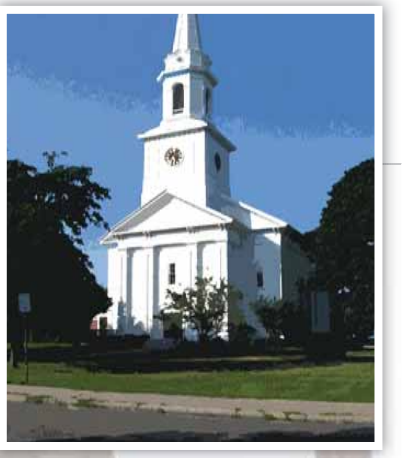

Columbian Square Village Center
Conceptual Plans and Design
Weymouth, Massachusetts

Prepared for:
The Town of Weymouth,
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and
Department of Planning and
Community Development

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Executive Summary

In an increasingly competitive economic environment, Columbian Square must marshal its best existing physical elements and the potential represented by its generous street widths to create a 'place' that is both historic and supports contemporary businesses, is safe and convenient for shoppers while providing visually attractive venues for social interaction.

The civic identity of Columbian Square has always been linked to the unique blending of public and private open space, historic structures, contemporary institutions, specialty shops, streets, sidewalks and potential spaces that distinguish this community. Over the past decades this blend has been at least partly distorted by changing patterns of travel, commuting and shopping. It is precisely the delicate balance of these qualities that must be restored and enhanced as part of this conceptual design process.

The vision for Columbian Square outlined in this report builds upon these valuable and historic elements to give the district its own unique identity. Recommended intersection improvements represent a once-in-a-generation opportunity for the Town to strengthen the visual and functional qualities of the square area. The conceptual scope of intersection and streetscape improvements recommended are intended to:

- Enhance traffic flow
- Maximize parking opportunities
- Create a strong spatial center in the square
- Enhance pedestrian movement by clarifying pedestrian zones and clearly identifying pedestrian crossings
- Develop a streetscape that will visually unify some disparate district elements, strengthen the identity of this historic area and encourage pedestrian activity
- Provide useful and meaningful connections between the square, the neighborhoods and public open spaces

The specific recommended traffic and streetscape improvements for the square summarized in this report include:

- Reorganize curb lines, sidewalks extensions and traffic islands to create new travel lanes that will improve vehicle flow, but not speed, in the square
- Introduce traffic signals that will include pedestrian crossing phases
- Reduce crosswalk length in the intersection
- Reconstruct sidewalks on the principal streets of the square
- Install street trees where space allows to better define the streetscape corridor
- Install ornamental street lights and site furniture to create an attractive environment for pedestrian interaction
- Create a new 'village green' at the Fogg Library lawn
- Develop a new gateway to the square at the entrance to Stella Tirrell Playground
- Provide direct pedestrian links to South Shore Hospital

These recommended actions are intended to strengthen the best facets of Columbian Square and implement key elements of the Weymouth Master Plan. Some of these elements include making the village a more walkable and bikeable community, develop traffic calming improvements to slow traffic and improve safety and take back excess street pavement where possible to create locations for social interaction.

A successful design for the village will allow smoother vehicle passage; create new connections to the surrounding community, an enhanced pedestrian realm and potentially, a revitalized retail environment in an era of rapidly changing economic conditions.

Introduction

Columbian Square is one of Weymouth's four village centers that evolved from earlier transportation crossroads and developed to include public and private services and institutions to support the surrounding residential areas. Over time, similar New England village centers have lost their commercial viability and local character with the advent of cars, associated transportation improvements and the regionalization of retail centers. Weymouth, however, is fortunate in that Columbian Square has retained much of its original character, activities and assets. The district is distinguished by a graceful composition of some truly outstanding buildings and spaces. The Fogg Building and Fogg Library, the Opera House, Old South Union Church and graceful lawns both frame and provide a memorable visual character to the center of Columbian Square. Though this character has been retained as the area has undergone development, as in many other community centers, the square has suffered from some degradation of character as streets have evolved to meet the needs of increasing traffic volume. The pedestrian environment in the square has come to be increasingly subordinated to the needs of vehicles transiting the area and fragmented building remodeling decisions have diluted the once strong visual character. Some building facades are disorganized, the sidewalk zone is undistinguished and overhead utilities are a visual distraction. Street widths are excessive in places and pedestrians crossing the square are faced with long and hazardous crosswalks. These trends are raising community concerns that the special qualities of the square are in danger of being overwhelmed. It is the purpose of this study to capitalize on the area's best physical assets to develop a unique, exciting, and sustainable Village Center Improvement Plan.

The alignment and cross-section of the Pleasant Street and Columbian Street/Union Street corridors through Columbian Square are the primary determinants of traffic flow and the pedestrian environment in the district. The center of the intersection is controlled by stop signs and both Pleasant Street and Columbian Street/Union Street are heavily traveled routes used by many vehicles and trucks being driven to other destinations. Along with the heavy volume of vehicular traffic, Pleasant Street and parts of Union Street also serve local resident pedestrians who patronize the stores and services located on these streets.

The village streetscape is comprised of a mix of land uses, different styles of architecture and mixed building façade materials including wood, stone and brick. The overall visual character of the Columbian Square area still provides the visitor and residents with a strong sense of arriving at the center of a real community.

The preferred approach to the creation of a successful village environment under these conditions is to implement key recommendations of the Weymouth Master Plan that will strengthen the character of the square. These recommendations include looking for opportunities where underutilized street width or lawn space represents a potential asset that can be realized by developing additional travel lanes, developing an enhanced sidewalk zone, small park plazas and meeting spaces that will help make the square both an interesting townscape and an commercial destination and implementing lane reconfigurations to reduce traffic speed while reducing congestion.

At the same time, the conceptual design for Columbian Square should go beyond the need to improve traffic efficiency, pedestrian convenience and the visual appearance of the district. Part of the approach should incorporate an understanding of the needs of shop owners, pedestrians, drivers and local institutions to insure that the proposed plan provides a balance of circulation – both vehicle and pedestrian - parking, street spaces, sidewalks, landscape development and new passive viewing opportunities to create a distinguished townscape.

Conceptual Design Methodology

The framework for traffic flow and circulation, parking, and streetscape design was created by studying and advancing engineering design initiatives developed by previous consultants for the Columbian Square district. Reviewed documents included the preliminary (15%) design drawings for the reconstruction of the Columbian Square intersection developed by The Louis Berger Group, Inc. (Berger), the Preliminary Engineering Report for utility burial developed by A.P. Franco & Associates, geographic information systems mapping provided by the Town and aerial photographs.

A base plan for the streetscape design effort was prepared after our traffic planning sub-consultant Jacobs Edwards and Kelcey had advanced the preliminary intersection design drawings in consultation with Town of Weymouth Traffic Engineer, Georgy Bezkorovainy.

Several field trips were undertaken by the consultant team to review the existing conditions along the principal streets in the project area to record pedestrian circulation, traffic issues and existing streetscape character. The conditions of sidewalks, accessibility issues, street trees, open space, safety of crosswalks, edge conditions, access to and from local businesses, availability of parking, access to the neighborhoods, recreation opportunities and clarity of signage were assessed. The principal district streets were also assessed in regard to how pedestrian circulation was accommodated amidst the heavily-trafficked streets in the area. A photographic inventory of these street corridors was completed to document the streetscape condition and serve as a reference for proposed improvements.

Streetscape design treatments were studied in parallel with the development of the intersection design and associated curb alignments alternatives. These alternatives considered different lane and traffic island configurations in the square and explored the character of other streetscape improvements. The team met internally and with the Town to review the implications of these alternatives and to determine the preferred and most practical alternative for presentation to the public.

Opinions of Probable Cost were prepared for the anticipated phased construction of the preferred alternative. These costs estimates may be found in the Appendix.

Goals and Objectives

Successful village centers are often distinguished by an attractive and convenient arrangement of buildings, streets, sidewalks and public spaces. They provide residents and visitors with convenient access, adequate parking, a safe and pleasant walking environment, meaningful public spaces and an engaging visual presence. Convenient neighborhood links to nearby merchants, services and institutions encourage shopping locally and can contribute to the health and vitality of the business community.

An important part of developing practical and attractive ways to provide these elements is listening to the concerns and visions of district residents and business owners. The vehicle for summarizing these citizen observations is the statement of goals and objectives. Goals illuminate overall community intentions and aspirations for the future. Objectives are a series of more focused, often concrete, desires that are subsequently embodied in the design plan.

The following summary of goals and objectives were determined to serve as the guiding principles for the Columbian Square streetscape design effort. These goals and objectives concern not only the immediate square area that will be the focus of early phase improvements; they also take into account the larger village context. The listing is not intended to suggest any priority order or importance. Rather, the goals and objectives statement comprehensively describes the intentions behind the streetscape improvement efforts for Columbian Square.

These goals and objectives have been drawn and summarized from a several sources, including comments made by attendees at the Public Visioning Meeting hosted on June 20, 2007. They also incorporate discussions with a number of district stakeholders who represent many of the interests concerned with the outcome of the project.

Statement of Project Goals

The Columbian Square Urban Design Improvements Project should develop comprehensive streetscape improvement proposals to enhance the safety, character and quality of Columbian Square for residents, visitors, merchants and patrons of this important village district. The project should anticipate future improvements to the larger region by providing improved intersection performance and a consistent image of quality. The overall goals for the project include the following:

- The improvements should reinforce the qualities of Columbian Square as a distinct village
- The Columbian Square Project should achieve a balance of town character, pedestrian safety, traffic flow and retail support
- The project should create a pedestrian-friendly environment. The intersection design should facilitate vehicular flow but should emphasize pedestrian movement and convenience
- Columbian Square is a “real” place and improvements should enhance this quality rather than appearing false, overly ornate or “precious”. The improvements should reinforce the genuine historic qualities of the square and should provide recommendations for its historic buildings and places
- Streetscape character should be improved to encourage business growth and support the economic viability of existing commercial establishments. Streetscape character should respond to needs of businesses
- The sense of welcome to Columbian Square should be enhanced. A clear image and identity for the area should be created to attract visitors and encourage pedestrian activity

Objectives

The goals of the Columbian Square Village Center Conceptual Design Project can best be met if the following specific objectives are also achieved:

- Use traffic calming techniques to improve safety and provide opportunities for pedestrian space development

- There should be an emphasis on improvements to the streets at key civic spaces, including the grounds of the Fogg Library and the entry to Stella Tirrell Playground. Provide a public gathering space in the square
- Control use of municipal lot for long-term parking. Improve enforcement of parking regulations
- Improve pavement surface and drainage at Camelot Way and in the municipal parking lot
- Better directional and identification signage should be provided throughout the square to direct visitors to parking and points of interest. Simplify and organize signage by developing a system to cluster placement of signs
- Pedestrian circulation and connections within the project area should be improved wherever possible. Improve and light through-block crossings/alleys
- Connections from the neighborhood to the square should be encouraged. Provide well-delineated, continuous sidewalks on principal and minor streets. Clarify street edge on Chauncy Street
- Replace or repair existing sidewalk pavement where patched or cracked. Unify visual aspect of sidewalks to clarify identity and eliminate visual clutter in the square
- Improvements that enhance pedestrian safety and social interaction should be favored. Install street furniture and create comfortable spaces
- Improve the spatial character of the square by installing street trees where possible. Square needs a stronger visual identity. Bury overhead utilities.

Traffic Management Plan

The principal streets in Columbian Square do not have a simple north-south and east-west orientation. For example, Pleasant Street extends in a northeasterly direction from the Main Street/Route 18 intersection. For purposes of simplicity, Pleasant Street is being defined as a north-south corridor in this report and Columbian Street and Union Street are defined as east-west roads.

Existing Conditions

Pleasant Street extends northerly from Route 18 to East Weymouth with connections leading to the Derby Street/ Route 3 interchange in Hingham. Columbian Street extends in a westerly direction from Pleasant Street in Columbian Square, crossing Route 18 before intersecting Grove Street in Braintree. Union Street extends from Pleasant Street (at Columbian Square) easterly to Liberty Street.

Columbian Square, formed where Pleasant Street, Columbian Street and Union Street meet, is a four-legged, unsignalized intersection. The Columbian Street and Union Street approaches are under STOP sign control and a median island separates directional traffic on the Union Street and Columbian Street approach legs. Pavement markings along both Pleasant Street and Union Street are faded and indistinct. On Columbian Street eastbound, drivers approach the intersection in two lanes and occasionally, even three drivers will approach the intersection abreast. The excessive pavement width within the intersection encourages this type of informal dual vehicle approach and maneuvering around vehicles waiting in traffic to turn. At Pleasant Street southbound, through-traffic easily moves around vehicles turning left/ east onto Union Street. Similarly, westbound Union Street through-traffic lines up in two lanes and vehicles turning right onto Pleasant Street pass on the north side of the existing delta island. Drivers in the intersection, frequently maneuver around vehicles waiting for an adequate gap in traffic to turn. Due to the often extensive waiting times, many drivers choose to accept inadequate traffic gaps to complete their turning maneuvers. Both of these situations, as well as the potential for 'zig-zag' movements of vehicles traveling from Union Street to Pleasant Street to Torrey Street (which will be explained in greater detail below) contribute to unsafe operating conditions within the study area.

Diagonal parking is provided along both sides of the southern Pleasant Street approach leg and the Union Street approach leg. Parallel parking is permitted along the eastern side of the northerly Pleasant Street leg and along the south side of the Columbian Street leg. The current parking usage will be detailed in a later section of this report.

Approximately 150 feet north of the Columbian Square intersection, Torrey Street meets the western side of Pleasant Street in an unsignalized tee intersection. Torrey Street is residential roadway that is used as a "cut-through" route primarily by vehicles approaching Columbian Square from Union Street during the morning and the afternoon peak period. To avoid travelling through the congested Columbian Square intersection to the signalized Route 18 intersection, these drivers turn right from the channelized Union Street lane onto Pleasant Street, left onto Torrey Street and continue to Route 18 via Park Avenue.

Compounding these problems, many parcels within the Columbian Square area are developed up to the edge of the right-of-way or back of the sidewalk, making roadway widening impossible without significant land takings.

Traffic Volumes

Traffic volumes are used to assess traffic operations and to recommend improvements that will accommodate traffic demands. In order to investigate improvements that will be adequate for a future period, a ten year projection was deemed appropriate as a design year for this project. Turning movement counts (TMC) for Columbian Square were supplied by the Town of Weymouth. The TMCs originated from two independent reports previously conducted within the study area.

- The first study was conducted by the Central Transportation Planning Staff (CTPS) of the Boston Metropolitan Planning Organization (MPO). The

CTPS study was initially performed to assess the impacts caused by the redevelopment of the South Weymouth Naval Air Station (SWNAS). These motor vehicle volumes were generated to a design year of 2017.

- The second study was conducted by Berger to investigate potential improvements at Columbian Square. These volumes were projected to a design year of 2020.

To provide a direct comparison between the volumes of the two reports, the 2020 volumes presented by Berger were reduced three years to 2017 using a growth rate of 1% per year.

Additional TMCs were performed at the intersection of Pleasant Street at Torrey Street on Thursday, August 23, 2007 to determine the percentage of vehicles turning left onto Torrey Street from Union Street westbound during the peak periods. These percentages were then applied to the CTPS and Berger volumes. During the weekday morning peak period, approximately 18% of the vehicles traveling westbound along the Union Street bypass the stop-controlled intersection and utilize Torrey Street as a cut-through. Approximately 10% of the vehicles make this turn during the weekday evening peak period.

Significant differences were found between the turning movement volumes from the CTPS report and the Berger report. Since these differences would impact proposed recommendations to Columbian Square, the Town of Weymouth established the Berger volumes as the more accurate and directed the team to use these findings in recommending improvements to Columbian Square. The design year weekday morning and evening peak hour traffic volumes are shown in Figures 1A, 1B and 1C. Figure 1A depicts the volumes as they are anticipated to occur in 2017. Figure 1B shows the effects on traffic volumes after the signalization of Columbian Square, that is, a reduction in the adverse Union Street westbound to Torrey Street westbound movement. It is anticipated that signalizing this intersection will reduce the number of mo-

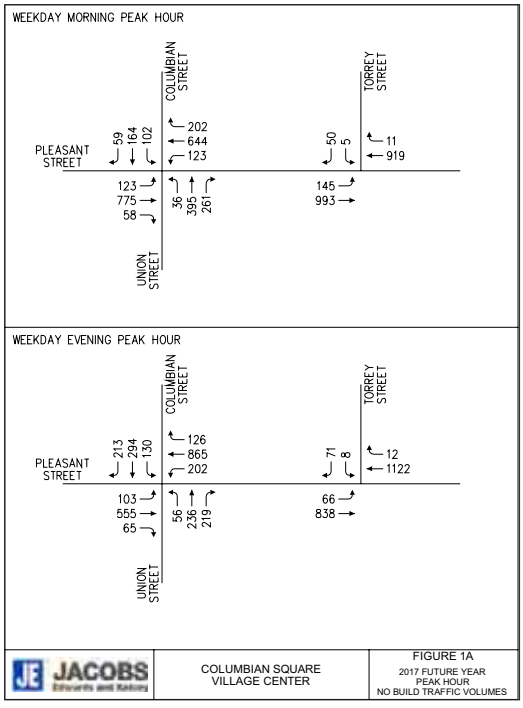

Figure 1A

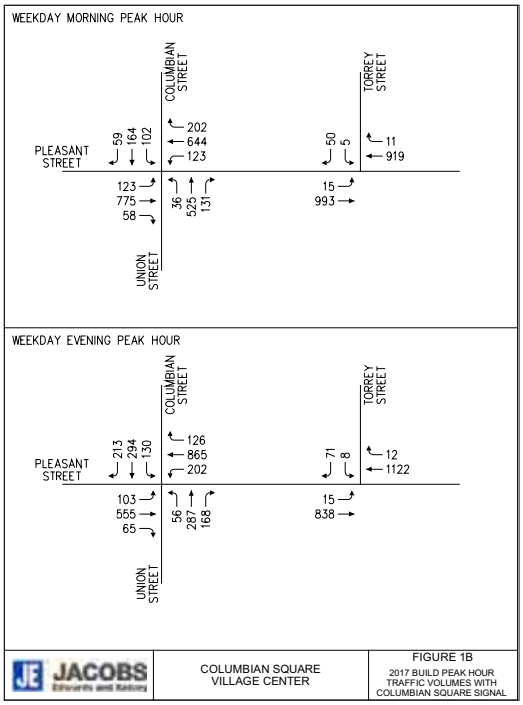

Figure 1B

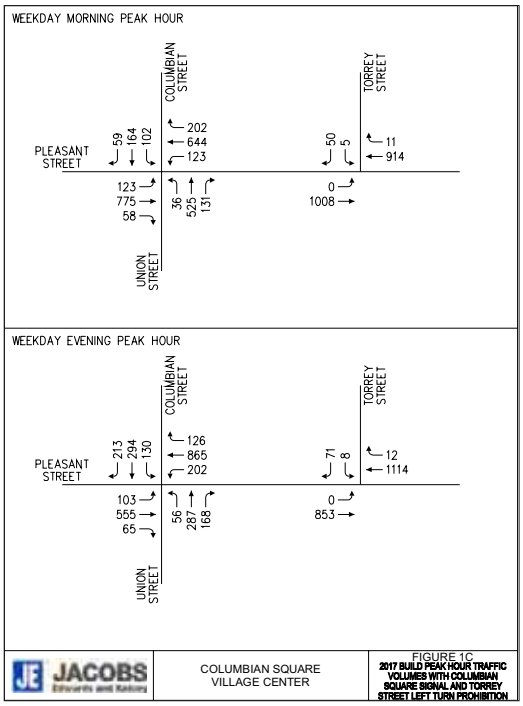

Figure 1C

torists performing this maneuver. Figure 1C expands this concept, banning left turns onto Torrey Street. The volumes shown on Figure 1C were used to analyze the traffic conditions within Columbian Square.

Traffic Analysis

Existing peak hour traffic operations in the traffic study area were assessed from both a quantitative and qualitative perspective. The qualitative analysis is based on field observations made during peak traffic periods, while the quantitative analysis is based on calculated intersection operating levels of service as described in greater detail below.

Level of Service Criteria

Level of Service (LOS) is a term used to describe the quality of the traffic flow on a roadway facility at a particular point in time. It is an aggregate measure of travel delay, travel speed, congestion, driver discomfort, convenience, and safety based on a comparison of roadway facility capacity to travel demand. Operating levels of service are reported on a scale of A to F, with LOS A representing the best operating conditions and LOS F representing the worst operating conditions. LOS A represents free-flow conditions with little or no traffic delays, while LOS F represents a forced-flow condition with long delays and traffic demands exceeding roadway capacity.

Roadway operating levels of service are calculated following procedures defined in the 2000 Highway Capacity Manual (HCM), published by the Transportation Research Board. For signalized intersections, the operating level of service is based on travel delay. Delay can be measured in the field, but is generally calculated as a function of the traffic volume; quality of traffic progression; the green ratio; the cycle length; the v/c (volume/capacity) ratio; and the capacity of each intersection approach, as appropriate. Delay criteria for unsignalized intersections are calculated for the side street or minor street approach and for left turns from the major street. The specific criteria applied per the HCM are summarized in Table 1.

Table 1

Level of Service	Average Stopped Delay per Vehicle (seconds)
A	0 - 10
B	>10 - 20
C	>20 - 35
D	>35 - 55
E	>55 – 80
F	>80

Queue Criteria

In addition to level of service, a review of the 95th percentile queue lengths was performed during each of the peak hours under existing and future conditions. While an intersection may show acceptable levels of service, extensive queue lengths may exist that impede operations elsewhere by extending into adjacent intersections or other conflict areas. A description of the critical queues at each intersection location is presented below.

Volume-to-Capacity Ratio Criteria

The volume-to-capacity ratio, a measure of the amount of traffic compared to the available capacity, is a basic measure of congestion along the approach to an intersection. As with delay, this measure can be utilized for either the individual approach or the intersection as a whole. As opposed to delay, there is no standard gauge to provide a specific point of reference for a certain volume-to-capacity ratio; however a lower volume-to-capacity ratio indicates that backups are less likely. As the ratio approaches and exceeds 1.00, backups and poor service have a greater potential to occur. Generally speaking, a volume-to-capacity ratio under 1.00 is considered acceptable.

Proposed Intersection Improvements

In order to improve motor vehicle operations and safety within the study area, several geometric alterations are recommended. Plans summarizing these geometric changes are shown in Figures 2 and 2A.

The Pleasant Street northbound approach requires an exclusive left-turn lane, a through-lane and a shared through/right-turn lane during, at least, the morning peak

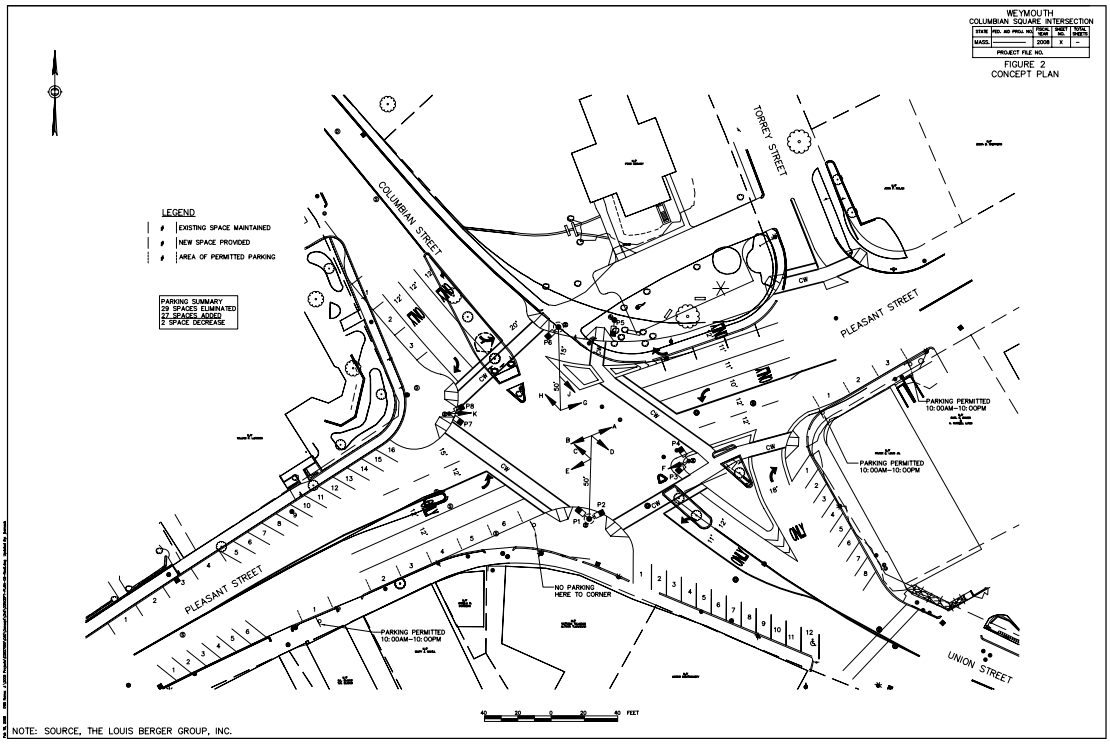

Figure 2

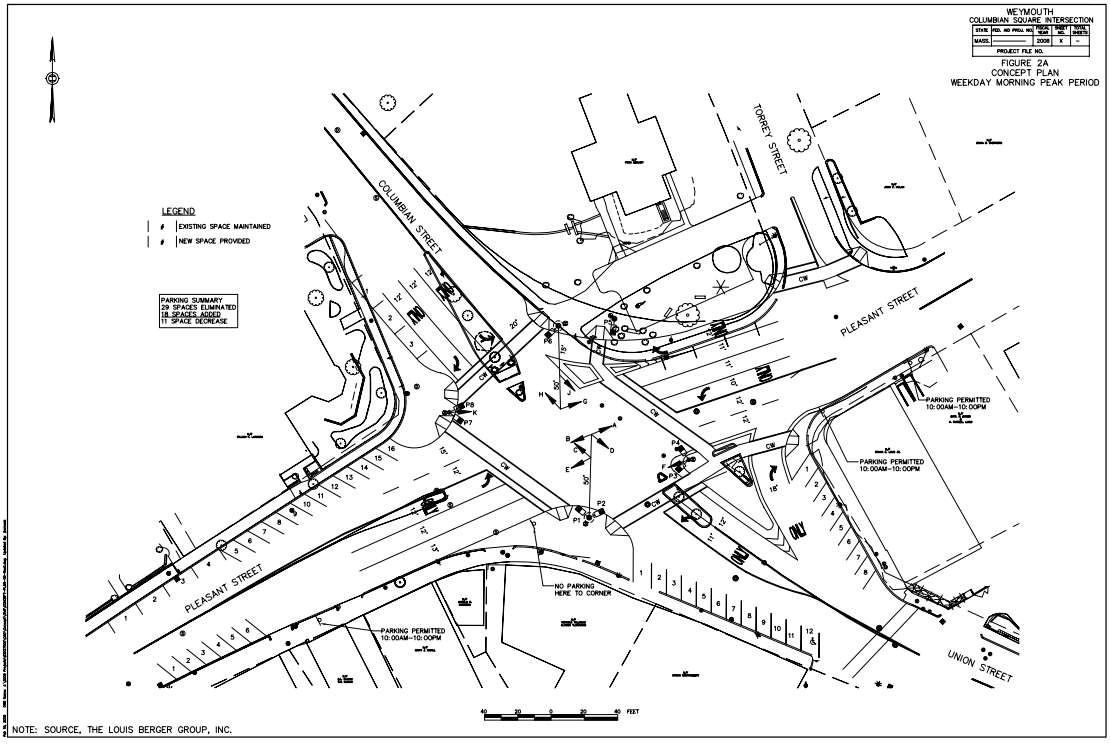

Figure 2A

hour. During the evening peak hour, the second through-lane is not required to achieve passable operation. During a series of public meetings, local merchants expressed concerns about the elimination of on-street parking. In order to improve traffic operations during the critical morning peak hour while maintaining as much parking as possible, the northbound Pleasant Street approach is proposed to consist of an exclusive left-turn lane, a general purpose lane and a regulated parking shoulder. During most of the day, the regulated parking shoulder on the east side of the street will provide opportunities for parallel parking (Figure 2). However, during the morning peak hour, the regulated park-

ing shoulder on the east side of the street will operate as an additional travel lane with the use of signing (Figure 2A).

An exclusive left-turn lane, two through-lanes and an exclusive right-turn lane should be provided on the Pleasant Street southbound approach. To provide the needed street width for these improvements, Pleasant Street at this location, will have to be widened. The Columbian Street eastbound approach is recommended to provide an exclusive left-turn lane, a through-lane and an exclusive right-turn lane. The Union Street westbound approach is recommended to provide an exclusive left-turn lane, a through lane and an exclusive right-turn lane.

The intersection is proposed to operate as a signalized intersection. The proposed phasing will provide an advance phase for left-turns on both Pleasant Street approach legs, a permissive left-turn/through phase along Pleasant Street and a permissive left-turn/through phase along Columbian Street and Union Street. An exclusive pushbutton-actuated pedestrian phase is also provided.

To eliminate cut-through traffic along Torrey Street, it is recommended that left turns be restricted from northbound Pleasant Street. Signing should be provided as well as the installation of a delta island at the Torrey Street approach to physically discourage illegal turns.

Analyses Results

The Level of Service analyses were conducted utilizing Synchro software methodology to determine the 2017 future year peak hour operating levels of service at the study intersection under the proposed geometric conditions. Traffic volumes were adjusted in the analyses to reflect the elimination of cut-through traffic along Torrey Street. It is assumed that with the left turn restriction into Torrey Street, with the installation of a traffic signal in Columbian Square and the completion of the Route 18 widening project currently underway, Union Street drivers will not pursue alternate routes, but will instead travel straight onto Columbian Street. The results for the signalized intersections are shown on Table 2 (following page)

The Pleasant Street at Columbian Street and Union Street intersection is anticipated to operate at an overall LOS C during the weekday 2017 morning and evening peak hours. Although acceptable delays are achieved, 95th percentile queue lengths during the morning peak hour reach 480 feet along the Union Street approach and 345 feet along the southbound Pleasant Street approach. During the evening peak hour, when the restricted parking shoulder along the northbound Pleasant Street approach is used for parking instead of a travel lane, the 95th percentile queue lengths reach 580 feet.

The overall V/C ratio was calculated at 0.72 during the weekday morning peak hour and at 0.80 during the weekday evening peak hour.

Table 2

Intersection/Peak Period/Movement	2017 Design Year Conditions			
	V/C[b]	Delay[c]	LOS[cd]	Queue[e] 50th/95th
Pleasant St. at Columbian St. and Union St.				
Weekday Morning Peak Hour:				
Pleasant Street NB L	0.59	24.5	C	38/110[f]
Pleasant Street NB TR	0.85	34.3	C	202/402[f]
Pleasant Street SB L	0.69	31.2	C	38/134[f]
Pleasant Street SB T	0.66	26.8	C	151/274
Pleasant Street SB R	0.14	0.2	A	0/0
Union Street WB L	0.09	16.3	B	10/37
Union Street WB T	0.79	27.9	C	205/479[f]
Union Street WB R	0.10	0.1	A	0/0
Columbian Street EB L	0.78	45.4	D	42/170[f]
Columbian Street EB T	0.25	17.4	B	49/123
Columbian Street EB R	0.04	16.0	B	0/26
Overall	0.72	26.0	C	–
Weekday Evening Peak Hour (without Lane Restriction):				
Pleasant Street NB L	0.57	21.0	C	14/106[f]
Pleasant Street NB TR	0.68	23.2	C	91/253
Pleasant Street SB L	0.67	18.0	B	29/176[f]
Pleasant Street SB T	0.76	21.8	C	114/345
Pleasant Street SB R	0.09	0.1	A	0/0
Union Street WB L	0.33	20.1	C	14/62
Union Street WB T	0.63	23.4	C	80/238
Union Street WB R	0.12	0.2	A	0/0
Columbian Street EB L	0.74	35.3	D	37/143[f]
Columbian Street EB T	0.64	23.8	C	82/243
Columbian Street EB R	0.15	18.7	B	0/51
Overall	0.61	20.4	C	–
Weekday Evening Peak Hour (with Lane Restriction):				
Pleasant Street NB L	0.45	16.8	B	18/61
Pleasant Street NB TR	0.93	43.9	D	242/584[f]
Pleasant Street SB L	0.88	48.4	D	54/241[f]
Pleasant Street SB T	0.63	20.2	C	149/297
Pleasant Street SB R	0.09	0.1	A	0/0
Union Street WB L	0.39	27.2	C	22/97[f]
Union Street WB T	0.66	31.4	C	118/306[f]
Union Street WB R	0.12	0.2	A	0/0
Columbian Street EB L	0.88	70.3	E	65g/233[f]
Columbian Street EB T	0.67	32.0	C	121/316[f]
Columbian Street . EB R	0.20	25.3	C	9/77
Overall	0.80	29.6	C	–

[a]Based on Volumes originally forecast to year 2020 and adjusted down to year 2017.
[b]Volume to Capacity Ratio
[c]Average Delay Time in Seconds
[d]Level-of-Service
[e]Queue Length in Feet.
[f]95th percentile volume exceeds capacity, queue may be longer.
[g]Volume exceeds capacity, queue is theoretically infinite.
NB = Northbound; SB = Southbound; EB = Eastbound; WB = Westbound;
L = Left Turn; T = Through; R = Right Turn; LTR = Shared Left/Through/Right-turn; LT = Shared Left-turn/Thorough; TR Shared Through/Right-turn.

In addition to the motor vehicle data, parking information was also received from the Town of Weymouth. This information consists of vehicle turnover counts for vehicles parked within Columbian Square. This study was conducted in December 2003 and February 2004 on a typical weekday between the hours of 8:00-9:00 AM and 3:45-4:45 PM. The on-street parking within the Square was broken into seven areas totaling 56 spaces. The counts show that in December, 101 vehicles parked during the weekday morning peak period and 83 vehicles departed. During the December weekday evening peak period, 128 vehicles parked and 136 vehicles departed. In February, 31 vehicles parked during the weekday morning peak period and 26 vehicles departed. During the February weekday evening peak period, 93 vehicles parked and 84 vehicles departed.

This parking information was supplemented with a parking inventory conducted on Thursday, August 23, 2007. The parking inventory noted the number of parking spaces available in the various sections of Columbian Square during 15 minute intervals of the same morning and afternoon periods used in the Town's turnover counts above. The results of this survey are provided below on Table 3. The location of on-street parking spaces is shown on the accompanying aerial photo.

As shown on Table 3, the amount of occupied parking spaces varied somewhat during the weekday morning peak period. During the weekday evening peak period, open parking spaces were available in all sections of the square. Overall, only approximately 8% to 37% of the available parking spaces were occupied. The most consistently occupied parking spaces were observed along the south side of the Union Street leg, peaking at 73% occupied. Only a maximum of 7 out of 13 parking spaces were occupied along the eastern side of the northbound Pleasant Street approach where parking is proposed to be restricted during the morning peak hours.

In the evening period, approximately 52% to 62% of the parking spaces in the square were occupied. A minimum of 19 parking spaces were available during all intervals. 100% occupancy was observed however, once along the west side of the southern Pleasant Street leg, along the north side

Table 3

	Occupied Spaces	Percent Occupied	Occupied Spaces	Percent Occupied	Occupied Spaces	Percent Occupied	Occupied Spaces	Percent Occupied
	8:00-8:15		8:15-8:30		8:30-8:45		8:45-9:00	
Area 1	3	23.1%	3	23.1%	3	23.1%	7	53.8%
Area 2	0	0.0%	0	0.0%	4	40.0%	6	60.0%
Area 3	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Area 4	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Area 5	2	18.2%	5	45.4%	7	63.6%	8	72.7%
Area 6	0	0.0%	0	0.0%	0	0.0%	1	12.5%
Area 7	0	0.0%	0	0.0%	1	33.3%	0	0.0%
Total	**5**	**8.3%**	**8**	**13.3%**	**15**	**25.0%**	**22**	**36.7%**
	3:45-4:00		4:00-4:15		4:15-4:30		4:30-4:45	
Area 1	6	46.2%	8	61.6%	8	61.6%	10	76.9%
Area 2	7	70.0%	9	90.0%	10	100.0%	9	90.0%
Area 3	3	42.9%	3	42.9%	3	42.9%	5	71.4%
Area 4	3	100.0%	2	66.7%	2	66.7%	2	66.7%
Area 5	5	45.5%	3	27.3%	5	45.5%	6	54.6%
Area 6	8	100.0%	5	62.5%	6	75.0%	4	50.0%
Area 7	2	66.7%	1	33.3%	0	0.0%	1	33.3%
Total	**34**	**56.7%**	**31**	**51.7%**	**34**	**56.7%**	**37**	**61.7%**

Columbian Sqaure On-Street Parking Areas

of the Union Street approach and on the southeast corner of the intersection.

While objective observations summarized in Table 3 indicate that there appears to be adequate parking opportunities in the Columbian Square district, the expressed perception of many interviewees is that there is a shortage of parking in the center of the square. In particular, several persons have identified all-day parking by South Shore Hospital employees as a problem for others seeking short term parking in the district. They stated that they have seen individuals walking from the municipal lot toward the hospital at 8:30 AM. One person has observed ranks of personal vehicles double-parked on Chauncy Street during business hours and speculated that this was unlikely to occur unless it was a group of employees who have coordinated their arrival and departure times according to a scheduled shift change.

Parking Management Strategies

Several methods can be used to maximize the efficiency of the existing parking spaces. An initial step toward management of the resource would be to institute time limits for parking spaces in the square. Time limits will increase rate of vehicle turnover, opening more parking spaces for potential patrons of local businesses. A further step would be to install parking meters at parking spaces in the square areas to reinforce time limits, as well as generating revenue. Both of these methods will need the assistance of police enforcement to ensure that the vehicles are in compliance with the applied regulations. Despite their advantages, these two methods have drawbacks. It is possible that patrons may choose to avoid the parking restrictions and travel to other retail outlets instead of the ones offered at Columbian Square. In order to create a solution that works for not only the Town, but the local community as well, it is recommended that a more strategic entity be created to assess the parking impacts within the study area.

Transportation Management Association

While parking may appear to be adequate under present conditions, the Town should be planning for the future of the district. As Columbian Square becomes an increasingly successful and desirable place to live and do business, we must plan for increased parking demand. One useful tool for strategic planning and allocating an important resource such as public parking is the Transportation Management Association (TMA).

The TMA would be composed of between 8 and 12 members, with representatives from, at least, the following:

- Municipal representatives – two appointed officials from planning and traffic engineering departments
- Columbian Square Stakeholders
- Owners of large parking lots
- South Shore Hospital
- Other entities with 25 or more employees

The structure of the TMA is critical to its implementation. The TMA can be established as an organization with an independent status or it can be established as part of another multi-purpose organization. If established as part of an existing organization such at the Planning Department or Chamber of Commerce, many elements will be already established, including physical office space and working relationships.

The TMA might have an initial three-year term, with a subsequent Town decision to continue, modify, or dissolve the committee. Its membership should have overlapping two-year terms to promote consistency and continuity. The Planning and Community Development Department might provide support in providing consultants, data and developing reports.

Among the agendas and responsibilities of the TMA would be the following:

- Hire consultants for origin and destination studies
- Review existing circulation and parking operations
- Review and provide input on major transportation project proposals
- Monitoring parking patterns and demand
- Develop traffic management programs and recommendations
- Advance advocacy positions for traffic/parking initiatives in Columbian Square to the Town– TMA has no enforcement powers

The TMA might undertake an initial investigation to identify employer and community needs and concerns. A TMA-sponsored survey should be conducted to determine employee origin, current commuting patterns, and shift hours. Transportation and parking-related problems or deficiencies would be then identified.

Follow-on TMA-sponsored studies might include making recommendations for traffic demand management, advisability of parking fees and/or time limits, studying the feasibility of setting aside spaces for long-term employee parking in municipal lots, recommending incentives for use of remote parking, shuttle busses, transit and car-pooling. Recommendations could be also be made for improved signage and for business owners with complementary hours of operation to share parking lots. The TMA might then develop an organized parking plan under the guidance of the Town with specific agreements between property owners.

Specific transportation demand management strategies should be identified, developed and then tested with the cooperation of employers, property owners and the Town. Planning tools and resources are available through US EPA, USDOT, and other agencies that can provide assistance in the development of transportation/parking demand management strategies.

Existing Streetscape Conditions

The Columbian Square study area is defined by three major streets - Pleasant Street, Columbian Street and Union Street. See Figure 3.

Pleasant Street extends generally south to north and is an arterial road linking South Weymouth with East Weymouth and the Town center. The Columbian Street / Union Street corridor is an east-west street providing connections between Hingham and Main Street (Route 18) and Braintree to the west. The Columbian Square intersection is currently under STOP sign control on Columbian Street and Union Street. Most approaches to the intersection were designed as single travel lanes, but currently many vehicles approach the intersection in the informal equivalent of two lanes.

Pedestrian movement observations were made within the study area roadways with particular attention given to key crossings in Columbian Square. Observations were made to evaluate the current conditions and help identify key demand paths. For a compact area like Columbian Square, increased pedestrian activity can be encouraged only if the major street crossings are safe, pedestrian facilities are comfortable and convenient and attractive destinations exist.

In evaluating pedestrian facilities, sidewalks, crosswalks and curb cuts were reviewed. In

Figure 3: Project Area

addition, the ability to walk along and across the major streets with respect to motoring traffic was also reviewed. Key destinations that can influence pedestrian patterns include businesses on Pleasant Street and Union Street, the post office, Old South Union Church, South Shore Hospital, Stella Tirrell Playground, residences on district streets and the municipal parking lot.

The pedestrian environment on Pleasant Street south of the square is in fair condition. The existing pavement, a mix of asphalt and cement concrete walks is -with some exceptions- in fair condition with localized instances of cracks and broken pavement. Walks are approximately 12' wide on the east side and 8'wide on the west and wheel chair ramps are located at all crossing locations. In many locations, the curb reveal is sub-standard reducing the separation of pedestrians from moving traffic.

Sidewalks on Chauncy Street are paved in bituminous concrete (asphalt) and vary in width and smoothness. The travelled way lacks curbing and vehicles were observed parking on the sidewalk, effectively blocking safe passage for pedestrians.

East of the square on Union Street, sidewalks are particularly indistinct near Camelot Way with some segments lacking curbs and clear delineation of the pedestrian zone. Another noticeable characteristic of Union Street in this area is that driveways and the intersecting streets are inadequately defined. This results in significant lengths of paved street edge without curbing. For some of the commercial uses, this has been done in order to facilitate on-site parking.

Further east on Union Street, curbs are constructed of bituminous concrete and the edge of the street is weakly defined. Similarly, on Camelot Way, sidewalks are discontinuous and poorly defined where they do exist.

Sidewalks exist on both sides of Columbian Street and are a mix of cement concrete and asphalt pavement, all of which are in fair condition. The walks vary from 6' to 12' in width.

Crossing any of the principal streets in the square is difficult as traffic volumes are high and crosswalks are not well-defined in regard to pavement markings, surface treatment or signage. In sum, the walking conditions within the square are in need of significant improvement to provide safe, comfortable conditions for pedestrians and to encourage increased walking access in the future. In addition, provisions should be made to create enhanced pedestrian spaces to encourage visitors to park their vehicles and linger in Columbian Square.

Gateways

Columbian Street - eastbound

The approach to the square from the west is by way of Columbian Street. The tall, white steeple of Old South Union Church and the continuous lawn fronting both the church and the adjacent Fogg Library, is a memorable gateway to the district. Columbian Street itself is a curved, processional street that winds through a mixed district of institutional buildings, partly screened parking lots and mature trees.

Union Street - westbound

Westbound Union Street approaches the village center on a long, straight alignment through a residential neighborhood. The street is flanked by wood frame homes and neat lawns. The entry columns and gates at the Stella Tirrell Playground entry could be an attractive gateway to the square, but are understated to the point of being unnoticed.

Pleasant Street - northbound

The southern leg of Pleasant Street is a long, slightly curved approach to Columbian Square through a heterogeneous mix of single family homes, mall parking lots and small commercial establishments. Other than the Main Street intersection, no particularly memorable event can be considered a gateway on the southern approach.

Arrival Events

The landmark form of the Fogg Library and the massive scale of the Fogg Opera Building

provide a distinct sense of arrival at Columbian Square. The Opera Building is visible from all approaches to the square and is the terminus for the Union Street and southbound Pleasant Street view axes. While less imposing and less well-maintained, the Fogg Boot Factory also contributes to the inventory of prominent architectural features that are the square's most important heritage.

Lighting

Throughout the Columbian Square area and on the principal approach routes to the village center only one basic type of light fixture is used. This is the standard "cobra head" streetlight luminaire and support arm attached to a wood utility pole – that it shares with the overhead utility services. Typical streetlight spacing is between 140 feet and 200 feet along one side of the principal streets in the study area.

Parking

Between on-street parking, the municipal parking lot and lots provided by individual business establishments, civic buildings and institutions, there appears to be adequate parking opportunities in the Columbian Square district.

However, pavement in the municipal parking lot is at the end of its service life and striping is indistinct. In some places on Chauncy Street, the public sidewalk and street are constructed of the same bituminous concrete material, and there are no visual clues to differentiate the sidewalk from the roadway. In addition, at some businesses on Camelot Way and on Pleasant Street, poor parking layout results in some vehicles backing over the sidewalk and into the street. This results in an increased risk of pedestrian/vehicle conflict and accidents as cars maneuver in these lots. Combined with wide curb cuts at these locations, a potentially hazardous condition is created for pedestrians, and the impression is reinforced that segments of these streets are the domain of the vehicle.

Some business stakeholders have commented that while the overall inventory of parking is adequate, the distribution of parking capacity is not optimal and a substantial component of parking inventory in the municipal lot is occupied by long-term parked cars. These vehicles have been stated to belong to employees and nearby residents.

Furniture

Site furniture is virtually non-existent throughout the project area. The width of existing sidewalks as they are currently laid out appears to provide enough width for the inclusion of street furniture along most of the principal streets as they enter the square.

Figure 4: Fogg Library Corner

Certain other areas could be candidates for the development of pedestrian spaces organized around street furniture installations. These might include the post office on Pleasant Street, Fogg Library on Columbian Street and at the Fogg Boot Factory.

Signage

Directional signage throughout Columbian Square is minimal. While Columbian Square celebratory banners attached to utility poles throughout the district are attractive, there is little in the way of signage to direct drivers to the municipal parking lot, to potential attractions in the square and to other services.

Proposed Streetscape Improvements

The plan for Columbian Square streetscape improvements includes upgrades to district sidewalks, crosswalks, curb lines, traffic islands, the municipal parking lot and connecting alleys, links to the neighborhood and the creation of a new civic space and gateway at Stella Tirrell Playground and at the Fogg Library lawn. These plans are described in the next series of illustrations.

Columbian Square–Northwest/Fogg Library Corner

The Fogg Library "gateway" concept envisions creating a new village greensward by developing a paved plaza and shade tree installation at the northwest Columbian Street/Pleasant Street corner of the library lawn. This treatment will provide an attractive setting for the renovated public library and a visual landmark that will announce arrival at the heart of the square. See Figure 4.

- A landscaped island within the intersection will allow southbound vehicles on Pleasant Street to take a "free" right turn onto westbound Columbian Street. The island will also shorten the crosswalks across both Pleasant Street and Columbian Street and will create a pedestrian 'refuge' within the intersection
- The plaza at the library corner will be paved with a combination of scored concrete and unit pavers and will be surrounded by a seat wall
- The existing war memorial on Pleasant Street will be placed in a prominent location to visually anchor the plaza
- Potential exists for installing flat art as part of the pavement treatment
- The Bailey's Common marker, commemorating the first meeting house in the square, should be moved from the Columbian Street traffic island to a location within the new plaza and appropriate interpretive exhibits developed to explain its historical significance
- Shrub masses will enclose and give form to the plaza space
- Trees and shrubs will screen the proposed parking lot on the Pleasant Street side of the library
- A curvilinear walk of scored concrete will link the Fogg Library front entry to the plaza and street corner
- An installation of shade trees near the Old South Union Church property line will enclose a significant area of the library lawn to create a new "village green" space for public gatherings

Columbian Square – Southwest/Fogg Opera Building Corner

At the southwest corner of the realigned Columbian Square intersection, the new curb line creates a sidewalk extension ("bumpout") that both better controls right turning traffic and greatly reduces the length of the crosswalk across Columbian Street. Additional space in the pedestrian zone has been enhanced by installing ornamental pavement and street furniture. See Figure 5.

- Unit pavers highlight the crosswalk and notify the driver that he/she is entering a pedestrian precinct
- An 8' wide brick sidewalk extends around the Fogg Opera Building corner at Columbian Street and Pleasant Street and defines the pedestrian passage zone
- Scored concrete and unit pavers create the floorscape of the sidewalk 'bumpout' area
- Multiple benches wrap the back of sidewalk at the Opera Building property line and create a new social venue for sitting and observing the street scene
- Large deciduous trees provide summer shade and fall color for the space
- Shrub masses define the space and buffer users from traffic noise and visual clutter
- Trash receptacles and bike racks are installed for the convenience of visitors

Figure 5: Fogg Opera Building Corner

Columbian Square – Southeast Corner

At the Pleasant Street/Union Street corner of the realigned intersection, a new sidewalk extension ("bumpout) again reduces the length of the crosswalk across Pleasant Street and also across Union Street. Streetscape improvements in this area are intended to support local businesses by creating comfortable pedestrian areas and an attractive setting for the adjacent storefronts. See Figure 6.

- Painted crosswalks will be replaced with unit pavers at the approximate location of existing crosswalks. This treatment will provide better long-term wear and will slow traffic, thereby making the crossings safer for pedestrians and vehicles alike
- The bumpout protects angle parking spaces on Union Street from through traffic
- A brick sidewalk on both Pleasant Street and Union Street wraps around the corner and visually unites the streetscape elements on both streets

Figure 6: Southeast Corner

Figure 7: Fogg Boot Factory Corner

- Shade trees and shrub beds define the pedestrian space and buffer users from traffic
- Site benches encourage lingering and socializing

Columbian Square – Northeast/Fogg Boot Factory Corner

At the Fogg Boot Factory corner of the redesigned intersection, the two small existing Union Street traffic islands have been merged into a much larger landscaped island with greater visual impact. The angle parking spaces at the existing curb have been retained while the width of the Union Street 'throat' has been reduced. The new island greatly clarifies traffic movement and divides the pedestrian passage across the street into two shorter segments. See Figure 7.

- The island serves as an intermediate landing/refuge for the crosswalk across Pleasant Street
- The paved portion of the island has been treated with a scored concrete surface
- Tree and shrub masses reinforce the spatial volume of the island and reduce the apparent scale of the intersection
- Curbing and shrubs define the edge of the angle parking zone and protect the crosswalk from vehicle incursions
- Shade trees and grates will be installed in front of the Fogg Boot Factory

Municipal Parking Lot – Chauncy Street/ Camelot Way

Repaving and restriping the municipal parking lot is expected to be an early construction phase of the project. The repaving will provide an opportunity to reorganize the lot creating a more efficient parking layout and convenient circulation. See Figure 8.

- New curbing and sidewalks will be installed on Camelot Way to improve pedestrian safety
- New curbing and sidewalks will be installed on Chauncy Street to better define the street edge and improve safety. Supplemental shrub beds on Chauncy Street near the Pleasant Street intersection should help to control informal parking
- A sidewalk with mountable curb at Settles Glass on Camelot Way will allow patrons to park in the current arrangement while warning entering/exiting motorists that they are in a pedestrian zone
- Shrub beds and shade trees will partly screen the lot at both Camelot Way and Chauncy Street edges
- Improvements should be made on Camelot Way to provide positive drainage
- Trees will be introduced into the parking lot to reduce glare by installing curbed planting beds at the intersection of four striped parking bays
- Signage to direct motorists to the parking lot will be installed on both Camelot Way and Chauncy Street corners
- Ornamental pavement, lighted archways and pedestrian lighting and coordinated signage could greatly increase awareness of the municipal lot and be celebratory locations on Pleasant Street if private property owners grant public access easements

Union Street – Eastern Approach to Columbian Square

The long view axis to the Fogg Opera Building view is a strong place-making element on the Union Street approach to the square. The

Figure 8: Municipal Parking Lot

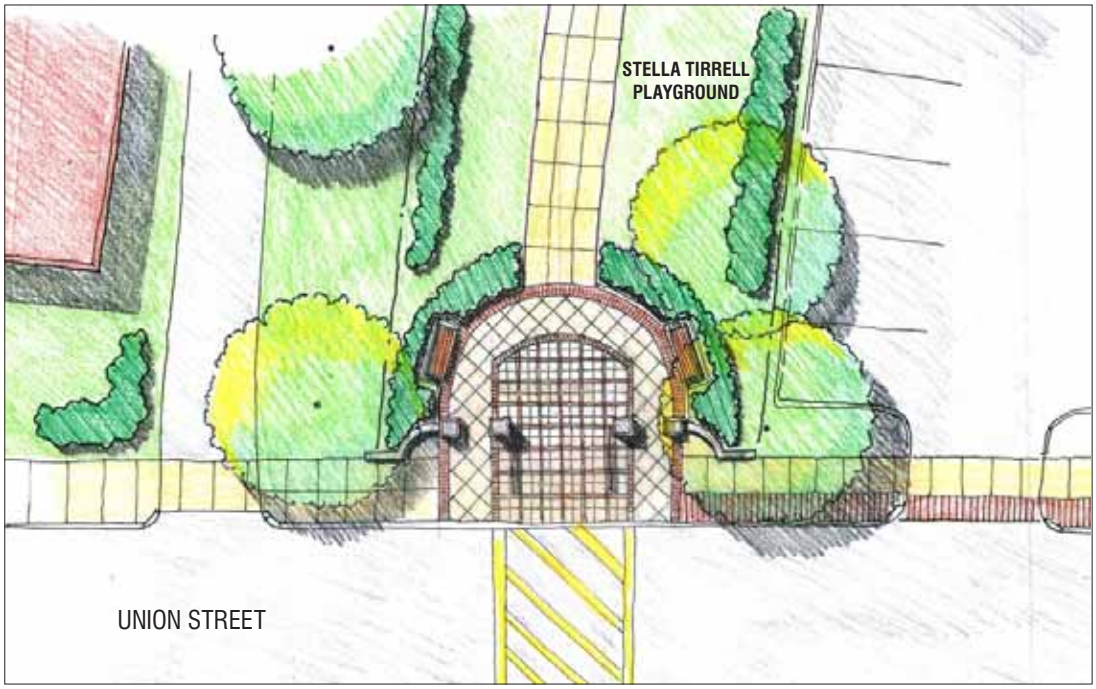

Figure 9: Stella Tirrell Playground

Figure 10: Union Street Approach

entry plaza at the Stella Tirrell Playground on Union Street is an opportunity to extend the park out to the street creating a transition from the residential neighborhood to the Columbian Square district. See Figure 9.

- The existing Union Street crosswalk at the park should be realigned to fall on the center of the Stella Tirrell Playground entry plaza
- A unit paver treatment should be applied to the crosswalk to alert westbound Union Street drivers of the increased level of pedestrian activity to be expected in Columbian Square
- Beginning a concrete sidewalk with unit paver accent band treatment on both sides of Union Street at the park entry plaza will support the impression of a more urban environment as the driver passes the park and approaches the square
- Standard reveal street curbing should be installed at the park entry plaza zone to better define the Union Street edge and improve safety
- The Stella Tirrell Playground entry plaza can be enlarged to create a landmark 'event' by moving/reconstructing the existing stone wall to enclose a larger space at the gateway

- Treat the plaza surface with scored concrete and unit pavers for increased visual impact
- Install benches and bike racks to create a 'mini-park' on Union Street for pedestrian convenience and to encourage greater use of the facility
- Supplemental shrub and tree plantings along the interior park entry walk will help shape the entry plaza space and screen the view of the adjacent Camelot Way apartment parking lot

As the westbound Union Street driver approaches Camelot Way, the character of the streetscape again transitions to a more intense treatment signaling a higher level of pedestrian activity. See Figure 10.

- The Union Street crosswalk at Camelot Way is made more prominent by installing unit pavers
- Brick/unit pavers are installed across the width of the sidewalk on both sides on Union Street from Camelot Way into the square
- The concrete sidewalk with unit paver accent band treatment continues south on the Camelot Way sidewalks
- Granite curbing with a standard reveal should be installed on Union Street at Settles Glass Co. to create a safe landing zone for the existing Union Street crosswalk
- As a part of further study in the next phase, the public may desire the consultant to study developing sidewalk extensions on the south side of Union Street at the existing crosswalk (Settles Glass) to create a traffic calming device and to reduce the length of the crosswalk.
- The sidewalk extensions can be landscaped to screen the angle parking bays on either side of the street
- A site bench and trash receptacle should be installed on the sidewalk extension at the corner of the Fogg Boot Factory building for pedestrian convenience

Pleasant Street – Southern Approach to Columbian Square

There are two distinct visual zones on the southern Pleasant Street approach to the square. Below the post office, the streetscape treatment is intended to buffer views of parking lots, create a gateway at the Main Street intersection and provide a sense of visual unity to a streetscape with a varied inventory of single family homes and small businesses. See Figure 11.

- On the east side of Pleasant Street near the Main Street intersection, street trees, shrub masses, ornamental lights and a sculptural signage installation will create a landmark gateway space while screening views of the adjacent mall parking lot.
- A new signage program at the intersection will orient Main Street drivers to the nearby Columbian Square and will highlight its attractions
- Brick pavers will be installed on sidewalks on both sides of Pleasant Street to support the image of northbound Pleasant Street as a "processional way" leading to Columbian Square
- Street trees will be installed on both sides of Pleasant Street if the overhead utilities are removed. The trees will experience longer life and increased growth rates if they can be planted on private lawns. The Town should, to the extent possible, pursue planting easements with property owners from the Main Street intersection to the post office
- Crosswalks highlighted with units pavers should be installed at the Wilbur Street and Central Street intersections

From the location of the post office into Columbian Square, the Pleasant Street corridor is dominated by the attractive view of the massive and memorable Fogg Opera Building. Streetscape treatments in this area are intended to create the impression of an increasingly pedestrian environment as one moves northward into the square. See Figure 12.

- Granite curbing with a standard reveal will be installed at the Chauncy Street intersection and in front of the former fire station. New curbing in these locations will better define the street edge, will organize parking and will have a calming effect on traffic
- The new curbing will also create an ADA -compliant landing zone for the reconstructed Pleasant Street crosswalk at the Chauncy Street corner
- The Chauncy Street and Pleasant Street crosswalks will be treated with unit pavers to provide a visual and textural signal to drivers

- A "low-reveal" or mountable curb should be installed in front of the building housing the Bicycle Clinic shop to create a well-delineated pedestrian zone while allowing patrons to park as they do currently
- Brick pavers will be installed on sidewalks on both sides of Pleasant Street
- Street trees and grates can be placed on the east sidewalk of Pleasant Street if the overhead utilities are removed
- Some street trees in the sidewalk currently exist on the west side of Pleasant Street. Because this is a narrower sidewalk, these trees should be supplemented with shade trees planted on the private lawns in front of LaRossa Shoe and the South Shore Bank, if easements can be secured
- Unit pavers walks will extend across all alley and driveway 'throats' to provide continuous pedestrian circulation zones on both sides of the street

Pleasant Street – Northern Approach to Columbian Square

For purposes of this study, the northern approach to Columbian Square on Pleasant Street is specified to begin at Tower Avenue. Southbound Pleasant Street begins its transition from a residential neighborhood to the business district within this zone and the streetscape treatment should reflect this change. See Figure 13.

- At both Tower Avenue and Torrey Street, small landscaped islands will be in-

Figure 11: Lower Pleasant Street

Figure 12: Upper Pleasant Street

Figure 13: Northern Pleasant Street Approach

stalled at the crosswalks to prevent northbound Pleasant Street traffic from turning into these streets. Residents have requested these measures to mitigate the effect of commuters travelling west on Union Street, turning north/right on Pleasant Street and turning left on Torrey Street/Tower Avenue to avoid congestion at the Columbian Street/Main Street intersection

- Beginning at Tower Avenue, construction of a new concrete sidewalk with a unit paver accent band on both sides of Pleasant Street will reinforce the sense of a transition to the more intense urban activity of Columbian Square
- Shade trees should be installed on private lawns on both sides of Pleasant Street if the necessary planting easements can be secured
- The Torrey Street crosswalk will be constructed with unit pavers for improved pedestrian safety
- At the Torrey Street intersection and at the Fogg Boot Factory building rear driveway, brick pavers will be installed on the full width of sidewalks on both sides of Pleasant Street to complete the transition to the Columbian Square district
- Street trees with grates will be installed in the sidewalk on the west side of the Fogg Boot Factory building

Columbian Street – Western Approach to Columbian Square

The South Shore Hospital is the most prominent landmark on the western approach to Columbian Square. The streetscape treatment in this area is focused on making the transition from the highly built-up nature of the hospital complex with its massive buildings, service docks and parking lots fronting Columbian Street to the pastoral setting of Old South Union Church and the historic, urban character of the Fogg Library, Cameo Theatre and Fogg Opera Building. The intent of the street treatment is to provide a sense of visual unity to these disparate elements similar to a carpet in a room unifying a variety of furniture types. See Figure 14.

- On the south side of Columbian Street, the sidewalk will be brick/unit-paved
- On the north side of Columbian Street, the sidewalk will be a concrete with a brick/unit paver accent band from Main Street to Burton Terrace. East of Burton Terrace, the sidewalk will be brick on both sides
- Unit paver sidewalk will be carried across the wide paved apron serving the South Shore Hospital loading docks to create a visible pedestrian route through this potentially hazardous area
- Columbian Street crosswalks will be treated with unit pavers to insure that the substantial volume of pedestrians crossing the street near the hospital will have a clearly established crossing routes
- Street trees will be installed on both sides of Pleasant Street if the overhead utilities are removed. If planting easements can be secured, trees planted on private lawns or in shrubs beds will almost always fare better
- Columbian Street driveway crossings and the crosswalk at Fogg Road will also be brick paved for enhanced visibility. See Figure 15

Figure 14: Columbian Street at South Shore Hospital

Figure 15: Columbian Street at Fogg Road

- On Fogg Road, a concrete walk with a brick/unit paver accent will create a transition zone for hospital workers walking toward the square
- East of Fogg Road, street trees will be installed in the sidewalk with tree grates

Ornamental Lighting

Roadway lighting in Columbian Square is currently provided by a system of undistinguished highway-style fixtures ('cobra-head") that, while efficient, detract from the image of the district. The addition of ornamental streetlights will improve the ambiance and the visual character of Columbian Square and will support the feeling of a more pedestrian-oriented environment.

It is important to set the height of the light source so that the fixture will be in scale with pedestrians and the on-center spacing of the poles will still be reasonably economical. The height of the light standards should be specified to yield the appropriate amount of light consistent with the village character of the district and the luminaire should be selected to provide a natural light color that will make Columbian Square a more attractive place at night.

Luminaire height should be specified at approximately 18-20 feet above ground level. A shepherd's crook style pole and ornamental luminaire that has a historically inspired style, but is not a slavish copy of a historic light may be an appropriate choice for the district. A luminaire type that renders colors naturally and produces a warm light color, such as metal halide, is recommended. High-pressure sodium lighting distorts natural color and is not recommended.

The 'Lechmere' steel pole and cast iron base by Spring City Electrical Mfg. Co. and 'Lechmere' – 110 Globe in 175-watt metal halide also by Spring City are recommended for Columbian Square. These poles and fixtures should be installed at 100 feet on center on one side of the street. Figure 16 shows an example of the proposed fixture. Proposed roadway lighting should be coordinated with off-street pedestrian light fixtures (alley lights) to create a cohesive image and streetscape character.

Following the installation of the ornamental lights, the cobra head luminaires and arms should be removed from the utility poles.

Figure 16: Ornamental Street Light

Walking Plan

An important component of the urban design vision for the square are the pedestrian connections that will link the attractions and services of Columbian Square with local employment sites and the surrounding neighborhoods. Pedestrian connections should be safe, convenient and should provide a link between trip generation points and reasonable destinations. See Figure 17.

- A new concrete walkway on Central Street will provide a more visible pedestrian link between Pleasant Street and the parking lot at Stella Tirrell Playground
- Providing a convenient connection between Pleasant Street and the municipal parking lot can be realized if the Town can secure an easement from the private owners of the two alleys between the lot and the square. See Figure 18
- The alleys should be treated with ornamental pavements and special light treatment. See Figure 19
- A clear and direct walkway between South Shore Hospital and the square would benefit hospital employees and local businesses alike. A pedestrian connection between Fogg Road and Pleasant Street will provide such a link if private property owners can be persuaded to grant pedestrian travel easements between Fogg Road and Pleasant Street

Figure 17: Pedestrian Links

Figure 18: Alley Treatment at Municipal Parking Lot

Figure 19: Gateway Alley Treatment

Existing Parking Lot Issues

One study task was to consider alternative options for the use and management of the public parking lot on Chauncy Street/ Camelot Way at the east side of the square. The parking lot occupies a central and significant portion of the land around the square, but is faced with a number of problems;

- Area employees reportedly use the parking spaces for all-day parking
- The lot is not well maintained and informational/directional signage is weak or non-existent
- There are no parking fees or revenues generated by the lot
- In its current state, the lot may not be fully supporting economic development or reuse in the square

The Opportunity

The parking lot presents an opportunity for supporting Columbian Square economic health and redevelopment. One option is a structured parking garage to provide additional parking and a possible revenue stream. A parking structure could provide the following potential benefits:

- Provides a regulatory option for new development to utilize public parking count towards zoning compliance
- Allows for higher density and higher value development than achievable under current market conditions
- Provides a potential revenue stream

In turn, a public parking structure raises the following issues that must be addressed:

- Creates a complex and costly public construction project
- May not drive market change, but only support market change
- Will probably not provide a revenue stream sufficient to support a bond issue for its construction
- Requires an overall district parking management plan to be implemented

The aspect of construction cost is not insignificant. Planning for structured parking facilities should incorporate an estimated construction cost of $20,000 per space. In addition, the management of all other public parking within the commercial district and adjacent areas is a requirement to ensure the garage functions properly (parking meters /fees). Adding management costs on top of the construction cost will likely exceed the revenues generated by parking space fees.

Revenues

From studies of parking garage options completed by the Cecil Group for others, it was determined that a sustainable price point for all day parking will probably be less than $5.00 per day and, most likely, no more than $3.00 per day. The ability to obtain fees for short-term parking would be dependent on an overall Columbian Square parking management program, including metered parking on the streets. Estimating 50% of the parking structure spaces would be set aside for short-term parking, a probable utilization schedule for the garage might be:

- Utilization at 50% of total capacity within the first year, with growth at 10% per year following;
- A future utilization of 110% capacity for the long-term spaces serving more than one user per day but only 250 operating days per year.

Sample revenues for 300-space parking garage are as follows:

Use	Spaces	Rate	1st year value	6th year value
Long-term	150	$3.00/day	$56,250	$134,888
Short-term	150	$7.50/day	$202,500	$429,188

Including escalation costs for fees at 3% per year.

Costs

The costs for a potential bond issue for a 300-space parking garage with spaces costing

$20,000 each for construction is summarized below at 6% interest for a 20-year bond:

Bond	1st year payment	6th year Payment
$6,000,000	$660,000	$570,000

Management costs for the parking garage and the rest of the parking in the square could be $250,000 per year. Consequently, even in the outlying years the garage operation should be anticipated to operate at a loss, and the cost of building and operating the structured parking needs some form of subsidy or gap funding.

Alternatives

The Cecil Group has determined that a series of land use and management alternatives could be considered. These options range from redevelopment plans to new management approaches, but all were considered to determine the potential to improve the property with enough value to obtain other public benefits.

- Construction of commercial space, office and retail or mixed-use development attached to the garage could provide subsidy value to the garage. A study option for mixed use is indicated on Figure 20. A mixed use development with 25,000 sq.ft. of commercial space and about 270 parking spaces could be programmed in a three-story building and parking structure on the municipal parking lot site fronting Chauncy Street and Camelot Way
- If the site is utilized as a multi-modal transit node, regional transit system money (such as state TOD funds) could help subsidize the construction. Up to $2 million has been provided for other transit-oriented projects in Massachusetts. However, these funds would not provide all of the gap funding needed
- In addition to parking fees, there could be Payments in Lieu of Parking (PILOPs) associated with the zoning relief for private on-site parking requirements. These could be longer term funds received as redevelopment projects move forward based on public improvements
- A partnership could be made with a private entity such as a parking system operator and a large institution such as the South Shore Hospital, where the former could bid on construction and operation of the garage and the latter could participate with the town in the costs and management. Because South Shore Hospital is proceeding with a significant expansion of parking to meet the needs of its growing services and work force, an opportunity may be available to combine resources
- Participation within the district, such as use of District Improvement Financing (DIF) or a Business Improvement Dis-

Figure 20: 25,000 SF Building 270 Space Garage Structure at Municipal Lot

trict (BID) that utilize funds from the district to directly support the bonded indebtedness and management fees

Criteria for Analysis

The following categories of programming and analysis should be carefully considered prior to the decision to proceed with improvements to the municipal lot:

Town Goals: What goals have been set by the Town for the site and adjacent land uses that will direct the decisions on redevelopment and reuse options

Functional Requirements: Each of the alternative uses and potential users may have certain functional requirements that may or may not be fully satisfied by the current configuration and construction at the lot

Land Use Impacts: Each of the land uses comes with certain impacts associated with their development that may or may not conform to the Town's overall plan for Columbian Square

Urban Design: The design of any of the reuse options comes with certain issues regarding circulation, massing, and design quality. Some of these can be addressed with appropriate site design approaches, while other aspects may involve requirements for other changes such as street and lot configurations

District-wide Parking Management: Assuming the parking structure is, at least partially, intended for public use, the feasibility of instituting parking meters/fees elsewhere in the district should be studied to prevent the future shift of parking demand from the parking structure (fee parking) to the adjacent on-street spaces (currently free parking)

Bond Issue Estimate for 300-space Parking Garage

$6,000,000 capital program bond in one 30-year bond issue

Bond	Rate	Interest	Principal	Payments
$6,000,000	6.00%	$360,000	$200,000	$560,000
$5,800,000	6.00%	$348,000	$216,667	$564,667
$5,583,333	6.00%	$335,000	$216,667	$551,667
$5,366,667	6.00%	$322,000	$216,667	$538,667
$5,150,000	6.00%	$309,000	$216,667	$525,667
$4,933,333	6.00%	$296,000	$216,667	$512,667
$4,716,667	6.00%	$283,000	$216,667	$499,667
$4,500,000	6.00%	$270,000	$216,667	$486,667
$4,283,333	6.00%	$257,000	$216,667	$473,667
$4,066,667	6.00%	$244,000	$216,667	$460,667
$3,850,000	6.00%	$231,000	$216,667	$447,667
$3,633,333	6.00%	$218,000	$216,667	$434,667
$3,416,667	6.00%	$205,000	$216,667	$421,667
$3,200,000	6.00%	$192,000	$216,667	$408,667
$2,983,333	6.00%	$179,000	$216,667	$395,667
$2,766,667	6.00%	$166,000	$216,667	$382,667
$2,550,000	6.00%	$153,000	$216,667	$369,667
$2,333,333	6.00%	$140,000	$216,667	$356,667
$2,116,667	6.00%	$127,000	$216,667	$343,667
$1,900,000	6.00%	$114,000	$216,667	$330,667
$1,683,333	6.00%	$101,000	$216,667	$317,667
$1,466,667	6.00%	$88,000	$216,667	$304,667
$1,250,000	6.00%	$75,000	$216,667	$291,667
$1,033,333	6.00%	$62,000	$216,667	$278,667
$816,667	6.00%	$49,000	$216,667	$265,667
$600,000	6.00%	$36,000	$216,667	$252,667
$383,333	6.00%	$23,000	$216,667	$239,667
$166,667	6.00%	$10,000	$216,667	$226,667
-$50,000	6.00%	-$3,000	$216,667	$213,667
-$266,667	6.00%	-$16,000	$216,667	$200,667
			Avg. Payment	**$382,667**

A substantial component of Columbian Square's visual character is its suite of memorable and irreplaceable historic buildings. There are also some examples of undistinguished and incompatible newer buildings, additions and remodelings that contribute less to the district's visual environment. This section includes recommendations for the preservation and rehabilitation of the best examples of historic architecture in the square. These recommendations can help support a vibrant walking community by protecting the character of historic buildings with attractive and compatible retail storefronts.

Columbian Square's best buildings can divided into three general types. See Figure 21.

- Theme Buildings – These are typically late Nineteenth Century structures, often of masonry construction, but occasionally built of wood. They are usually between two and five stories and have no or very small front and side yard setbacks, a repeating pattern of upper story windows, decorative cornices and other appropriate details. Examples of this type of building are the Fogg Boot Factory building at the corner of Union Street and Pleasant Street and the Cameo Theater on Columbian Street.
- Landmark Buildings – These are architecturally memorable buildings, often with significant setbacks and landscaping. They display distinctive roof lines, turrets and ornamentation and were sometimes built for religious, civic or cultural purposes. The Fogg Library and the Fogg Opera House represent this type of building.
- Transitional Residential Buildings - Formerly residential buildings that have been converted to commercial or professional use, these buildings continue to display features typical of a wood-frame home with front and side yards. They continue to display many original architectural features.

The Secretary of the Interior's Standards for Rehabilitation

Alterations to and renovation of historic buildings should incorporate measures to protect and preserve the architectural character and features of the building. The Secretary of the Interior's Standards for Rehabilitation of Historic Buildings provide detailed guidance for the repair and renovation of significant examples of local architecture. The Standards for Rehabilitation of Historic Buildings are codified under federal law in 36 CFR 67 and are intended to provide a guide for use in the Federal Historic Preservation Tax Incentives Program. The Standards provide guidance in "the process of returning a property to a state of utility, through repair or alteration, which makes possible an efficient contemporary use while preserving those portions and features of the property which are significant to its historic, architectural, and cultural values."

In addition to certifying historic rehabilitation work for Federal tax purposes, the Stan-

Figure 21: Columbian Square Building Types

dards have guided State and local officials in reviewing rehabilitation proposals for significant properties and have been adopted by many historic district and planning commissions across the country.

The intent of the Standards is to preserve a property's historic significance through the preservation of historic materials and features. They also apply to the building's site and environment, as well as attached or related new construction. The Standards (cited below) are intended to be applied to a rehabilitation project in a reasonable manner, taking into consideration economic and technical feasibility:

- A property shall be used for its historic purpose or be placed in a new use that requires minimal change to the defining characteristics of the building and its site and environment
- The historic character of a property shall be retained and preserved. The removal of historic materials or alteration of features and spaces that characterize a property shall be avoided
- Each property shall be recognized as a physical record of its time, place, and use. Changes that create a false sense of historical development, such as adding conjectural features or architectural elements from other buildings, shall not be undertaken
- Most properties change over time; those changes that have acquired historic significance in their own right shall be retained and preserved
- Distinctive features, finishes, and construction techniques or examples of craftsmanship that characterize a property shall be preserved
- Deteriorated historic features shall be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature shall match the old in design, color, texture, and other visual qualities and, where possible, materials. Replacement of missing features shall be substantiated by documentary, physical, or pictorial evidence
- Chemical or physical treatments, such as sandblasting, that cause damage to historic materials shall not be used. The surface cleaning of structures, if appropriate, shall be undertaken using the gentlest means possible
- Significant archeological resources affected by a project shall be protected and preserved. If such resources must be disturbed, mitigation measures shall be undertaken
- New additions, exterior alterations, or related new construction shall not destroy historic materials that characterize the property. The new work shall be differentiated from the old and shall be compatible with the massing, size, scale, and architectural features to protect the historic integrity of the property and its environment
- New additions and adjacent or related new construction shall be undertaken in such a manner that if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired

Preservation Recommendations

Even where the owner is not intending to apply for the Federal Historic Preservation Tax Incentive Program or where a building is new, the structure should acknowledge the historical significance and the existing character of the district. The architecture of new buildings should respect the character of adjacent historic buildings and should attempt to define a coherent street edge by emulating some of the basic elements of a "theme" building. These include rhythmic upper window treatment, zero setback and continuity of detail.

Building Renovation Setbacks

Existing building setbacks should be preserved on all street sides and where the building abuts a public gathering space. For theme buildings, there should be no front or side building setbacks except when necessary to create a public space.

Renovations to Corner Buildings

Existing historic details present on corner buildings should be preserved. These include towers, rounded masonry corners and/or angled corner entrances. Buildings on corner lots should present architecturally- related front facades to both streets. The facade facing the more heavily travelled street may be more articulated than the façade facing the minor street. A renovated theme building on a corner lot such as the Fogg Boot Factory, should

have glazed first floor facades with recessed entrances on both streets or a traditional angled corner entrance and additional entrances for any façade walls more than 30' wide.

Roofs

Traditional roof features of historic buildings should be preserved where visible. These include roof style and pitch, authentic materials and details. Roofing materials that are visible from the street should be traditional materials such as slate, metal, tile or reasonable facsimiles. Visible roofs should not exceed the walls in their respective visible proportions when viewed from the street.

Building Articulations

Historic building features that articulate the form of the building façade should be preserved when present. These features include bays, turrets, columns, dormers and pediments.

First Floor Facades

Existing historic storefront elements such as original windows, transoms, doors and wall sign fascias should be preserved. New storefront designs and renovations should respect and incorporate these elements. Historic landmark and transitional residential build-

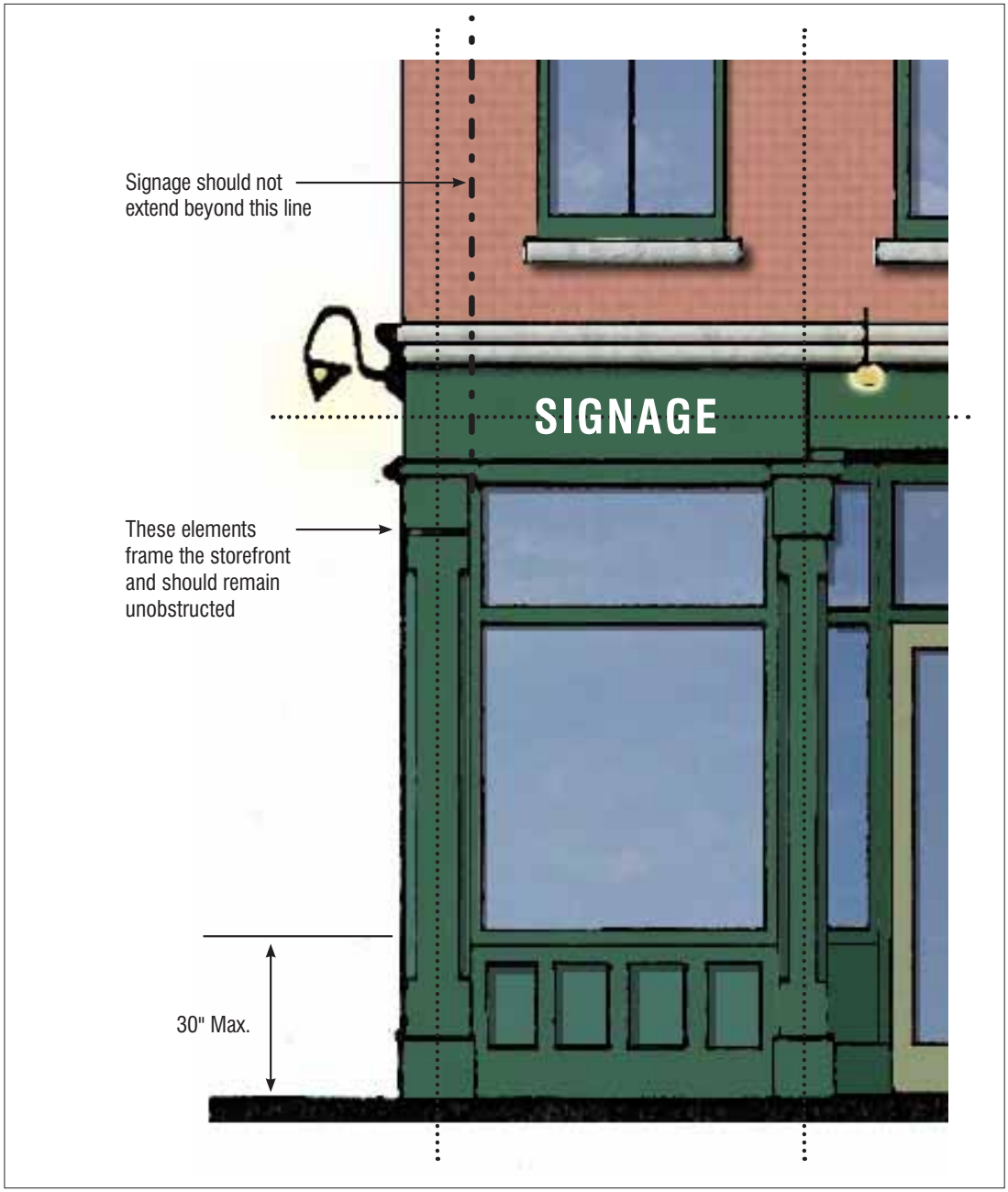

Figure 22: Storefront Treatment A

Figure 23: Storefront Treatment B

ings should retain their traditional patterns of windows on the ground floor.

First floor street facades of theme buildings should have at least half of their facades in clear non-mirror, non-opaque glass. Bulkhead base walls should be built below first floor glass and should not rise less than 12 inches or more than 30 inches above outside grade. See Figure 22.

Street facades of theme buildings should have one doorway every 40 feet. The doorway should be recessed at least 36 inches from the sidewalk.

Exterior shutters or security bars should be avoided and the installation of security devices should not damage the aesthetic integrity of historic materials or features.

Upper Floor Window Arrangements for Facades of Theme Buildings

Historic window arrangements, including lintels, sills and masonry surrounds should be preserved. On theme building facades, windows should cover a minimum of 20% and a maximum of 40% of the façade area above the first floor. New window header height should align horizontally with those on, at least, one adjacent building when possible. See Figure 23.

New horizontal window groups should form rhythmic, symmetrical patterns on the building. Within groups, there should be a wall space between window frames of not more than one half window width.

Upper Floor Window Size and Design for Facades of Theme Buildings

Historic window components should be preserved or replicated if window replacement is necessary. Such elements include rectangular or arched wood-framed windows, divided light sash, ornamental lintels and sills. Replacements may be constructed with different materials if visually equivalent.

Replacement windows should be vertically oriented rectangles with a height-to-width ratio between 5:3 to 9:3. There should be some traditionally appropriate horizontal division within the frame, but snap-in grilles should not be allowed. Divisions should be equal, or nearly equal, in size. Ratios, shapes and divisions may differ for smaller windows below the cornice and in some other special locations.

New windows should have visible, historically compatible masonry or in special cases, wood sills and lintels. New windows on a given floor should be no taller or wider than those on the floor below.

Facades Materials

Historic building materials should be preserved when present. Such materials include wood, stone and brick.

For theme or landmark buildings, wall surfaces visible from the street should be predominantly brick, stone and, in special cases, wood. Ornamental metal detailing may be used if historically appropriate. Facsimile materials that replicate an appropriate historic appearance of brick or stone are also acceptable.

For transitional residential buildings, traditional wood clapboard siding and wood trim should be used. These buildings may incorporate other building materials that are historically compatible with wood clapboards. Vinyl siding is not appropriate. When siding is applied, all existing trim and structural features such as brackets, corner boards, hoods, etc., should remain undisturbed and visible.

Mortar joints for new masonry construction should be no more than 3/8 inch for brick or ½ inch for other masonry or stone construction elements if they are at least 8 inches high and 16 inches wide. Mortar color should not significantly contrast with masonry in hue or value.

New windows for transitional residential buildings should be consistent in appearance with those of other historically appropriate residential buildings in the district.

For all renovations or rehabilitations, materials should be combined in historically appropriate combinations.

Materials to be painted, such as previously painted façade materials and window frames, should be repainted in colors that complement the materials of nearby historic buildings.

Façade Detailing

Historic cornices of brick stone or wood should be preserved when present.

Historic façade details should be preserved when present. Details may include brackets, decorative brickwork, arches and incised ornamentation.

Additions or renovations should respond to existing façade detailing by utilizing stylistically consistent, compatible elements on street-front facades.

Mechanical Equipment

For historic buildings, fire escapes, window-mounted air conditioners, or other mechanical systems should not be installed in ways that irreversibly damage historic features or materials. On masonry buildings, mounting hardware should be attached at mortar joints rather than to the masonry itself.

Roof-top mechanical equipment should not be visible from the street. Fire escapes, window-mounted air conditioners or other mechanical systems should not be located on facades that front major streets.

Signs Located Above the First Floor

Historic sign fascia bands above first floor storefronts should be preserved when present.

Business signs should normally be placed in the flat fascia band above the first floor glazing. Signs should not be placed in a manner that will obscure important historical details or features.

Signs should be mounted so as to avoid irreversibly damaging historic building features. Mounting hardware on masonry buildings should be placed at mortar joints rather than drilling into the masonry itself.

Fogg Library Programming

Mayor Kay has pledged to renovate and reopen the Fogg Library so that it will once again be the civic anchor that it was in the past. As part of the building renovation, the Town may wish to consider ways to develop a new library that is as much a community center and neighborhood meeting place as a quiet repository for books.

As libraries face increasing competition from other information providers, they have begun to reshape their mission and strategic vision. This revisioning has moved some institutions to attract new library users by being more user-friendly and by reprogramming a portion of their space to host a variety of non-traditional uses. These forward-thinking libraries are likely to be active places, where video media and the internet exist side-by-side with books, art exhibits are common and social events are hosted. Libraries are beginning to include film festivals, poetry readings, toy loans, literacy programs and homework assistance in addition to access to electronic resources. Interestingly, some are beginning to explore the development of revenue producing uses such as book stores, gift shops or even cafes.

The concept of a café serving food and/or beverages to library card holders has been implemented in a number of libraries successfully. The new service has generally been well received by a library-going public familiar with commercial bookstores, and a café can make the library more of a community center.

The coffee bars or cafés have ranged in size from just a vending machine or "push cart" serving coffee, juice and muffins to a leased/improved space operation providing full meals. The Farmington, CT Public Library operates a small coffee cart and the Lucy Robbins Wells Library in Newington, CT hosts a full café. The Multnomah County Library in Portland Oregon created a 175 square foot space for a coffee bar during a recent renovation project. As part of a lease agreement with the library, Starbucks Coffee Corp. agreed to operate the concession and pay a monthly rent. As part of the lease contract, Starbucks is helping to sponsor library activities and develop an advertising campaign to attract patrons to library events. Some other libraries have reached agreements with vendors for a share of the gross revenue ranging from 5-6%.

The Watertown, MA Free Public Library leases space to a concessionaire who operates the Book Store Café. Besides serving coffee, sandwiches and drinks, the Café sells books and compact disks that have been donated to the library, coffee mugs and canvas book bags with the library logo, headphones for audio books and flash drives (USB memory sticks) to store down-loaded electronic files. In addition to lease payments, the library receives 100% of proceeds from the sale of donated books and compact disks.

At first glance, allowing food and drink in the library might be perceived to be counter to the needs of book preservation. Because staff members may naturally be concerned about an increased risk of damage to the collection and pest infestation; the manner in which food and drink is managed is important.

When Brown University decided to create cafes with seating areas and allow drinks into its libraries, it tied the move to the concept of personal responsibility. The libraries required that beverage containers have closed lids (travel mugs) or "slow leak" tops (Starbuck's lids). Vendors are selling beverages in single serving containers with screw tops for water, juice and soda. Discussions of food on web-based library discussion groups have included comments that libraries with cafes or food services have found very little damage to the book collection. Respondents noted that borrowers routinely read library books at the supper table or while drinking coffee and few items have been returned damaged.

When planning space for a potential café concession area, some location and operational considerations should be made of the program plan.

- The space should be in a prominent location and appear part of the library
- The space should also be separable – with an entrance that will allow the concessionaire to operate the café when library is closed

- Café surfaces/floors must be designed to be easily cleaned to prevent problems with insects or rodents
- Utilities to support the operation must be carefully considered – power, ventilation, trash removal
- Allow additional features such as an internet cafe

Other revenue-generating programs have included collections-sharing agreements with local historical societies that have allowed libraries to copy, print and sell historical photos in calendars or matted and framed photos. Selling reproductions of old picture post cards of local interest has also been part of bookstore sales in some instances. The Elizabeth Tabor Public Library in Marion, Massachusetts is currently developing as much as one third of its operating budget through these measures and some other innovative programs. The library's newest program is a community-wide, adult team 'spelling bee'. Teams of three individuals pay a fee to enter and take part in a four round, single elimination competition format. Each team will confer on the spelling of the word and in thirty seconds must write their answer on a slate. Each team, may for an additional $50. fee, make a one-time "lifeline" call to a friend for help. The competition has become a popular wintertime diversion for the community and teams often show up in uniforms accompanied by cheer leaders.

While there is not much quantitative data that these types of services have increased library patronage, many libraries that have implemented these features note that they have contributed revenue to a limited budget, are popular with the public and help the institution compete in a changing world of bookstore chains and online information delivery.

Utility Burial

Utility poles and lines have been cited by workshop attendees as contributing to visual clutter throughout the Columbian Square area. Participants recommended burying utility lines, at least, in the central part of the village district. They also feel that the current "cobra-head" highway luminaires attached to utility poles do not make a positive contribution to the visual character of Columbian Square. While efficient and economical, this type of fixture casts a harsh light and contributes to the establishment of a suburban or highway road feel that is not in scale with pedestrian activities. They would like to see the cobra-head fixtures and poles replaced with historically inspired ornamental street lights along the principal streets of the village.

Some have intuitively recognized that, though the dollar-and-cents benefits from the improved visual aesthetic of buried utilities are hard to quantify, they are nonetheless real and can be substantial. In addition to the aesthetic aspects of removing overhead utilities, they also understand other benefits conferred by utility burial:

- Greater reliability of service in an area subject to winter ice storms
- Reduced economic losses caused by power outages
- Reduced motor vehicle accidents caused by collision with poles
- Reduced expense for utility in pole replacement due to vehicle crashes
- Reduced tree damage caused by utility line trimming
- Reduced accidental electrocutions

Relevant Existing Conditions

National Grid currently maintains 15 kilovolt feeder lines along Columbian Street and Pleasant Street serving Columbian Square and the larger district around and beyond. Pole-mounted transformers step the line voltage down and supply three-phase and single phase power to most users on these streets and on the side streets. Telephone lines and CATV systems share the poles with the electric company and have their main lines along Pleasant and Columbian Streets. The phone and cable lines have a substantial number of conductors on these poles serving local businesses as well as the larger region.

The 2006 A.P. Franco report entitled "Conversion of Overhead Utilities to Underground – Preliminary Engineering Report" described two approaches to the burial of these utilities.

Base Scenario: The first and more expensive option assumes that all overhead utilities will be placed in underground conduits in the project area streets where the overhead poles and utilities are currently aligned. Because this alternate will require the excavation of significant segments of roadway pavement, the utility burial operation should be closely coordinated with future roadway improvements to minimize disruption and to realize the economies of shared costs, such as pavement demolition and street/sidewalk restoration. Further, it was assumed that not the entire length of the principal streets in the project area will be demolished and repaved, so those economies will not be available throughout the project area.

Alternate Scenario: The alternate scenario assumes that the overhead utilities will be removed from Pleasant, Union and Columbian Streets within the project area and utility service lines will approach the rear of buildings on overhead wires mounted on new and existing poles from the adjacent parking lots and side streets.

Preferred Utility Burial Scenario

Based on the research conducted for the "Conversion of Overhead Utilities to Underground – Preliminary Engineering Report" and review of the proposed roadway and streetscape improvements in the Columbian Square area, we have concluded that the most economical plan to achieve the removal of utility poles and overhead lines on the principal streets within the project limits is to create a hybrid scheme that incorporates part of the Base Scenario and part of the Alternate Scenario. See Figure 24.

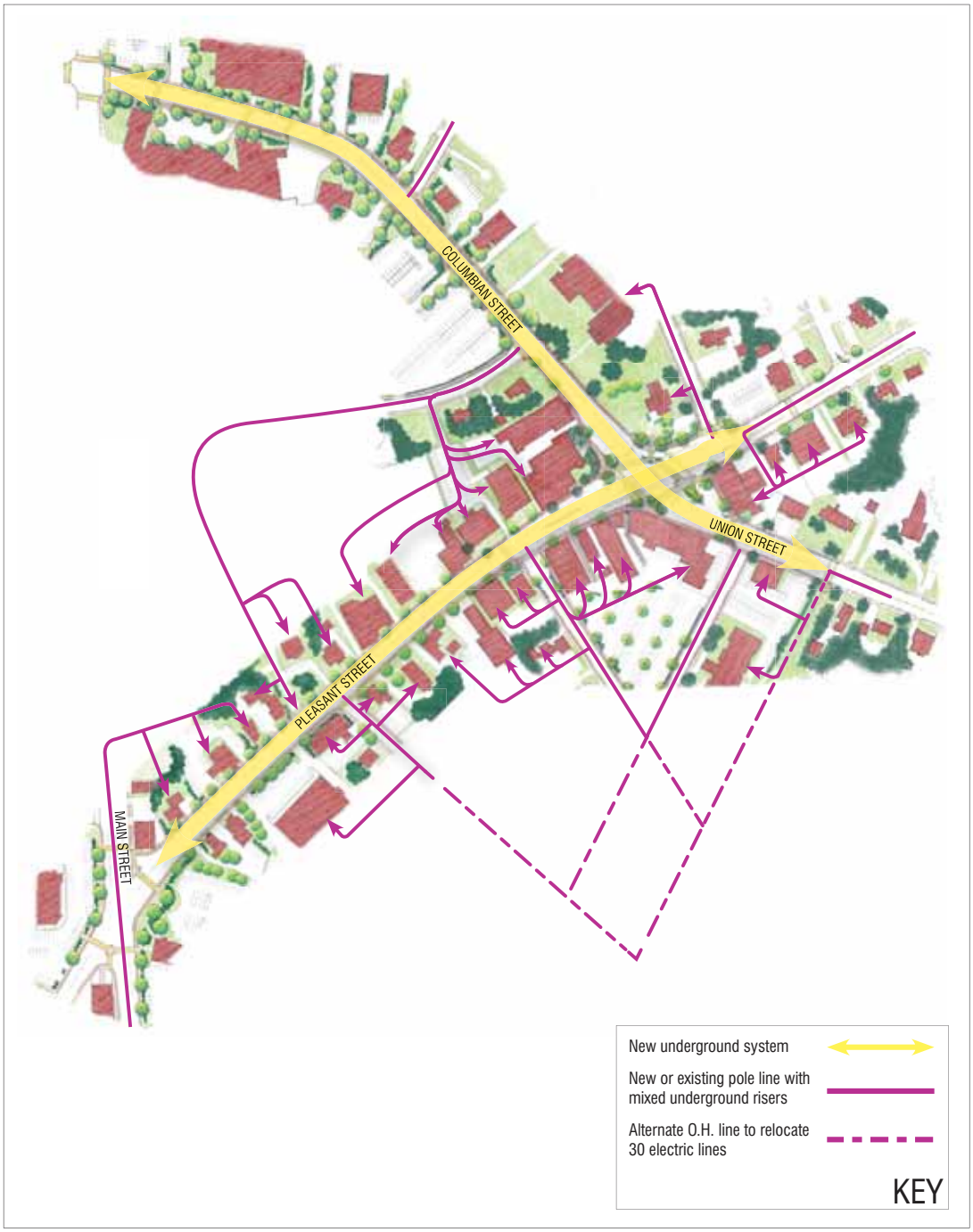

Figure 24: Utility Burial Plan

Under this hybrid scenario, a new underground infrastructure will be installed along Pleasant Street between Main Street and a point just north of the Torrey Street intersection and along Columbian Street/Union Street between Main Street and the entrance to Stella Tirrell Playground on Union Street. The new infrastructure is assumed to include, at a minimum, a six-way duct bank and large (7'x13') precast electric manholes, risers and hand holes for all three utilities (National Grid, Verizon, and Comcast) as well as some public or private land to site transformers and switchgear. Similarly, a new duct bank and manhole system will be installed parallel to the new electrical system to serve the telephone/CATV utility. Telephone and CATV will typically share a common duct bank, but will require separate manholes and handholds. This underground infrastructure will allow the removal of the utility pole and overhead lines on these streets while continuing to carry the major electrical feeders, telephone trunk lines, cable, and miscellaneous services that pass through the project area and serve the larger district.

The existing overhead utilities and poles along Fogg Road, Wilbur Street, Central Street, Chauncy Street, Camelot Way and

Torrey Street will be modified or replaced as required to accept new, relocated overhead lines, transformers and services to existing customers. Additional poles and lines will have to be placed in the municipal parking lot and on negotiated easements to allow routing of lines through the private parking lots on the west side of Pleasant Street. Relocation of utilities to these poles will allow the customers currently being supplied by existing utility lines on Pleasant Street/Columbian Street to be served by new lines connecting at the back of these properties. This route minimizes construction and the costs associated with converting these services to a less visually obtrusive underground system.

During the design of the new infrastructure system, the utilities, National Grid, in particular, may propose installing new overhead lines along the western edge of Stella Tirrell Playground to better serve their major lines along Central Street and Chauncy Street. This option may further reduce the required work along Pleasant Street and Union Street/ Columbian Street.

While it seems likely that the combination of in-street burial of conduits on Pleasant Street and Columbian Street and overhead utility delivery to the rear of most buildings is practical, there are some key issues that must be addressed and will become better understood as the design of the utility burial improvement is further advanced. These issues may have an impact on the practicality/political acceptability of these recommendations and on the overall implementation costs.

- Rear delivery of utilities to the buildings that abut the municipal parking lot appears to be an effective and economical method of serving these properties. Some of these properties are already served from the rear of the buildings. At some properties on the west side of Pleasant Street however, negotiating overhead utility line and pole easements across several separate properties may prove to be difficult. Owners may be concerned that an easement could cause a loss of flexibility in using their land or an impediment to selling the property. If a single property owner in a critical location is uncooperative, this approach may be less attractive.
- The Town of Weymouth Building (electrical) Inspector may have to determine the utility upgrade required of each property owner when the new method of utility delivery is determined. The cost of the point-of-use improvements may be as much as $7,500 per property and if this cost is not absorbed by the Town, it may be a factor in determining the property owners' willingness to cooperate with the utility burial process. The utility burial cost estimate addresses relocation of the service approach and provides an approximate estimate of service connection upgrade costs on private property for information purposes only. Costs associated with inside code compliance are usually considered supplemental and are not paid by the Town.

- Typical underground conversions such as this will require the installation of above ground pad-mounted switchgear or transformers, especially for the electrical utility. We anticipate that a new above-ground gear installation will be requested/required by National Grid at the intersection of Columbian Street and Pleasant Street. One location for this gear might be on a portion of the Fogg Library property adjacent to the proposed parking area. Because of its potential visual impact on this historic location, sensitive siting and adequate landscape screening will be required as part of this work.

Costs and Implementation Considerations

Costs associated with the removal of overhead utilities are not trivial. If the Town chooses to pursue this work, every effort should be made to coordinate and phase the utility burial work with the roadway improvements and streetscape work. As much as $500,000 can be saved if the two projects are undertaken simultaneously. Beyond the significant economies to be realized in construction, a coordinated construction process will eliminate the inconveniences and criticism associated with demolition of recently completed pavement to install duct banks.

Implementation of these proposed measures may take as long as two years from the time of first construction to the final removal of all overhead utilities. A significant level of con-

struction co-ordination will be required to insure safe and uninterrupted access to each business or residence in the affected area. Temporary ramps, plates and careful scheduling will be necessary during this process to minimize economic damage to retailers. Vehicular and pedestrian traffic and parking may be temporarily limited or reduced.

Funding Utility Burial

The utility companies are not likely to volunteer to absorb the significant cost of utility burial because their utility rates don't cover this type of capital cost. Funding for the burial of overhead utilities may have to be approached in a different way.

Several Massachusetts communities have financed the burial of overhead utilities by enacting a local bylaw in accordance with Massachusetts General Law Chapter 166, Section 22D. Towns have filed special legislation to give the municipality the authority to issue bonds to pay for the burial of utilities and to do the work itself, receiving reimbursement from the utility rather than requiring the utility to undertake the work. Under this legislation, the utility is allowed to pass along the cost of funding this arrangement to the rate payers in the form of a two per cent surcharge on their electric and telephone bills.

As an example, in 1999, the Town of Norfolk financed the burial of 3/4 mile of overhead utilities in the town center under this special legislation. The commercial users and 3,000 households in the town were surcharged 2% of their electric and telephone bills by the utility companies. To a median (at that time) $ 55.00 monthly residential electric bill, $1.10 was added (2%). To a median $ 89.00 monthly residential telephone /CATV bill, $1.78 was added (2%). The total surcharge for this hypothetical family was $ 2.88 / month. Under a best-case scenario, the annual revenue stream paid to the town as a result of the surcharge was $ 166,000. This allowed the town to pay the principal and interest on a 7-year bond of $ 800,000. This bond was sufficient to allow the Town to pay for the burial of utilities and to install new streetlights within the town center.

Funding will not require a ballot question because it is not a debt exclusion.

Funding and Phasing

One of the critical issues involved in the realization of improvements to Columbian Square is the source of funding for capital improvements. While mitigation funds made available through the development of the South Weymouth Naval Air Station will make a significant contribution to the realization of the Town's vision, the entirety of the urban design improvement program may not be economically feasible for the Town to undertake without funding support from other agencies.

Opinion of Cost

The total cost for implementing the all of the pedestrian and traffic improvements concepts proposed for the Columbian Square district is difficult to estimate with any degree of certainty before a reliable survey is completed and the streetscape design has advanced to the 25% level. Preliminary Opinions of Cost have been developed based on the Conceptual Design and are detailed in the Appendix.

Funding Sources

The capital improvements to Columbian Square will involve funding for both design and implementation. The full range of local, state and federal sources should be explored as part of the implementation effort for the urban design improvement initiative. A brief description of a number of public funding programs that may have relevance to the implementation of the Columbian Square district streetscape and traffic improvements follows.

Source:	MA Community Development Action Grant
Amounts:	$1 million cap; requires match by the Town.
Uses:	Community and development funds for economic development; no restriction on spending, but must be spent on publicly-owned facilities.
Timing:	State-appropriated and bonded every four years.
Note:	Matching funds can come from Town's CDBG funds.

Source:	Public Works Economic Development Grant
Amounts:	Up to $1 million spent every two years.
Uses:	Public works infrastructure improvements that result in economic enhancement, possibly including streetscape improvements in line with the economic enhancement potential of the improvements.
Timing:	Every two years.

Source:	Community Development Block Grants (CDF2)
Amounts:	Up to $ 1 million per year.
Uses:	Uses Streetscape improvements if the surrounding area is shown to meet certain needs criteria. CDBG funds may be matched to dollars obtained from other sources.
Timing:	Yearly

Source:	MA Ready Resource Fund
Amounts:	Up to $400,000 per year.
Uses:	Public facilities, parking lots and infrastructure improvements for the enhancement of commercial districts (a more targeted subsection of Community Development Block Grant program).
Timing:	NA

Source:	MA Department of Environmental Management - Historic Landscapes Program
Amounts:	$50,000 maximum.
Uses:	Grants are given to municipalities for historic parks, commons, and public buildings.
Timing:	Annual.

The Town of Weymouth may consider undertaking a historical inventory in the district. At the completion of such a process, it should be possible to determine if any structures or sites are potentially applicable for aid under the Historic Landscapes Program.

Several of these potential funding sources are geared towards urban design and infrastruc-

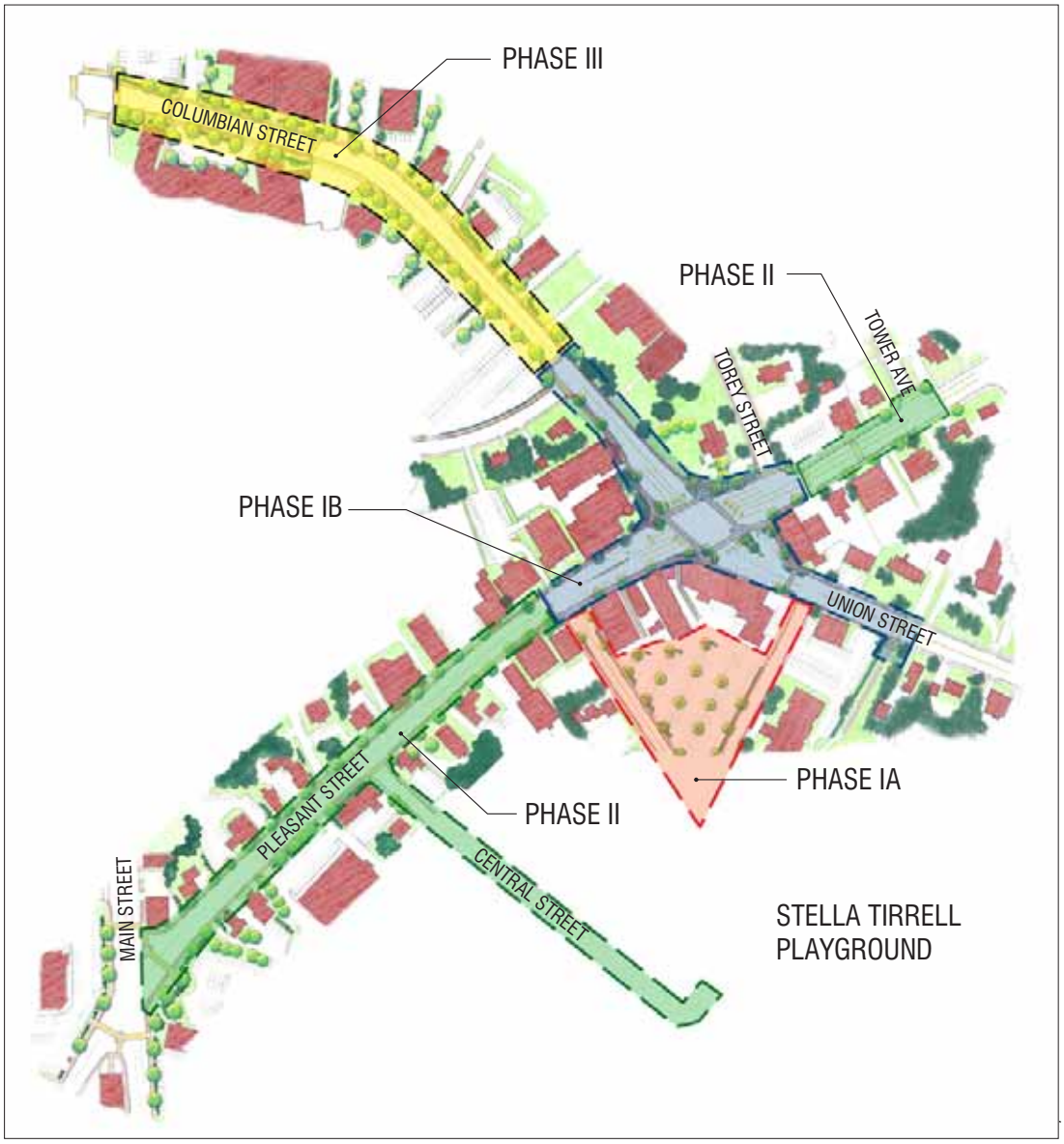

Figure 25: Proposed Phasing

ture improvements, and could be directly applicable to recommendations such as sidewalk, streetscape and lighting improvements.

The likelihood of acquiring funding under any of these programs or other sources depends on a variety of factors, including timing, eligibility, competing applications, aggressive support of elected officials and legislative delegation. Columbian Square occupies such an important location in the Weymouth's history and civic life and the fact that its economic life is being threatened by larger development forces in the region, its comparative position would undoubtedly be strong in any competitive review process.

Phasing

Advancing the Columbian Square Village Center Design plan and its recommendations into concrete actions will require phasing of the work that will allow the Town to construct the work in financially "digestible" components. The Town will also be best served when the work is organized to assure an adequate supply of public parking and to minimize the potential disruption to the operations of business owners in the square. See Figure 25.

Phase I has been organized to implement the intersection improvements in the center of Columbian Square. However, within this phase, a logical order of events dictates that two subphases - executed in close coordination - will allow the most cost-effective sequence of construction and will minimize the disruption to business operations within the square.

Under Phase IA, the municipal parking lot

will be resurfaced and restriped, shade trees, screen plantings and new lights will be installed. Camelot Way and Chauncy Street will be repaved and curbing installed, drainage improvements undertaken, new sidewalks will be constructed and street lights and directional/parking signs installed on these streets. When all improvements to the parking lot and these two streets are completed, clear access to the municipal lot and on-street parking spaces will be provided to shoppers during the construction of later intersection improvements.

Phase IB will be initiated without demobilization after Phase IA. During this phase, Columbian Street and Union Street from Fogg Road to Stella Tirrell Playground and Pleasant Street from Chauncy Street to Torrey Street will be milled and overlaid with new pavement; curbing will be realigned, islands, gores, crosswalks and sidewalk extensions will be constructed. A traffic island will be installed at the Torrey Street intersection. Traffic signals and street lights will be installed in the square, pavement will be striped, sidewalks and 'bumpouts' will be surfaced and the Fogg Library plaza and parking lot will be constructed. Finally, the alleys connecting Pleasant Street to the municipal parking lot will be treated with ornamental pavement and lights (with owners' permission) and landscaping and site furniture will be furnished at the plazas and islands.

During Phase II, streetscape improvements on the southern portion of Pleasant Street will be implemented. Street pavement on Pleasant Street is generally in acceptable condition and is not expected to be reconstructed. Except for the Columbian Square intersection work completed in Phase I, crosswalks and sidewalks will be reconstructed on both sides of Pleasant Street from Main Street to Tower Avenue. A new sidewalk will be constructed on Fogg Road and the sidewalk on the north side of Central Street from Pleasant Street to the parking lot at Stella Tirrell Playground will be improved. A traffic island will be installed at the Tower Avenue intersection, if necessary. With the permission of private lot owners, ornamental pavement indicating pedestrian ways from Fogg Road to Pleasant Street will be installed in the post office and South Shore Savings Bank parking lots. Shade trees will be planted on private lawns along the back of sidewalk, if planting easements can be secured from property owners.

Final construction will take place under Phase III. Columbian Street sidewalks from the Main Street intersection east to Fogg Road will be reconstructed as part of this work and new unit paver crosswalks will be installed at Columbian Street intersections and at the South Shore Hospital. Shade trees will be planted on private lawns along the back of sidewalk, if possible and ornamental street lights will be installed.

While the broad arc of the project phases is somewhat "knowable" based on the Town's anticipated capital budgets and/or mitigation payments received from other developments, there may be other minor appropriations or unanticipated opportunities to implement small, self-contained elements of the plan. These elements should have construction characteristics or geographic limits that will allow them to be separated from their anticipated phase and executed when the revenue stream allows.

Appendix: Cost Estimates

Columbian Square Intersection and Streetscape Improvements - Phase 1A & 1B

Conceptual Design Opinion of Cost

November 29, 2007

Prepared by: The Cecil Group, Jacobs Edwards and Kelcey

Estimated Bid Date: 2010

Assumptions

- Phase 1A Improvement Zone includes sidewalk and roadway improvements to Chauncy St. to the Camelot Way intersection and on Camelot Way. Work also includes improvements to the municipal parking lot. This work is intended to make improvements to the municipal parking lot in advance of the work within Columbian Square that will at least temporatily remove a number of on-street parking spaces. Pavements will be milled and overlaid, the lot will be restriped, alley improvements executed (w/ permission of property owners) and landscaping installed
- Phase 1B Improvement Zone is primarily the immediate vicinity of the Columbian Square intersection. The zone extends from Chauncy Street east on Pleasant Street to east side of Torrey Street; southeast on Columbian Street from Fogg Rd to SE side of Camelot Way on Union Street. Sidewalk improvements extend on Union St to Stella Tirrell Playground entry.
- Phase 1B improvements consist of realigned curbs within the intersection, new traffic islands, curb line revisions at "bump-outs" traffic signals, embossed asphalt pavement at crosswalks, pavement striping, new sidewalk pavement, plaza treatment at Fogg Library and Stella Tirrell Playground, site furniture, street trees and ornamental lighting.
- Assume Phase 1B follows Phase 1A without delay or demobilization
- Assume intersection street pavements to be milled and overlaid
- Assume pavement base at sidewalks to be re-useable
- Cost of utility burial (incl. trenching and backfill) is carried elsewhere

Phase 1A Improvements

Item No.	Description	Unit	Unit Price	Quantity	Amount	Remarks
01500	**Project Mobilization**	LS	1		**$15,000**	Field office, project sign, temporary power, equipment transport, etc. Lump sum allowance
01570	**Site Preparation**	LS	1		**$1,500**	Tree protection, sediment control: Lump sum allowance
02120	**Selective Demolition**				**$12,910**	
	Sawcutting	LF	1400	5.00	$7,000	Cut existing Chauncy Street pavement at proposed curb line and at sidewalk pavement at bldg faces
	Remove and stockpile curb	LF	60	16.00	$960	Remove and stockpile existing curb at Chauncy St
	Street and sidewalk pavement demolition	CY	90	55.00	$4,950	Demolish and remove existing pavement at locations of prop sidewalk pavements
02200	**Earthwork**				**$26,006**	
	Excavation	CY	460	21.00	$9,660	Allowance for unclassified excavation at prop curb and sidewalks
	Gravel borrow	CY	290	25.00	$7,250	Allowance for offsite gravel material for Chauncy St and Camelot Way sidewalk pavemants and curbs as required
	Dense graded crushed stone at new curblines	CY	18	22.00	$396	8" base course
	Backfill	CY	150	18.00	$2,700	Allowance for backfil and compaction at curbs
	Fine grading and compacting	SY	1,500	4.00	$6,000	Final grading of new sidewalk surfaces. Spread gravel as req'd from offsite source

Columbian Square Intersection and Streetscape Improvements - Phase 1A & 1B						
Conceptual Design Opinion of Cost						
November 29, 2007						
Prepared by: The Cecil Group, Jacobs Edwards and Kelcey						
Estimated Bid Date: 2010						
02510	**Bituminous Concrete Paving and Traffic Markings**				**$167,575**	
	Mill and overlay bit. conc. street pavement	SF	62300	2.25	$140,175	1.5" mill depth; 2" overlay incl Chauncy St, Camelot Way and muni parking lot
	Pavement striping	LS			$8,500	Allowance for road and parking lot striping.
	Embossed/Stamped Bituminous Conc. Pavement	SF	2700	7.00	$18,900	"StreetPrint" process. Assume mat'l sprd and rolled, base course and finish course embossed and colored at alleys from Pleasant St.
02515	**Concrete Paving**				**$36,000**	
	Cement concrete sidewalks	SF	7,200	$5.00	$36,000	Concrete sidewalks (4' w) on Chauncy and Camelot. System incl. 4" cement concrete, expansion joints @ 30' and scoring pattern.
02526	**Granite Curb**				**$60,100**	
	Reset granite curbing - Straight	LF	60	25.00	$1,500	Chauncy St curb from stockpile
	Granite curbing - Radius	LF	85	40.00	$3,400	New 6" x 18" radius curb at Chauncy St muni lot entries
	Granite curbing - Straight	LF	660	40.00	$26,400	New 6" x 18" straight curb on both sides of Chauncy St
	Granite curbing - Radius	LF	160	40.00	$6,400	New 6" x 18" radius curb inside muni lot
	Granite curbing - Straight	LF	560	40.00	$22,400	New 6" x 18" straight curb inside muni lot
02600	**Site Utilities**				**$25,000**	
	Street storm drainage system	LS	1		$25,000	Allowance for street drainage improvements on Chauncy and Camelot Way
02782	**Unit Pavers**				**$97,200**	
	Brick Pavers	SF	3,600	$27.00	$97,200	Accent band brick pavers at both Chauncy St and Camelot Way sidewalks - set hand tight on 4" conc. slab and bit. conc. leveling bed.
02870	**Site Furnishings**				**$7,500**	
	Signage	LS	1	7500.00	$7,500	Allowance for parking directional / information signs at Chauncy St., Camelot Way and at alley "mouths"
02900	**Landscaping**				**$28,700**	
	Street trees	EA	21	1200.00	25200.00	Deciduous trees on Chauncy St. and in muni lot
	Landscape shrubs	LS	1	3500.00	$3,500	Deciduous/evergreen shrubs on Chauncy St. and in muni lot.
16520	**Street Lighting**				**$136,800**	

Columbian Square Intersection and Streetscape Improvements - Phase 1A & 1B						
Conceptual Design Opinion of Cost						
November 29, 2007						
Prepared by: The Cecil Group, Jacobs Edwards and Kelcey						
Estimated Bid Date: 2010						
	Street Light	EA	12	8500.00	$102,000	Ornamental roadway lighting to be approx. 20'+ pole hgt. 80' o.c. spacing on Chauncy, Camellot and in muni lot. Furnished, installed with footings, conduit, wiring, connections and controls.
	Alley Street Light	EA	6	5800.00	$34,800	Ornamental street lights at alleys to be approx. 16' pole hgt. 75' o.c. spacing. Furnished, installed with footings, conduit, wiring, connections and controls.
	Site Improvements Total				**$614,291**	
	Construction Contingency				$122,858.20	*20 % of construction cost at Visioning Phase for unanticipated conditions.*
	Construction Total				**$737,149**	Construction + Contingency
	General Conditions, Overhead and Profit				$110,572	15% of Construction Total
	Soft Costs				**$104,329**	
	Site Survey	LS	1	8500.00	$8,500	Allowance
	Design/Engineering				$88,458	Allowance - Assumed 12% of construction cost
	Permitting				$7,371	Allowance - Assumed 1% of construction cost
	Total Phase 1A Cost (Y 2010 dollars)				**$952,051**	
	Phase 1B Improvements					
Item No.	**Description**	**Unit**	**Unit Price**	**Quantity**	**Amount**	**Remarks**
01500	**Project Mobilization**	LS	1		**$0**	Carried in Phase 1A
01570	**Site Preparation**	LS	1		**$3,500**	Tree protection, sediment control: Lump sum allowance
02120	**Selective Demolition**				**$56,575**	
	Sawcutting	LF	2670	5.00	$13,350	Cut existing street pavement at curb line to be adjusted, alleys and sidewalk pavement at bldg faces.
	Remove and stockpile curb	LF	725	16.00	$11,600	Remove and stockpile existing curb at locations of prop. curb "bumpouts"
	Street and sidewalk pavement demolition	CY	575	55.00	$31,625	Demolish and remove existing street pavement at "bumpouts" , islands and sidewalk pavements

Columbian Square Intersection and Streetscape Improvements - Phase 1A & 1B						
Conceptual Design Opinion of Cost						
November 29, 2007						
Prepared by: The Cecil Group, Jacobs Edwards and Kelcey						
Estimated Bid Date: 2010						
02200	**Earthwork**				**$140,128**	
	Excavation	CY	5,500	21.00	$115,500	Allowance for unclassified excavation at "bumpouts", islands, and newly paved areas
	Gravel borrow	CY	250	22.00	$5,500	Allowance for offsite gravel material for new pavemant at "bumpouts" parking areas and other locations as required
	Dense graded crushed stone at new curblines	CY	24	22.00	$528	8" base course
	Backfill	CY	350	16.00	$5,600	Allowance for backfil and compaction at curbs
	Fine grading and compacting	SY	3,250	4.00	$13,000	Final grading of new sidewalk surfaces, plazas and new pavement at "bumpouts". Spread gravel as req'd from offsite source
02510	**Bituminous Concrete Paving and Traffic Markings**				**$240,395**	
	Class I Bit. Conc. Pavement - Type I-1	Ton	60	85	$5,100	New pavement at Fogg Library parking area - Allowance
	Mill and overlay bit. conc. street pavement	SF	78,500	2.25	$176,625	1.5" mill depth; 2" overlay Pleasant St., Columbian St., Union St.
	Embossed/Stamped Bituminous Conc. Pavement	SF	7,310	7.00	$51,170	"StreetPrint" process. Assume mat'l sprd and rolled, base course and finish course embossed and colored at crosswalks.
	Pavement striping	LS			$7,500	Allowance for roadway striping.
02515	**Concrete Paving**				**$104,950**	
	Cement concrete sidewalks	SF	5,970	5.00	$29,850	Concrete sidewalks on Union St., at plazas, and seating areas. System incl. 4" cement concrete, expansion joints @ 30' and scoring pattern.
02526	**Granite Curb**				**$43,950**	
	Reset granite curbing	LF	670	25.00	$16,750	Curb from stockpile
	Granite curbing - Radius	LF	360	40.00	$14,400	New 6" x 18" radius curb at "bumpouts"
	Granite curbing - Straight	LF	320	40.00	$12,800	New 6" x 18" straight curb at at Main Street "bumpouts"
02600	**Site Utilities**				**$60,000**	
	Street storm drainage system	LS	1		$40,000	Allowance for replacing / remodeling drainage structures
	Electrical Upgrades	LS	1		$20,000	Allowance for improving electrical infrastructure to support new traffic signals
02782	**Unit Pavers**				**$368,520**	
	Concrete Unit Pavers at Fogg Library plaza	SF	500	24.00	$12,000	Concrete pavers in accent bands at plaza. Pavers set hand tight on 4" conc. slab and bit. conc. bedding.

Columbian Square Intersection and Streetscape Improvements - Phase 1A & 1B						
Conceptual Design Opinion of Cost						
November 29, 2007						
Prepared by: The Cecil Group, Jacobs Edwards and Kelcey						
Estimated Bid Date: 2010						
	Brick Pavers	SF	15,100	22.00	$332,200	Brick pavers at Pleasant, Columbian, Union St. sidewalks - set hand tight on 4" conc. slab and bit. conc. leveling bed.
	Granite Rubble Block Pavement	SF	640	38.00	$24,320	Granite "cobbles" at street gores - on 8" conc. slab and mortared joints.
02870	**Site Furnishings**				**$31,950**	
	Signage	LS	1	5000.00	$5,000	Allowance for pedestrian information signs
	Benches	EA	18	1000.00	$18,000	Six foot site benches with backs
	Bike Racks	EA	4	750.00	$3,000	
	Tree Grates	EA	7	850.00	$5,950	
02900					**$38,700**	
	Street trees	EA	26	1200.00	$31,200	Deciduous trees on streets.
	Landscape shrubs	LS	1	7500.00	$7,500	Allowance for deciduous/evergreen shrubs at "bumpouts and other public locations on streets/alleys.
03300	**Cast in Place Concrete**				**$43,500**	
	Cast in Place Seat Wall	CY	145	300.00	43500.00	Seat wall at Fogg Library plaza
	Traffic Controls				**$308,000**	
	Traffic Signal System	LS	1	300000.00	$300,000	Signals on ornamental masts. Furnished, installed with footings, conduit, wiring, connections and controls, detector loops and pedestrian phase controls.
	Signage	LS	1	8000.00	$8,000	Allowance for regulatory/direction signs
16520	**Street Lighting**				**$284,000**	
	Street Light	EA	30	8500.00	$255,000	Ornamental roadway lighting to be approx. 20'+ pole hgt. 80' o.c. spacing. Furnished, installed with footings, conduit, wiring, connections and controls.
	Pedestrian Light	EA	5	5800.00	$29,000	Ornamental pedestrian lights at plazas to be approx. 16 pole hgt. 60' o.c. spacing. Furnished, installed with footings, conduit, wiring, connections and controls.
	Site Improvements Total				**$1,724,168**	
	Construction Contingency				$344,833.60	*20 % of construction cost at Conceptual Design Phase for unanticipated conditions.*
	Construction Total				**$2,069,002**	Construction + Contingency
	General Conditions, Overhead and Profit				$310,350	15% of Construction Total

Columbian Square Intersection and Streetscape Improvements - Phase 1A & 1B						
Conceptual Design Opinion of Cost						
November 29, 2007						
Prepared by: The Cecil Group, Jacobs Edwards and Kelcey						
Estimated Bid Date: 2010						
	Soft Costs				**$288,970**	
	Site Survey	LS	1	20000.00	$20,000	Allowance
	Design/Engineering				$248,280	Allowance - Assumed 12% of construction cost
	Permitting				$20,690	Allowance - Assumed 1% of construction cost
	Total Phase 1B Project Cost (Y 2008 dollars)				**$2,668,322**	

Columbian Square Intersection and Streetscape Improvements - Phase II

Conceptual Design Opinion of Cost

November 29, 2007

Prepared by: The Cecil Group, Jacobs Edwards and Kelcey

Estimated Bid Date: 2010

Assumptions

- Phase II Improvement Zone includes sidewalk and roadway improvements on Pleasant St. from Main Street to Chauncy Street and the Central Street sidewalk to Stella Tirrell Playground parking lot. Work also includes Pleasant Street improvements between Torrey Street and Tower Avenue.
- Phase II improvements consist of some limited street pavement being milled and overlaid, curb line revisions at "bump-outs", embossed asphalt pavement at crosswalks, pavement striping, new sidewalk pavement, street trees and ornamental lighting.
- Assume pavement base at sidewalks to be re-useable
- Cost of utility burial (incl. trenching and backfill) is carried elsewhere

Phase II Improvements

Item No.	Description	Unit	Quantity	Unit Price	Amount	Remarks
01500	**Project Mobilization**	LS	1		**$12,000**	Field office, project sign, temporary power, equipment transport, etc. Lump sum allowance
01570	**Site Preparation**	LS	1		**$3,500**	Tree protection, sediment control: Lump sum allowance
02120	**Selective Demolition**				**$16,250**	
	Sawcutting	LF	2260	5.00	$11,300	Cut existing Pleasant Street pavement at proposed side street crosswalks and driveways
	Remove and stockpile curb	LF	0	16.00	$0	Remove and stockpile existing curb at proposed Pleasant St bumpouts
	Street and sidewalk pavement demolition	CY	90	55.00	$4,950	Demolish and remove existing pavement at locations of prop crosswalks and new sidewalk pavements
02200	**Earthwork**				**$17,865**	
	Excavation	CY	255	21.00	$5,355	Allowance for unclassified excavation at prop curb, crosswalks and sidewalks
	Gravel borrow	CY	180	25.00	$4,500	Allowance for offsite gravel material for Pleasant St sidewalk pavements and crosswalks as required
	Dense graded crushed stone at new curblines	CY	25	22.00	$550	8" base course - Allowance
	Backfill	CY	30	18.00	$540	Allowance for backfill and compaction at Torrey St/Tower Ave island curbs
	Fine grading and compacting	SY	1,730	4.00	$6,920	Final grading of new crosswalk and sidewalk surfaces. Spread gravel as req'd from offsite source
02510	**Bituminous Concrete Paving and Traffic Markings**				**$48,765**	
	Mill and overlay bit. conc. street pavement	SF	7500	2.25	$16,875	Allowance 1.5" mill depth; 2" overlay at limited locations on Pleasant St
	Pavement striping	LS			$5,500	Allowance for road striping.

Columbian Square Intersection and Streetscape Improvements - Phase II						
Conceptual Design Opinion of Cost						
November 29, 2007						
Prepared by: The Cecil Group, Jacobs Edwards and Kelcey						
Estimated Bid Date: 2010						
	Embossed/Stamped Bituminous Conc. Pavement	SF	3770	7.00	$26,390	"StreetPrint" process. Assume mat'l sprd and rolled, base course and finish course embossed and colored at Pleasant St. crosswalks.
02515	**Concrete Paving**				**$33,000**	
	Cement concrete sidewalks	SF	6,600	$5.00	$33,000	Concrete sidewalks (4' w) on Pleasant St. between Torrey and Tower - and on Central St. System incl. 4" cement concrete, expansion joints @ 30' and scoring pattern.
02526	**Granite Curb**				**$4,890**	
	Reset granite curbing - Straight	LF	115	30.00	$3,450	New 6" x 18" straight curb at islands
	Granite curbing - Radius	LF	36	40.00	$1,440	New 6" x 18" radius curb at islands
02600	**Site Utilities**				**$35,000**	
	Street storm drainage system	LS	1		$35,000	Allowance for street drainage improvements on Pleasant Street
02782	**Unit Pavers**				**$346,950**	
	Brick Pavers	SF	12,850	$27.00	$346,950	Brick sidewalks on Pleasant St. Accent band brick pavers at Pleasant St between Torrey and Tower and on Central St sidewalks - set hand tight
02870	**Site Furnishings**				**$4,500**	
	Signage	LS	1	4500.00	$4,500	Allowance for parking directional / information signs at Pleasant St. intersections
02900	**Landscaping**				**$39,600**	
	Street trees	EA	33	1200.00	39600.00	Deciduous trees on Pleasant St.
16520	**Street Lighting**				**$187,000**	
	Street Light	EA	22	8500.00	$187,000	Ornamental roadway lighting to be approx. 20'+ pole hgt. 80' o.c. spacing on Pleasant St. Furnished, installed with footings, conduit, wiring, connections and controls.
	Site Improvements Total				**$749,320**	
	Construction Contingency				$149,864.00	*20 % of construction cost at Visioning Phase for unanticipated conditions.*
	Construction Total				**$899,184**	Construction + Contingency
	General Conditions, Overhead and Profit				$134,878	15% of Construction Total
	Soft Costs				**$131,394**	
	Site Survey	LS	1	14500.00	$14,500	Allowance

Columbian Square Intersection and Streetscape Improvements - Phase II						
Conceptual Design Opinion of Cost						
November 29, 2007						
Prepared by: The Cecil Group, Jacobs Edwards and Kelcey						
Estimated Bid Date: 2010						
	Design/Engineering				$107,902	Allowance - Assumed 12% of construction cost
	Permitting				$8,992	Allowance - Assumed 1% of construction cost
	Total Phase II Cost (Y 2009 dollars)				**$1,165,456**	

Columbian Square Intersection and Streetscape Improvements - Phase III

Conceptual Design Opinion of Cost

November 29, 2007

Prepared by: The Cecil Group, Jacobs Edwards and Kelcey

Estimated Bid Date: 2010

Assumptions

- Phase III Improvement Zone includes sidewalk and roadway improvements on Columbian St. from Main Street to Fogg Road and along Fogg Rd (900LF).
- Phase III improvements consist of some limited Columbian Street pavement being milled and overlaid, embossed asphalt pavement at crosswalks, pavement striping, new sidewalk pavement, street trees and ornamental lighting.
- Assume pavement base at sidewalks to be re-useable
- Cost of utility burial (incl. trenching and backfill) is carried elsewhere

Phase III Improvements

Item No.	Description	Unit	Quantity	Unit Price	Amount	Remarks
01500	**Project Mobilization**	LS	1		**$10,000**	Field office, project sign, temporary power, equipment transport, etc. Lump sum allowance
01570	**Site Preparation**	LS	1		**$2,500**	Tree protection, sediment control: Lump sum allowance
02120	**Selective Demolition**				**$33,550**	
	Sawcutting	LF	2310	5.00	$11,550	Cut existing Columbian Street pavement at proposed crosswalks and sidewalk pavements
	Street and sidewalk pavement demolition	CY	400	55.00	$22,000	Demolish and remove existing pavement at locations of prop crosswalks and new sidewalk pavements
02200	**Earthwork**				**$18,775**	
	Excavation	CY	75	21.00	$1,575	Allowance for unclassified excavation at prop crosswalks and sidewalks
	Gravel borrow	CY	80	25.00	$2,000	Allowance for offsite gravel material for Columbian St sidewalk pavements, crosswalks and curbs as required
	Dense graded crushed stone at new curblines	CY	0	22.00	$0	8" base course - Allowance
	Backfill	CY	0	18.00	$0	Allowance for backfil and compaction at curbs
	Fine grading and compacting	SY	3,800	4.00	$15,200	Final grading of new crosswalk and sidewalk surfaces. Spread gravel as req'd from offsite source
02510	**Bituminous Concrete Paving and Traffic Markings**				**$43,875**	
	Mill and overlay bit. conc. street pavement	SF	5500	2.25	$12,375	Allowance 1.5" mill depth; 2" overlay at limited locations on Columbian St
	Pavement striping	LS			$3,500	Allowance for road striping.
	Embossed/Stamped Bituminous Conc. Pavement	SF	4000	7.00	$28,000	"StreetPrint" process. Assume mat'l sprd and rolled, base course and finish course embossed and colored at Columbian St. crosswalks.

Columbian Square Intersection and Streetscape Improvements - Phase III						
Conceptual Design Opinion of Cost						
November 29, 2007						
Prepared by: The Cecil Group, Jacobs Edwards and Kelcey						
Estimated Bid Date: 2010						
02515	**Concrete Paving**				**$64,500**	
	Cement concrete sidewalks	SF	12,900	$5.00	$64,500	Concrete sidewalks (4' w) on Columbian St. between Main St and Burton Terrace - and on Fogg Road. System incl. 4" cement concrete, expansion joints @ 30' and scoring
02526	**Granite Curb**				**$0**	
	Reset granite curbing - Straight	LF	0	25.00	$0	Pleasant St curb from stockpile - Allowance
	Granite curbing - Radius	LF	0	40.00	$0	New 6" x 18" radius curb - Allowance
02600	**Site Utilities**				**$20,000**	
	Street storm drainage system	LS	1		$20,000	Allowance for street drainage improvements on Columbian Street
02782	**Unit Pavers**				**$490,320**	
	Brick Pavers	SF	18,160	$27.00	$490,320	Brick sidewalks on south side of Columbian St. Accent band brick pavers at Columbian St sidewalks between Main and Burton Terr. and on Fogg Rd - set hand tight on 4" conc. slab and bit. conc. leveling bed.
02870	**Site Furnishings**				**$1,500**	
	Signage	LS	1	1500.00	$1,500	Allowance for parking directional / information signs at Columbian St. intersections
02900	**Landscaping**				**$44,400**	
	Street trees	EA	37	1200.00	44400.00	Deciduous trees on Columbian St.
16520	**Street Lighting**				**$246,500**	
	Street Light	EA	29	8500.00	$246,500	Ornamental roadway lighting to be approx. 20'+ pole hgt. 80' o.c. spacing on Columbian St. Furnished, installed with footings, conduit, wiring, connections and controls.
	Site Improvements Total				**$975,920**	
	Construction Contingency				$195,184.00	*20 % of construction cost at Visioning Phase for unanticipated conditions.*
	Construction Total				**$1,171,104**	Construction + Contingency
	General Conditions, Overhead and Profit				$175,666	15% of Construction Total
	Soft Costs				**$161,744**	
	Site Survey	LS	1	9500.00	$9,500	Allowance

Columbian Square Intersection and Streetscape Improvements - Phase III						
Conceptual Design Opinion of Cost						
November 29, 2007						
Prepared by: The Cecil Group, Jacobs Edwards and Kelcey						
Estimated Bid Date: 2010						
	Design/Engineering				$140,532	Allowance - Assumed 12% of construction cost
	Permitting				$11,711	Allowance - Assumed 1% of construction cost
	Total Phase II Cost (Y 2010 dollars)				**$1,508,513**	

Columbian Square Intersection and Streetscape Improvements - Overhead Utility Burial

Conceptual Design Opinion of Cost

November 29, 2007

Prepared by: AP Franco & Associates

Estimated Bid Date: 2009

Assumptions

- Overhead Utility Burial Zone - Pleasant St. from Main Street to Torrey Street - Columbian Street from Main Street to Columbian square and extending east on Union Street to the entry to Stell Tirrell Playgound
- Overhead utility burial improvements consist of sawcutting pavements, trenching, furnishing and installing conduit, manholes, handholes, switch gear, transformers, some rerouting of overhead lines to rear of buildings and pavement repair.
- Lump sum costs were developed and provided by individual utility provider - including labor and switching costs.
- Costs do not include cost of connection to the individual customer or costs of required upgrades to customers' property to accommodate new services.
- Costs assume utility burial will be a "stand-alone" project - that is, not coordinated with other street scape work. If the work can be coordinated with other street/sidewalk construction, efficiencies in some work items may be realized.

Overhead Utility Burial

Item No.	Description	Unit	Quantity	Unit Price	Amount	Remarks
01500	**Project Mobilization**	LS	1		**$5,000**	Field office, temporary power, equipment transport, etc. Lump sum allowance
01570	**Site Preparation**	LS	1		**$3,500**	Tree protection, sediment control: Lump sum allowance
02120	**Selective Demolition**				**$57,625**	
	Sawcutting	LF	8400	5.00	$42,000	Cut existing Pleasant Street and Columbian Street and sidewalk pavement at proposed utility alignment
	Street and sidewalk pavement demolition	CY	625	25.00	$15,625	Demolish and remove existing pavement at locations of prop utility ductbank and manhole locations
02200	**Earthwork**				**$288,600**	
	Excavation	CY	7,460	21.00	$156,660	Allowance for unclassified excavation at prop ductbank
	Backfill	CY	6,500	18.00	$117,000	Allowance for backfil and compaction at ductbank
	Fine grading and compacting	SY	3,735	4.00	$14,940	Final grading of fill at restored pavement surfaces.
	Electric Utility Burial				**$2,205,000**	
	Electrical utility burial	LS	1	#########	$2,205,000	Lump sum per National Grid estimate - incl provision of overhead electric service to w/i 2 feet of rear of customers' building

Columbian Square Intersection and Streetscape Improvements - Overhead Utility Burial						
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	Telephone/CATV Utility Burial				**$1,092,650**	
	Telephone utility burial	LS	1	300000.00	$300,000	Lump sum as estimated by Verizon - incl. provision of overhead service to w/i 2 feet of rear of customers' building. Duct bank costs cover Verizon and ComCast conduit requirements as a common ductbank.
	Manholes	EA	12	5600.00	$67,200	
	Handholes	EA	21	3000.00	$63,000	
	12 way ductbank	LF	1,950	110.00	$214,500	
	9 way ductbank	LF	2,025	90.00	$182,250	
	3 way ductbank	LF	1,390	30.00	$41,700	
	Risers	EA	5	5000.00	$25,000	
	ComCast / CATV utility burial	LS	1	100000.00	$100,000	Lump sum - incl provision of overhead service to w/i 2 feet of rear of customers' building
	Handholes	EA	33	3000.00	$99,000	
	Fire Alarm Burial				**$20,000**	
	Fire alarm Burial burial	LS	1	20000.00	$20,000	Lump sum estimate - incl. provision of overhead service to w/i 2 feet of rear of customers' building.
	Connections at Buildings				**$383,000**	
	Service connections at private property	LS	1	383000.00	$383,000	Estimate for service connections at rear of customers' building.
02510	**Bituminous Concrete Paving**				**$117,600**	
	Hot mix asphalt street pavement	SF	33600	3.50	$117,600	Street pavement patch on Pleasant Street and Columbian Street
02900	**Landscaping**				**$7,500**	
	Landscape screening at surface-mounted equipment	LS	1	$7,500.00	$7,500	Allowance
	Site Improvements Total				**$4,180,475**	
	Construction Contingency				$418,047.50	*10 % of construction cost at Visioning Phase for unanticipated conditions (only if project is constructed w/o coordination with intersection/streetscape work).*
	Construction Total				**$4,598,523**	Construction + Contingency
	Soft Costs				**$499,852**	

Columbian Square Intersection and Streetscape Improvements - Overhead Utility Burial						
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Estimated Bid Date: 2009						
	Design/Engineering				$459,852	Allowance - Assumed 10% of construction cost
	Police details	LS	1		$40,000	
	Total Utility Burial Cost				**$5,098,375**	

THE CECIL GROUP, INC.
JACOBS/EDWARDS & KELSEY
A.P. FRANCO ASSOCIATES