, Paul Revere Landing Park and the Esplanade in Charlestown and the MDC playground and P.F.C. Steven Steriti ice rink in the North End. There will be no adverse impacts on these areas. There will be positive impacts on Paul Revere Landing Park. The park will be connected to Tudor Wharf through one of the bridge vaults, which will be cleaned up and well lighted. This will allow for an additional link in the pedestrian routes from Charlestown to Boston. Many walkers now cross the Charles River on the Gridley Locks, operated by the Metropolitan District Commission. These walkers presently cross Paul Revere Landing Park and walk under the Charlestown Bridge on Waldo Street. With the proposed improvements they will be able to walk under the Charlestown Bridge nearer the water's edge.

NON-REGULATORY POLICIES

Policy 14 - Encourage and assist commercial fisheries research and development, restoration and management of fishery resources, development of extensive and intensive aquaculture, and enhancement of anadromous fisheries, initiated at local, state and federal levels.

This policy is not applicable to the Tudor Wharf project.

Policy 15 - Ensure that state and federally funded public works projects proposed for location within the 100 year coastal floodplain will:

(a) not exacerbate existing hazards or damage natural buffers;

(b) be reasonably safe from flood and erosion related damage; and

(c) not promote growth and development in damage prone or buffer areas, especially in undeveloped areas of APR's.

This policy is not applicable to the Tudor Wharf project.

- Policy 16 - Encourage acquisition of undeveloped hazard prone areas for conservation or recreation use, and provide technical assistance for hazard area zoning and mitigation of erosion problems.

This policy is not applicable to the Tudor Wharf project.

- Policy 17 - Provide funding for protection from tidal flooding and erosion, emphasizing the use of non-structural measures where feasible.

This policy is not applicable to the Tudor Wharf project.

- Policy 18 - Encourage, through technical and financial assistance and review of publicly funded development, compatibility of proposed development with local community character and scenic resources.

Considerable care has gone into the design of the project to ensure that it is compatible with the area and existing and proposed surrounding structures. The proposed realignment of the Freedom Trail through the site will improve public access and enjoyment in this area. The visual impact study shows no adverse

impact to view corridors and visually improves the Charlestown waterfront.

- Policy 19 - Promote the widest possible public benefit from channel dredging, ensuring that designated ports and developed harbors are given highest priority in the allocation of federal and state dredging funds. Ensure that this dredging is consistent with marine environmental policies.

As there will not be channel dredging at Tudor Wharf, this policy is not applicable to the project.

- Policy 20 - Encourage, through technical and financial assistance, expansion of water dependent uses in designated ports and developed harbors, redevelopment of urban waterfronts, and expansion of visual access.

The redevelopment of Tudor Wharf will accomplish many of the goals of the Coastal Zone Management office. The project will return water dependent uses to the waterfront, expand public access to the waterfront in Charlestown and greatly improve the existing views of, through and from the site.

- Policy 21 - Improve public access to coastal recreation facilities, and alleviate auto traffic and parking problems through improvements in public transportation. Link existing coastal recreation sites to each other or to nearby coastal inland facilities via trails for bicyclists, hikers and equestrians and via rivers for boaters.
- Policy 22 - Increase capacity of existing recreation areas by facilitating multiple use and by improving management, maintenance and public support facilities. Resolve conflicting uses whenever possible through improved management rather than through exclusion of uses.
- Policy 23 - Provide technical assistance to developers of private recreational facilities and sites that increase public access to the shoreline.
- Policy 24 - Expand existing recreation facilities and acquire and develop new public areas for coastal recreational activities. Give highest priority to expansion or new acquisitions in regions of high need or where site availability is now limited. Assure that both transportation access and the recreational facilities are compatible with social and environmental

characteristics of surrounding communities.

The project will accomplish many of the objectives of these four non-regulatory policies regarding recreation. The site in its present state is not a public recreation site. When developed, Tudor Wharf will certainly enhance the opportunities for recreation. The project is not of the size or scale that access to land-based public transportation is important, yet the site is very accessible by foot, and will be easily accessible by boat. As part of the Harborwalk and Freedom Trail, the site will be linked by miles of public walkways to other sites and areas of interest in Boston. The water taxi landing will allow linkage to other waterfront recreation facilities throughout the harbor.

Policy 25 -

Encourage energy conservation and the use of alternative sources such as solar and wind power in order to assist in meeting the energy needs of the Commonwealth.

The project is considering the use of energy saving technologies such as ice storage for air conditioning. With ice storage, the system uses off-peak electricity to make ice, which is used

during the daytime to cool the buildings.

- Policy 26 - Ensure that state and federally funded transportation and wastewater projects primarily serve existing developed areas, assigning highest priority to projects which meet the needs of urban and community development centers.

This policy is not applicable to the Tudor Wharf project.

- Policy 27 - Encourage the revitalization and enhancement of existing development centers in the coastal zone through technical assistance and federal and state financial support for residential, commercial and industrial development.

This project will revitalize the Charlestown waterfront area and turn a dilapidated, restricted area into an alive, water related and public area offering improved views, public access and a new link in the City's Harborwalk program.

4.7 Harborpark Consistency

The City of Boston Harborpark program seeks to open the water's edge for public use and enjoyment. The project, under either alternative, responds to the

Boston Redevelopment Authority guidelines on heights and setbacks and offers all of the amenities and accessibility recommended by the Harborpark office. The BRA recommends 14 foot walkways between a building and the water's edge. Tudor Wharf will offer a 20' walkway on the north side of the pier building and a 16' walkway on the south side of the pier building. At the end of the pier, which is 120 feet wide, the public area will project 35 feet beyond the end of the building.

5.0 Visual Impacts

The purpose of this study is to analyze the visual impact of the proposed design on views to, through and from the site and to study the sensitivity of its massing and scale relative to its surroundings. This is achieved by comparing the existing site condition with perspectives of the proposed design. The Scope and the comment letters on the E.N.F. requested that the analysis provide views from Charlestown, including City Square and the Constitution, the North End and from Tudor Wharf itself.

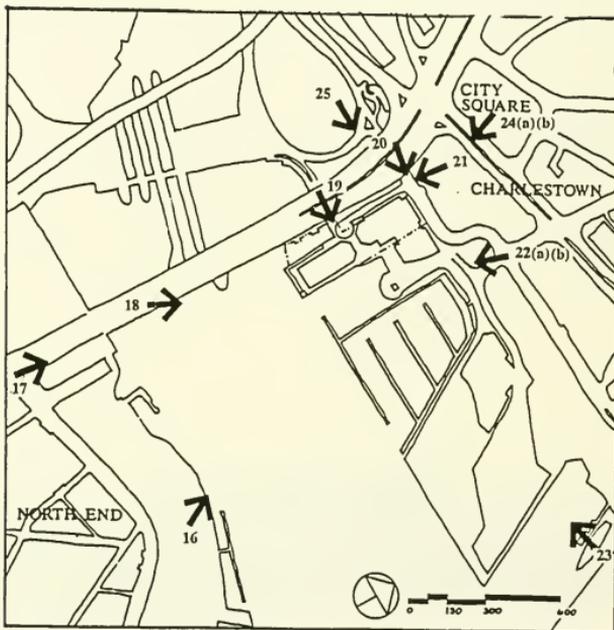
5.1 Visual Study

The important view corridors in the area of Tudor Wharf are those where the USS Constitution, the Bunker Hill Monument, the Customs House, Old North Church and Boston Harbor can be seen. The important view points where these places can be seen from include City Square, the USS Constitution and the Charlestown Bridge. The study shows the views of and from the Tudor Wharf site at the present time, and the views from the site after completion of the project. In the case of the City Square view, the proposed view is when both the CANA project and the Tudor Wharf project are completed.

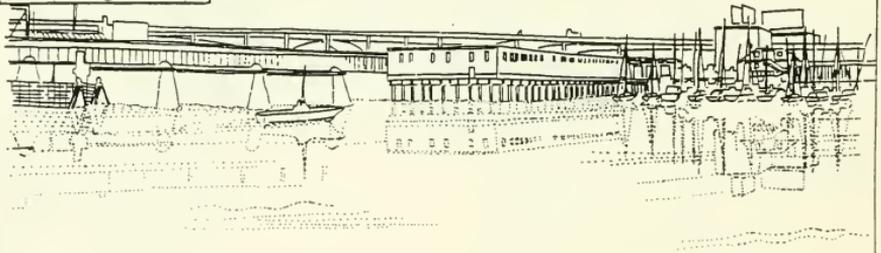
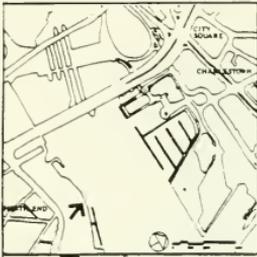
The following key plan indicates the ten locations from which views are shown. Starting in the North End at the MDC skating rink, Exhibit 16 the views move in a clockwise direction to the intersection of North Washington Street and Commercial Street (Exhibit 17). The next view, Exhibit 18, is from the southern approach to the Charlestown Bridge. Exhibit 19 shows the view from the bridge, but closer to the site and looking down onto the site. Exhibit 20 shows views on Water Street looking towards the USS Constitution and with the Massport Parcel building constructed. Exhibit 21 looks eastward down Charles River Avenue towards the Harbor. Exhibits 22(a) and 22(b) show the views looking from Water Street with and without the Massport Parcel. Exhibit 23 is a view from the deck of the USS Constitution looking westward towards Constitution Plaza and Tudor Wharf. Exhibits 24(a) and 24(b) show the view from City Square. The proposed views are taken with the CANA project completed. Exhibit 25 shows the view looking eastward from Paul Revere Park after Water Street is realigned.

The visual study includes views of Tudor Wharf where the Alternative #2 addition is included. In Exhibits 18, 19, 21, 23 and 25, the view is essentially the same with either alternative. Exhibits 16, 17

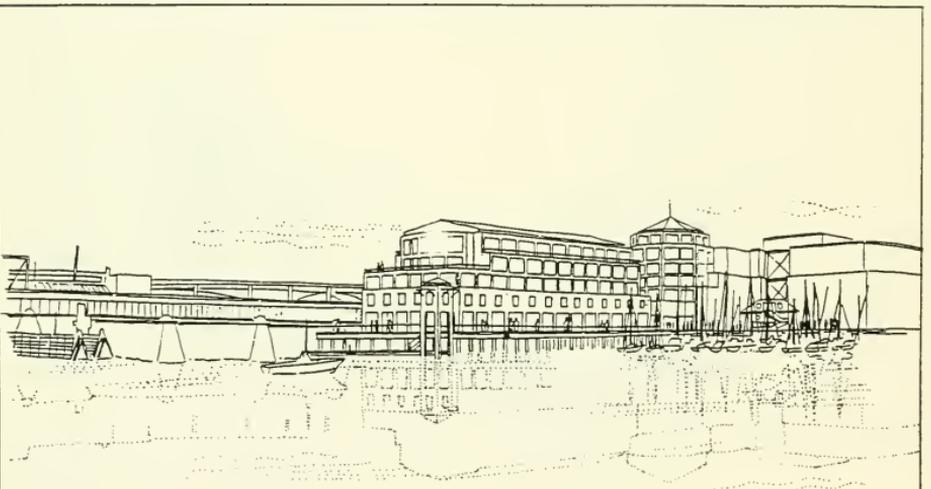
and 20 show the site with Alternative #2 showing. The above visuals are from locations where the additional building space in Alternative #2 can be seen. Exhibits 22(a), 22(b), 24(a) and 24(b) do show the differences between Alternatives #1 and #2 from the Water Street and City Square areas.



VIEW STUDY KEY PLAN

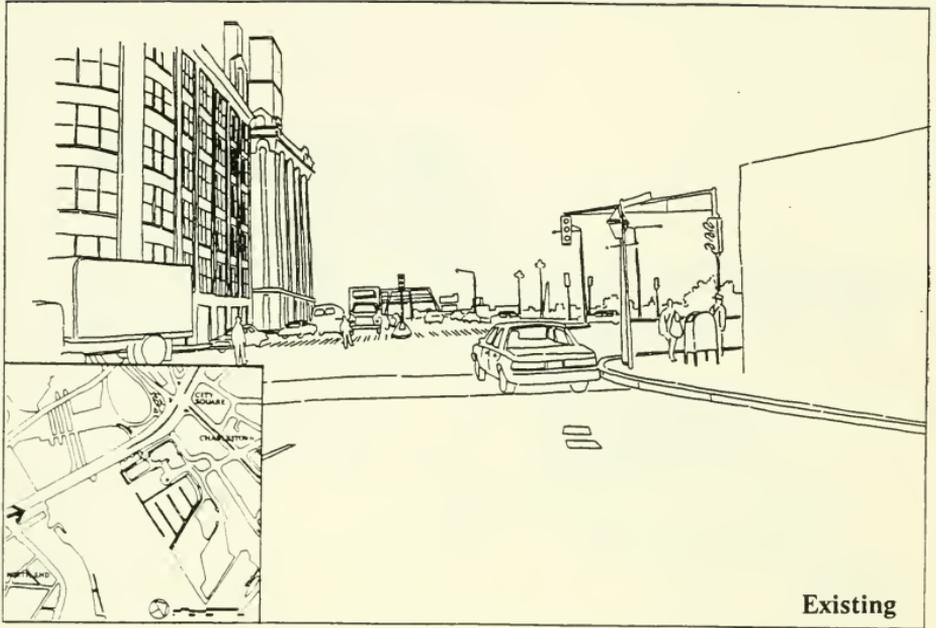


Existing

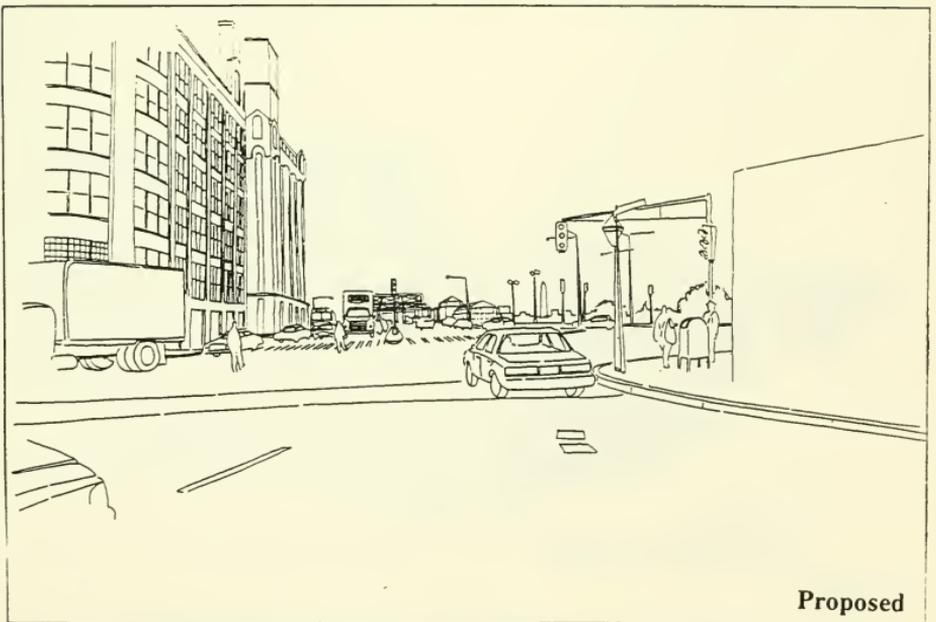


Proposed

Exhibit 16 - View from North End

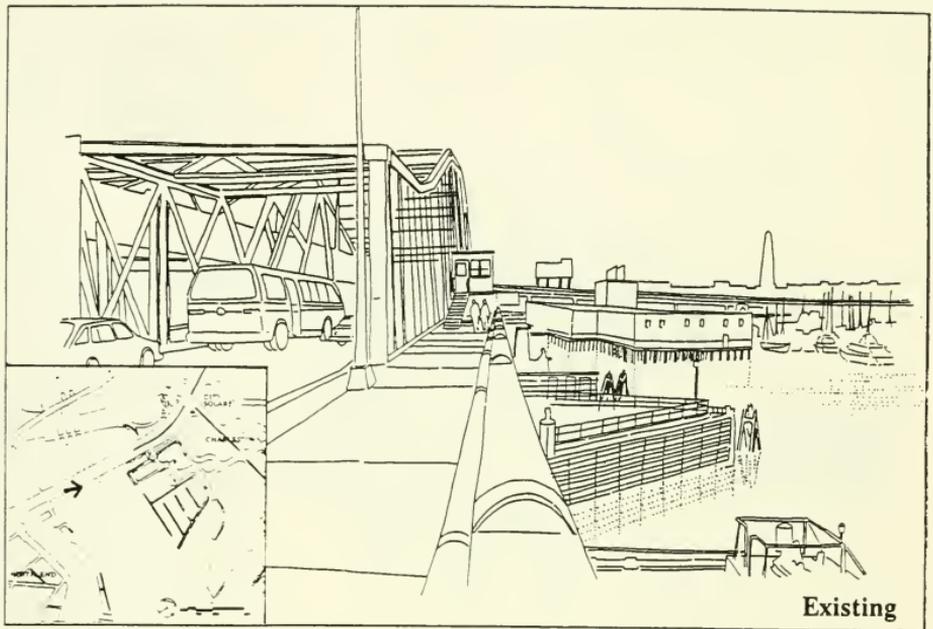


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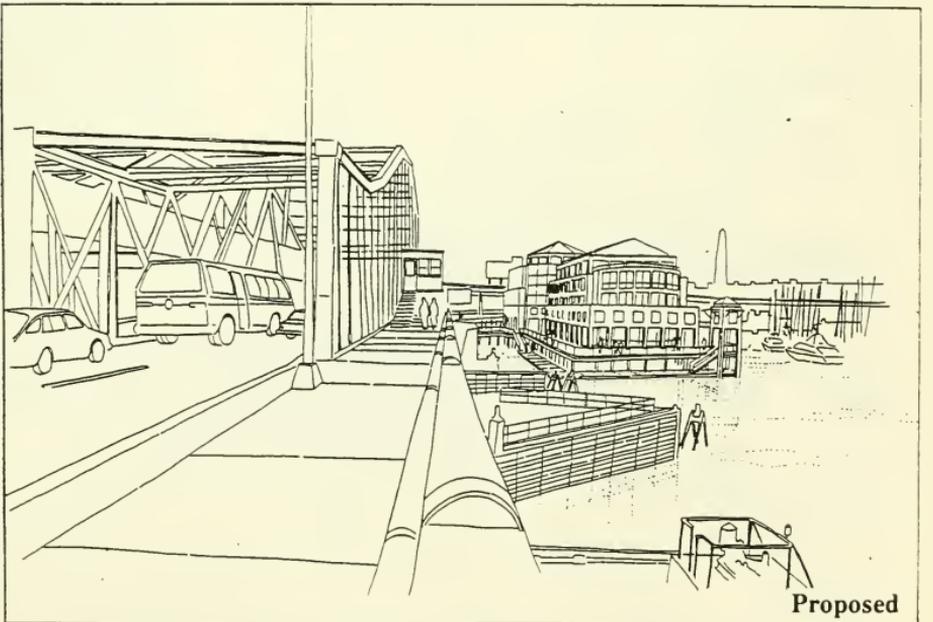


Proposed

Exhibit 17 - View from Causeway Street



Existing



Proposed

Exhibit 18 - View from Charlestown Bridge

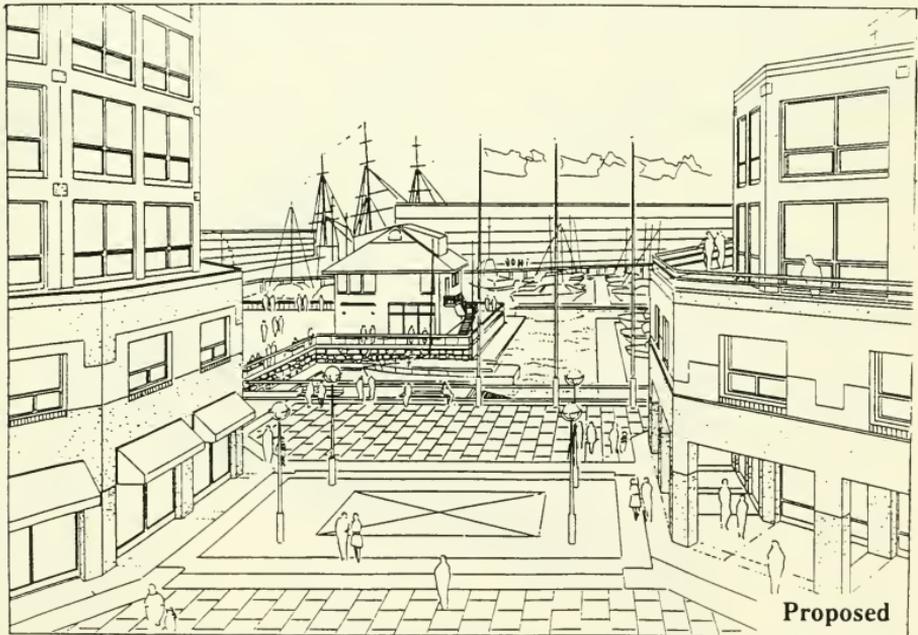
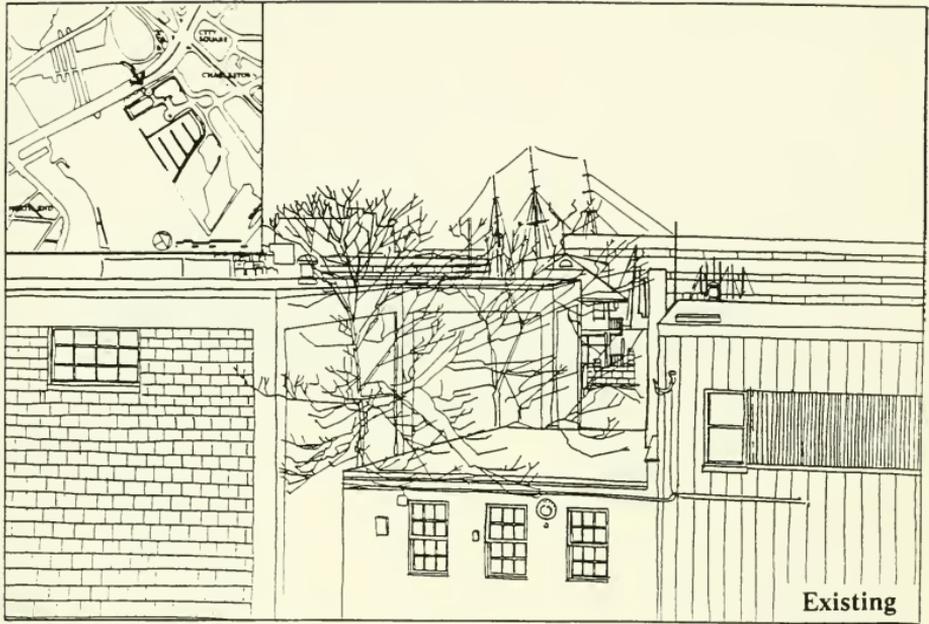


Exhibit 19 - View Looking East Along Waterfront

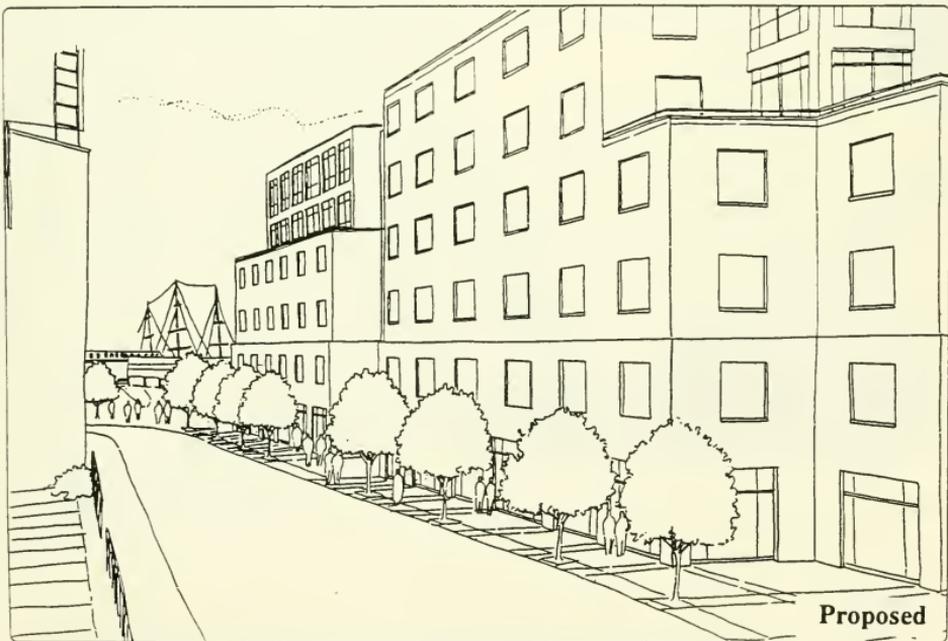
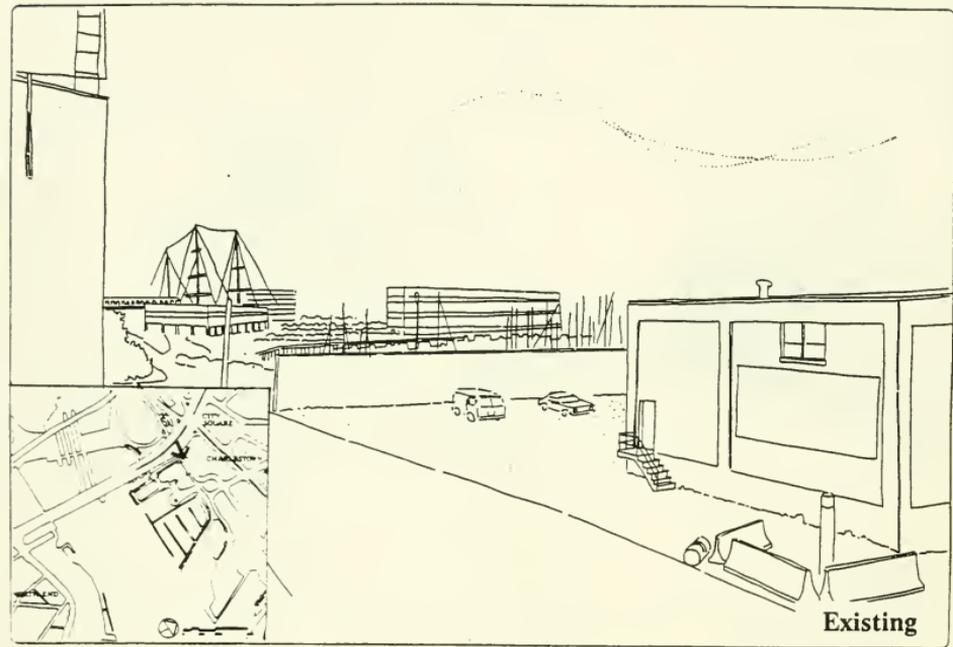
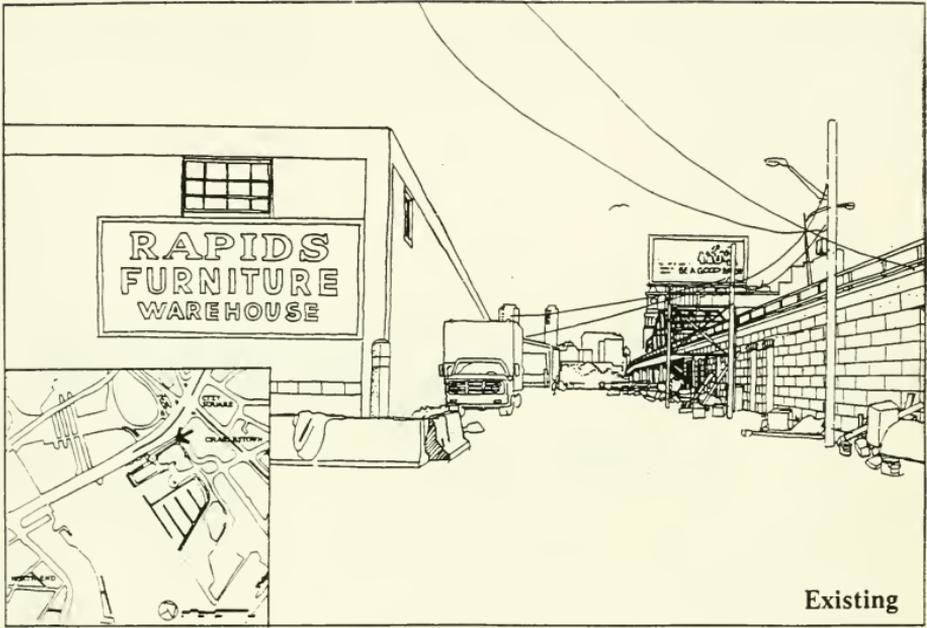
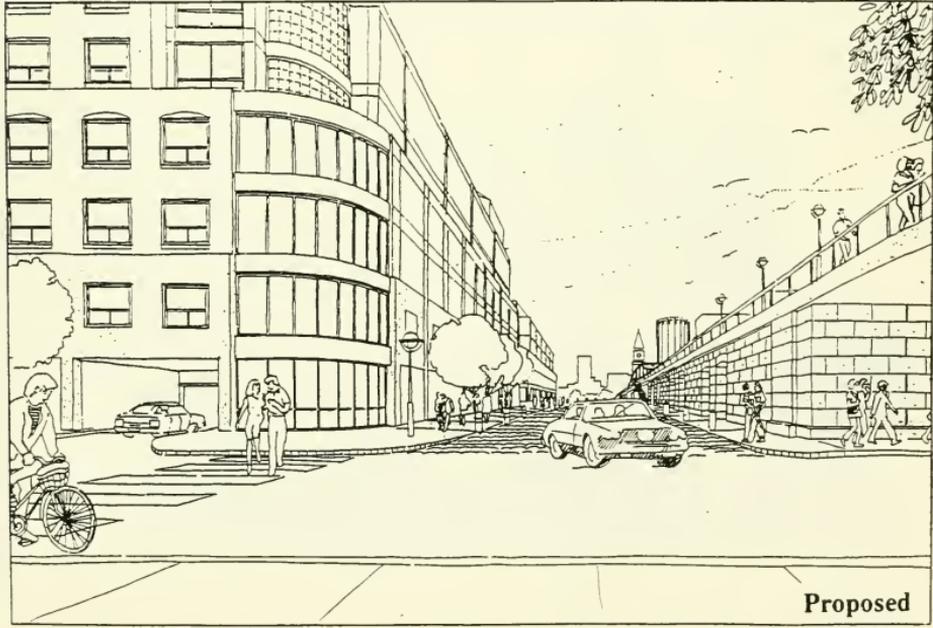


Exhibit 20 - View Looking East on Water Street



Existing



Proposed

Exhibit 21 - View Looking South on Charles River Avenue

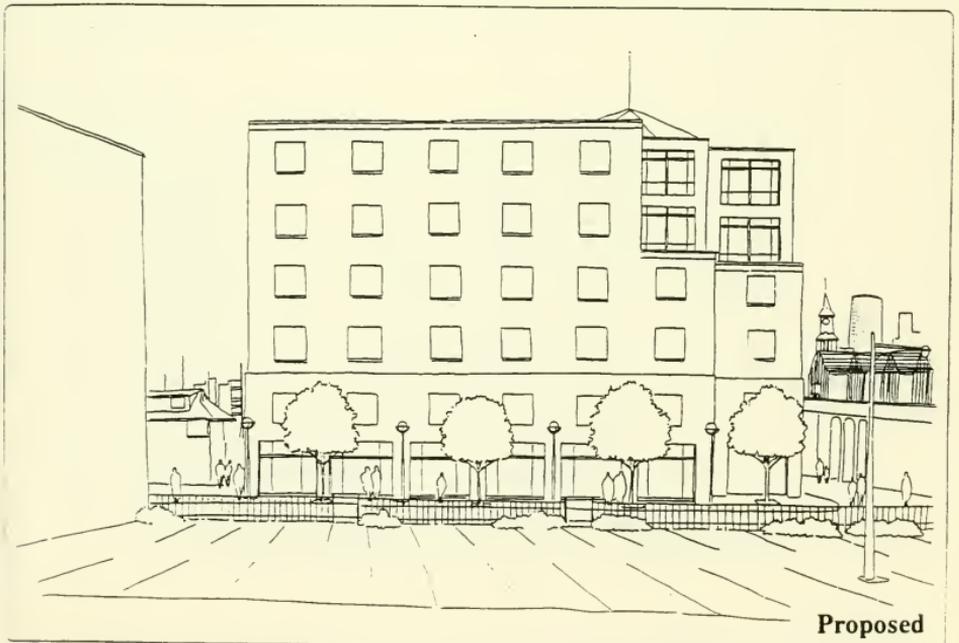
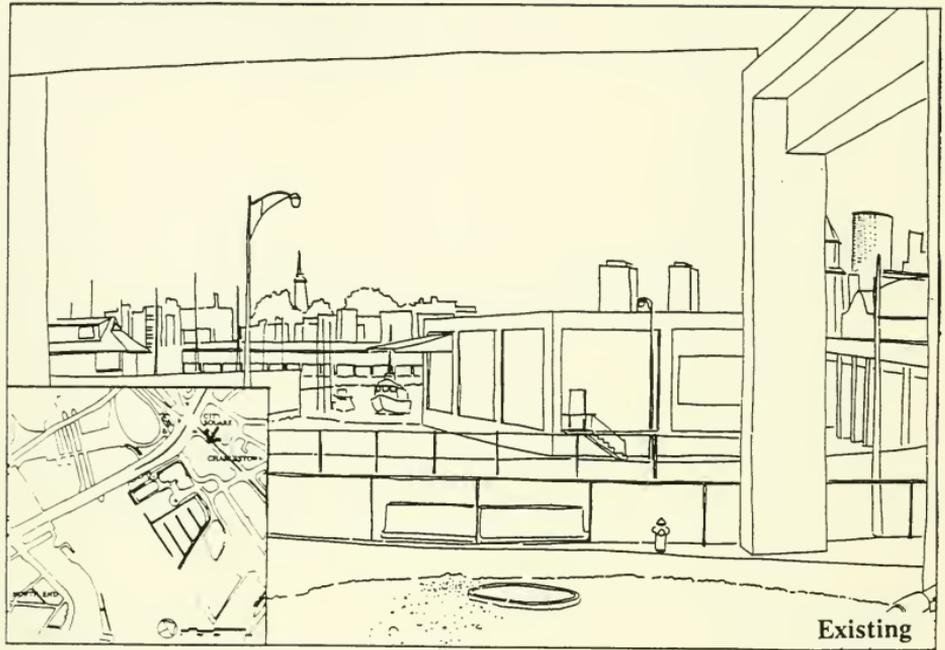


Exhibit 24(a) - View From City Square Without Massport Parcel

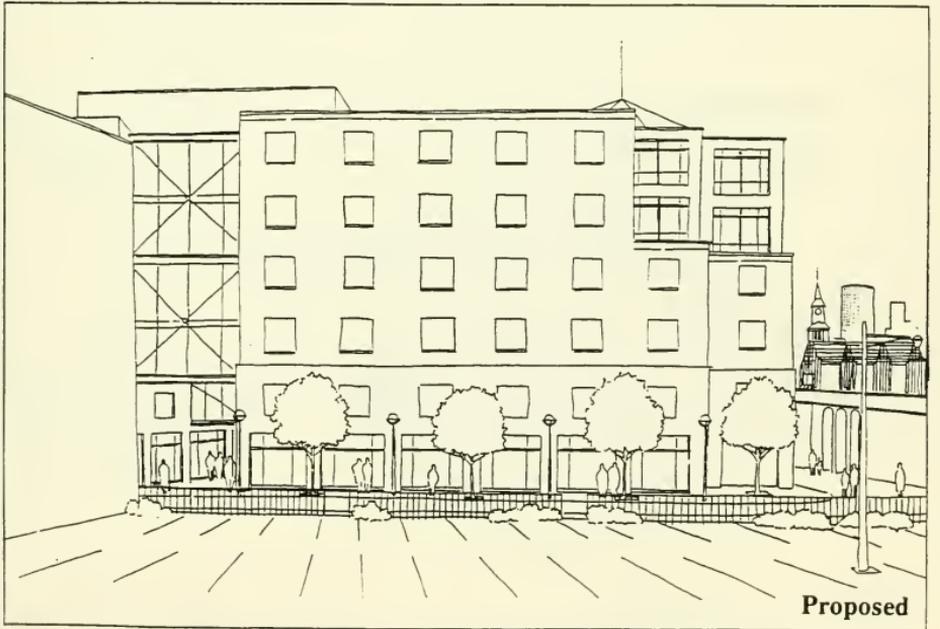
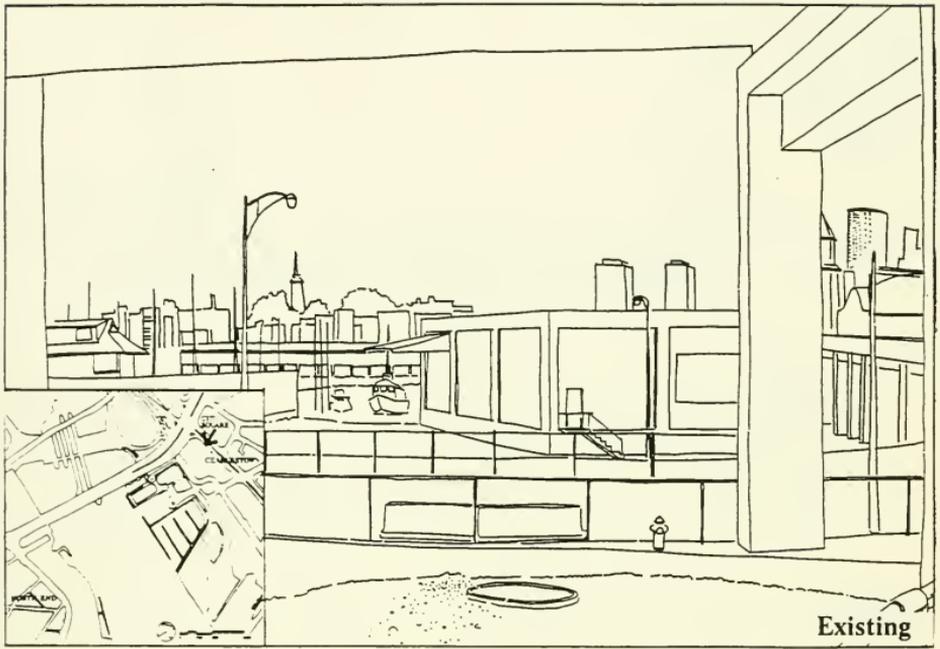
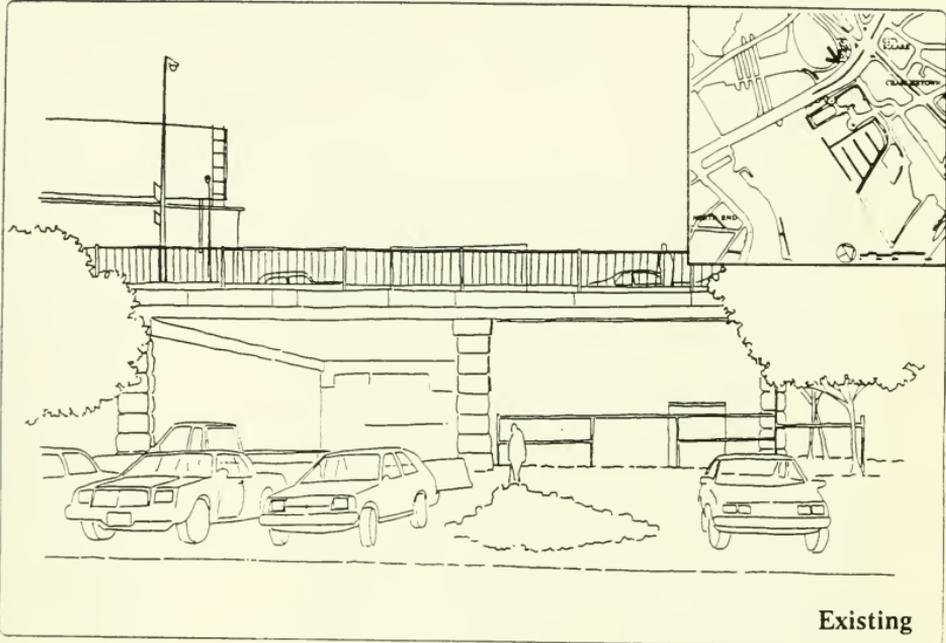
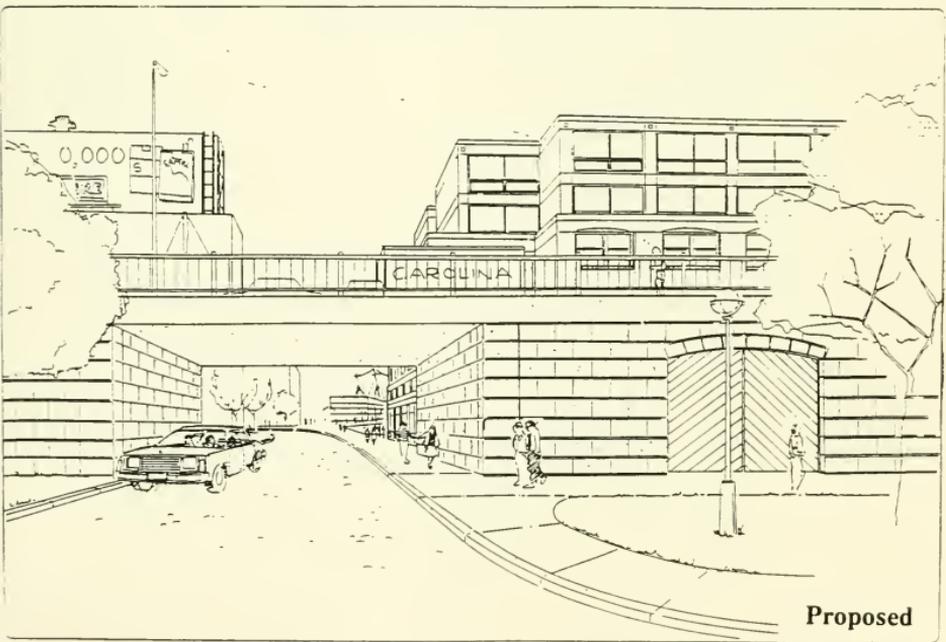


Exhibit 24(b) - View From City Square With Massport Parcel



Existing



Proposed

Exhibit 25 - View from Paul Revere Park

5.2 Summary

The view study demonstrates that many views will improve dramatically with the construction of Tudor Wharf. The present site is an unattractive warehouse structure on a dilapidated pier that is seen from many locations in the North End, from the Charlestown Bridge and Charlestown itself. In addition to improving the area, Tudor Wharf will provide places that will create new views for the public to enjoy. The proposed buildings are the same heights and scales of the buildings and other structures in the surrounding area. The Tudor Wharf project fits in to the neighborhood in an attractive fashion.

5.3 Shadow Impacts

The Shadow Impact study was performed to illustrate and analyze the shadows cast by the proposed buildings. This has been done by studying the site in each of the four seasons at various times during the day. The seasons were broken down into morning, noon and afternoon. The twelve figures produced show the effects of the buildings on the surrounding area. Summer provides the best solar conditions for the site. Most of the site, and in particular the public areas facing the water, will remain sunny most of the day. The effect on the adjacent marina is also minimal. During the late summer season, only a few slips will be in shadow during the late afternoon.

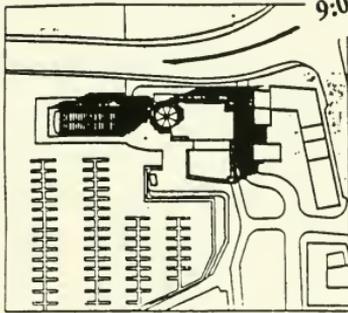
The Winter season provides the worst conditions for solar exposure. At this time of the year, the buildings will cast the longest shadows. Even so, there will be large areas of public space that are sunny and on warmer days will be even more attractive for outdoor activities. The marina will have large areas of shade during the late afternoon hours but many of the slips will remain in sunlight. The use of the marina in winter is not expected to grow above its present winter use level. The fifty liveaboards will be

able to have sunny slips in winter if desired.

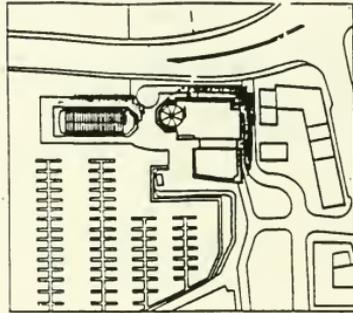
The Spring and Fall conditions are somewhere between the extremes of maximum shade in winter and maximum sun in summer. The midday periods will still see the main public areas near the waterfront in sunlight.

The study was conducted with the Alternative #2 building space included. Under Alternative #1, the offsite shadows would be less than shown.

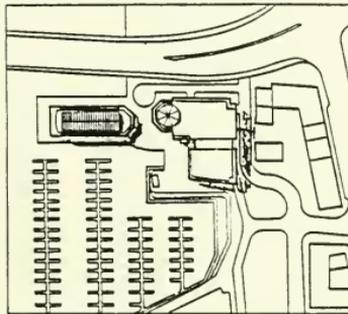
9:00 AM



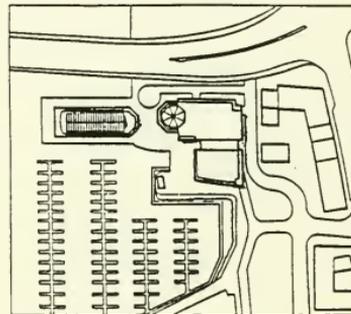
9:00 AM



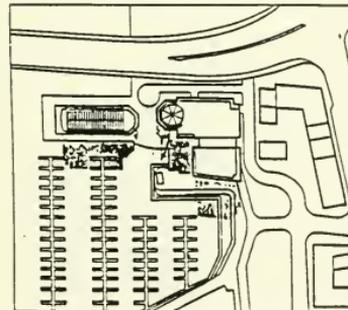
12:00 NOON



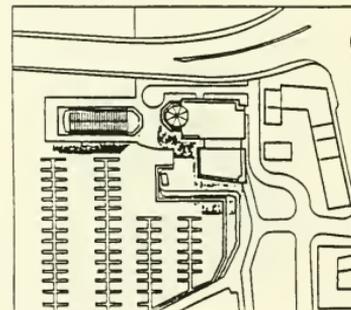
12:00 NOON



3:00 PM



3:00 PM



MARCH 21

JUNE 21

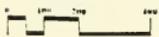
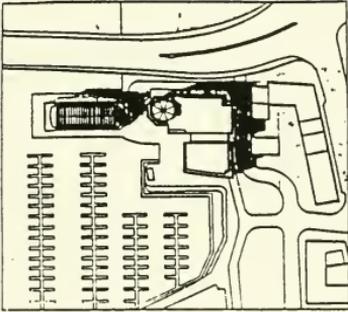
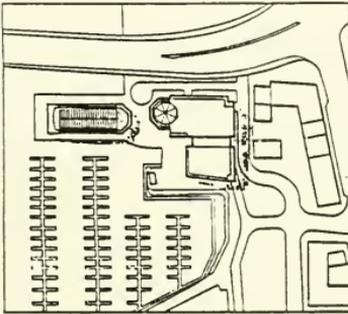


Exhibit 26(a)
Shadow Study (spring, summer)

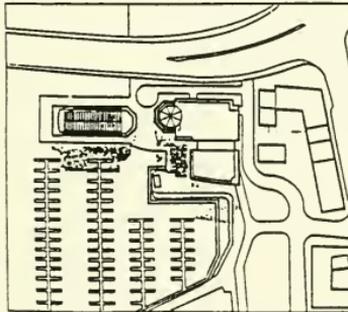
9:00 AM



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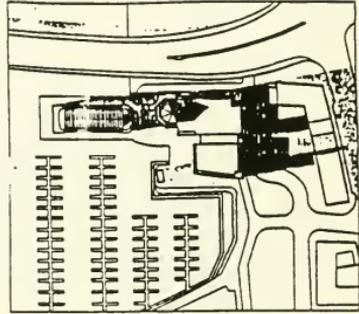


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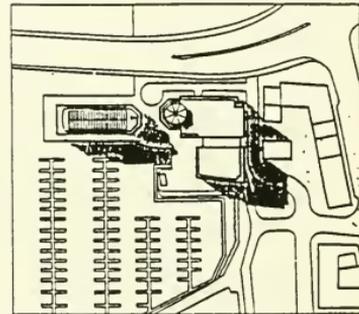


SEPTEMBER 21

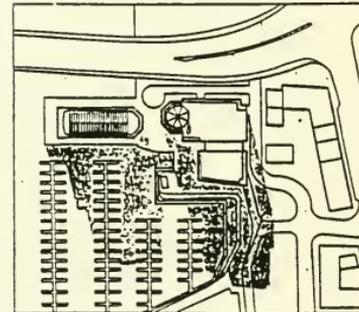
9:00 AM



12:00 NOON



3:00 PM



DECEMBER 21

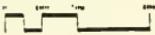


Exhibit 26(b)
Shadow Study (fall, winter)

6.0 Dredging

The following section outlines the reasons for the proposed dredging at Tudor Wharf, provides the results of the sediment analysis performed, outlines the disposal options and reviews the effects of the Charles River on the dredging operations.

6.1 Present Conditions

At the present time the Tudor Wharf site consists of filled tidelands, mudflats that are exposed at low tide and water ranging up to -30 mean low water (MLW). Along the east side of the present pier building, the water ranges from -30 MLW to about -3 (MLW), at low tide. Along the end of the present pier building, the water is consistently 30 feet deep. On the west side of the pier, the bottom rises rapidly and is exposed along much of the pierside at low tide.

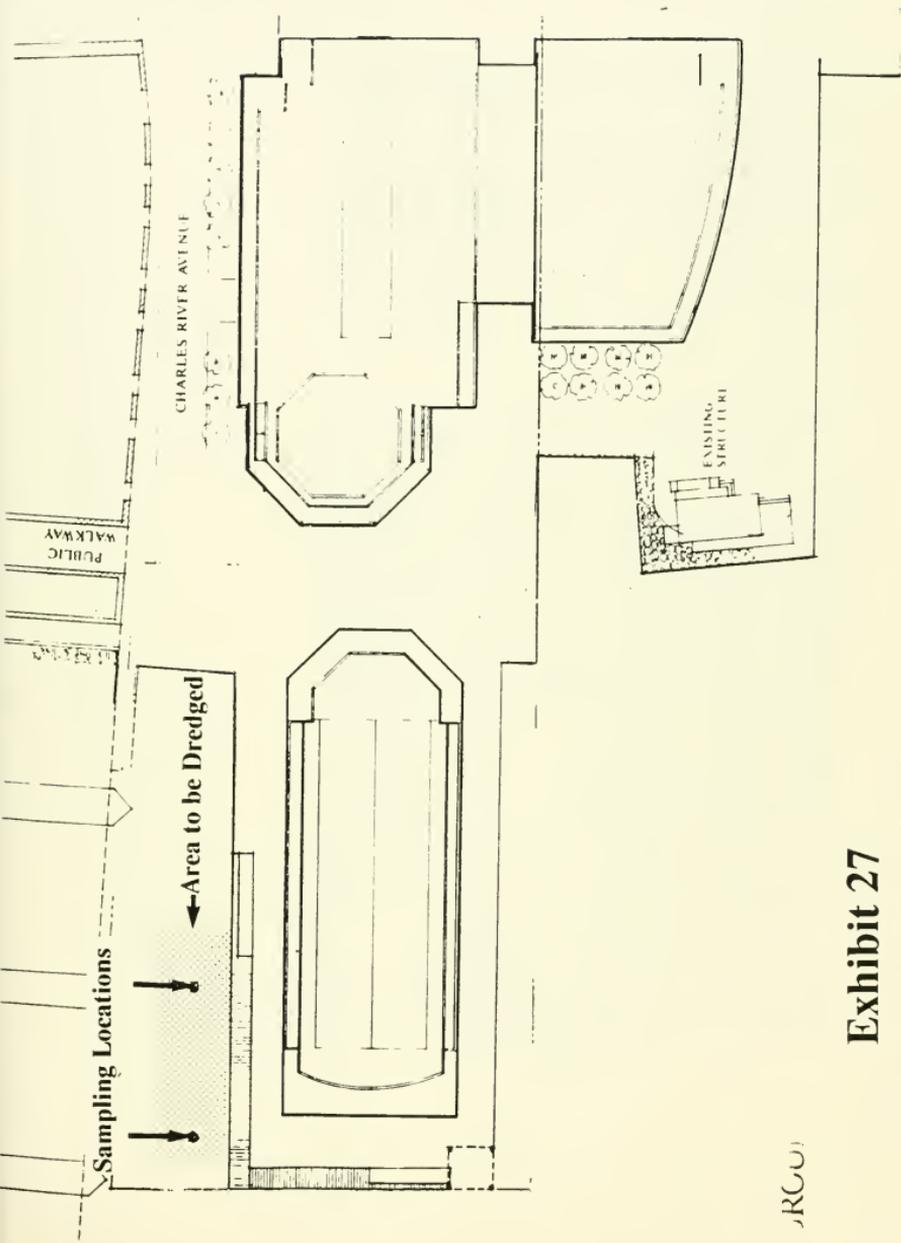
6.2 Proposed Dredging

In order to permit the use of the west side of the new pier structure for the historic ship exhibit, or any other use, about 6,655 cubic yards of material must be dredged out and disposed of. The area

required by the proposed exhibit ships is 200 feet long, 30 feet wide and must be 15 feet deep at low tide. The side slopes of the dock will slope at a 2 to 1 angle. (See Exhibit 27)

6.3 Volume, Sediment Analysis

On June 3, 1988 two samples from the area to be dredged were taken. The sites chosen are shown on the accompanying exhibit. These samples were extracted by drilling down fifteen feet and removing a core sample. The samples were tested for heavy metals, polychlorinated biphenyls, and other contaminants. The results of the testing reveal that the area to be dredged is for the most part either category one or two type material, as defined in DEQE regulations 314 CMR 9.00. Of the two testing sites, only the lead level of the inshore sample is at category three levels. The other sample revealed a lead level of category two. The mercury levels were both low or below category two and the arsenic, cadmium, and chromium levels at both sample sites were category one. (See Appendix E for the complete dredge spoils analysis).



JRCU

Exhibit 27
Area to be Dredged

6.4 Disposal Options

The dredge spoils may be disposed of in two ways, on land or at sea. If at sea, the likely location for the disposal of the 6,655 cubic yards of spoils would be the Massachusetts Bay Foul Area, located about 12 miles east of Marblehead in waters approximately 300 feet deep. It would take two trips in a 4,000 yard dump scow to dispose of the spoils.

The spoils can also be disposed of on land. Several approved disposal sites exist in eastern Massachusetts and if this method is used, the disposal will be carried out in accordance with DEQE and Army Corps of Engineers approved methods. There are three major drawbacks to land disposal of the spoils. One is the number of truck trips generated. Using 20 yard trucks, there would be 333 round trips to dispose of the 6,655 yards of material. Another is the high level of lead. This level may make it difficult to obtain local Board of Health approval for disposal of the spoils. The high chloride levels of the spoils also limits the possible disposal sites to high chloride level sites. There are only a few such sites in the region and Board of Health approval is also required.

The dredging will be accomplished by using a barge mounted crane and clamshell. If the material is to be disposed of at sea, the spoils will be placed directly into a dump scow. If the material is to be disposed of on land, the material will be placed directly into trucks on site.

6.5 Turbidity caused by Charles River flow

During dredging operations, which will take only two to three days to accomplish, care will be taken to prevent silt from fouling the harbor. Due to the proximity of the Charles River Dam discharge, heavy flows from the dam could cause sediments from the dredging operations to be moved off site. The contractor will not perform dredging operations when the dam pumps are running, and will also place a containment boom around the area to be dredged during all dredging operations. The boom will limit the off site migration of sediment during the dredging operations.

7.0 Night Herons in Boston Harbor

During a site visit, a group of Black Crowned Night Herons was found roosting (perching) in and amongst the pilings under the pier deck. The following section outlines the nesting and roosting characteristics of the night heron and the effects the construction and proposed uses will have on the night herons. The full report can be found in Appendix B.

7.1 Description

The black crowned night heron is a medium sized heron, growing to about 26 inches in length. The crown, back and shoulders of adults are black, with the remainder of the wings and tail ashy-grey. The undersides are whitish, legs are yellow and the irises are a conspicuous bright red. (See Exhibit 28)

7.2 Feeding Habits

Black crowned night herons most commonly feed in tidal creeks, the edges of ponds and swamps with standing water. They usually feed singly, often in areas several miles from the nest. They feed on a wide variety of aquatic organisms, including fish, amphibians and invertebrates.

7.3 Breeding Areas

Large breeding colonies of black-crowned night herons occur on the islands of Boston Harbor; specifically, Middle Brewster, Outer Brewster, Calf Island and Spectacle Island. The herons have been known to utilize the inner harbor for feeding and roosting sites, principally during the non-breeding season; typically, late August through early April. The largest black-crowned night heron rookery, which has exceeded 300 breeding pairs, occurs on Spectacle Island. Other islands reporting breeding pairs of herons are Middle Brewster Island (20-154 pair) and Calf Island (several pair) and more recently on Outer Brewster Island (several pair) (See Exhibit 29).

Herons begin to assemble at their breeding areas during the beginning part of April and remain there until young birds fledge in early June. The largest portion of the Boston Harbor population of black-crowned night herons migrate south beginning in August and September. A small portion of the population remain in the Boston Harbor area during the winter months. The population appeared to consist principally of younger birds in their first or second winter plumage.

Preferred nesting sites are not found in the inner Boston Harbor. The black-crowned night herons prefer to nest in areas more isolated from man's activities such as the Boston Harbor islands. Black-crowned night herons are widely distributed throughout Massachusetts during the breeding season. The majority of the herons, in the Boston Harbor area, breed on the outer islands; Middle Brewster, Outer Brewster, Calf Island and Spectacle Island. These areas provide suitable nesting habitat and minimal disturbance from human activities. Although this heron is highly adapted to areas of human activity, they prefer more secluded surroundings during the breeding season; early April through August. Some birds occasionally utilize the Boston Harbor area for feeding areas during the breeding season.

7.4 Roosting Areas

Black-crowned night herons are distributed throughout the Boston Harbor area during the non-breeding season. Habitats provide roosting sites for these birds primarily during periods of inactivity and during the non-breeding season. Roosting is a habit of a variety



Mature



Immature

Exhibit 28
Black-Crowned Night Heron

Roosting Area

Breeding Areas

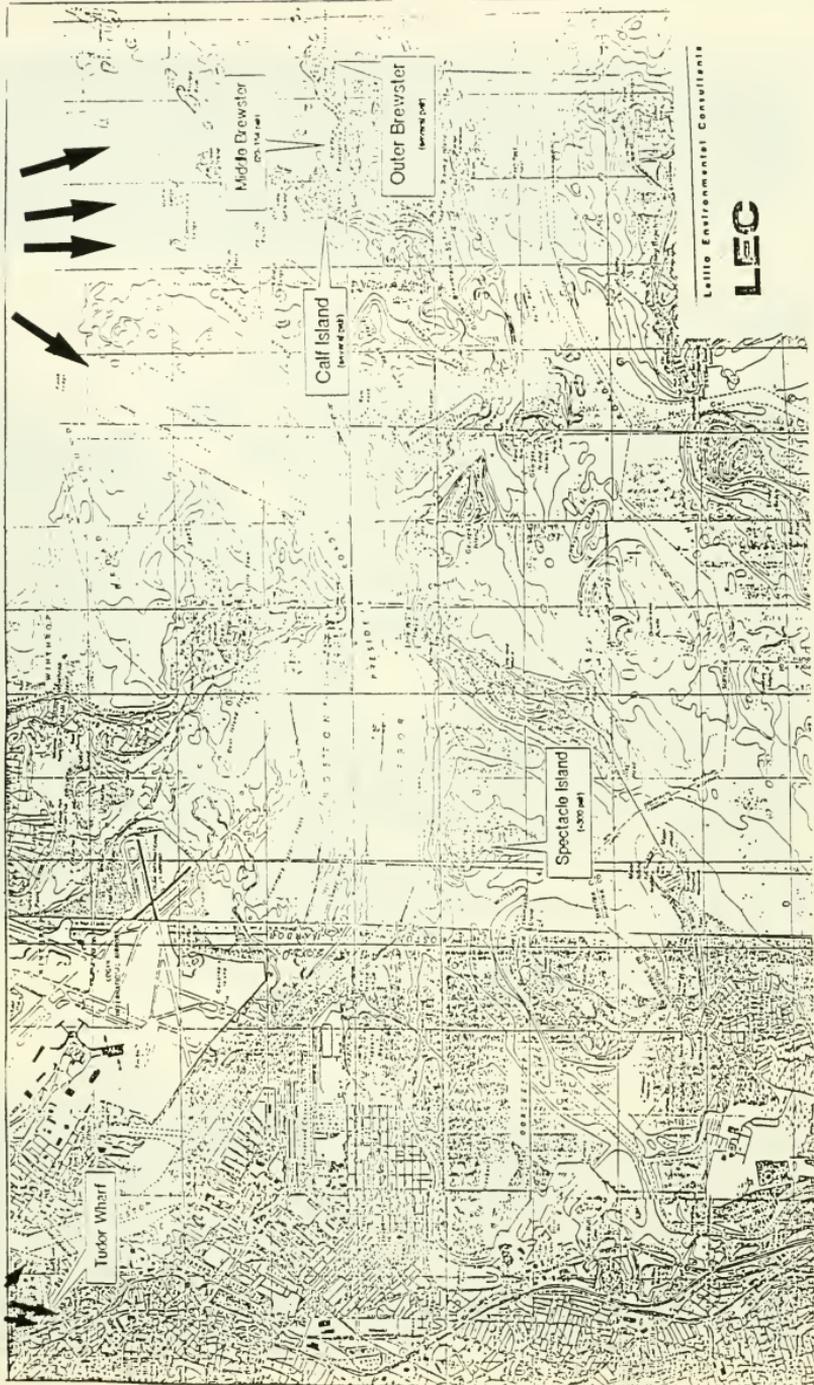


Exhibit 29

Heron Breeding Areas

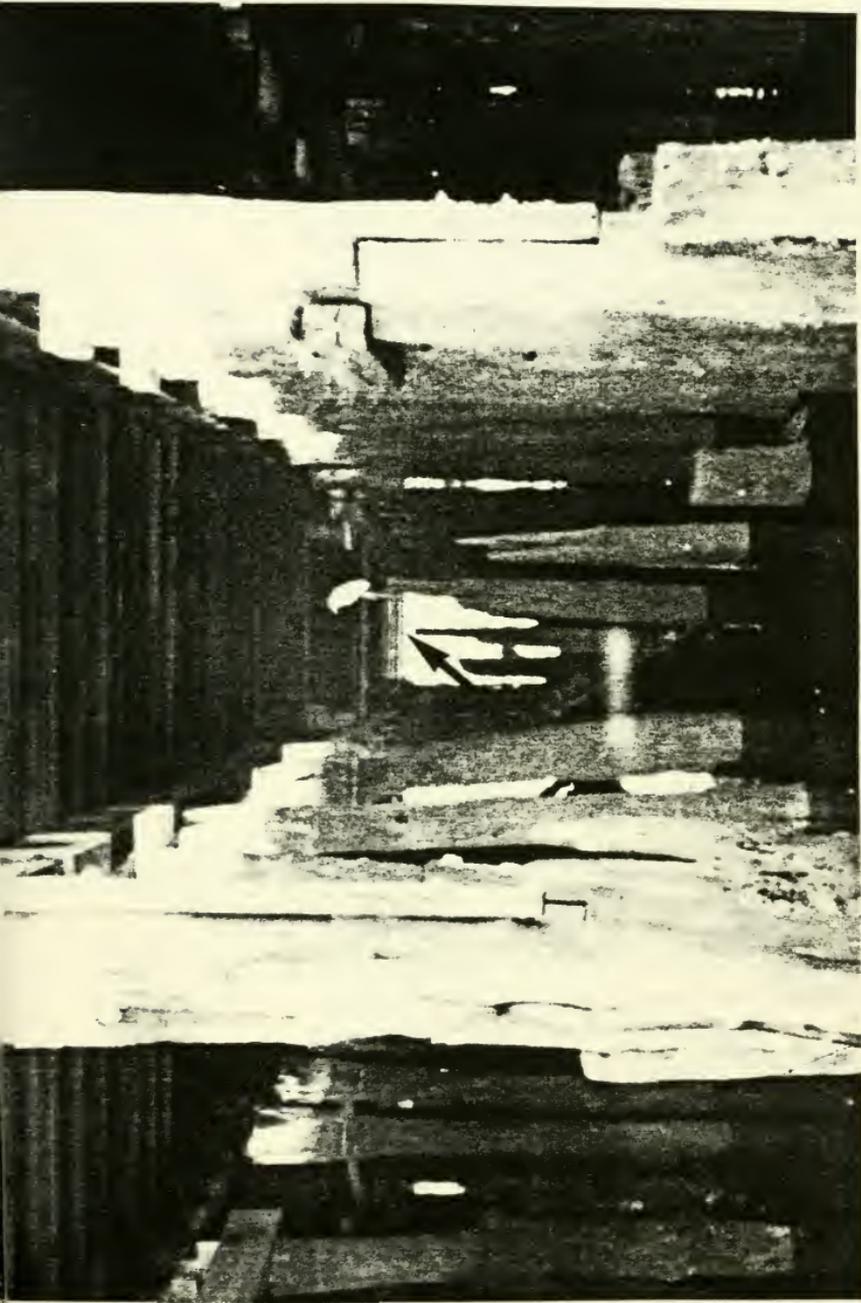


Exhibit 30

Roosting Night Heron

of species. The heron typically engages in this activity during resting periods, after feeding or after long periods of strenuous activity. These birds perch on trees in the natural environment, though they also utilize other structures (pilings, rock outcroppings, etc.) when available. Local ornithologists have not located the heron population within the inner portions of Boston Harbor. However, during a tour of the harbor several roosting areas within the harbor were observed.

Specific roosting areas appear to be located within Boston Harbor, particularly in the inner harbor, during the non-breeding season: typically, late August through early April. The physical characteristics of these areas consisted, principally, of timber wharves which were abundant throughout the harbor.

7.5 Characteristics of Tudor Wharf

During a site visit to Tudor Wharf, approximately 13 black-crowned night herons were observed roosting beneath the existing Tudor Wharf (warehouse) building. The timbers supporting this building were densely spaced, and not uniformly distributed. The pilings appeared to serve as the principal roosting sites for the herons. Cross-

beams, which allowed adequate space for the herons to stand, were also occupied by the birds.

At Tudor Wharf spacing between pilings was broad enough to accommodate the wing span of the herons. The absence of herons from other, more closely spaced pilings suggested that spacing may be important in the selection of this site. The Tudor Wharf site also allowed relatively unobstructed viewing in three directions; north, east, and south. This was a characteristic present on several wharves within the inner Boston Harbor.

Another characteristic of the Tudor Wharf site was the elevation of the deck in relation to the mean high water line noted on the pilings. The distance between mean high water and the deck of the existing structure allows the herons to utilize the area throughout the entire day and not be forced to relocate according to the tide schedule.

It is important to note that this wharf is not a breeding area for these herons; that, at best, it is utilized as a roosting/loafing site during the non-breeding season (late August through early April); and, that the majority of the Boston Harbor black-crowned night

heron population (80%) overwinters in parts unknown outside of Boston Harbor.

7.6 Summary

The reconstruction of the Tudor Wharf pier will be accomplished in such a manner as to permit the night heron to return to normal roosting habits at this location. The proponents are concerned that even if the pier structure closely duplicates that which exists today, the proposed re-use of the wharf edge for water dependent uses may discourage the return of the night heron.

At the present time, the night heron primarily uses the site from late August through mid April. It was observed that the herons take a keen interest in the boat traffic along the Tudor Wharf edge. This traffic, from the Constitution Marina, is at its peak from mid June through September so there is some overlap between the roosting season and the boating season. The Tudor Wharf water dependent users will be tied up closer to the roosting areas. The dinner boat/excursion boat operator is expected to offer service from early March through late December. The water taxi service is presumed to be a year round operation. The historic boat exhibit will also

obstruct the heron's view and escape route to the south.

In the event herons do not return, it is expected that the remaining roosting sites in the harbor will be utilized and that there will be no effect on the heron's breeding habits or population in Boston.

8.0 Traffic

The following sections outline the traffic and parking conditions for Tudor Wharf. The site is located adjacent to City Square, where extensive reconstruction of transportation facilities is underway. This reconstruction, known as the Central Artery/North Area (CANA) project, provides a mix of limited access highways, with major interchanges between downtown Boston and northerly destinations, rearrangement of at-grade arterials, as well as upgraded City streets. Analysis conditions, assumed herein, utilize a completed CANA project as the base environment and pinpoints the roles of all transportation modes available to the site. The scope of the traffic analysis is the same as the City of Boston Transportation Access Plan.

8.1 Roadway and Intersection Impacts

8.1.1 Post CANA Roadway Configuration

As noted by MEPA in the ENF Certificate, "the traffic analysis will be based on the roadway conditions that will be expected after completion of the CANA project, even though that project is not

likely to be completed before Tudor Wharf."

Design elements of the CANA project which impact the Tudor Wharf site are listed below:

Reconstruction of the Rutherford Avenue/Chelsea Street intersection (City Square). Ramps to and from I-93 will be relocated from Park Street to the west leg of this intersection.

Reconstruction of the Chelsea Street/Warren Street intersection. Warren Street will be the primary access between Chelsea Street and Water Street.

Closure of Water Street west of the Charlestown Bridge (Washington Street); Chamber Street, Joiner Street and Gray Street will also be closed.

8.1.2 Post CANA Traffic Volumes

Base network traffic volumes for the Tudor Wharf traffic analysis are noted in the Central Transportation Planning Staff's (CTPS) memorandum entitled "Documentation of North Area Projects, Day-of-Opening Traffic Forecasts (1991)", July 3, 1986. Traffic forecasts were prepared for an expected completion date

of 1991; this schedule (CANA completion) has been revised and the expected completion date is now 1994.

Increases in traffic between 1991 and 1994, in the vicinity of Tudor Wharf, are constrained by "the available capacity of the Artery High Bridge and the Charlestown Bridge", as described in the "L-2 Manual Assignment Assumptions" section. Any increase in traffic will, therefore, be due to development in the Charlestown Navy Yard or City Square.

Proposed development use totals for the Charlestown Navy Yard were revised by the Boston Redevelopment Authority in March, 1988. This latest plan calls for more housing and less office and retail space than was projected in the 1986 build-out plan used by CTPS. Trip generation for the new build-out plan was calculated using trip generation rates and assumptions documented in the CTPS memo. In all cases, except for "outbound" AM peak hour, traffic volumes in the CTPS memo were higher than the revised build-out traffic volumes. The AM peak hour volumes were lower by 80 trips. (Calculations and comparisons are contained in Appendix F.)

Other Charlestown developments, including Constitution Plaza, Constitution Marina, Hoosac Pier, three housing projects and a garage in the City Square area, and three developments off Rutherford Avenue, were included in the 1991 traffic projections.

Since no other developments are anticipated between 1991 and 1994, the CTPS volumes for the "1991 L-2 Configuration" will be used as the "Post CANA Traffic Volumes". The post CANA traffic volumes are shown in Exhibits 31 and 32.

8.2 Trip Generation

Trip generation characteristics of the Tudor Wharf project are based on statistics published by the Institute of Transportation Engineers (ITE)[1] and data gathered by the Central Transportation Planning Staff (CTPS)[2].

[1] Institute of Transportation Engineers, Trip Generation Manual (Fifth Edition), 1987.

[2] Tom Lisco, CTPS Memorandum - "Charlestown Navy Yard and Associated Trip Generation", Central Transportation Planning Staff, June 16, 1986.

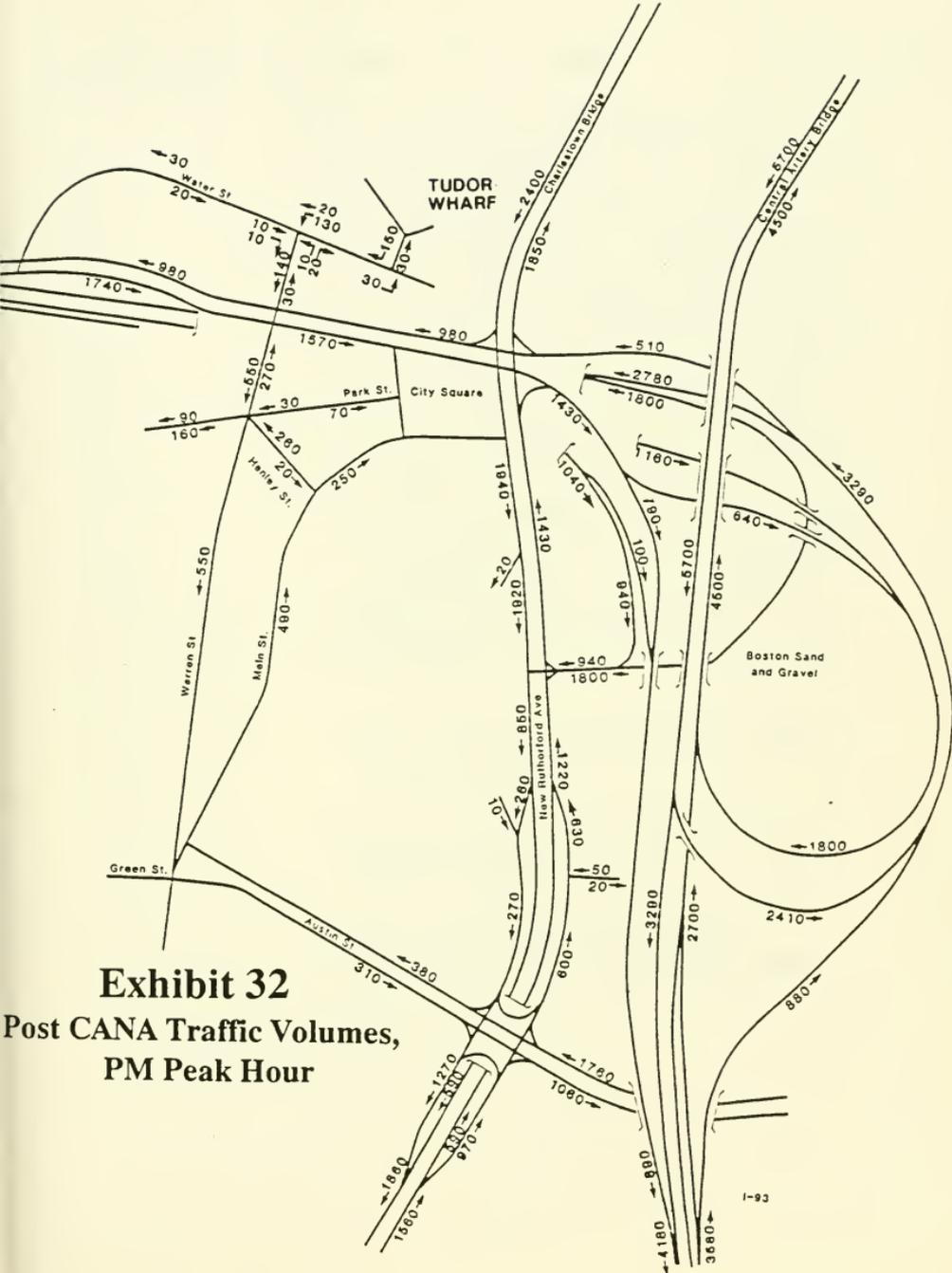


Exhibit 32
Post CANA Traffic Volumes,
PM Peak Hour

Reference: "North Area Project Final Design, L-2 Configuration 1991 PM Peak Hour", CTPS, July 1986.

ITE statistics were developed from nationally conducted surveys of similar land uses, predominantly in locations where the automobile is the exclusive mode of transportation. Assumed trip generation rates for Tudor Wharf are based on CTPS data collected specifically for land uses in the Charlestown Navy Yard. The CTPS trip generation rates are similar to ITE rates which have been adjusted to reflect expected mode choice for trips to and from the project. Development components of the Tudor Wharf project include office, commercial/retail and restaurant uses. Two development scenarios have been defined for estimation of trip generation rates and trip volumes:

- 1) Alternative #1: Tudor Wharf without Massport Parcel
- 2) Alternative #2: Tudor Wharf with Massport Parcel

Table 1 identifies the expected development components of the project.

Table 1
Tudor Wharf Development Components (in Square Feet)

	<u>Office</u>	<u>Commercial/</u>		<u>Total</u>
		<u>Retail</u>	<u>Restaurant</u>	
Pier Building	71,760	5,670*	6,618*	84,048
Landside Building (w/o Massport Parcel)	115,680	10,666*	0	126,346
Landside Building (with Massport Parcel)	177,750	18,286*	0	196,036
TOTAL (w/o Massport Parcel)	187,440	16,336*	6,618*	210,394
TOTAL (with Massport Parcel)	249,510	23,956*	6,618*	280,084

* - Gross Leasable Area

Vehicle trip generation rates for office use at Tudor Wharf have been estimated by adjusting the standard ITE rates of the appropriate size office development for the expected mode split as determined from CTPS data. A mode split of 40 percent auto use and 60 percent transit use will be used for the Tudor Wharf development.

In the CTPS memo, the average weekday trip generation rate for the existing office use at Constitution Plaza

was determined to be 4.375 trips per 1,000 s.f. The ITE trip generation rate for the same size office development (160,000 s.f.) is 12.2 trips per 1,000 s.f. Therefore, the actual rate compared to the ITE rate equates to 32 percent auto use.

CTPS used the data for Constitution Plaza to determine the average weekday office trip rate for the Charlestown Navy Yard. They used a rate of 4.5 trips per 1,000 square feet--approximately 41 percent auto use if compared to the ITE rate of 10.9 trips per 1,000 square feet.

Other approved developments in the Boston Central Business District (CBD) use a mode split of 30 percent auto use and 70 percent transit use, yet these developments are not substantially closer than Tudor Wharf to commuter rail and rapid transit stations. Also, the walk to Tudor Wharf from the North Station platforms -- across the MDC locks, through Paul Revere Park, and under the Charlestown Bridge -- does not require crossing any streets or intersections. Table 2 shows the mode split and walking distances to transit facilities for Tudor Wharf and several approved projects. Vehicle trip generation rates for the retail use will use the standard ITE rates adjusted for a mode split of 25

percent auto use. The retail use at Tudor Wharf is expected to serve on site or local patrons. The CTPS study indicated that the retail uses in the

Table 2
Mode Split and Walking Distance

Development	Mode Split Auto/Transit	Walking Distance		
		To Nearest Commuter Rail Station	To Nearest "T" Station	To Secondary "T" Station
Tudor Wharf	40/60	North Station 2,200'	North Station Orange Line 2,600'	North Station Green Line 2,600'
International Place	30/70	South Station 2,100'	Aquarium Blue Line 1,700'	South Station Red Line 1,700'
125 High Street	30/70	South Station 1,600'	South Station Red Line 1,200'	State Street Blue Line Orange Line 1,900'
Charlestown Navy Yard (measured from Gate #1 on far west end of yard)	41/59*	North Station 3,400'	North Station Orange Line 3,800'	North Station Green Line 3,800'
Constitution Plaza	32/68*	North Station 2,800'	North Station Orange Line 3,200'	North Station Green Line 3,200'

* Determined from CTPS trip rates used for traffic projections for the CANA project.

Charlestown Navy Yard are, on average, expected to generate about 30 trips per 1,000 square feet -- approximately 25 percent of the ITE rates.

Similarly, restaurant use at Tudor Wharf is expected to have a high component of on site, or locally generated trips. For significant residential and employment populations, these "captive" trips are assumed to be about 50 percent, similar to other mixed use waterfront developments [3]. For the restaurant use, a vehicle trip generation rate 50 percent of the standard ITE rate will be used.

Table 3A and Table 3B represent the expected vehicle trip generation rates and volumes for each of the development scenarios without and with the Massport Parcel, respectively. Trip generation rates are related to the size of the generator. In general, the larger the office, commercial or retail establishment size, the lower the trip generation rates.

[3] Draft Environmental Impact Report, Lewis Wharf Redevelopment, HMM Associates.

Table 3A
 Vehicle Trip Generation
 (without the Massport Parcel)

	Area (s.f.)	Daily	Peak Hour of Adjacent Street					
			AM			PM		
			In	Out	Total	In	Out	Total
<u>Office</u> Trip Rate (trips per 1000 s.f.)	187,440	4.69	0.64	0.10	.74	0.11	0.59	.70
trips		879	120	18	138	21	111	132
<u>Commercial/Retail</u> Trip Rate (trips per 1000 s.f.)	16,336*	35.02	0.63	0.27	0.90	1.82	1.90	3.72
trips		572	10	4	14	30	31	61
<u>Restaurant</u> Trip Rate (trips per 1000 s.f.)	6,618 *	47.81	0.41	0.05	0.46	2.50	1.12	3.62
trips		316	3	0	3	17	7	24
<u>Other</u> TRIPS		1,767	133	22	155	68	149	217
Gross Leasable Area								

Table 3B
Vehicle Trip Generation
(with the Massport Parcel)

	Area (s.f.)	Daily	Peak Hour of Adjacent Street						
			AM			PM			
			In	Out	Total	In	Out	Total	
<u>Office</u>									
Trip Rate (trips per 1000 s.f.)	249,510	4.37	0.61	0.09	0.70	0.11	0.57	0.68	
Trips		1090	152	22	174	27	142	169	
<u>Commercial/Retail</u>									
Trip Rate (trips per 1000 s.f.)	23,956*	30.63	0.54	0.23	0.77	1.52	1.58	3.10	
Trips		734	13	6	19	36	38	74	
<u>Restaurant</u>									
Trip Rate (trips per 1000 s.f.)	6,618*	47.81	0.41	0.05	0.46	2.50	1.12	3.63	
Trips		316	3	0	3	17	7	24	
<u>Public</u>									
Trips		2140	168	28	196	80	187	267	
<u>Mass Leasable Area</u>									

8.3 Trip Distribution

Trip distribution patterns for Tudor Wharf are based on a memorandum by Tom Lisco entitled, "Distribution of Newly-Generated Charlestown Trips", Central Transportation Planning Staff (CTPS), June 20, 1986. The CTPS data were derived from a license plate survey of the Constitution Plaza (Hoosac Pier) development on the Charlestown waterfront, adjacent to the Charlestown

Navy Yard and Tudor Wharf. The CTPS survey was undertaken to determine actual trip distribution for office development in the vicinity of the Charlestown Navy Yard for the CANA project.

The survey was conducted midday on April 14, 1987 and matched approximately one-third of the license plate numbers of vehicles parked in the Constitution Plaza parking lot with the Registry of Motor Vehicles license plate tape file to determine the origin of the vehicles. CTPS then made several adjustments based on the following assumptions:

1. Fifteen percent of all new-development trips will have local Charlestown origins and destinations.
2. Trip distribution by corridor for residential, commercial, and recreational trips will be the same as for office trips. Non-office trips will probably be shorter than office trips, but by corridor there is no reason to assume that they will differ greatly.
3. Trips will be more skewed to the north and to the near west than in the survey statistics from Constitution Plaza. This assumption is based on the present and future difficulty in accessing Charlestown from points requiring use of

the Central Artery from the Charlestown Bridge. Slightly more trips are assumed to be distributed via the Prison Point Bridge because of the major developments in the Kendall Square area in Cambridge.

The second assumption will have little effect on the Tudor Wharf development since 84 percent of the trips will be "office" trips. The CTPS survey distribution and adjusted distribution are shown by percent in Table 4 below. The adjusted trip distribution, shown in Exhibit 33, will be used for the Tudor Wharf development.

Table 4
CTPS Trip Distribution for New Development
on the Charlestown Waterfront/City Square Area

<u>Corridor</u>	<u>Survey Percent</u>	<u>Adjusted Percent</u>
Route 1	28%	24%
Routes 99 & 28	6%	5%
I-93 North	15%	12%
Prison Point Bridge	2%	4%
Central Artery/Charlestown Bridge	49%	40%
Local	0%	15%

8.4 Trip Assignment

Tudor Wharf trips were assigned to the post CANA roadway network according to the adjusted trip distribution pattern. Table 5 summarizes the breakdown of AM and PM peak hour trips on each of the travel routes. These are shown graphically on Exhibits 34 and 35.

Table 5
Vehicle Trip Assignment

<u>Route</u>	<u>%</u>	<u>AM Peak Hour</u>				<u>PM Peak Hour</u>			
		<u>W/O Massport</u>		<u>W/ Massport</u>		<u>W/O Massport</u>		<u>W/ Massport</u>	
		<u>In</u>	<u>Out</u>	<u>In</u>	<u>Out</u>	<u>In</u>	<u>Out</u>	<u>In</u>	<u>Out</u>
Route 1	24%	32	5	40	7	16	36	19	45
Rutherford Ave.	5%	7	1	8	1	3	7	4	9
I-93 North	12%	16	3	20	4	8	18	10	22
Prison Pt. Bridge	4%	5	1	7	1	3	6	3	7
Central Artery	32%	42	5	54	7	22	36	25	46
Charlestown Bridge	8%	11	4	14	4	6	24	6	30
Local	15%	<u>20</u>	<u>3</u>	<u>25</u>	<u>4</u>	<u>10</u>	<u>22</u>	<u>12</u>	<u>28</u>
		133	22	168	28	68	149	80	187

Exhibit 33

Trip Distribution

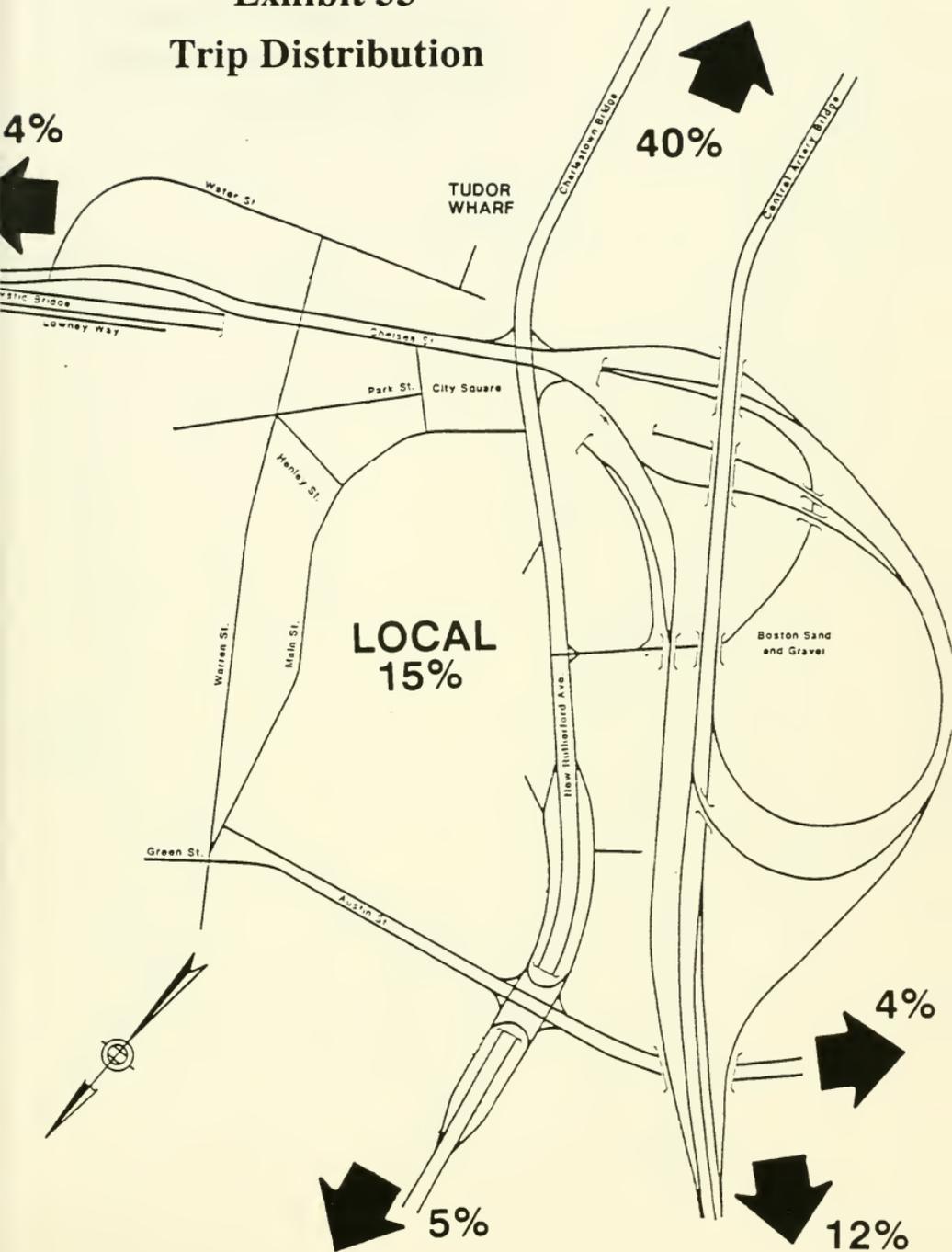


Exhibit 34

Tudor Wharf Traffic

without Massport Parcel

(Alternative #1)

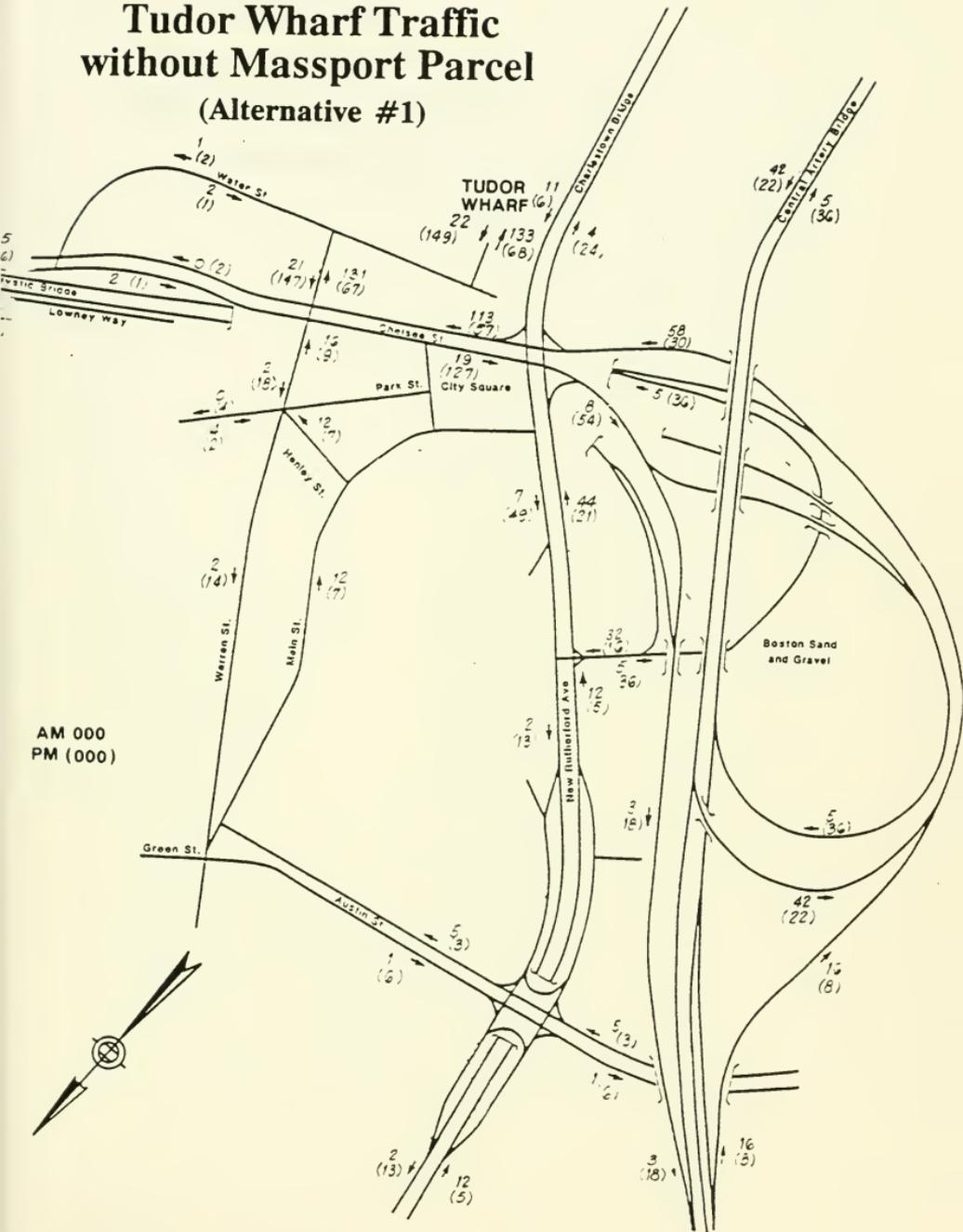
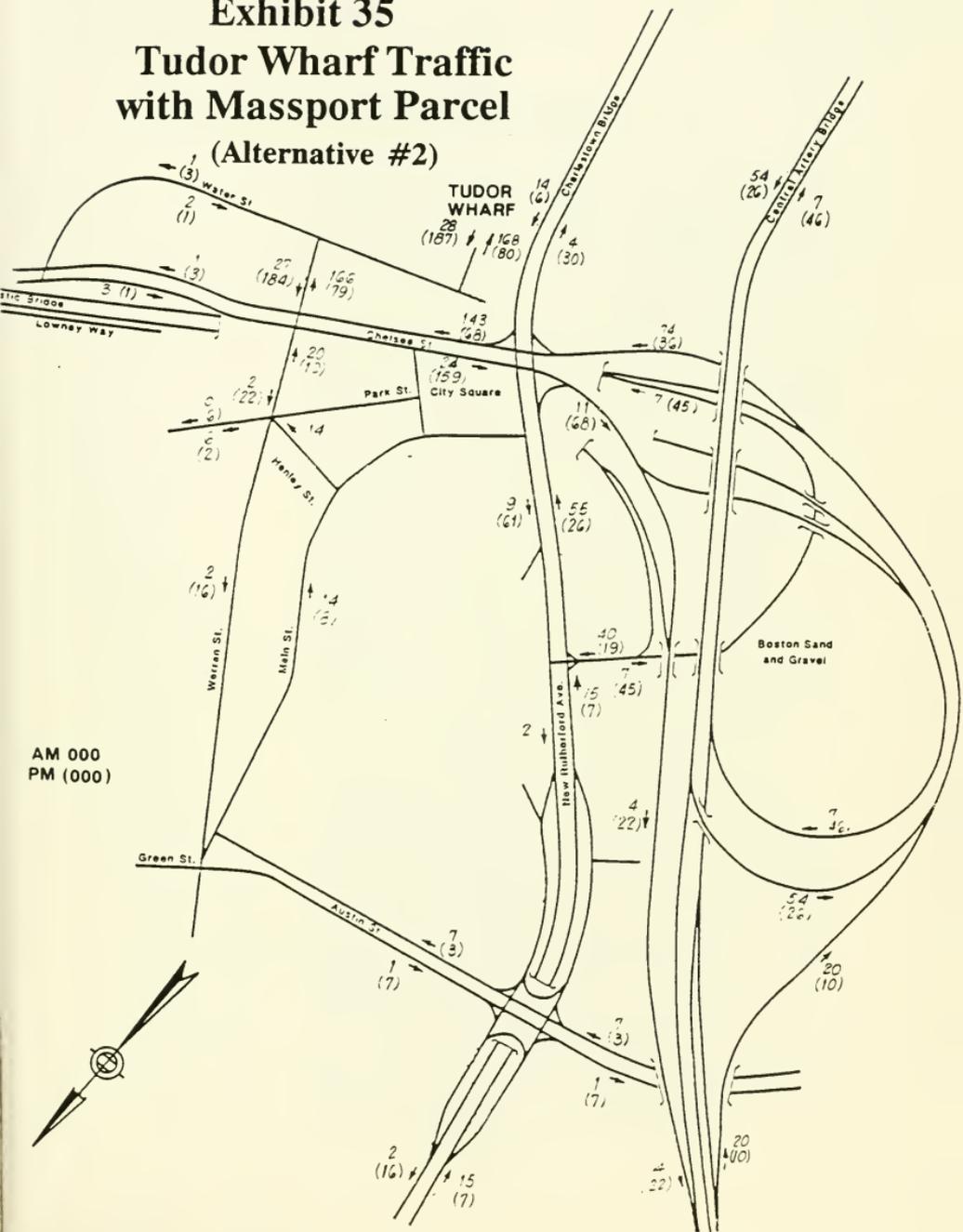


Exhibit 35

Tudor Wharf Traffic with Massport Parcel

(Alternative #2)



AM 000
PM (000)

8.5 Level of Service Description

Level of service (LOS) is a quantitative measure used to describe the operation of an intersection. Values range from A to F, A representing very good operation and F representing very poor operation. Level of service calculations are performed using methods in the 1985 Highway Capacity Manual (HCM), published by the Transportation Research Board. For signalized intersections, level of service is defined in terms of average stopped delay which is determined using an analysis method relating traffic volumes, geometric conditions, and traffic control conditions. Delay is a measure of driver discomfort, frustration, fuel consumption, and lost travel time. The ratio of existing traffic volume to available capacity (volume/capacity ratio) provides a measure for the intensity of traffic loading relative to the ability of the street to handle the traffic. The number of lanes, presence of turn lanes, type of traffic control, and signal phasing are important capacity determinants. As the volume/capacity ratio (v/c) approaches 1.0, extreme congestion sets in with long backups at signalized intersections. While the v/c ratio is not used to define level of service, it is helpful to

evaluate intersections with poor levels of service. The following LOS definitions are associated with signalized intersections:

	Volume/ LOS Capacity Ratio	Avg. Standing Delay Seconds/Vehicles	General Description Signalized Intersections
A	0-0.60	0-5.0	Free flow
B	0.61-0.70	5.1-15.0	Stable flow (slight delays)
C	0.71-0.80	15.1-25.0	Stable flow (acceptable delays)
D	0.81-0.90	25.1-40.0	Approaching unstable flow (tolerable delay -- occasionally wait through more than one signal cycle before proceeding)
E	0.91-1.00	40.1-60.0	Unstable flow (intolerable delay)
F	> 1.00	60.1 +	Forced flow (jammed)

Level of service analysis for two-way stop sign controlled intersections assumes left turns from the major street are affected by opposing major street through traffic. Traffic on the minor street is affected by all conflicting traffic. The methodology is based on gaps in the major street traffic in which a vehicle can pass through or enter the major street. Reserve capacity is related to the capacity of these gaps; as the gaps become smaller or less frequent, the reserve capacity becomes smaller and traffic backups will occur. Levels of service for unsignalized intersections have been defined as follows:

Level-of-Service Criteria For Unsignalized Intersections

Reserve Capacity Pass. Cars Per Hour	Level of Service	Expected Delay to Minor Street Traffic
> 400	A	Little or no delay
300-399	B	Short traffic delays
200-299	C	Average traffic delays
100-199	D	Long traffic delays
0- 99	E	Very long traffic delays
*	F	*

* When demand volume exceeds the capacity of the lane, extreme delays will be encountered with queuing which may cause severe congestion affecting other traffic movements in the intersection. This condition usually warrants improvement to the intersection.

8.6 Level of Service Analysis

Level of service analysis was performed for the Post CANA without Tudor Wharf (to be referred to as Post CANA No Build) and Post CANA with Tudor Wharf conditions (to be referred to as Post CANA Build) using the 1985 Highway Capacity Manual methodology at the following intersections:

Chelsea Street/Warren Street
Rutherford Avenue/Chelsea Street
Rutherford Avenue/Route 1 Ramps

Traffic volumes analyzed for the Post CANA No Build condition are from the Central Transportation Planning Staff (CTPS) data as described in the Traffic Volume section of this report.

Intersection geometrics used in the analysis are from a report by Vanasse Hangen and Brustlin (VHB) entitled, "Local Intersection Improvement Analysis, CANA Project", November, 1987.

Intersections in the City Square area of Charlestown have recently been studied by CTPS and the City of Boston (through their consultant, VHB) because of anticipated operational problems after the completion of the CANA project. The study by VHB recommended improvements to

the intersections of Rutherford Avenue/Chelsea Street, Rutherford Avenue/Route 1 ramps, and Chelsea Street/Warren Street. The recommended geometrics, shown in Exhibit 36, will be used in the level of service analysis.

Level of service analysis results are summarized in Table 6.

8.7 Roadway and Intersection Mitigation

The intersection of Chelsea Street/Warren Street, which will handle the greatest number of Tudor Wharf vehicles, will operate at LOS B and LOS C during the AM and PM peak hours, respectively. The intersection of Rutherford Avenue/Route 1 Ramps will operate at LOS D even with the addition of Tudor Wharf. No improvements are proposed at these locations.

The VHB analysis of the intersection of Rutherford Avenue/Chelsea Street shows it will operate at LOS F for Post CANA Conditions. Using the 1985 Highway Capacity Manual methodology to calculate the level of service (VHB did not use this methodology), the intersection operates at LOS F for the Post CANA No Build condition during the PM peak. During the AM peak (see Table 5) the intersection of Rutherford Avenue/Chelsea Street will operate at LOS E for the Post

CANA No Build Condition and the Build Condition as well. Average delay per vehicle will increase by 7 to 9 seconds. Delay is minimized if the VHB design is altered to include a left turn only, a left-through, a through, and a right turn only lane on the Chelsea Street approach to the intersection. A right turn only signal phase can be included with the eastbound Rutherford Avenue signal phase.

Table 6
Level of Service
AM and PM Peak Hour

<u>Intersection</u>	Post CANA No Build			Post CANA with Tudor Wharf						
	<u>LOS</u>	<u>Delay</u>	<u>v/c</u>	w/o Massport Parcel		w/ Massport Parcel		<u>LOS</u>	<u>Delay</u>	<u>v/c</u>
AM PEAK HOUR										
Chelsea St/Warren St	B	9.34	0.87	B	11.84	0.92	B	12.71	0.93	
Rutherford Ave/Chelsea St	E	51.02	1.02	E	57.81	1.04	E	59.80	1.04	
Rutherford Ave/Rte 1 Ramps	D	28.33	0.97	D	29.59	0.98	D	30.14	0.99	
PM PEAK HOUR										
Chelsea St/Warren St	C	17.24	0.93	C	19.47	0.94	C	22.63	0.97	
Rutherford Ave/Chelsea St	F	65.65	1.07	F	71.04	1.08	F	83.32	1.11	
Rutherford Ave/Rte 1 Ramps	D	31.68	0.89	D	31.03	0.89	D	31.70	0.89	

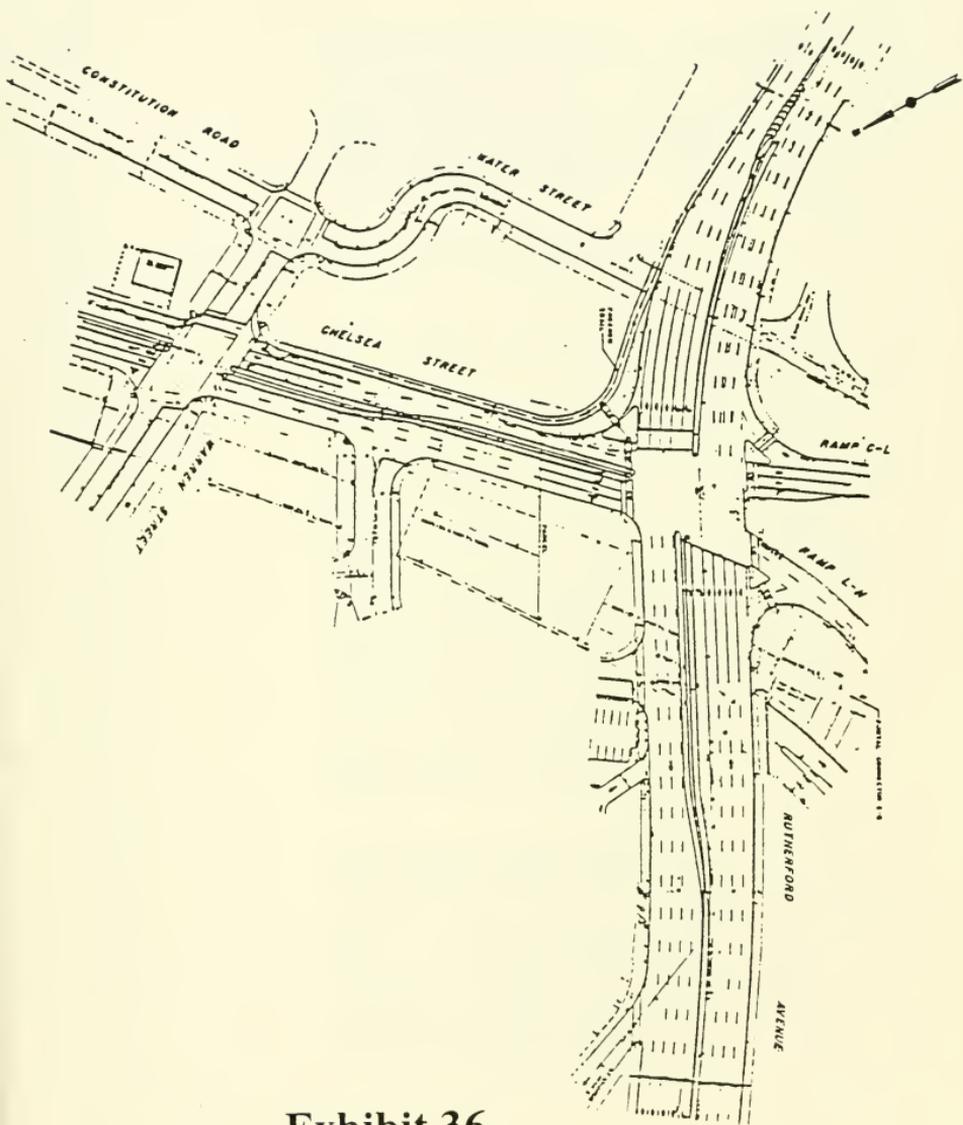


Exhibit 36

Local Intersection Improvements

The other intersections in the study area will operate at LOS D or better even with the addition of Tudor Wharf. No improvements, beyond the Vannase Hangen Brustlin recommendations, are needed.

8.8 On Site Loading and Circulation

Water Street, with a pavement width of approximately 30 feet, is the public way providing access to Tudor Wharf. Vehicular access from Water Street is proposed along the alignment of so-called Charles River Avenue, a driveway with a pavement width of 28-32 feet. Access to parking from Water Street is proposed via a 28-foot ramp approximately 40 feet northerly of Charles River Avenue (an alternative ramp on Charles River Avenue is also being considered) and a drop-off area parallel to Water Street, approximately 90 feet long.

The Charles River driveway is approximately 200 feet long leading to a circular turnaround with a diameter of 62 feet. On the northerly side of the driveway, access to a two-bay truck loading area (20' wide) and 8 parking spaces have been provided.

8.8.1 Loading/Service

Tudor Wharf will, at full development, have about 224,000 square feet of building area without the Massport Parcel or 298,000 square feet with the Massport Parcel. By percentage use, these totals break down as follows:

	Commercial		
	Office	Retail	Restaurant
Without Massport	87%	9%	4%
With Massport	87%	10%	3%

The commercial/retail and restaurant components will require approximately three times the loading facilities required by office use of the same size. The office component requires facilities for fewer truck loading spaces per unit of area. The two truck spaces provided will be adequate for most building needs with proper management of the dock.

Service vehicle parking will be relegated to specific locations in the garage. These vehicles tend to be smaller than delivery trucks, but their parking duration is significantly longer. Four

spaces will be set aside for their use.

8.8.2 On-Site Circulation

Water Street, the public way access to Tudor Wharf, will be dead ended on the south when the North Area Project is completed. Thus, vehicular conflicts with non Tudor Wharf traffic will be minimal at its access point.

Vehicle trip generation estimates for peak hours, shown earlier, indicate the following traffic flows which, conservatively, will utilize the garage ramp:

Peak Hour	Without Massport		With Massport	
	In	Out	In	Out
AM	133	22	168	28
PM	68	149	80	187

A volume of 187 per hour will average to one vehicle each 19 seconds. Since this flow will be almost free flow onto Water Street, no capacity problems are indicated.

8.9 Pedestrian Impacts

Tudor Wharf will provide, to a major extent, a pleasant pedestrian environment. In addition to pedestrian circulation within the development, external pedestrian access is proposed to and from Tudor Wharf for:

The Freedom Trail - By providing stairs between the North Washington Street bridge and Tudor Wharf.

The Harborwalk - By providing pedestrian walks on the perimeter.

Paul Revere Landing Park - By pedestrian passage under the Charlestown Bridge from Tudor Wharf and access to Charles River Dam and North Station.

It is estimated 5,337 person trips can be expected daily without the Massport Parcel and 6,640 person trips with the Massport Parcel. Approximately half of these person trips will be involved in accessing Tudor Wharf from outside the development (i.e. not from the parking facility). About 90 percent of this flow will take place between 8 AM and 8 PM. Pedestrian movement within Tudor Wharf has been carefully laid out. Pedestrian

movement external to Tudor Wharf requires a coordinated, cooperative effort with the involved agencies. Water Street, access to local bus stops and adjacent attractions require walk areas of reasonable width, well lighted and potentially attractive street furniture and facilities for handicapped access.

8.10 Public Transportation

Person trips to and from Tudor Wharf by public transport (i.e. not auto trips and/or walking) constitutes a major access component for the development. In this section an inventory of existing facilities and proposals for potential facilities will be discussed and evaluated.

At present (and probably in the future) the following facilities are (will be) available.

Public Transportation Facilities

1. Rapid Transit - MBTA
2. Commuter Rail - MBTA
3. Bus
 - a. Shuttle - Private and Potential MBTA
 - b. Local - MBTA
 - c. Express - MBTA
4. Water Shuttle - Private
5. Other

8.10.1 Public Transportation

Although the MBTA Orange Line, providing direct service between Oak Grove, Malden and Forest Hills, is located near Tudor Wharf, the nearest "T" stations are over one-half mile away.

Studies conducted in Manhattan determined the average walking distance/time frame to be:

Local bus:	800 feet / 3 minutes
Rapid Transit:	1200 feet / 4-5 minutes
Commuter Rail:	3000 feet / 10-12 minutes

Estimates of time required to access the nearest transit stations are shown in Table 7.

Table 7
Travel To Transit Stations

MODE: <u>WALKING</u>			MODE: <u>BUS</u>			
<u>Station</u>	<u>Distance</u>	<u>Time</u>	<u>Distance</u>	<u>Headway</u>	<u>Travel</u>	<u>Total</u>
North Station	2200'	7.7 mins.	3200'	8	3-5	11-13 mins.
Haymarket	3700'	13.0	4200'	8	3-5	11-13
Community College	3400'	12.0	3900'	9	3-5	11-13

- Notes:
1. Walking Speed = 285 feet/minute
 2. Headways are most frequent rush hour estimates
 3. Walk to and from bus, approximately: 2-3 minutes, is not included
 4. Walking distance noted - to and from North Station - is via MDC locks. An alternate walking route via the North Washington Street Bridge has a walking distance of approximately 2700 feet (9.5 minutes) for commuter rail passengers.

Each station provides interchange with the "T" system, commuter rail and other bus and shuttle routes. In addition, local bus and shuttle routes will be available in the immediate vicinity of Tudor Wharf (approximately 1000 feet) providing service to the northeast, north and downtown Boston.

Table 8 contains estimates of the service available in the immediate vicinity of Tudor Wharf after completion of the CANA project and direct service; i.e., without changinglines, at the stations. Services are estimated because, although studies

are underway, no final service plan has been developed for the area.

Table 8
Estimated Public Transport Available To Tudor Wharf
Near Site - Within Approximately 1000 Feet

<u>Carrier</u>	<u>Route Description</u>	<u>Estimated Headways(minutes)</u>		
		<u>Peak</u>	<u>Day</u>	<u>Night</u>
"T" Bus Route #111	Haymarket and Woodlawn serving Chelsea and Revere, via Tobin Bridge	5-8	20	60
"T" Bus Route #92	Assembly Square and Downtown serving Charlestown & Somerville via Main St. - Rutherford Ave.	15	30	60
"T" Bus Route #93	Sullivan Square Station & Downtown serving Charlestown, via Bunker Hill & Lowney Way	8	30	60
Shuttle Bus	Site vicinity and North Station/ Haymarket, via North Washington St.	10	30	30
Water Shuttle "T" or Private Seasonal	Site vicinity and Rows/Long Wharfs	15	15	-
Airport Shuttle Private	Site Vicinity and Logan International Airport		On Call	

Table 8 (Cont.)

Estimated Public Transport Available To Tudor Wharf
Near Site - Within Approximately 1000 Feet

AT STATIONS - DIRECT SERVICE

Route	Route Description	Est. Headways (minutes)		
		Peak	Day	Night
NORTH STATION				
"T" Orange Line	Oak Grove and Forest Hills	4	8	12
"T" Green Line (1)	Boston College & North Station	6	7	8
"T" Green Line (2)	Riverside and Lechmere	7-8	10	10
"T" Commuter Rail				
North Station and	Beverly	20	30	60
	Reading	25	60	60
	Haverhill	30	2 trains	
	Lawrence	30	"	
	Winchester	20	60	60
	S. Acton	30	60	60
	Fitchburg	3 trains	2 trains	1 train
HAYMARKET				
"T" Orange Line	Noted under N. Station			
"T" Green Line (1)	Noted under N. Station			
"T" Green Line (2)	Noted under N. Station			
"T" Bus	Haymarket and Woodlawn			Noted Above
"T" Bus	Assembly Square & Downtown			"
"T" Bus	Sullivan Square & Downtown			"
"T" Bus	Haymarket & Medford			
	Express to Somerville via I-93	13-15	-	-
COMMUNITY COLLEGE				
"T" Orange Line	Noted under N. Station			
"T" Bus	Assembly Square and Downtown			Noted Near Site

8.10.3 Estimated Public Transportation Use

Estimates of person trips by public transportation were developed by first utilizing a travel mode split between auto trips and non-auto trips. The non-auto trips were then apportioned to the following modes based on data from "Urban Space for Pedestrian" (Pushkarev and Zupan, MIT Press, 1975):

Walk only - Includes Recreation /
Tourist Trips
Rapid Transit - Includes Bus Trips to
Stations
Commuter Rail - " " "
Bus - Not Including Bus Trips to
Stations
Water Shuttle
Other - Includes Bicycles, Airport
Shuttle

In the following tables total person trips, auto trips and person trips by auto are shown for daily and peak hour periods. Note: Please refer to the section on Trip Generation for vehicular (auto) trip estimates and use areas (square feet).

Table 9
Estimated Daily Person Trips (Auto vs. Non Auto)

	Total Person Trip Generation	
	<u>w/o Massport Parcel</u>	<u>with Massport Parcel</u>
<u>OFFICE</u>		
Area	187,440 sf	249,520 sf
Person Trips (13.5/1000 sf)	2,530	3,368
<u>RETAIL</u>		
Area	27,440 sf	39,590 sf
Person Trips (38.3/1000 sf)	1,051	1,516
<u>RESTAURANT</u>		
Area	8,780 sf	8,780 sf
Person Trips (200 / 1000 sf)	1,756	1,756
Total Person Trips	5,337	6,640
Person Trips by Auto	- 2,717	- 3,260
Non Auto Person Trips	2,620	3,380

Table 10
Estimated Peak Hour Person Trips

	AM PEAK HOUR				PM PEAK HOUR			
	w/o Massport		w/ Massport		w/o Massport		w/ Massport	
	<u>In</u>	<u>Out</u>	<u>In</u>	<u>Out</u>	<u>In</u>	<u>Out</u>	<u>In</u>	<u>Out</u>
<u>Office</u>	360	55	455	65	62	332	80	425
<u>Retail</u>	72	28	92	44	216	236	260	272
<u>Restaurant</u>	12	0	12	0	68	28	68	28
Total Person Trips	444	83	559	109	346	596	408	725
Person Trips by Auto	-168	-29	-211	-37	-113	-206	-131	-252
Non-auto Person Trips	276	54	348	72	233	390	277	473

Table 11
Estimated Non-Auto Travel Mode

<u>Period</u>	<u>Walk Only</u>	<u>Rapid Transit</u>	<u>Commuter Rail</u>	<u>Bus</u>	<u>Water Shuttle</u>	<u>Other</u>	<u>Total</u>
Two-way 24-hour							
w/o Massport Parcel	183	1907	183	283	37	26	2620
w/ Massport Parcel	237	2461	237	365	47	34	3380
AM Peak Hour							
In w/o Massport Parcel	5	210	29	25	4	3	276
In w/ Massport Parcel	6	266	37	32	4	3	348
Out w/o Massport Parcel	1	41	6	5	1	1	54
Out w/ Massport Parcel	1	55	8	7	1	1	72
PM Peak Hour							
In w/o Massport Parcel	4	178	25	21	3	2	233
In w/ Massport Parcel	5	211	29	25	4	3	277
Out w/o Massport Parcel	7	297	41	35	5	4	390
Out w/ Massport Parcel	8	360	50	43	6	5	473

8.10.4 Mode Split

The mode split between auto and non-auto person trips is estimated at approximately 50/50 on a daily basis, (peak hour mode split is 40% auto to 60% non-auto). Non-auto person trips will utilize rapid transit (73%) and bus (11%). Person trips via rapid transit will also use the shuttle bus, local bus and walking to reach the transit station(s). Providing a shuttle bus route with reasonable headways is important to maximize the usage.

Note: This section utilized material from "Urban Space for Pedestrian" Pushkarev and Zupan, MIT Press, 1975, as well as data from local sources.

8.11 Taxi Waiting Area

Taxi service will be a desirable and beneficial transportation feature, since it can provide on-call access to and from the proposed development without long-term parking demand.

Previous studies indicate the expected maximum taxi trip length will be approximately two miles. (Shorter trips will predominate.) This trip length will cover areas such as downtown Boston, East

Boston and portions of Chelsea, Everett, Cambridge and Somerville.

A taxi waiting area will be established on site for three taxis. The average parking duration for taxis awaiting fares is six minutes. The taxi drop off and pickup areas will be provided and signed. Cab companies will be permitted to install telephones in the lobby of the landside building to permit direct connection to their dispatch centers.

8.12 Water Transportation

Preliminary studies are underway to determine the feasibility of instituting a water taxi service at Constitution Marina. As noted in "Transportation, A Framework for Improved Access", (City of Boston, February 1986):

"The City of Boston and the Commonwealth recognize the need to develop a comprehensive water transportation system. It will enhance the revitalization of Boston Harbor, provide alternative modes of travel for commuters and encourage Inner Harbor Shuttle Services."

As shown in Exhibit 37, thirteen existing or proposed locations will be serviced by water shuttle or water taxi. The nearest water terminals to Tudor Wharf are Pier 4 in the Charlestown Navy Yard and Lincoln Wharf in the North End. These remote locations are not expected to serve business and restaurant trips at Tudor Wharf; they could be attractive to tourists (as indicated by the low percentage of trips assigned to this mode).

A water taxi service and docking facility at Constitution Plaza would serve the business and restaurant trips at Tudor

Wharf and also trips to and from the City
Square area in Charlestown.

CHARLESTOWN NAVY YARD

Pier 4
Shuttle and Water Taxi
Completed in 1987

CHARLESTOWN NAVY YARD

Pier 11
Shuttle and Water Taxi
Completion Expected in 1992

SCHRAFFTS' CENTER
Commuter, Shuttle and
Water Taxi. Completion
Expected in 1989

BURROUGH'S WHARF
Shuttle and Water Taxi
Completion Expected in
1990

LEWIS WHARF
Shuttle and Water Taxi
Completion Expected in
1992

LONG WHARF
Excursion, Commuter,
Shuttle and Water Taxi
In Use, Renovation
Expected by 1991

ROWES WHARF
Excursion, Commuter,
Shuttle and Water Taxi
Completed in 1987

WORLD TRADE CENTER
Shuttle and Water Taxi
Completed in 1986

KENNEDY LIBRARY
Excursion, Shuttle
and Water Taxi
Completion Expected in
1989

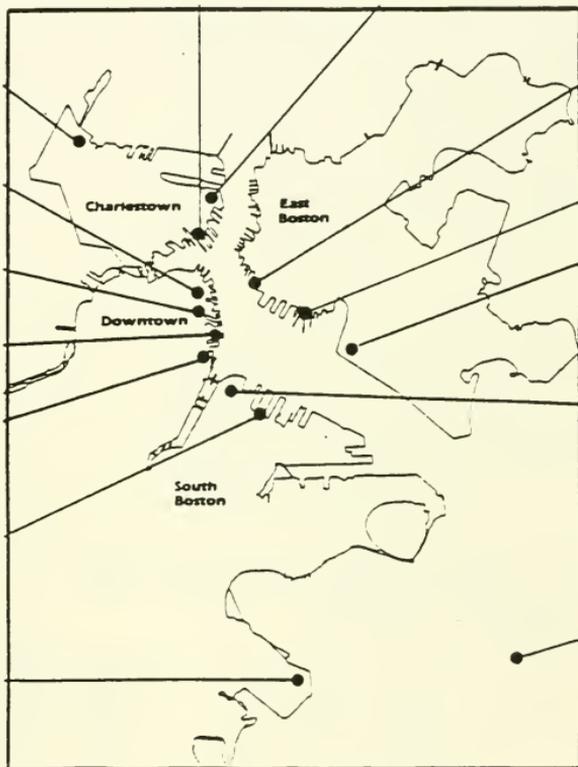
CLIPPERSHIP WHARF
Shuttle and Water Taxi
Completion Expected in 1991

CASHMAN MARINE
Shuttle and Water Taxi
Completion Expected in 1990

LOGAN AIRPORT
Shuttle and Water Taxi
Completed in 1985

FAN PIER/PIER 4
Shuttle and Water Taxi
Completion Expected in 1995

**HARBOR ISLANDS
STATE PARK**
Some Excursion,
Shuttle and Water
Taxi at present
Completion expected
in 1992



BOSTON HARBOR WATER TRANSPORTATION SITES

Exhibit 37 Water Transportation

9.0 Parking Impacts9.1 Parking Generation

Parking generation and accumulation for Tudor Wharf was estimated using data from the Urban Land Institute's "Shared Parking"; a publication designed to estimate the peak parking demand for mixed/multi-use developments. Peak parking rates for office, commercial/retail and restaurant land uses are based on 1,000 square feet of gross leasable area. Gross leasable area for each of the land uses in the Tudor Wharf development is shown in Table 12. Peak parking rates for each type of land use and the default assumptions regarding percent auto usage and vehicle occupancy are shown in Table 13.

Tudor Wharf	Table 12		
	Gross Leasable Area	Square Footage Commercial/ Retail	Restaurant
Without Massport Parcel	187,440	16,336	6,618
With Massport Parcel	249,510	23,956	6,618

Table 13
Parking Rates and Default Assumptions

	Office		Commercial/ Retail		Restaurant	
	Wkdy	Sat	Wkdy	Sat	Wkdy	Sat
Peak Parking Rate (Spaces/1,000 GLA)	3.0	0.5	3.8	4.0	20.0	20.0
Percent Auto Usage	100%	100%	100%	100%	100%	100%
Vehicle Occupancy	1.2	1.2	1.8	1.8	2.0	2.0
Tudor Wharf Percent Auto Usage	40%	80%	25%	50%	50%	100%

Peak parking rates in "Shared Parking" assume 100 percent auto usage; the parking rates for Tudor Wharf will be adjusted to reflect a lower percent auto usage as noted in the Trip Generation section of this report. The percent auto usage on Saturday is assumed to be twice the weekday percent.

Parking accumulation during the day is also based on data from "Shared Parking". The peak parking demand occurs at different times for the different land uses: the peak weekday parking demand for office use occurs at 10 or 11 AM; for the commercial/retail use at 1 PM and for the restaurant at 7, 8 and 9 PM. Peak parking demand of all three land uses will occur at 2 PM on weekdays and 8 PM on Saturdays. Peak parking demand values are shown in Table 8. Exhibits 38 and 39

show the accumulation of parking for Tudor Wharf with and without the Massport Parcel. Parking demand and accumulation back-up calculations are contained in the Appendix.

Table 14
Tudor Wharf Peak Parking Demand

	Weekday	Saturday
Without Massport Parcel	235	163
With Massport Parcel	303	175

The parking garage at Tudor wharf will have 303 parking spaces. This will satisfy the estimated maximum demand of the Tudor Wharf development with the Massport Parcel. Six handicapped parking spaces are required for buildings of this size and will be provided for in the parking structure.

9.2 Constitution Marina Parking

The "Massport Parcel" is currently a parking lot for the Constitution Marina, and it is also being used as overflow parking for Constitution Plaza, Barretts restaurant, and the U.S.S. Constitution.

The parking lot has approximately 80 spaces; parking is free.

Existing parking conditions at the Constitution Marina were described in a memo by CTPS dated April 15, 1986. The memo contained the following information:

- Constitution Marina has 265 slips.
- For the marina, heavy use times are Friday evening, Saturday, and Sunday, from June through the middle of September.
- During summer months, 30-35 vehicles might come in during the AM peak period or go out during the PM peak period on weekdays.
- During the winter months, 12-15 cars from the marina use the lot each weekday. Evening and weekend future parking demand for the marina can be accommodated in the Tudor Wharf parking garage. However, the summer demand of 30-35 vehicles cannot be accommodated in the parking garage.

Exhibit 38

Parking Accumulation without Massport Parcel

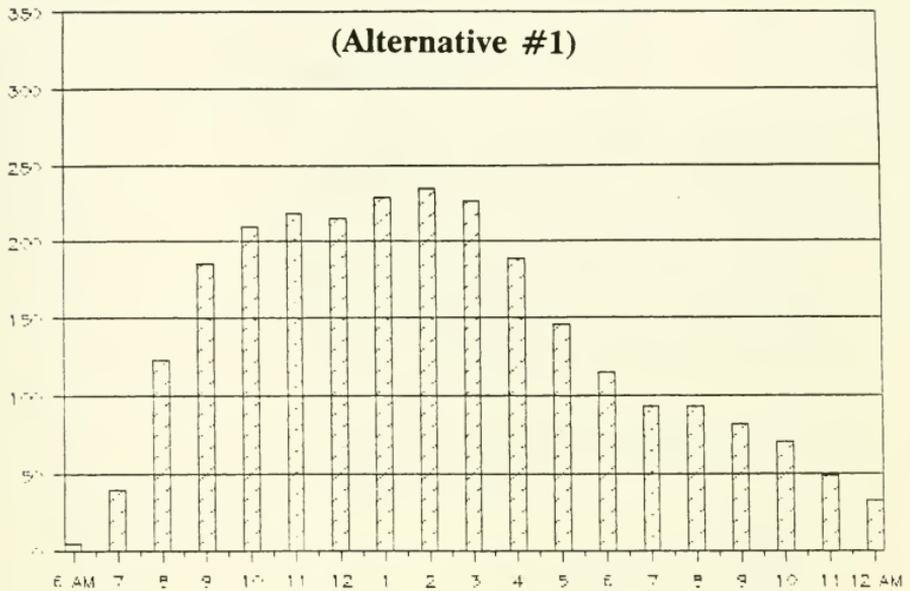
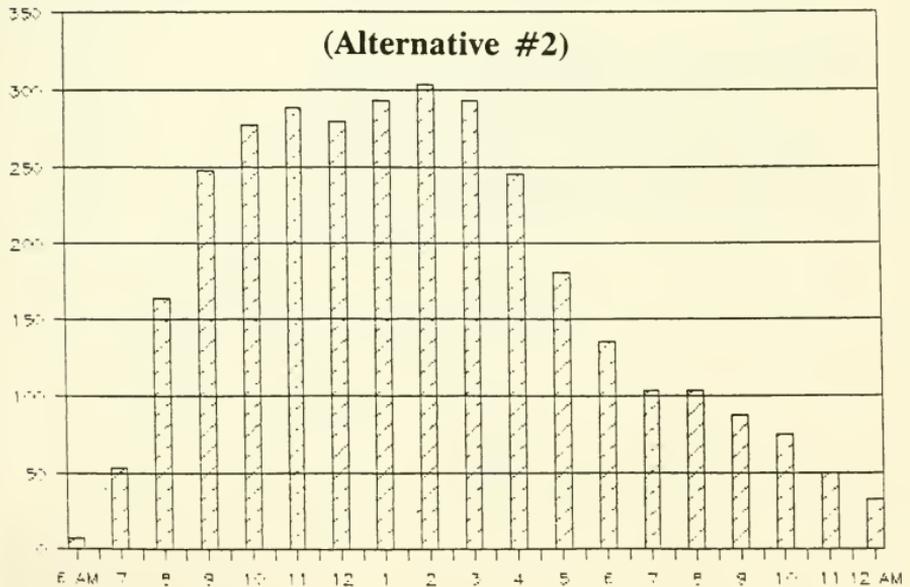


Exhibit 39

Parking Accumulation with Massport Parcel



9 Long Term Monitoring

A long-term transportation monitoring program will be set up in cooperation with the Boston Transportation Department and the Boston Redevelopment Authority. This program will provide the City with follow-up data on project traffic and parking conditions. The program should include the following:

- Survey of parking accumulation and peak parking demand.
- Employee survey to determine travel mode, vehicle occupancy and origin /destination.
- Survey of pedestrian routes to, from and through the site.

If site vehicle traffic or parking demand has been underestimated by the assumptions used in this report, then alternative mitigation measures will be explored. These measures may include the following:

- Employee Shuttle Service - Provide shuttle service between Tudor Wharf and North Station. Other locations, such as Haymarket or Post Office Square, could be included.

- Preferential Parking - Provide preferential parking for high occupancy vehicles (HOV).- Differential Parking Fees - Implement a parking fee structure that would have higher rates for all-day employee users, and lower rates for HOV users.

10.0 Infrastructure

This section is in response to the Certificate's request for a description of the sewer and water infrastructure. It outlines the impacts of the proposed project on the wastewater collection and treatment system in the metropolitan area. The amounts of wastewater generated are calculated and the sewer route to the treatment plant is reviewed. The water demand for Tudor Wharf is calculated and the effects of this demand on the supply and pressure of water in Charlestown is also reviewed.

10.1 Impact of Proposed Project on the Sewer System

In Alternative #1, the project as proposed will generate 21,863 gallons per day of wastewater. In Alternative #2, the project as proposed will generate 26,794 gallons per day of wastewater. This area is served by the Boston Water and Sewer Commission and the Massachusetts Water Resources Authority.

The figures are calculated by using Title V guidelines for wastewater generation. Present generation is assumed to be negligible and is not calculated in. The estimates are based on the following assumptions:

Office Space-75 gallons per day/1,000 sf

Retail Space-50 gallons per day/1,000 sf

Restaurant-35 gallons per day/seat

In Alternative #1, Tudor Wharf is projected to have 187,440 square feet of office space, 16,336 square feet of retail space and a 150 seat restaurant.

<u>Use</u>	<u>Area</u>	<u>Factor</u>	<u>Total</u>
Office	187,440	75/1,000	14,058
Retail	16,336	50/1,000	817
Restaurant	150 seat	35/seat	<u>5,250</u>
		TOTAL	20,125

In Alternative #2, the project is projected to have 249,510 square feet of office space, 23,956 square feet of retail space and a 150 seat restaurant.

<u>Use</u>	<u>Area</u>	<u>Factor</u>	<u>Total</u>
Office	249,510	75/1,000	18,713
Retail	23,956	50/1,000	1,200
Restaurant	150 seat	35/seat	<u>5,250</u>
		TOTAL	25,163

Water consumption for the two alternatives will mirror the wastewater generation figures. In Alternative #1, consumption 20,125 gallons per day is

predicted and in Alternative #2, 25,163 gallons per day is the predicted use.

10.2 Sewer Line Route

Wastewater from Tudor Wharf is transported by Boston Water and Sewer Commission and Massachusetts Water Resources Authority sewer lines to the Deer Island Sewage Treatment Plant. The sewer lines carry the wastewater from the site northwesterly to Sullivan Square, northeasterly under the Mystic River to Everett and southeasterly through Chelsea and East Boston to Deer Island for treatment and discharge. (See Exhibit 40 and 41)

The Tudor Wharf site is served by a 15 inch Boston Water and Sewer Commission (BW&SC) sewer line. This line connects to a Massachusetts Water Resources Authority (MWRA) interceptor at the intersection of Charles River Avenue and Water Street. This interceptor is 27 x 36 inches and travels 400 feet southwesterly to Front Street. At Front Street is a combined sewer overflow with a 36 inch discharge into Boston Harbor. This outfall is located just upstream of the Charlestown Bridge at Paul Revere Landing Park.

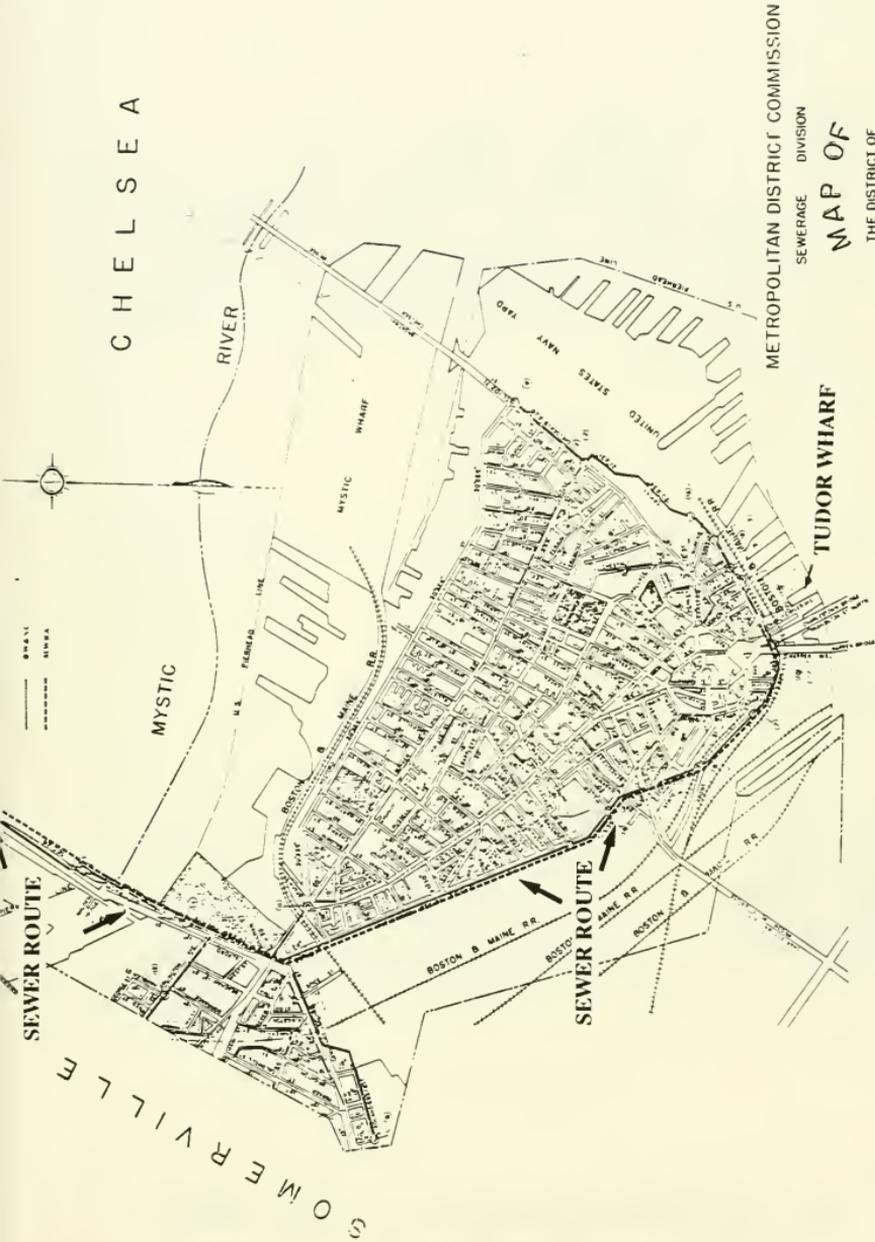
At Front Street, the sewer line travels westerly along Front Street for 1,600 feet. The pipe is 30 x 18 inches. In the vicinity of the Boston Sand and Gravel plant, the line turns northwesterly and travels cross country for 800 feet to the intersection of Rutherford Avenue and Chapman Street. From there, the line travels along Rutherford Avenue towards Sullivan Square. The line enlarges to a 31 x 39 inch line for 600 feet and then enlarges again to 37 x 44 inches for another 3,400 feet. At Sullivan Square the line turns northeast, enlarges to 78 x 86 inches and crosses under the Mystic River to the pumping station located beside the Edison power plant. From here, the wastewater flows through the 78 x 86 inch North Metropolitan Trunk to the Chelsea Pumping Station located near the Chelsea Street Bridge on Chelsea Creek. The North Metropolitan Tunnel carries the wastewater from this point, under Logan Airport to Deer Island for treatment and discharge into Massachusetts Bay.

The Deer Island Treatment Plant has a design flow of 350 million gallons per day (mgd). The current average daily flow is 270 mgd. There is sufficient capacity at Deer Island to handle the increased flow (a predicted maximum of 25,163 gallons per day) from Tudor Wharf.

The Deer Island Sewage Treatment Plant is undergoing a massive renovation and replacement program that will upgrade the treatment process from primary to secondary. At completion of the construction program the plant will be capable of handling 480 million gallons average daily flow and 1,270 mgd peak flow. The plant is scheduled for completion by 2000.

The conditions and excess capacities of the affected sewer lines have been reviewed with the BW&SC and the MWRA. They have informed us that there is sufficient capacity for the proposed development. The BW&SC line on Water Street can handle both the Alternative #1 wastewater projection of 20,125 gallons per day and the Alternative #2 projection of 25,163 gallons per day.

The MWRA lines and pumping stations can also handle the additional flows generated by the proposed development.



C H E L S E A

MYSTIC

RIVER

S O M E R V I L L E

SEWER ROUTE

SEWER ROUTE

METROPOLITAN DISTRICT COMMISSION
SEWERAGE DIVISION

MAP OF
THE DISTRICT OF

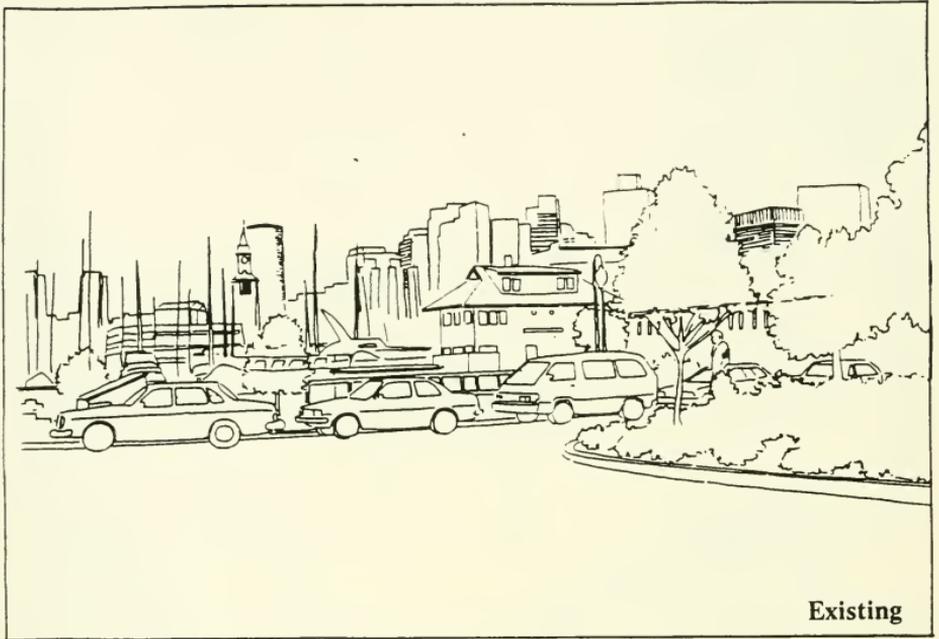
TUDOR WHARF

Exhibit 40

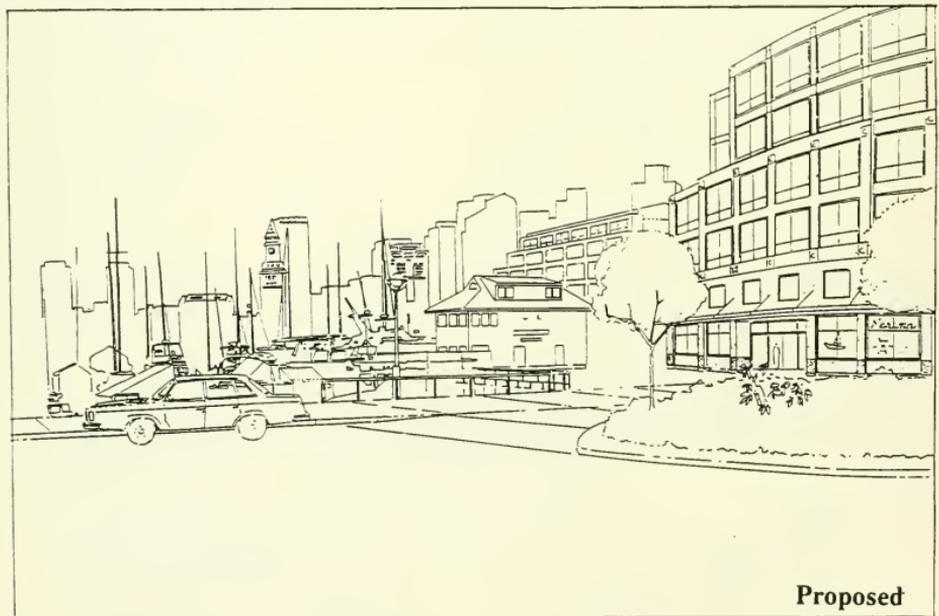
SEWER ROUTE IN CHARLESTOWN

CHARLESTOWN

SHOWING
SEWERAGE SYSTEM



Existing



Proposed

Exhibit 22(b) - View Looking South from Joiner Street With Massport Parcel

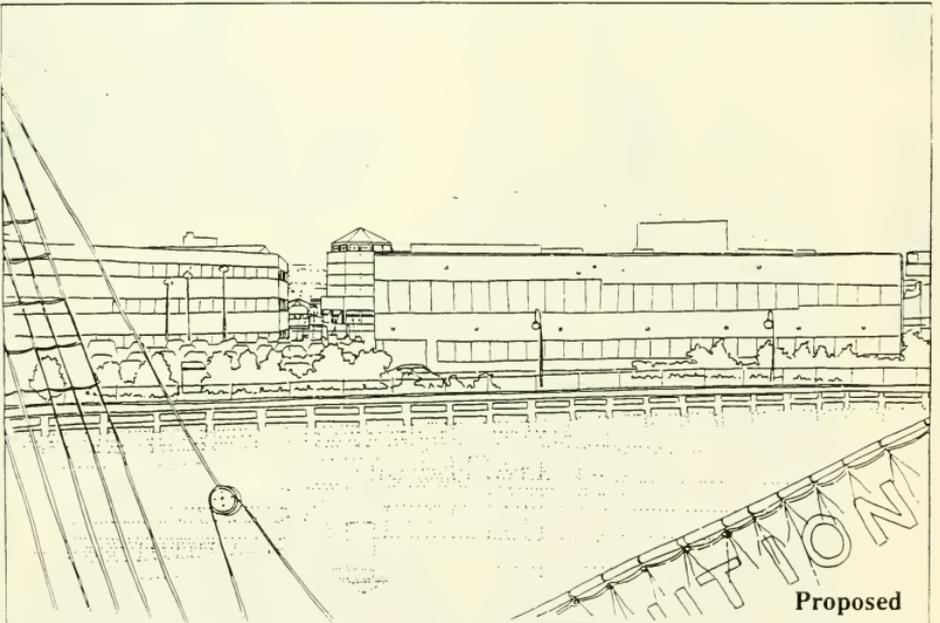
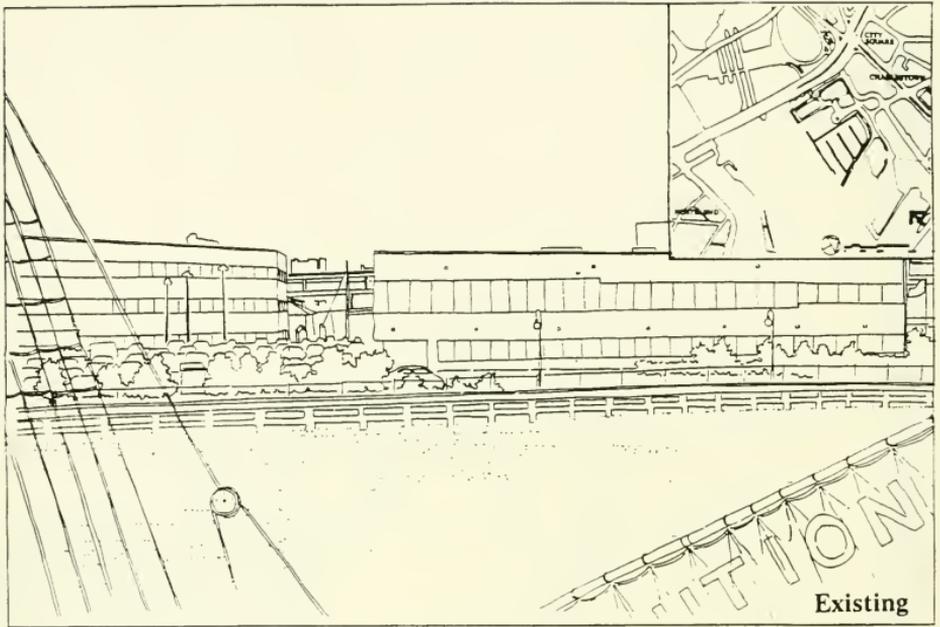


Exhibit 23 - View From USS Constitution

10.3 Water Supply

The Tudor Wharf site is served by a 12 inch water main on Water Street that is maintained by the BW&SC. The source of water is the MWRA. At the present time, the 12 inch line feeds an 8 inch line on Charles River Avenue that feeds the existing building. This line was installed in 1898.

10.4 Project Demand

According to the BW&SC, there is adequate supply and pressure for the proposed development's needs of 20,125 gallons per day for Alternative #1 or 25,163 gallons per day for Alternative #2.

At the Commission's request, the project will tie directly into the 12" line on Water Street, bypassing the 90 year old section on Charles River Avenue.

10.5 Site Drainage

At the present time, the entire Tudor Wharf site is covered with impervious surfaces. The at-grade levels drain in several directions. Part of the area drains into the BW&SC combined sewer

system on Water Street, while parts of the site drain directly into Boston Harbor. The roof drains on the landside building are connected to the combined sewer system. The pier building roof drains into the harbor.

The Tudor Wharf plans call for collecting the roof, roadway and plaza drainage in a separate drainage system from the wastewater system. The runoff will be collected into catch basins with oil and grease separators prior to discharge into Boston Harbor. The major benefits to the sewer system is the removal of fresh water from the sewer system. This will reduce peak flows during storm events.

11.0 Construction Impacts

In the following section, the demolition of the existing structures will be explained, the construction methods and phasing schedule are reviewed, air and water quality impacts are reviewed and parking needs for construction workers, equipment and supplies are discussed.

11.1 Existing Structures

The warehouse constructed on the site is partially on land and extends southerly over the harbor. Portions of the site to the south and west of the warehouse structure consist of a level, asphalt paved truck loading area. This pavement is bounded to the south by a granite block seawall which runs east-west completely beneath the warehouse structure.

The existing warehouse consists of a two story high structure constructed both on land and over water. The portion of the structure built over water is of wood frame construction supported on timber piles.

11.2 Construction Phasing

The Tudor Wharf construction schedule calls for a three-year construction period with an estimated start in the summer of 1989.

In the following table, major work is identified by proposed phase and schedule. Variations can occur and should be expected. However, the major phasing proposals are well considered and should be effectuated to the extent possible.

Construction Schedule/Phasing

<u>Phase</u>	<u>Work</u>	<u>Schedule</u>	
		<u>Start Month</u>	<u>Finish Month</u>
<u>One</u>	A. Remove existing buildings	1	2
	B. Construct temporary concrete deck on existing piers for parking/materials	3	3
<u>Two</u>	Construct underground parking	4	12
<u>Three</u>	Landside building - Alternative 1	13	24
	OR Landside building - Alternative 2	13	30
<u>Four</u>	Pier structure	18	25
	Pier building	25	36
	Charles River Avenue, stairs, public areas		
	dredging, dock	30	36

Phase One will involve the removal of the existing metal and concrete structures on the site. This will take two months. The existing pier structure will receive a

temporary concrete deck to support the parking requirements of the marina (if Alternative #2 is built) and the construction project. Construction of the temporary deck will take one month.

Phase Two is the construction of the underground parking facility. For Alternative #1, the garage will be four levels and in Alternative #2, the garage will be three levels. In Alternative #2, the garage will extend under the Massport parcel to a new bulkhead that will serve as the northern wall of the garage.

Under either alternative and using the slurry wall construction technique, the concrete exterior wall of the structure will be cast. Once the exterior wall is complete the garage area will be excavated. For either alternative, about sixty thousand cubic yards of excavate will be removed and trucked away. As it is dug up, the excavate will expand in volume by approximately 25% to 75,000 cubic yards. It is estimated that 3,000 truckloads of 25 cubic yards each will be required over a three month period to remove the excavate. The garage structure will be constructed inside the exterior wall with cast in place concrete. In Alternative #2, the northern wall of the garage will serve as the bulkhead. At present, the bulkhead slopes downward and

is composed of loose fill. The Tudor Wharf proposal calls for using the garage wall as the bulkhead which will open up an additional 40 x 225 foot area for additional boat slips in the marina. Along the eastern bulkhead is a granite block bulkhead in fair condition with the exception of a 40 foot section. This section will be rebuilt to resemble the existing granite wall. The garage will be finished in month 12 of the project.

Phase Three, the construction of the landside building, will be next. This building will be of conventional construction - a steel frame with a masonry exterior and will take one year to build. In Alternative #2, construction would take an additional six months and push the remaining work back.

Phase Four will involve the construction of a new pier structure. The demolition of the existing structure and construction of the new pier will begin in month 18. A floating debris barrier will be placed around the pier and using a combination of land based cranes and barge mounted cranes the existing deck and piles will be pulled up and hauled away to an approved disposal site. It is estimated that 2,000 yards of material will be removed.

The 120 x 225 foot concrete platform structure is to be supported on precast, prestressed concrete piles. The deck will be a poured concrete surface on the piles.

Phase Four will include the construction of the pier building and construction will begin in month 25. The building will be a conventional steel frame structure with a masonry exterior.

The reconstruction of Charles River Avenue, the construction of the Charlestown Bridge stairs, public areas, dredging and dock installation will all be constructed during this phase. Finally, the improvements to the bridge vaults will be made. The total construction time is three years.

Extensive highway reconstruction is underway and will continue adjacent to the site during the Tudor Wharf construction. This will affect routing of traffic to and from Tudor Wharf. However, the major elements of the CANA construction traffic pattern has been set and will probably remain in place during the three-year Tudor Wharf construction period.

When Tudor Wharf construction starts in mid 1989, the following patterns and/or work are anticipated:

1. Tobin Bridge
 - o Southbound detour and new Grey Street ramp will be in effect and continue through 1992.
 - o Northbound access via Water Street and Chelsea Street remains open.
2. Connector between Central Artery and Tobin Bridge
 - o will be under construction
3. North Washington Street Bridge
 - o utility revisions underway
 - o Charlestown approach realigned with Rutherford Avenue
4. Front Street connection to Water Street realigned and improved
5. Short duration rerouting (detour) can be expected.

11.3 Staging Areas, Access, Parking

The construction phasing for Tudor Wharf will permit much of the construction staging and worker parking to occur on site. Once the buildings have been demolished and the temporary platform constructed on the present pier, all of the worker parking and construction staging can be accomplished on site. When the garage is under construction the temporary pier will serve as the worker parking area. When the garage is finished, workers can park in it.

The site has a considerable amount of planned public space that will not be built on. This includes the plaza area, Charles River Avenue and the bridge vaults. Much of the equipment and supplies that are necessary for construction can be stored on site. This space, coupled with good inventory management practices, will be adequate for staging and equipment parking needs.

11.3.1 Construction Workers - Trip Mode and Parking

In Phase One, demolition followed by construction of a temporary concrete deck on existing piers, workers' vehicle accommodations will be difficult. During

this scheduled three month period, minimal on-site parking can be provided since available on-site areas will be reserved for demolition equipment, materials delivery and storage.

During Phase One, the contractor(s) will provide shuttle service to nearby public transportation facilities; e.g., North Station, Haymarket and Community College for workers and their tools. Water shuttle or coordination with existing shuttle service will also be considered and evaluated.

Completion of the temporary concrete platform in Phase One will provide an area for materials storage and worker parking during Phase Two - construction of underground parking. After Phase Two is completed, in 12 months, parking for workers and service vehicles can be provided for the duration of the construction project.

After Phase One is completed, the majority of construction workers will utilize personal vehicles to transport themselves and their tools to the construction site.

11.3.2 Tudor Wharf Access/Routing via Roadway

Access to and from the Tudor Wharf area during the CANA construction will be available from the following major routes: Tobin Bridge, North Washington Street Bridge, Central Artery, and Front Street/New Rutherford Avenue.

Local routing to and from the site is proposed on a preliminary basis herein, since short duration rerouting will require a degree of flexibility while CANA work is in progress. Front Street will provide direct access to Tudor Wharf while exiting vehicles will use Water Street, which allows connections to the major routes.

Coordination will be required between CANA construction and routes utilized by Tudor Wharf traffic. The resident engineer will have the responsibility for obtaining the necessary information from the Massachusetts Department of Public Works and indicating short term alternative routing for the contractor and workers.

11.3.3 Front Street/Charles River Avenue/Water Street

Construction of Charles River Avenue has been proposed for Phase Four. However, in keeping with the necessary coordination and flexibility required, it may be expedient to construct at least a portion of the roadway when the Front Street/Water Street realignment is built.

It will not be necessary to close any public ways or occupy them by Tudor Wharf construction.

11.3.4 Truck Movements

Truck routes will generally utilize the roadways noted above; i.e., Front Street in and Water Street out, connecting to the major highways.

The number of trucks is estimated as six to eight per hour on average during Phases One and Two, with no more than four to six on site at any one time. During Phases Three and Four, fewer truck movements are anticipated.

11.3.5 Material and Equipment Storage

After completion of Phase One there will be adequate storage areas on site. They include:

1. The temporary concrete platform
2. Plaza area
3. Potentially, areas under North Washington Street Bridge arches.

11.4 Air and Water Quality

Air and water quality impacts during construction will be minor. The scope of the proposed development is limited, and mitigating measures will be implemented to further minimize the potential range of impacts. During construction, short term air quality impacts can be expected from fugitive dust from demolition, and construction vehicle emissions. In accordance with D.E.Q.E. regulations, measures will be taken to control fugitive dust emissions. These measures include the daily watering of exposed surfaces to prevent dust.

The additional contribution to background levels of air quality from construction vehicles will be minimal. It is expected that only four to six construction vehicles will be on site at any time and that CO emissions from these vehicles would be insignificant relative to the emissions generated from the heavy automobile traffic on the Charlestown Bridge.

Water quality impacts will be generated by the debris entering the harbor during wharf demolition, from pile driving for the pier and the parking garage and from the dredging. Due care will be exercised

by the contractor to prevent debris from entering the water but the demolition of existing piles and wharf decks will be difficult to achieve without some loss of materials. A containment boom will be installed during demolition to prevent the spread of any floating materials. Floating debris will be manually removed if necessary. A containment boom will be in place during dredging and whenever construction activities would be disturbing the harbor bottom.

11.5 Solid Waste Disposal

Solid waste generated by the construction phase will consist of excavate and demolition materials. Materials excavated for the construction of the underground garage are composed of miscellaneous fill placed on the site over the years. The composition of the excavate is typical of that found in urban locations, and test results do not show high levels of contaminants. All building materials will be recycled or properly disposed of at approved demolition landfills. Excavated soils will also be disposed of in accordance with DEQE regulations.

Pilings, decks and other wharf structures to be removed are of untreated timber and steel. The approximately 600 piles and other materials will be disposed of at an

approved landfill. There are currently a number of demolition landfills in eastern Massachusetts which would be suitable.

BOSTON PUBLIC LIBRARY



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