CITY OF SOMERVILLE, MASSACHUSETTS
OFFICE OF STRATEGIC PLANNING AND COMMUNITY DEVELOPMENT
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Case #: PB2009-5
Site: Assembly Square Phase 1AA
Date: 8/20/2009
Recommendation: Conditional Approval

PLANNING STAFF REPORT

Site: Assembly Square Phase 1AA (Assembly Square Drive and IKEA)

Applicant Name: FR Sturtevant Street, LLC
Property Owner Name: FR Sturtevant Street, LLC & FR Assembly Square, LLC
Property Owner Address: 1626 East Jefferson Street Rockville, MD 20852
Alderman: William Roche

Legal Notice:
The Applicant, FR Sturtevant Street, LLC, and its Agent, Hugh Hahn, Vanasse Hangen Brustlin, Inc. seek Special Permit with Site Plan Review-A final level approval of a phase ("Phase 1AA") of a planned unit development (S.Z.O. §16.8.3) including a store selling furniture, home furnishings, and carpets (IKEA) (S.Z.O. §7.11.9.7.c) and a restaurant (S.Z.O. §7.11.10.1.1.c), roadways, infrastructure, and associated improvements serving Phase 1AA, and dedication of useable open space available to the public, all under the Planned Unit Development Preliminary Master Plan approved by the Planning Board on December 14, 2006. The Applicant also seeks a Special Permit for signage for Phase 1AA (S.Z.O. §6.4.14.C & §12.4).

The owners of the parcels subject to these applications are:
FR Sturtevant Street, LLC – Parcels 99-A-2, 99-A-3, 99-A-4, 99-A-5, 99-A-7, 99-A-8, 99-A-6, 101-B-24
FR Assembly Square, LLC – Parcels 67-A-1, 86-A-1
These parcels are also commonly known as 16-34 and 100 Assembly Square Drive (f/k/a Sturtevant Street), 123 and 147 Foley Street, the so-called "Yard 21 Parcel" and the proposed area of Assembly Square Drive.

Assembly Square Mixed Use District (ASMD); Planned Unit Development Overlay District - A (PUD-A).

Zoning District/Ward: Assembly Square Mixed Use District (ASMD); Planned Unit Development Overlay District - A (PUD-A) / Ward 1
Zoning Approval Sought: SPSR-A under SZO§16.8.3, §6.4.14.C & §12.4
Date of Application: July 28, 2009
Date(s) of Public Hearing: August 20, 2009

CONTENTS

I. BACKGROUND / PERMITTING PROCESS

This application (PB2009-5) is a new Special Permit with Site Plan Review A and Special Permit for signage to replace a previously approved application (PB2007-29). That original plan was revised several times in the approximately two years since the approval in October 2007. The materials submitted for this current application includes the materials submitted in the original application as revised through prior amendments approved by the Planning Board or *de minimis* changes approved by the Planning Director (the Site Plan Approval for subdivision approved in the original application remains in effect and is not included in this new permit application). The following outlines the evolution of the original proposal:

On December 14, 2006, the Planning Board granted Planned Unit Development-A-Preliminary Master Plan (PUD-PMP) approval, subject to certain conditions, for a development area that includes the subject property.

On October 18, 2007, the Planning Board granted conditional approval of (PB2007-29):

- SPSR-A for final level approval of a phase of the PUD (§6.4.9), including construction of the IKEA store and reconstruction and realignment of Assembly Square Drive;
- Special Permit for signage in order to exceed the maximum height and area of allowable signage (SZO §6.4.14.c); and,
- Site Plan Approval for subdivision of parcels (SZO §5.4).

On October 16, 2008, the Planning Board (PB2007-29-R0908) granted approval to revise the SPSR-A in order to accommodate certain changes to the building and the site including the accommodation of the future multi-use path, reduction and configuration of parking facilities, removal of outside vehicular ramp, alteration of façade (egress stairs and addition of windows to west and north façades), revision of drainage and other underground utility design to accommodate site changes; and to revise the Special Permit for Signage in order to reconfigure the sign plan.

On December 18, 2008 the Planning Board (PB2007-29-R1108) granted approval for revisions to the layout of Assembly Square Drive with associated revisions to the Site Plan Approval for subdivision.

On August 6, 2009 the Planning Board (PB2007-29-R0709) granted approval for revisions to the gateway elements and landscaping at the intersection of Assembly Square Drive and Mystic Avenue and to incorporate landscaping elements along the eastern side of Assembly Square Drive.

On January 22, 2009, May 13, 2009 and August 13, 2009, *de minimis* revision applications were approved by the Planning Director that slightly altered the path, building, landscape and Assembly Square Drive plans.

The applicant is requesting new Special Permit with Site Plan Review A and Special Permit for signage that incorporates all actions taken up to this date. The Preliminary Master Plan approved in December 2006 and the Site Plan Approval for subdivision approved in 2007 remain in effect.

II. DESCRIPTION OF PROPERTY

This phase of the PUD consists of two components: the proposed IKEA store, and the reconstruction, realignment and extension of Assembly Square Drive.

IKEA property: The property comprising the proposed IKEA consists of approximately 11.9 acres of developed land, with varied historical use. Until recently, the portion of the site proposed for the IKEA store has been home to for-profit recreational facilities (Good Times, Boston Paintball), industrial uses (Yard 21, Spaulding Brick, Amerigas Propane), and support buildings (sheds and garages). In Fall 2008, these building were demolished and the site is currently vacant. The site has few if any natural features and is generally considered both unsightly and underdeveloped.

Assembly Square Drive: The site also includes the existing Assembly Square Drive roadway, which presently terminates at Foley Street. The proposed realignment and extension of Assembly Square Drive would cover currently vacant land that lies east of and adjacent to the existing parking lot of the Assembly Square Marketplace.

III. DESCRIPTION OF PROPOSAL

The applicant is requesting new Special Permit with Site Plan Review A and Special Permit for signage.

The project consists of the construction of an IKEA store; reconstruction, realignment and extension of Assembly Square Drive; and traffic mitigation at several off-site locations. While the proposal will be described in greater depth in Section V (SPSR-A request) of the report, a summary of the IKEA and Assembly Square Drive proposals follows:

IKEA: The Applicant has demolished previously existing structures on the site in order to erect a single building containing a 340,000 square-foot retail store (IKEA Home Furnishings), an accessory restaurant use, and two levels of structured parking.

> Building design: The building would be positioned close to the intersection of Assembly Square Drive and existing New Road/proposed IKEA Way, with minimum setbacks along these proposed sidewalks. It would be four stories in height, with structured parking on the lower two stories, and retail showrooms and a warehouse on the upper stories. The exterior would be clad in blue metal panels with the southwest corner on Assembly Square Drive accented in yellow.
>
> Parking and Loading: The site would include 1,320 parking spaces, including 1,158 structured spaces and 162 surface parking spaces at the southern end of the site. Loading docks would be on the second story outside level of the parking structure, on the eastern side. One truck loading facility (for home delivery) is located along IKEA Way and would be screened by metal panels and a proposed sign. Parking and loading facilities have been screened with architectural mesh and vines; where this could not be accomplished, stamped concrete is provided instead for

architectural interest. The surface parking lot is triangular and would abut the southerly portion of Assembly Square Drive; this lot includes a pedestrian walkway on the westerly side of the lot in order to connect with pedestrian walkways contained within the parking structure. In addition, the Applicant has committed to providing 200 ground-level parking spaces at the easterly edge of the structure for exclusive weekday use by MBTA riders.

	Min/Max of SZO	***Proposed***
Total Auto Spaces	340 Min	1320
Surface	n/a	162
Structured	n/a	1158
Handicapped	8	40
Compact[1]	Max 20% of required	264
Bicycle	27	30
Loading	9	10

Signage: The Applicant is proposing 6,222 square feet of wall signage and 2,465 square feet of freestanding signage. As these signs exceed the area, height, and quantity allowed under the Ordinance, zoning relief by Special Permit is required. This is discussed further in Section VI (Special Permit for Signage) of the report.

Landscaping and Open Space: Landscaping is proposed along sidewalks and within medians along Assembly Square Drive and IKEA Way, in traffic islands bordering the parking lot, and in two proposed parks. One "pocket park" would be located at the northeast corner of IKEA Way and Assembly Square Drive (the park is proposed for this phase but is not being included in the usable open space calculation for this permit). The other park, called a "rain garden", would double as a bioretention facility at the northeastern edge of the IKEA parcel. Consistent with the approved Preliminary Master Plan, this phase would include 31.8% landscaping (165,388 square feet) and 22.7% usable open space (118,047 square feet). As the Ordinance provides rather broad definitions of landscaping and usable open space, significant discretion is afforded the Planning Board in their review and approval. This is further discussed in Section V (SPSR-A request) of the report.

IKEA Way: A new roadway is proposed (IKEA Way) to extend eastward from Assembly Square Drive at the terminus of New Road. This road will run adjacent to the proposed IKEA building and a portion of the roadway will be constructed prior to the store's opening. An easement for public access is shown on the Applicant's plans and the easement will eventually be dedicated to the City as a public way. Because the easement narrows to less than 40' as its easternmost end, an additional easement over abutting land of the Applicant has been reserved to ensure that this roadway will meet the minimum 40-foot width requirement for public ways.

Hours of Operation: According to the application, hours of operation for customers will be from 10 a.m. to 10 p.m., with deliveries made before and after retail hours. Garbage pickup would also be scheduled for off-hours.

Assembly Square Drive: Consistent with the approved Master Plan, the Applicant is proposing to realign

[1] Under §9.11.c, "…up to twenty percent (20%) of those required spaces may be designed for compact cars". Where provided parking exceeds the minimum requirement, this requirement may be read: at least 80% of required parking spaces must be standard. In the revised proposal, compact parking would represent 78% of required parking; however, over 300% of required parking would be standard. Compact parking would represent 20% of provided parking.

Assembly Square Drive between New Road and Foley Street to allow for its extension along the eastern line of the Assembly Square Marketplace property through to Route 28/Middlesex Fells Parkway. This new roadway would be dedicated to the City, which would vacate the former roadway for future private development.

Assembly Square Drive South of New Road: The proposed cross-section for the portion of Assembly Square south of New Road and IKEA Way would include one travel lane in each direction with bike accommodation (versus a dedicated bike lane), plus standard eight-foot sidewalks and five-foot furnishing strips and medians ranging from six to ten feet in width.

Assembly Square Drive at IKEA Way/New Road: This intersection is the widest cross section because left-hand turning lanes are proposed on all four sides. Pedestrian crossings are assisted here by an island refuge between the proposed pocket park and the IKEA store.

Assembly Square Drive North of New Road to A Street: The cross-section for this portion of Assembly Square Drive varies between New Road and A Street. It is wider than the southerly portion of Assembly Square Drive, containing one travel lane in each direction, but includes continuous street parking on both sides of the street, dedicated bike lanes and wide sidewalks. Four way crosswalks are shown at the intersections with Foley Street and C Street; one crosswalk over Assembly Square Drive is shown at A, B & D Streets and the northern entrance to the Marketplace.

Assembly Square Drive at A Street: The applicant is proposing a single lane roundabout to provide access to A Street from Assembly Square Drive. This would calm traffic and maintain the flow of vehicles entering and exiting the site.

Assembly Square Drive North of A Street to Route 28/Middlesex Fells Parkway: This cross-section features two travel lanes in each direction and a median strip that extends from the roundabout area to the Marketplace entrance.

Off-site Mitigation: In order to mitigate traffic impacts anticipated by the regional draw of the IKEA store as well as impacts of the planned Phase 1A development, mitigation for auto, pedestrian, and bicycle traffic is proposed at several off-site locations. The plans are consistent with the goals of the Assembly Square Unified Design Guidelines for the Public Realm. The proposed mitigation generally includes the following:

Installation of new traffic signal equipment at:

- Route 28 South at Mystic Avenue; and,
- Mystic Avenue U-turn underpass.

Installation of new traffic controlling equipment and pedestrian amenities at:

- Mystic Avenue northbound at Lombardi Street/Assembly Square Drive;
- Mystic Avenue northbound at New Road;
- Middlesex Avenue at Foley Street; and,
- Assembly Square Drive at New Road.

Installation of traffic controlling equipment and pedestrian amenities, and revision of vehicle turning movements at:

- Route 28 at Assembly Square Drive; and,
- Route 28 at Middlesex Avenue.

Installation of new traffic controlling equipment and pedestrian amenities at Broadway and Lombardi Street; and improved connections between the intersections of Broadway at Lombardi Street and Mystic Avenue northbound at Lombardi Street/Assembly Square Drive.

IV. ENVIRONMENTAL REVIEW

The project has undergone separate review by the Massachusetts Environmental Policy Act Office (MEPA), and was approved for a Draft Environmental Impact Report (DEIR) for the entire project on August 15, 2008. The applicant is currently working on the Final Environmental Impact Report (FEIR) for the project. A submittal date for this report has not been established.

V. REQUEST 1: SPSR-A

The Ordinance states "Applications for final level approval of…a phase of the PUD…shall be submitted as application(s) for special permit with site plan review …" (SZO §16.8.3). As the site is located within the Assembly Square Mixed-Use District, the more particular SPSR-A review process applies (SZO §6.4.9).

In SPSR-A review, findings must be made in accordance with the following:

- SZO §6.4.9: Establishes submission requirements, review criteria, development standards, design guidelines, and required findings and determinations specific to SPSR-As. Incorporates additional requirements (listed below) by reference.
- SZO §6.4.7: Establishes development standards and design guidelines for all developments in the ASMD.
- SZO §6.4.8: Establishes development standards and design guidelines for large developments.
- Conditions of Preliminary Master Plan-Planned Unit Development-A (PMP-PUD-A) Approval: As there are many detailed conditions, compliance will be referred to in general terms, except where clarification or modification is needed.

The project's conformance to these submission criteria, review criteria, and PMP-PUD-A conditions is evaluated generally in the following sections. Since SZO §6.4.9 pulls review and submission standards from many parts of the Ordinance, some of these are repetitive; thus detailed findings are attached in Appendix A.

A. Detailed Description of Proposal

This section of the report applies only to the IKEA site and uses language from the SZO Design Guidelines for the ASMD (SZO §6.4.7 & §6.4.8). These guidelines are not mandatory but serve as a baseline for a successful design. This report addresses issues by the topics below:

A. Building Design
B. Site Design
C. Landscaping and Open Space
D. Transportation and Circulation
E. Linkage
F. Conditions of PUD-PMP approval

A. Building Design

While the building's design is firmly based in IKEA's design tradition, bearing signature colors, materials, and signage, it has been significantly modified to suit this uniquely urban setting. In particular, the following modifications have been made:

- The building has been designed and situated in order "to reinforce both existing and future circulation patterns" of existing and future roads, sidewalks, and the proposed MBTA station;
- "Interesting entrance areas" are enhanced by metal canopies and an angled entrance at the foot of the proposed Main Street for Phase 1A. A separate pedestrian entry on IKEA Way helps to "break down the overall scale …and respond to the pedestrian-scale use of Open Space";
- Small setbacks—as close as one foot at points—from proposed IKEA Way and Assembly Square Drive reinforce the streetwall and urban fabric of the new neighborhood;
- The façade features vertical plane changes, which contribute to "visual interest and variety" and improve the large building's relationship to the public realm;
- The building will include two levels of structured parking and only a modicum of surface parking, allowing it to sit on the most compact site of any IKEA in North America;
- Loading facilities are located at the least visible portion of the property and elevated away from any pedestrian conflicts;
- In addition to being screened as described above, the railroad-facing side of the building will be enhanced with a planted fence along the railroad tracks and significant landscaping, minimizing its appearance as the "rear" of the property.
- External stairs create a vertical element that serves to add interest to the façade.
- The main entrance canopies on Assembly Square Drive and IKEA Way incorporate a consistent use of yellow panels and glass to give prominence to these entrances.
- Screening for the inclined portion of the ramps will be accomplished with concrete spandrel panels.

B. Site Design

In accordance with the Preliminary Master Plan, the overall redevelopment in this phase will involve site improvements to utilities, drainage, roadways, traffic, pedestrian and bicycle circulation, and the creation of new landscaping and usable open space. Perhaps most importantly, development of the IKEA on this inland site will allow for more compatible development on the waterfront, where the IKEA was originally granted special permits.

IKEA site: Regarding the IKEA site, requirements of the SZO are generally met. The IKEA property will not itself contain a street grid, but has been designed in anticipation of adjoining a planned grid in Phase 1A, to the north of the site. The building has been designed to give a prominent terminus to the proposed "Main Street" of Phase 1A. The following observations on site design and function are also made.

- Building equipment and service areas have been largely located away from public ways. Like parking and loading facilities, many are also screened;
- Screening of the transformer is not shown on the plans, but would be a condition of approval;
- The Police Department has requested monitoring and communication infrastructure throughout the site (details are included in Appendix C);
- While most trash collection will occur at the eastern, screened portion of the property, by the loading docks, some trash will apparently be picked up adjacent to the bus stop. A condition of approval should be that this cannot occur during the operating hours of the business; and,
- The IKEA building has been situated on the site to accommodate the multi-use path along the eastern edge of the site

Assembly Square Drive: Assembly Square Drive will extend the street grid across the development, by establishing a network of sidewalks and crosswalks and aligning existing Marketplace parking aisles with the "letter" streets proposed for Phase 1A. More detailed analysis on the design of the street network itself is contained in the Transportation discussion (Part D of this section). However, Planning Staff offer the

following general recommendations:

- Street furniture, lighting, and sidewalk/crosswalk treatment should generally conform to the principals of Unifying Design Guidelines for the Public Realm; and,
- Bicycle racks should be consistent with the recommendations of the Bicycle/Pedestrian Coordinator (included in Appendix C).

C. Landscaping and Usable Open Space

As landscaping is a connector between the IKEA site and the roadway, this portion of the report addresses both portions of the application together and is not divided. As previously noted, the Applicant is proposing significant landscaping for the site: 31.8% landscaping (165,388 square feet) and 22.7% usable open space (118,047 square feet). As part of this proposal, the Applicant would build two parks and install significant amounts of landscaping on the site and along public ways. This will be a marked improvement from today's barren conditions.

The site plans illustrate compliance with the landscaping requirements of the SZO (outlined in Appendix A) and the PUD-PMP approval.

Landscaping features include:

- Landscaped medians within Assembly Square Drive (as further described in the Transportation discussion);
- Significant conformance with the Unifying Design Guidelines for the Public Realm;
- Trees within the surface parking area and along the pedestrian walkway;
- Plantings between the surface parking lot and the right-of-way;
- Overall number of trees exceed the requirement (150 compared to 130 required); and,
- A "gateway feature" located at the intersection of Assembly Square Drive and Mystic Avenue.

Furthermore, the Applicant will provide usable open space in the following places:

- Along most portions of Assembly Square Drive, where abundant planting is proposed. This is acceptable under the SZO definition of creating a "network of open spaces";
- The bioretention / "rain garden" on the IKEA property featuring educational exhibits describing its "green" operations; lighting will be installed along the pedestrian paths which connect the IKEA parking lot with the sidewalks serving the proposed MBTA station. Information on how the "rain garden" park will be designed and activated has been submitted to the City;
- Portions of the IKEA Way sidewalk, connecting the pocket park with the rain garden, and housing the bus stop;
- City-owned property at the southerly edge of Assembly Square Drive, on which the Applicant proposes to install (and maintain) landscaping and a path for public use, creating new usable open space;
- "Visually accessible" decorative landscaping in the traffic island south of the surface parking, to be heavily landscaped for passive enjoyment by observers;
- A pocket park featuring plantings, seating, and a decorative colonnade is proposed at the corner of IKEA Way and Assembly Square Drive opposite the bus stop. Although the Applicant proposes to build this park in this phase, it has not been included in the usable open space count for this phase and would be applied toward the calculations for the next phase of the PUD; and,
- A community path will be constructed starting at Mystic Avenue then following along the existing MBTA tracks behind the IKEA building; the path will eventually extend to the water front. The path will feature a variety of landscaping elements. This land would eventually be dedicated to the City as open space and would become a component of a larger path extending along the Mystic River water front.

Usable Open Space
The quality of design and implementation is exceedingly important in evaluating Usable Open Space. Applicants are allowed to include a broad scope of elements as part of usable open space, and broad interpretations—such as finding decorative landscaping to be "visually accessible"—allow for creative applications.[2] Usable open space is a very important issue to the community, and whether it is truly "accessible to and designed for use by the public" is ultimately up to the discretion of the Planning Board.

Unifying Design Guidelines for the Public Realm
In addition to the citywide landscaping requirements, the Ordinance calls for developments in the ASMD to conform to the landscaping provisions of the Unifying Design Guidelines for the Public Realm. The submitted plans generally demonstrate conformance with these guidelines: pedestrian walkways have been provided in the structured and surface parking areas; innovative stormwater treatment and a green roof are proposed; the building's eastern side has been treated more as a façade than as a back side; and the historic water tower will be restored to the site.

D. Transportation and Circulation
This portion of the report will address roadway construction and mitigation both on- and off-site, as well as examining bicycle and pedestrian connections throughout the development. The Applicant is proposing construction and mitigation to accommodate not only the present phase but also Phase 1A, the proposed mixed-use development.

Transportation & Circulation: On-site
The Applicant is proposing various cross-sections for Assembly Square Drive in response to comments expressed by the public, the Board, City staff and peer consultants.[3] These include:

- Bicycle Lanes: Drawings show space for dedicated bicycle lanes throughout Assembly Square Drive. Although the plans do not presently illustrate pavement markings for bicycle lanes, the Applicant has consented to provide those as a condition of approval.

- Assembly Square Drive South of New Road: This section would include one dedicated bicycle lane as well as one travel lane in each direction, plus eight-foot sidewalks, five-foot planting strips, and medians ranging in width. Although Planning Staff acknowledges that concerns have been expressed regarding the capacity in this design for this area, all technical experts involved in the project have expressed confidence that the proposed capacity is more than adequate for anticipated traffic volumes. That said, conditions have been written requiring regular analysis and reporting of traffic volumes for two years after opening. The Applicant will be required to address any issues discovered in collaboration with the City.

- Assembly Square Drive North of New Road to A Street and Roundabout: This portion of Assembly Square Drive will consist of one travel lane in each direction, with dedicated bicycle lanes and off-street parking. Turn lanes will be provided leading into the proposed "letter" streets of Phase 1A and into the Marketplace at "C" Street. Landscaped medians are located where safety and functioning of the road would not be compromised. Planted medians will contribute to the

[2] The definition of usable open space under SZO §2.2.111 is: "Open space accessible to and designed for use by the public and limited to use as landscaped area and/or non-profit recreational uses." This definition explicitly includes sidewalks; in addition sections 16.6.1 and 17.3 refer to connected networks of usable open space and linear connections between them, so that sidewalks can be part of a comprehensive usable open space plan.

[3] Designs for Assembly Square Drive are currently at the Pre-100% design stage.

beauty and ecological value of these roadways, while also discouraging speeding and reinforcing pedestrian connections within this part of the usable open space network. Landscaped medians will also provide pedestrian refuge for persons crossing Assembly Square Drive at the relocated crosswalk at "B" Street and the newly proposed crosswalk at "D" Street. Three-inch raised intersections at appropriate locations increase pedestrian friendliness and discourage vehicular speeding. A 5 foot wide strip of grass and trees and a 2 foot wide paver strip along the eastern side of Assembly Square Drive would be installed on the eastern side of the street while the western side of the street would feature a 5-11 foot wide grass and tree strip to create a boulevard or parkway effect.

- Assembly Square Drive North of A Street to Route 28/Middlesex Fells Parkway: This portion of Assembly Square Drive will consist of two travel lanes in each direction which leads from Fellsway into a small roundabout at the intersection with A Street. Access to the Marketplace is provided along this section of roadway. The roundabout will connect the four lane section of Assembly Square Drive with the two lane section of Assembly Square Drive and A Street. It is anticipated that this roundabout will calm traffic entering and exiting the straightaway from A Street to IKEA Way and provide a focal point and "gateway" feature for the district.

- IKEA Way: Plans illustrate a "hammerhead" at the terminus of IKEA Way, designed in consultation with the Fire Department to facilitate the turning around of fire vehicles. This hammerhead is temporary in nature and will be removed when IKEA Way is extended during Phase 1A of the development.

- Transportation Demand Management Plan: Within the IKEA building showers and lockers will be provided for employees in order to encourage their walking and cycling to work. IKEA will also provide one Zipcar or other flex-car parking space initially while continuing to work with providers to evaluate future needs for flex-car programs. IKEA also states that they will implement a program to encourage employees to use mass transit. They have also submitted a description of the shuttle bus service that would run until the opening of the Orange Line station. This service would run between the site and either the Sullivan Square MBTA Station or the Wellington MBTA Station and would operate on weekends and two weekday afternoons or evenings according to a schedule yet to be determined.

The site is largely in conformance with the City's priorities. Together with previously described landscaping and open space plan, these changes reinforce the importance of pedestrian and cyclist safety and comfort while also providing for safe and efficient vehicular movements.

Transportation & Circulation: Off-site Mitigation:
Significant off-site traffic mitigation is proposed to improve vehicular, bicycle, and pedestrian traffic at key intersections that would be impacted by traffic to and from IKEA and Assembly Square.

City Agencies and peer consultants have worked with the Applicant and the Applicant's engineers to ensure that the project will not create traffic circulation problems or environmental, health, or safety concerns. Staff originally had concerns about the Applicant's methodology used for the traffic analysis. However, after extensive study and consultation with the City's peer consultant traffic engineers, Staff are satisfied that the logic used for the analysis is sound and that the proposed traffic mitigation is appropriate. Nevertheless, Planning Staff recommend continuous monitoring and evaluation of traffic conditions; this has been agreed to by the Applicant and is recommended as a condition of approval. Although Staff are confident that the transportation network has been designed with ample capacity to avoid traffic congestion, these proposed conditions will require the Applicant to work with the City to identify and resolve future traffic problems before future phases could proceed.

The proposal includes eight locations, as generally described below:

- Location 1: Lombardi Street/Mystic Avenue Northbound/Assembly Square Drive: This mitigation includes geometric changes such as traffic islands, new curbs, lane striping, and signage, as well as new traffic signal controllers, crosswalks and pedestrian signals. Planning Staff are recommending conditions requiring bicycle detection on all approaches of the intersection and specifying emergency vehicle pre-emption technology.

- Location 2: Lombardi Street/Broadway/Mt. Vernon: This includes geometric changes such as traffic islands, medians, new curbs, lane striping, and signage, as well as new traffic signal controllers, crosswalks and pedestrian signals. Planning staff are recommending conditions requiring bicycle detection on all approaches of the intersection and specifying emergency vehicle pre-emption technology.

  Widening of the Lombardi underpass in locations 1 and 2 will expand capacity sufficient to address the volumes associated with traffic heading toward Assembly Square Drive from Sullivan Square, Broadway, and the I-93 Southbound exit (via Mystic Avenue Southbound), as well as traffic seeking access to Mystic Avenue Northbound and I-93 Northbound.

  Specific features incorporated into the design to control traffic are:

  - A signal at the end of the off-ramp in order to control left-hand turns onto Lombardi Street and increase the safety of this movement.
  - The U-turn leading to Mystic Avenue Northbound includes two lanes for part of its length in order to increase storage capacity.
  - Queue detection on the U-turn would reduce the likelihood of traffic backing up onto the interstate.
  - Capacity on Lombardi leading to Assembly Square Drive has been increased in order to decrease vehicle stacking.
  - A traffic signal and stop bar on Mystic Avenue immediately north of Assembly Square Drive would stop northbound traffic and allow vehicles to exit the U-turn onto Mystic Avenue without conflict.
  - Pedestrian facilities have been designed and located to the south side of Lombardi Street in order to increase pedestrian safety and comfort, with the addition of exclusive pedestrian signal phasing and the removal of an unsignalized pedestrian crossing at the foot of the ramp and mid-block crossings on Lombardi Street.
  - Bicycle detection and lane striping have been added on Lombardi Street at approaches to intersections in both directions.

  The proposal would allow cars exiting I-93 Southbound two means to enter Assembly Square – through a left turn onto Lombardi Road and then directly into Assembly Square Drive or through the U-turn and then a right turn onto New Road or Foley Street. Vehicles will continue to be able to turn right to access Broadway. The Applicant's engineers assert that this design will increase the capacity of the intersection, increase driver choice, and disperse traffic over more streets.

  The City's peer consultants have stated that this design allows the most flexible access and the most capacity for this intersection and that it is probably the best design possible for this area. Nevertheless due to the complexities of the intersection they recommend close monitoring of its performance so that any necessary remedies—such as signal timing changes and temporary closure of the median on Lombardi Street—may be implemented as needed. As such Planning

staff recommends approval of the proposed design, with the proviso that modifications may be required if indicated by post-construction level-of-service analysis.

- Location 3: Mystic Avenue Northbound/New Road: This includes geometric changes such as new curbs, lane striping, and signage, as well as new traffic signal controllers, crosswalks and pedestrian signals. Planning staff are recommending conditions requiring bicycle detection on all approaches of the intersection and specifying emergency vehicle pre-emption technology.

- Location 4: Middlesex Avenue Northbound/Foley Street: This includes geometric changes such as new curbs, lane striping, and signage, as well as new traffic signal controllers, crosswalks and pedestrian signals. Planning staff are recommending conditions requiring bicycle detection on all approaches of the intersection and specifying emergency vehicle pre-emption technology.

- Location 5: Mystic Avenue Northbound/I-93 Northbound Off-ramp/Route 28: This includes lane striping, signage, and new traffic signal heads for improved visibility. Planning staff are recommending conditions specifying emergency vehicle pre-emption technology.

- Location 6: Route 28/Assembly Square Drive: This includes geometric changes such as traffic islands, new curbs, lane striping, and signage, as well as new traffic signal controllers, crosswalks and pedestrian signals. Planning staff are recommending conditions requiring bicycle detection and appropriate shoulder striping on all approaches of the intersection and specifying emergency vehicle pre-emption technology.

- Location 7: Route 28/Middlesex Avenue: This includes geometric changes such as traffic islands, new curbs, lane striping, and signage, as well as new traffic signal controllers, crosswalks and pedestrian signals. Planning staff are recommending conditions requiring bicycle detection and appropriate shoulder striping on all approaches of the intersection and specifying emergency vehicle pre-emption technology.

- Location 8: Kensington Avenue: Pedestrian improvements to Kensington Avenue are now proposed as part of the off-site mitigation, including crosswalks, ramps, pedestrian sensors, warning signage indicating when a pedestrian is in the crosswalk, improved lighting, and pavement markings.

As conditioned, the off-site mitigation proposals are acceptable to Staff. Staff is confident that the proposed transportation and circulation provisions will perform as desired; in the event they do not, the City will have adequate authority to ensure they are corrected.

It is very important to note that some of the streets involved in these intersections are owned by entities other than the City, including the Department of Conservation and Recreation and the Massachusetts Highway Department. Engineering drawings have been submitted to these agencies and have been reviewed; submittal of the 100% design is anticipated this month. Final review and approval is anticipated in September. It is anticipated that minor details of the design may change between the present and final designs for these sites. At present no significant design changes are anticipated; should the design significantly change a revision to this permit may be needed.

E. Water, Stormwater, and Sewer Facilities

The Applicant is proposing to build these facilities as part of the Assembly Square Drive and IKEA Way construction in order to accommodate the full build-out of the proposed mixed-use development.

These plans have been approved by the City Engineer and the Applicant has agreed to fund a final review by the City's peer consultants.

F. Linkage
Linkage fees would be required at a rate of $3.91 per square foot over 30,000 gross square feet. Planning Staff have verified that Section 6.4.6.B of the Ordinance specifically excludes structured parking from gross square footage calculations. Final linkage amounts will be payable prior to the issuance of any Certificate of Occupancy based on the final gross square footage of the building. The building may not exceed 340,000 gross square feet (not including structured parking).

G. Jobs
Members of the public and the Board have expressed concerns about the provision of jobs for Somerville residents. While this issue is outside the purview of zoning control, it is recognized to be a significant concern and Planning Staff have discussed this at length with the Applicant. In addition to committing to giving Somerville residents two weeks' advance notice of initial job openings and priority for making application, the Applicant has agreed to provide funding for a job training program for Somerville residents. They will also provide computers at agreed upon locations within the City of Somerville so that interested applicants can complete their applications on-line as is required by IKEA.

H. Conditions of PMP Approval
Conditions of the Preliminary Master Plan (PMP) approval addressed traffic, stormwater, sewer, water, and urban design issues. Review by peer review consultants indicates that traffic, stormwater, sewer, and potable water engineering designs have satisfied all conditions of the Preliminary Master Plan approval. City Staff have reviewed the Urban Design conditions of PMP approval and find that those applicable in this phase have been met.

B. Findings (SZO § 5.2.5 (a-h), §6.4.7, § 6.4.8, and §6.4.9): See Appendix A

VI. REQUEST 2: SPECIAL PERMIT FOR SIGNAGE

The Applicant is seeking a Special Permit from the SZO signage requirements (SZO §12.4). SZO §6.4.14.c provides that the Planning Board may grant approval for noncompliant signage in the ASMD, if the Special Permit criteria are met.

A. Description of Proposal
In deference to the site's sensitive urban setting, the Applicant has departed somewhat from its "trade dress", which involves a significant amount of signage oriented toward highway traffic. However, as a result of the site's more urban orientation with access from two directions the number of flag signs has doubled from the standard. Also, Assembly Square's historic water tower is proposed to be renovated and used as a sign in place of the usual three-sided "navigation tower" generally used by IKEA (The water tower will also feature signs reading "Assembly Square"). Drawings and a detailed outline of the proposed package is available in the Sign Matrix included in Section B Tab B of the application material.

The signage proposed for the site can be categorized into three types of signs: wall, freestanding and directional.

Wall Signs
The Applicant states that the larger (**yellow, internally lit**) signs are needed in order to communicate IKEA's presence to traffic on Interstate 93. Further, the Applicant justifies the multiple yellow IKEA signs along Assembly Square drive by stating that they would not be visible at the same time from most vantage points.

The SZO does not allow for any signage on the east façade, because it does not face a "public way". However, since it faces the MBTA railroad tracks, it is very much a public face of the building and should be treated as such. Therefore, granting a "bonus" allowing signage on this side (allowing approximately 1840 square feet) would be appropriate. In addition, the building is very large, and is to some extent visually broken up by the signs. Although signage should not replace architectural design in accomplishing this end, it can play a part.

Freestanding Signs
As with the large yellow IKEA signs, the Applicant describes the **water tower** sign as a way finding tool for travelers from I-93. Staff supports the restoration of the water tower on the site and find this use as a sign appropriate. As the water tower is a historic feature of Assembly Square that would be costly to resurrect but is generally desired by the citizens of Somerville, it is appropriate that it could also serve as signage for both the district and the business underwriting the tower's restoration.

The justification given for the **circles of flags** is that they demarcate entrances to the site. Staff finds that flags as a form of signage are appropriate in this situation and that their scale and their privatizing impact on space meant for public enjoyment is acceptable.

Regarding the **Welcome** signs, the IKEA name and other branding exclude them from the category of directional signage.

Directional Signage
Regarding truly directional signage, given the out-of-town traffic anticipated to the site, clear directional communication is desirable and justified. Directional signage less than 12 square feet does not require zoning relief.

An overview of the proposed signage is below:

Type of Signs	**Area Proposed**
Wall	
2 yellow internally and externally lit "IKEA Home furnishings" signs and 1 larger "IKEA" sign on the Assembly Square Drive façade	2,379 s.f.
2 yellow "IKEA Home furnishings" signs on the IKEA Way façade	846 s.f.
1 yellow "IKEA Home furnishings" sign facing the surface parking lot	852s.f.
1 yellow "IKEA Home furnishings" sign facing the railroad tracks	544 s.f.
1 "seasonal banner" with varying content on Assembly Square Drive façade	675 s.f.
1 "seasonal banner" with varying content on IKEA Way façade	675 s.f.
10 oversized "entrance" signs mounted to walls	251 s.f.
Subtotal	*6,222 s.f.*
Freestanding	
1 ring of eight flags, with each flag measuring 117 square feet per side, located on a traffic island at Assembly Square Drive and IKEA Way	900 s.f.
1 ring of eight flags, with each flag measuring 117 square feet per side, located on a traffic island at the southerly entrance on Assembly Square Drive	900 s.f.
2 externally lit "IKEA" signs on the historic water tank	448 s.f.
5 "Welcome to Ikea" signs of 54.3 square feet per side	217 s.f.
Subtotal	*2,465 s.f.*

Overages would be as shown in the table below.

Type of Sign	Allowed Area	Proposed Area	Overage
Wall	4,205 s.f.	6,222 s.f.	1.5 times allowed
Freestanding	500 s.f.	2,465 s.f.	4.9 times allowed
Overall	4,705 s.f.	8,687 s.f.	1.8 times allowed
Wall with 1,840 s.f. Bonus[4]	6,045 s.f.	6,222 s.f.	1.0 times allowed
Overall with 1,840 s.f. Bonus	6,545 s.f.	8,687 s.f.	1.3 times allowed

B. Relief Required

Several types of relief would be required in order to approve the current sign proposal. Relief is required for the following departures from the Ordinance requirements:

- 13 signs would exceed the 35 foot height limit (including the water tower sign);
- 2 directional signs would exceed the 12 square foot size limit;
- The proposal exceeds the maximum of 2 freestanding signs allowed for a site with more than one type of business. Applicant is requesting 23 (including 16 flag signs).
- Wall and freestanding signage would exceed maximum allowed area as shown in the table above and on the "Sign Matrix"

As shown above, wall signage would nearly meet what the SZO allows, freestanding signage would exceed the limit due primarily to the second flag circle and water tower renovation. The overall factor of sign overages would be approximately 1.3 times the allowable square footage. It is possible to justify this degree of zoning relief based on peculiarities of the site, structure, and future use for a modest margin of increase such as this.

C. Findings (SZO §5.1.4)

Planning staff find that the increased height and quantity of signage will not be detrimental or derogate from the principles of the Somerville Zoning Ordinance.

In order for the special permit to be granted, the following criteria must be met.

a) Information supplied. The Applicant has submitted the information required by SZO §5.1.2.
b) Compliance with standards. Planning staff find that the proposal would substantially comply with the standards of the SZO.
c) Purposes of district. Planning staff find that, as part of the PMP, allowing some flexibility with signage controls is consistent with the objectives of the Assembly Square Mixed-Use District, as specified in Article 6, including "increas[ing] real estate investment and maximiz[ing] development"; and "creat[ing] new jobs…." Departure from the standards of the Ordinance is appropriate to the extent that additional signage is necessary for a business that will contribute to the economic vitality and renewal of this district.
d) Site and area compatibility. Planning staff find that the requested relief for signage is appropriate.

Because the use will be a green development on a brownfield site, will have a regional draw and appeal to Interstate drivers, and will be a pioneer business in a district largely being rebuilt, relief should be afforded to encourage its establishment.

[4] As described in the report, the 1,840 square foot "bonus" indicates consideration given to the fact that IKEA would not be allowed to install signage on the frontage along the railroad since it is not a "public way" but that it could be considered as such, since it is treated as a "face" of the building and the district.

VII. STAFF RECOMMENDATION AND CONDITIONS

Based on the materials submitted by the Applicant, Planning staff site visits, and the findings made in this report the Planning staff finds that the proposal is substantially consistent with the objectives of the ASD Plan, and recommends **CONDITIONAL APPROVAL** of the requested

- **SPECIAL PERMIT WITH SITE PLAN REVIEW-A** for Final Level Approval of Phase 1AA of the Assembly Square Planned Unit Development-A-Preliminary Master Plan approved by the Planning Board on December 14, 2006; and,
- **SPECIAL PERMIT** for signage;

To ensure that this phase as completed is compatible with the overall PMP, the Planning Staff has attached the conditions in the following ***Table 1*** to these permits and approvals.

Findings for SPSR-A under Sections 5.2.5 (a-h), 6.4.7, 6.4.8, and 6.4.9 of the Somerville Zoning Ordinance
Assembly Square Phase 1AA (PB2009-05)

The Planning Staff has made the following findings:

5.2.5 (a-h) Findings and Determinations for SPSRs		***Met***	***Not Met***	***Change / Mitigation / Waiver Needed or Other Comments***
a. Information supplied.		X		The Applicant has submitted the information required by SZO §5.2.4.
b. Compliance with standards.		X		As before, Planning staff find that the application materials substantially comply with the standards of the SZO and its guidelines.
c. Purposes of district.		X		Planning staff find that the proposal addresses nearly all of the objectives of the Assembly Square Mixed-Use District, as specified in Article 6, including "increas[ing] real estate investment and maximiz[ing] development", "creat[ing] new jobs", "promot[ing] accessibility to and within the district by improving existing and creating new roadways, pedestrian walkways and bicycle paths", "replac[ing] vacant or underutilized land, low-density development, and incompatible uses…", "improve[ment of] utilities and infrastructure", "creat[ion] of new public open space", "encourage[ment of] transit-oriented development", and "increas[ing] the supply of affordable housing units within the City".
d. Site and area compatibility.		X		Planning staff find that the proposal has been designed in a manner that is compatible with the existing natural features of the site and is compatible with the characteristics of the surrounding area, and that the scale, massing, and detailing of buildings are compatible with those surrounding area. In particular, since the overall district is proposed for redevelopment, Planning staff find that the proposal has been necessarily designed with consideration of the vision for the district's future.
e. Functional Design.		X		Planning staff find that the proposal meets accepted standards and criteria for the functional design of facilities, structures and site construction.
f. Impact on Public Systems.		X		Planning staff find that the proposal will not create adverse impacts on the public services and facilities serving the development, such as the sanitary sewer system, the storm drainage system, the public water supply, the street system, and the sidewalks. Rather, the proposal would result in improvements to these systems and facilities.
g. Environmental Impacts.		X		Planning staff find that the proposal will not create adverse environmental impacts, including off-site, unless those impacts are mitigated. With replacement of industrial businesses, capping of polluted soils, installation of environmentally-significant public infrastructure (such as stormwater and sewer facilities), advanced "green" design of the building and its stormwater park, the proposal is anticipated to have beneficial environmental impacts.

Findings for SPSR-A under Sections 5.2.5 (a-h), 6.4.7, 6.4.8, and 6.4.9 of the Somerville Zoning Ordinance
Assembly Square Phase 1AA (PB2009-05)

5.2.5 (a-h) Findings and Determinations for SPSRs		***Met***	***Not Met***	***Change / Mitigation / Waiver Needed or Other Comments***
h. Consistency with purposes.		X		Planning staff find that the proposal is consistent with the purposes of the Ordinance, including "to facilitate the adequate provision of transportation, water, sewerage…and other public requirements", "to conserve the value of land…", "to adequately protect the environment", "to encourage the most appropriate use of land throughout the City", and "to preserve and increase the amenities of the municipality."

Findings for SPSR-A under Sections 5.2.5 (a-h), 6.4.7, 6.4.8, and 6.4.9 of the Somerville Zoning Ordinance
Assembly Square Phase 1AA (PB2009-05)

	Requirement	***Met***	***Not Met***	***N***
A. Submittal Requirements	Below listed requirements plus §5.2.3 requirements	X		
B. Referral to Other Agencies	Somerville Redevelopment Authority, Assembly Square Design Review Committee	X		
C. Criteria for Review	Must meet criteria below plus those of SZO Sections 5.2.5.a-h			
	Traffic impact & proposed mitigation consistent with Transportation Study, TIAS, and/or TDM Plan	X		Conditions attached would require continued monitoring and analysis and future resolution of unanticipated problems.
	§6.4 design guidelines			See 6.4.7 & 6.4.8 tables below
	Mixed use	X		Will be totally retail component of larger mixed-use development. Restaurant and open space satisfy requirement for this phase.
	Economic benefits	X		According to the PUD-PMP submission, IKEA will be the single largest employer in the Assembly Square area development, providing 475 jobs.
	Structured parking	X		Most of the parking is provided in a screened structure, with the remaining surface parking comprising only 1.2% of all parking, as allowed.
	Pedestrian/bike access	X		Sidewalks and bicycle access are provided.
	Affordable Housing / Linkage	X		Linkage fees are a condition of approval.
	Views to Mystic River	N/A		N/A
	Enhanced and activated OS to offset shadow impacts	X		Insignificant shadow impacts anticipated from studies. Open spaces will be activated by: 1) educational facilities, 2) bus waiting areas/intersection, and 3) being part of a pedestrian sidewalk network.
	New or improved OS	X		Significant new open space is proposed as part of this development.
	Support of transit service	X		Proposal would provide funds toward station construction as well as parking for future users. There will also be a bus stop provided on Assembly Square Drive. Shuttle service from nearby stations will be provided until the Assembly Square Station opens.
	§5.2.5 review standards	X		
	Impacts on public facilities	X		Peer review indicates satisfactory design.
	Site drainage	X		Peer review indicates satisfactory design. City Engineer has reviewed and approved site drainage
	Emergency vehicle access	X		The Fire and Police Deparments have reviewed the proposal for adequate emergency vehicle access.

	Requirement	***Met***	***Not Met***	***N***
	Placement or screening of electric, cable, and other lines and equipment	X		Utilities are shown as screened, but must be constrained by condition of approval. Condition: Garbage pick-up on Assembly Square Drive may not occur during business hours and no garbage may sit on street while awaiting pickup.
	Appropriateness of signage	X		Sign package only requires a modicum of zoning relief and is more sensitive to its surroundings.
	Screening of exposed machinery etc	X		Facilities are shown as screened and condition of approval will also require screening.
	Mitigation of shadows on OS	X		Addressed above.

The following two checklists outline design guidelines recommended in the Somerville Zoning Ordinance. While compliance with guidelines is not mandatory, they should be adhered to as often as possible.

6.4.7 Development Standards & Design Guidelines in ASMD				
	Recommendation	***Met***	***Not Met***	***Change / Mitigation / Waiver Needed or Other Comments***
A. Development Standards				
Transportation Analysis	Provide analysis, including TDM Plan	X		The Staff finds that the analysis is logical and the proposed mitigation appears adequate for development beyond the proposed IKEA. Nevertheless conditions are attached for performance evaluation and problem resolution if needed after construction.
Parking Requirements	Meet requirements of §9.15	X		The application shows a minimum requirement of 340 vehicle parking spaces and 27 bicycle spaces; this requirement is met, with the provision of over 1300 vehicle spaces, and 30 bicycle spaces. Maximum parking limits of 600 spaces do not apply because the MBTA Orange Line station has not been built.
Landscaping Requirements	Meet requirements of Article 10; Provide contiguous O.S.	X		The plan for this phase exceeds the requirements of the Ordinance for Open Space, Usable Open Space, and trees (150 proposed / 130 required). Providing open space along both sides of Assembly Square Drive would create a more contiguous open space plan which flows through the middle of the Assembly Square site. The Parks and Open Space division of OSPCD has worked with Planning Staff and the applicant to design a landscaping and open space proposal that will be a benefit to the community.
Pedestrian Connections	Provide continuous pedestrian connections	X		Shown in plans with various paths, sidewalks, parks, and crosswalks.
B. Design Guidelines				
Street & Sidewalk Design	Comply with *Design Guidelines for the Public Realm*	X		Will comply with added conditions: Street furniture, lighting, and design of crosswalks should conform to principals set in Unifying Design Guidelines for the Public Realm.

Findings for SPSR-A under Sections 5.2.5 (a-h), 6.4.7, 6.4.8, and 6.4.9 of the Somerville Zoning Ordinance
Assembly Square Phase 1AA (PB2009-05)

6.4.7 Development Standards & Design Guidelines in ASMD				
	Recommendation	***Met***	***Not Met***	***Change / Mitigation / Waiver Needed or Other Comments***
Building Design	Create presence on street edge	X		Building is set close to major street edges of IKEA Way and Assembly Square Drive. Entrances have been revised to be more prominent along streets.
	Create interesting entrance areas	X		Canopies and a false entrance (to the garage) terminating proposed "Main Street". Entrances feature interesting color and fenestration. Egress stairs also add interest.
	Visual interest of façade	X		Façade has varying setbacks and planes and incorporates different colors at key points.
	Break down scale of bldg to pedestrian scale	X		The various planes, angles and components of the structure give the feeling of a more pedestrian scale
	Materials/colors consistent with historic buildings	N/A		
	Locate equipment / service areas away from public ways and screen; enclose inventory	X		Shown in plans and reinforced with a condition of approval.
	Vertical integration of uses. Ground floor uses add presence to public ways and sidewalks		X	The second part of this criterion is not met but site is part of larger PUD that will achieve this.
	Recommended minimum fenestration percentages		X	These recommendations are met on all but the North (IKEA Way) sides.
	Minimum visual access via windows	X		The inclusion of "shop windows" addresses this issue.
Parking Lot Design	Comply with §9.15. Avoid unbroken expanses of pavement.	X		Trees are provided in the surface parking and along pedestrian path.
Open Space	Landscaping strips not UOS	X		Staff finds that quality of design and implementation is exceedingly important in evaluating Usable Open Space. Considering the enhancements to the appearance, comfort and ecological value of the site, Planning staff find that plantings and pedestrian amenities are well balanced and that the site design underscores the importance of the pedestrian experience within the usable open space network.
	Mystic River	N/A		
Efficiency of Design	LEED checklist	X		The LEED checklist indicates a potential LEED Platinum score.
Contributions	Credits for contributions	N/A		
Loading Spaces	Reduce visual impacts of loading spaces	X		Loading is on second floor at "rear" along railroad. This level is largely screened with architectural "mesh" and year-round vines.

6.4.8 Development Standards & Design Guidelines for Large Developments

Findings for SPSR-A under Sections 5.2.5 (a-h), 6.4.7, 6.4.8, and 6.4.9 of the Somerville Zoning Ordinance
Assembly Square Phase 1AA (PB2009-05)

	Recommendation	***Met***	***Not Met***	***Change / Mitigation / Waiver Needed or Other Comments***
A. Traffic Access & Impact Study	Submit, with TDM Plan	X		Traffic studies have been evaluated by peer consultants and found to be logical. Mitigation is found to be appropriate for the site.
B. Model	Submit 3-D model		X	Waiver granted for this phase.
C. Urban Block Plan	ASD street grid	X		IKEA will not be part of a grid but is designed to integrate visually. Assembly Square Drive will physically connect lettered streets with parking aisles of the Marketplace..
D. Development Standards				
Transportation Analysis	Provide analysis	X		See other transportation comments.
Large Retail Projects	Minimum non-retail component	X		Proposal is 340,000 s.f.-- must be balanced by 435,000 s.f. of nonretail elsewhere. Future phases include: 2100 residential units, 1.75M s.f. of office; a restaurant; a 62,000 s.f. cinema, and a 200-room hotel. As part of the PUD context, this large solely retail component is acceptable.
	Ground level retail cap	X		The ground level will be used for parking.
Landscaping	50% of LS to be UOS	X		(See above)
E. Design Guidelines	Structured parking	X		88% of parking is located in structures.

Compliance with Conditions of PUD-PMP
Assembly Square Phase 1AA—(PB2009-05)

The Planning Staff finds that the applicable conditions of the Planned Unit Development-A/Preliminary Master Plan (PMP) would be met for this Phase, as further outlined below.

Condition	***Met***	***Not Met***	***Mitigation / Waiver / Comments***
A. Transportation Management / Traffic Circulation			
The Applicant shall revise the Traffic Impact Assessment Study (TIAS) in consideration of comments included in the Peer Review memorandums prepared by FST reviewing Existing Conditions, No-Build Conditions, and Build Conditions, consistent with MEPA review. Major actions to be taken prior to Phase 1A include: expanding the impact study area, documenting/justifying trip proposed generation rates, trip distribution, and trip reduction rates. The applicant shall consider issues discussed in Peer Review Memoranda. The Board shall consider the Peer Review Memoranda or any additional information when considering permit applications. All mitigation involving traffic signal upgrades must include specific discussion and documentation of the ability of all controllers to be left in place to fulfill the functions required of them by proposed mitigation. In addition, all traffic control equipment and roadway elements must meet City of Somerville specifications and standards. The Applicant shall consider all recommendations referenced in the Traffic Impact and Access Study Memo; On-Site Circulation Memo; and the Pedestrian and Bicycle Circulation Memo prepared by Fay, Spofford & Thorndike (FST). The Applicant shall also work with the Massachusetts Highway Department to include visible signage that will direct traffic to the site via highway and keep traffic at a minimum in residential neighborhoods.	***X***		The Applicant has completed a revised TIAS using an alternative method for their no-build analysis. However, peer consultants agree with the Applicant that the proposed traffic design and mitigation will be sufficient to handle the proposed vehicle trips. Expansion of the Impact Study Area will be allowed in the next phase, which will trigger MEPA and a study of intersections in Medford and Boston.
B. Water System:	***X***		
1. Applicant shall conduct additional hydraulic analyses to ensure that the City's system is capable of meeting the adjusted demands throughout the project. Applicant shall meet fire flow requirements while maintaining a minimum pressure of 20 psi at the fire location. In	X		

Condition	*Met*	*Not Met*	*Mitigation / Waiver / Comments*
accordance with DEP guideline, a minimum pressure of 35 psi shall be maintained throughout the distribution system during normal demand conditions.			
2. Applicant shall have a fire protection engineer determine the fire protection requirement at each individual building and determine whether or not a sprinkler system will be necessary for each building. At the building permit application stages, all fire protection facilities must meet the requirements of the Somerville Fire Department.	X		
3. Applicant shall ensure that all materials shall be in accordance with the City of Somerville Water and Sewer Enterprise's Specifications and/or Rules and Regulations, latest issue.	X		
4.Applicant shall consider installing new hydrants, in consultation with the recommendations of the Fire Chief, at the following locations:	X		
• On "C" Street, approximately 100 feet east of the intersection of "A" Street	X		
• On "G" Street, approximately 180 feet north of the intersection of Ikea Way	X		
• On Assembly Square Drive, approximately 220 feet east of the intersection of Route28/Middlesec Fells Parkway	X		
• On Assembly Square Drive, approximately 550 feet east of the intersection of Route 28/Middlesex Fells Parkway	X		
• On Foley Street, approximately 80 feet east of the intersection of Middlesex Avenue	X		
• On Foley Street, approximately 420 feet east of the intersection of Middlesex Avenue	X		
5. Applicant shall install valves at each intersection, and correspondingly show and label on all drawings. All tees, bends, reducers, and other fittings should also be labeled on the drawings.	X		
6. Applicant shall provide individual calculations to determine the sizes necessary for the connections to each property. The proposed service connections to each of the new buildings shall be shown on further design drawings.	X		

Condition	***Met***	***Not Met***	***Mitigation / Waiver / Comments***
C. Sanitary Sewer System:	***X***		
1. All site plan review submissions shall include profiles of the proposed sewer system. Applicant must ensure that there are no conflicts with other proposed utilities.	X		
2. Applicant shall submit details of proposed pipe materials for review and approval during each site plan review process.	X		
3. Applicant shall make every effort to comply with DEP requirement that states "whenever possible" a minimum horizontal distance of ten feet shall be maintained between sewer lines and water mains. Exceptions are usually only allowed when there are conflicts with existing utilities or existing structures that would prevent obtaining the proper separation.	X		
4. Applicant shall evaluate the impact the proposed project flows will have on the MWRA interceptor and the upstream and downstream municipal sewer system.	X		
D. Stormwater Management	X		
1. Applicant shall provide additional information to the Planning Board to verify the adequacy of the existing MWRA 84'-inch Somerville Marginal Conduit.	X		
2. Applicant shall further investigate the alternative drainage design identified in the PUD application.	X		Full compliance will be verified upon submission of Construction Documents.
3. Applicant shall provide the Planning Board with a status report on the receipt of necessary permits from MWRA.	X		
4. Applicant shall provide a more detailed analysis of the site hydrology for existing and proposed conditions during the 2-, 10-, and 100-year storm events.	X		
5. Applicant shall meet with DCR and obtain any and all necessary permits from DCR. Applicant shall furnish the Planning Board with copies of these permits.	X		
6. Applicant shall supply the Planning Board with copies of all test pit logs and locations for review.	X		
7. Applicant shall provide a detailed series of Best Management	X		

Condition	***Met***	***Not Met***	***Mitigation / Waiver / Comments***
Practices (BMP's) to demonstrate a total suspended solids (TSS) removal rate of at least 80 percent. Plans shall include locations of all proposed BMP's.			
8. Applicant shall provide a detailed set of plans identifying items such as sequence of construction, limits of phasing, and placement/type of erosion control measures.	X		Full compliance will be verified upon submission of Construction Documents.
9. Applicant shall submit a stormwater maintenance program to the Planning Board. The maintenance program shall address the frequency of inspection/cleaning of the proposed water quality units. The plan shall also identify the stormwater management system owner and parties responsible for operation and maintenance of the stormwater facilities.	X		Full compliance will be verified upon submission of Construction Documents. The applicant has received approval from the Conservation Commission
10. Applicant shall submit a soil management to the Planning Board in order to determine if soil conditions will allow for the inclusion of low impact design elements including, but not limited to, bio swales.	X		
E. Urban Design:			
1. All site plan review submittals for each building/phase shall be accompanied by an update of the overall master plan with the following level of information:			
a) Consistent dimensions between all plans and between sections and plans.	X		
b) Street sections with dimensions that indicate travel lanes, parking lanes, bicycle lanes, planting strips, sidewalks, and building edges, among other elements.	X		
c) Circulation that clearly shows the operations of all streets on-site and surrounding context, showing	X		
• Existing and proposed traffic signals	X		
• Direction of vehicular traffic on street lanes and at parking garage access points	X		
• Ikea operations for parking and drop off/pick up for trucks, home delivery, and customers	X		
• Operations at all ingress and egress points, including the circulation along the major routes that provide access to the site	X		

Condition	*Met*	*Not Met*	*Mitigation / Waiver / Comments*
• Bicycle routes and connections to regional systems	X		
• Pedestrian routes and crosswalks and connections to surrounding neighborhoods	X		
d) Proposed building entrances or other indication of primary facades.	X		
e) Phased plan of infrastructure improvements tied to building development.	X		
2. Applicant shall review with the Fire Chief and the City the geometry of Ikea Way, including its intersection with Assembly Square Drive and Main Street (F Street).	X		Review has resulted in the addition of a turnaround at the terminus of IKEA Way acceptable to the Fire Department.
3. Applicant shall reconsider the design of Main Street at the back corner of the Ikea loading area in order to create a more positive architectural character at this key corner.	X		The design of this elevation has been revised to improve this “terminated vista” from Main Street.
4. Applicant shall study integrating the T-Station into the site plan and creating visibility for the presence of the T-Station at the terminus of E Street/Foley Street and a plaza and arrival sequence that connects more directly to the Assembly Square Park on Main Street. Maximizing T-Station visibility shall be a factor in considering applicable site plan proposals.	X		Improvements to screening of parking and loading facilities, the redesigned north façade, enhanced sidewalks, and the proposed “rain garden” all contribute to the relationship of the store to the T-station. Accommodation of potential future multi-use path would enable additional access to T-Station.
5. At each Site Plan Review Special Permit submission that involves the use of DCR land, the Applicant shall submit confirmation of the acquisition of the DCR land in the northeast corner of the proposed project or shall reconfigure the development for such phase consistent with the requirements of the Master Plan and the applicable regulations of the SZO.			N/A
6. At each Site Plan Review Special Permit submission, the Applicant will consider massing the buildings to create more consistent street corridors with similar heights on both sides of the street, using street walls and step backs where necessary, especially on E Street and where buildings exceed six to eight stories.			N/A
7. As part of the Phase 1AA submission, the Applicant shall provide a plan for the pedestrian crossings for the entire project.	X		
8. The Applicant shall design and make improvements to the following pedestrian crossings:	X		

Condition	***Met***	***Not Met***	***Mitigation / Waiver / Comments***
• Ten Hills neighborhood during Phase 1A.			N/A
• Lombardi Drive during Phase 1AA submission.	X		
• Kensington Avenue during Phase 1AA submission	X		
9. As part of each site plan review submittal, the Applicant shall provide the following information:	X		
• Calculations showing that the percentage of open space and usable open space meets the zoning requirement for a PUD-A within the ASMD.	X		Amendment will not change the provision of open space
• Confirmation that the setbacks from the Mystic River to the closest buildings are at least 150 feet.			N/A
10. Illustration on the drawings of the required continuous pedestrian, bicycle, vehicular and Urban Ring connections that need to be made to the destinations enumerated in the ASD Plan as defined in §6.4.2 of the SZO, including:	X		
a) Clarification of the pathways and sidewalk systems with notes, dimensions and legends.	X		
b) Illustration of how the particular phases affect the accessibility and visibility of the proposed Assembly Square T Station.	X		Multi-use path would enable additional access to T-Station.
c) Confirmation that the zoning requirements related to the minimum shadow cast by buildings onto open space between March 21st and September 21st are met.	X		
d) Ensure that the light conditions shown on the plans are adequate for the tree species enumerated in *Unifying Design Guidelines for the Public Realm – Assembly Square.*	X		
e) Applicant shall provide illustration and notation on the drawings that all shade trees and shrubs required by zoning are shown in all parking lots.	X		
f) Applicant shall employ smart growth techniques in overall development, including but not limited to: Low Impact Development for Stormwater Management, bioswales, recycling and sustainable green technologies, and LEED.	X		
g) Applicant shall be responsible for all design, construction, maintenance and repair of all roadways, streetscape including street lighting and other street furniture furnishings, and parks and open space	X		

Condition	***Met***	***Not Met***	***Mitigation / Waiver / Comments***
which are part of the PUD. Applicant shall be responsible for the design and construction of water, sewer, and storm drainage systems serving the PUD. Applicant shall be responsible for the usage costs of electricity, gas, water, cable and other utilities furnished to the PUD, and for trash removal. The City shall be responsible for the maintenance and repair of water, sewer, and storm water conduits, and traffic signals on public ways. The City shall also be responsible for snowplowing and street cleaning, including the cleaning of catch basins, except that the City shall not be responsible for catch basins associated with Smart Sponge Technology, or equivalent technology, unless and until the City has the equipment to clean such "Smart Technology" catch basins. The Applicant shall be responsible for designing, constructing, maintaining, and repairing similar "Smart Technology" required by MEPA. All utilities shall be designed and installed in accordance with the City of Somerville's standards and specifications.			
11. Applicant shall provide details of the pedestrian connection from Assembly Square to Draw 7 Park under the railroad bridge.			N/A
12. Applicant shall include a landscape buffer between the tracks and the proposed development.	X		Landscaped buffer has been revised to accommodate future multi-use path, while still providing landscaping and screening consistent with the original PMP and SPSR-A approvals.
13. Applicant shall show the pedestrian connection from the proposed Assembly Square T Station to Draw 7 Park. The design of the project shall not preclude the ability for the future design and construction of this pedestrian connection. (The Applicant is not expected to construct the pedestrian connection, but merely to show it in the plans in the event that enough federal and state monies are available to construct such a connection as part of the T station).			N/A
14. Applicant shall clarify the "Kiss and Ride" drop off and the associated walkways.			N/A
15. Prior to Phase 1A, Applicant shall review the bus drop off and pickup area and modify as needed. Urban Ring bus drop off and pickup is not provided at the Assembly Square T Station along G Street. It			N/A

Condition	***Met***	***Not Met***	***Mitigation / Waiver / Comments***
appears that dropping off passengers will block the street in its current configuration.			
16. Applicant will consider plans to link the Mystic River Park clearly to the surrounding street circulation for bicyclists and pedestrians to the T Station prior to Phase 1A.			N/A
17. Applicant shall provide additional details to better define the "series of pocket parks" described in the PUD submission.	X		
18. Applicant shall depict the locations of handicapped accessible curb ramps.	X		
19. Applicant shall submit detailed landscaping plans that conform to the City's guidelines. The guideline states that streets should be tree-lined. Street trees are set back as much as 55 feet from the intersection edge of curbing along Main Street. No trees are shown in the bumpouts at intersections.	X		
20. Applicant shall continue to work with the City on the design of the proposed median on Assembly Square Drive in order to maximize the amount of usable open space.	X		

Appendix C - City Agency Comments

(Peer Review Comments prepared by Fay, Spofford & Thorndike, LLC completed August 9, 2007 are available from the Planning Division)

Comments from Terry Smith – City of Somerville Traffic and Parking
Sent: July 30th, 2007

Federal Realty Investment Trust (Proponent) is applying to the Planning Board for a final level approval of the first phase of the Planned Unit Development Preliminary Master Plan, Assembly Square. Vanasse Hangen Brustlin, Inc. (VHB) has completed a Traffic Impact and Access Study for this Phase. VHB, the City's peer traffic consultant (FST), and City staff have conducted a series of meetings relative to the traffic study and FST's review and comments on this traffic study. A general consensus has evolved concerning the proposed traffic mitigation presented in the traffic study. With the few exceptions specified below, Traffic and Parking is in support of the proposed traffic mitigations presented.

Further consideration should be given to the following:

- Existing traffic signal controllers for the Mystic Ave/Lombardi intersection and the Mystic Ave NB/Rte 28 south intersection which were installed during/for the Democratic National Convention still have operational functionality. VHB is proposing that these two traffic controllers remain in place. When there is the full build out of Assembly Square Mall these traffic controllers will be approximately 20 years old. Even though they still remain operational, their future life expectancy is limited. It is recommended that the proponent provide new "state of the art" traffic signal controllers for these locations.

- Reference is made to FST's memo dated July 24, 2007.
  Assembly Square Drive - Two to three lane cross section or four to five lane cross scetion.
  In this memo FST reviews the two to three lane and four to five lane cross-section proposal for Assembly Square Drive. Traffic capacity and traffic/vehicle density is reviewed. This memo states "The City must decide whether the motorized traffic benefits and the site marketing features of the proposed four to five land cross section, with less traffic density per lane, make it superior to the two to three lane cross section." Traffic and Parking finds merit in the second option listed, i.e. " The right of way for the four to five lane cross- section could be reserved and used to create a highly-landscaped pedestrian and bicycle environment with less impervious surface and retain the sidewalks in their current location (with the unlikely potential to widen in the future not being precluded).

- Reference is made to FST's memo dated July 24, 2007.
  Lombardi Street between Broadway and I-93 SB off-ramp.
  There are two basic options for this segment of the Lombardi corridor, either block the Lombardi Street median and not allow left turns from I-93 SB onto Lombardi Street or to maintain the status quo and allow left turns onto Lombardi Street from I-93. FST examined and listed the pros and cons of both options. Traffic and Parking prefers the option where the median to Lombardi Street is blocked and left turns are not allowed. In this scenario from a local neighborhood perspective and a City perspective, the impact of traffic is diminished on the local street network and safety is not compromised.. In FST's memo it is stated that if left turns are allowed there is the potential of blockage on the I-93 off ramp, pedestrian crossings is more hazardous, and vehicle operations are more congested and hazardous. These negative aspects far surpass any potential impacts of trucks being allowed to use Lombardi Street to access Assembly Square Drive.
  I do understand that this intersection is still under review and other alternatives are being considered.
  Please call if you have any questions on the above and forward these comments as may be required and you deem appropriate

CITY OF SOMERVILLE, MASSACHUSETTS
JOSEPH A. CURTATONE
MAYOR

AUGUST 6, 2007

Madeleine Masters, Planning Director
City of Somerville
93 Highland Avenue
Somerville MA 02143

RE: ASSEMBLY SQUARE PHASE IAA
COMMENTS OF THE CONSERVATION AGENT

Dear Madeleine:

The Somerville Conservation Commission has not reviewed the plans for Assembly Square Phase IAA as of this date. As a result, I am submitting these initial comments on the plan. The Commission reserves the right to provide additional comments and impose additional conditions on this phase of the project if and when this phase comes before the Commission.

1. Construction Stormwater Management

Phase IAA focuses on the development of the IKEA store at a location that is approximately 400-feet from the Mystic River. The legal jurisdiction of the Commission may extend beyond the 100-foot wetland buffer zone when a project has actual impact on a wetland resource. The Commission recommends that the applicant prepare a more in depth construction stormwater management plan that will be in place beginning with demolition, through site preparation until completion of construction and installation of all new stormwater management systems. A failure to adequately prevent erosion of soils after demolition and during construction can result in sediments going into the storm drains that feed directly into the nearby Mystic River and will trigger the jurisdiction of the Commission. The applicant should be aware that construction sites over 1-acre must meet Federal Clean Water Act requirements related to construction stormwater management as well. Construction activities (including other land-disturbing activities) that disturb one acre or more are regulated under the NPDES stormwater program.

The Commission strongly urges that the applicant comply with the following conditions related to construction stormwater management:

a. Prior to demolition, install temporary erosion control measures consistent with the Commonwealth of Massachusetts Erosion and Sediment Control Guidelines for Urban and Suburban areas. Those measures should be specifically designed to: (a) minimize erosion of soils, (b) contain sediments on the property and (c) capture sediments before they reach any road or any storm drain leading to the Mystic River.

b. The applicant should develop a construction stormwater management plan that is included with all site documents. Consideration should be given to: (a) re-vegetation of the site during any lull between construction and demolition; (b) dust control measures, (c) staging construction activities in a manner that limits the amount and the time any area of soils is exposed, (d) installation of a gravel stabilized construction entrance at the location of construction access, (e) use of rice straw waddles and silt fences, (f) end of day sweeping of the construction entrance, (g) measures to trap sediments prior to reaching catch basins and (h) installation of any "Stormceptor" or "Vortex" stormwater cleaning units before demolition and construction.

c. Install gravel of pavement base materials prior to construction of the new building. Truck and construction equipment washing should occur in an area where sediments can be captured by onsite sedimentation controls.

d. Apply topsoil to slopes and other areas disturbed by construction. Topsoil used may be native organic material screened so as to be free of roots, branches, stones, and other deleterious materials. Topsoil shall be applied so as to provide a minimum of a 4-inch compacted thickness. Upon completion of top-soiling, finished sections are to be limed, seeded and mulched. Construction personnel shall inspect completed sections of work on a regular basis and remedy any problem areas until a healthy stand of grass has become established.

e. Maintain, repair, and replace as necessary temporary erosion control measures until such time as the entire construction area has been stabilized (A minimum of one year shall have passed).

f. After stabilization, remove and suitably dispose of temporary erosion control measures.

2. Long-term Stormwater Management

In addition to construction stormwater management, the project should include measures to ensure that after construction:

a. Untreated stormwater does not enter the Mystic River;

b. The volume and rate of stormwater discharges into storm drains do not increase;

c. MA Department of Environmental Protection Stormwater Management Standards are met to the maximum extent practical; and

d. Stormwater management systems have operation and management plans.

3. Plant Selection

The landscape architect should review the list Massachusetts Prohibited Plant List published by the Massachusetts Department of Agricultural Resources and eliminate any proposed installation of plants on the list (http://www.mass.gov/agr/farmproducts/Prohibited_Plant_Index2.htm)

4. Assembly Square Drive and other mitigation work

Although the IKEA site lies entirely outside the 100-foot buffer zone please note that any mitigation work for Phase I-AA that will be within the 100-foot buffer zone will require the applicant to file an appropriate application for such work with the Conservation Commission. Prior plans indicated that

the widening of Assembly Square Drive in the vicinity of the Fellsway may be within 100-feet of a wetland as may be any signal work at that intersection.

If you have any further questions please feel free to give me a call at x2519.

Sincerely yours,

Stephen Winslow, Esq.
Conservation Agent

City of Somerville
Police Department
220 Washington Street
Somerville, MA 02143
(617) 625-1600
www.somerville.ma.us

Robert R. Bradley
Chief of Police

August 10, 2007

Katie R. Brillantes
Senior Analyst, SomerStat Department
City of Somerville
93 Highland Avenue
Somerville, MA. 02143

Dear Ms Brillantes,

In response to your request for additional comments regarding the Assembly Mall I would like to submit the following additional information regarding suggestions for inclusion into the final plans for Assembly Square mall future development.

First, I would like to make sure that the roadways through the project are of sufficient width to accommodate the anticipated traffic volume. Adequate street lighting will be essential to preventing accidental injuries due to the high volume of both pedestrian and vehicular traffic Intersections should be kept clear of obstructions with a clear line of sight for on coming traffic.

Second,, I reccommend that the developer install high resolution video cameras on the roadways and public areas throughout the project and that the developer allow the Police Department to have access to viewing these cameras 24/7. Details of how this can be accomplished can be discussed at a later time, but it will likely fit into future goals for the department.

In addition to the above, all traffic control signal installations or improvements made within or around the development should include a system to allow for manual operation signals by a hand held device.

All new buildings more than four stories in height should be wired to include a provision for installation of surveillance cameras that focus on exterior public areas and which is compatible with allowing such cameras to be remotely viewed by Somerville Police.

Large buildings, especially those with multiple basement levels (if any) should include installation of an antenna system to allow for clear radio transmissions by police and fire departments. Also, the developer should provide a rooftop location on the tallest building within the development for installation of a police repeater or satellite receiver.

The developer should be encouraged to install video monitoring and recording of all public areas within the development, especially interior areas where large numbers of people will likely gather as a part of the overall plan. Recorded images should be maintained for sixty days.

The developer should be encouraged to establish an area within the development for use by the police department with telephone and computer connections where police officers can meet with members of the public, write reports or use as a command post for special or public events within the development.

I hope that these comments will be useful in developing final plans for the completion of this project. If I can be of further assistance, please contact me.

Very truly yours,

Robert R. Bradley
Chief of Police

Addendum to Police Comments:
Submitted August 14th, 2007

Hi Katie,

I just spoke to All comm communications who handles the radio equipment for police, fire and public works. He suggested that in Assembly Square any new development, we require the developer to provide a "bi-directional amplifier system for police and fire radio frequencies" for every building in the complex. He told me that this has become standard in new large construction projects in this area so it should be nothing new to the contractors. He also emphasized that we secure a long term agreement for placement of police and fire radio antennas, transmitter / repeater / satellite receivers on the tallest building in the complex.

I hope that it's not too late to add this into the requirements.

Paul

August 10, 2007
Fire Department

Katie R. Brillantes
City of Somerville, Project Manager
Mayor's Office of Strategic Planning & Community Development

Katie,

This is a response to a request for comments on phase 1AA Assembly Square Project. Plan review and permits for fire department access, fire alarm and fire suppression systems shall be done through the Fire Prevention Bureau located at 255 Somerville Avenue. (617)625-6600 x8401. A/Deputy Chief Bill Hallinan will be the point of contact.

Adequate fire department access and water supply to the site shall be maintained at all times. A procedure for responding to the site for industrial accidents shall be worked out with the Fire Department prior to construction. Any building demolition shall be done with a fire department detail.

I am excited about helping this project move forward, if you need any assistance don't hesitate to ask.

aA/Deputy Chief William Hallinan
Somerville Fire Prevention

MEMORANDUM

To: Katie Brillantes, Project Manager
Office of Strategic Planning and Community Development
From: Charles E. O'Brien, P.E., City Engineer
Date: August 10, 2007
RE: Review Phase 1-AA Assembly Sq. and Ikea Proposal

Assembly Square Drive:

Utility Plans:

Catch basin laterals are designed to be 12" R.C.P. City standards for catch basin laterals are 8" diameter with special traps. (Lebaron # L-217) Note: Engineering may approve the design of 12" laterals considering the fact of reduced maintenance efforts with 12" laterals. (less pipe clogging)

Proposed 20" water main should be located such that all hydrants will be on the "short side." Specifically, from station 13+/- to 20+/-, the main should be located on the southern third of the roadway so that the hydrant will be on short side.
It is city policy to locate water main gate valves on intersecting street lines as much as possible for ease of locating.

Sheets 45 through 54 *Alignment and Grading Plans*

There are no elevations shown on the plans.

Ikea Plan Review:

Stormwater:

The design of phase 1-AA appears to meet or exceed all storm-water management regulations and good engineering design with respect to both structural and non-structural BMP's – best management practices. The drainage report includes pre and post run-off calculations, description of water quality units to treat the storm-water and an inspection

and maintenance schedule to make sure the system is functioning as designed. The design includes a bio-retention system to treat biologically run-off from the loading dock area. The system also includes a detention underground system composed of 36" pipe to store storm-water during heavy storms greater than the 10- year storm.

Water Distribution System:

The Assembly Square system appears adequate to handle full build-out demand plus fire flows. The type of pipe material (ductile iron, cement-lined class 52) meets city standards. The water mains will be encased in polyethylene wrap for protection against the corrosive soils that are present in the area.

According to the M.W.R.A., their system will be capable of delivering at the full build-out the necessary flows required and existing City of Somerville demand through meter 91. The effect on the City's system has not been determined, but considering the history of water demand in this area (large water users such as Ford Motor Co., First National Stores, H.K. Porter etc.), the overall effect on the existing demand in the area should be minimal.

Sanitary Sewerage System:

The Engineering Division has reviewed the plans and approves the proposed design. The new 12" and 18" sewers will replace an old, leaky 12" clay sewer that has a history of surcharging during heavy storms due to excessive infiltration and inflow (I/I). These new sewers will significantly improve sewerage service throughout the area.

Sewer Mitigation:

Engineering is satisfied with the degree of effort undertaken by the developer's consultant, V.H.B., with respect to the planning of proposed I/I mitigation measures for phase 1-AA and for the future full build-out. It is understood that the future mitigation including a new 42" storm drain discharging to the Mystic River will require a rather long lead time in order to acquire the necessary permits and other approvals from city, state and federal governments.
Note: Ten Hills Road sewer and drain replacement has been completed (2005/06) on both the east and west side of Temple Road. Therefore, the developer need not make any improvements on Ten Hills Road.

Cc: Stan Koty, Commissioner DPW
Carol Antonelli, Sewer/Water Supt.

INTEROFFICE MEMORANDUM

TO: KATIE BRILLANTES

FROM: VITHAL DESHPANDE

SUBJECT: ASSEMBLY SQUARE – COMMENTS ON FINAL LEVEL PUD APPROVAL PHASE 1-AA

DATE: 8/15/2007

CC: PETER MILLS

I reviewed "final level PUD Approval phase 1-aa" document submitted by VHB Inc, for environmental purpose and would like to make following comments:

1. This document addresses stormwater management, sewer and water and transportation that are or can be relevant to environmental issues.

2. Stormwater Management addresses regulatory requirements as per NPDES standards. There are set goals to reduce peak discharge of stormwater to the MWRA 84-inch Somerville Marginal Conduit. Low Impact Development (LID) and other designs are outlined to reduce non-point source pollution. Several structural and non-structural Best Management Practices are also detailed. Snow removal techniques, especially practices of using sand/salt and disposal of collected snow (in case of major snow emergency) may need to be addressed. Proposed bioretention basin seems to be new and attractive idea to reduce stormwater pollution as far as development in Somerville is concerned. It will be a good idea to understand its applications at other places as well as case studies especially related to reducing pollution load.

3. Water supply and sewer design has been addressed properly and unless there are any comments from City Engineer, this section should be ok.

4. In Transportation narrative there is a Trip Generation Comparison - Table 1. It shows significant reduction in trips/traffic, between previous proposed IKEA developments vs. Currently Proposed Phase 1-AA development. It seems that it provides the comparison in two design scenarios but not that with the existing traffic density. However, several mitigation actions pertaining to traffic-related impacts are proposed at various locations.

5. General Comment: Since proposed IKEA building intends to seek LEED certification, it will be a good idea if the future documents also outline design submittals proposed to achieve appropriate pre-requisites and/or credit points.

FAY, SPOFFORD & THORNDIKE

TRAFFIC IMPACTS PEER REVIEW

of

Final Level PUD Approval Phase I-AA

Assembly Square Redevelopment
Phase I-AA Traffic Impact and Access Study
And Mitigation Plans

Part I –Detailed Documents Review
VHB Submission

IKEA Somerville, MA

Prepared for:
City of Somerville

Prepared by:
Fay, Spofford & Thorndike, LLC

August 9, 2007

1.0 Transportation Narrative

The Transportation Narrative is a concise compilation of the overall transportation impact of the Phase I-AA development within the context of the long term Assembly Square Area redevelopment plan. It sets the master-planning framework of assumptions used to identify the framework for trip generation and trip distribution of the site development plan.

At the outset it indicates the Applicant will be expanding the study area and specifically address FST Team comments made in the December 16, 2006 peer review document. It cites that the differences in methodology will be addressed in a revised and expanded Traffic Impact and Access Study (TIAS) consistent with Executive Office of Environmental Affairs (EOEA) traffic analysis guidelines.

The revised TIAS will include additional intersections in Somerville, Medford, and Boston. A couple of key points are made:

1) Traffic generation of Phase I-AA is significantly reduced from the previous approved IKEA waterfront submission by 30-54 %.

2) Prior first phase mitigation commitments are not reduced.

Conceptual mitigation measures have been identified at each of the following locations:

- Mystic Avenue northbound at Lombardi Street/Assembly Square Drive
- Broadway at Lombardi Street
- Mystic Avenue northbound and Mystic Avenue/I-93 southbound U-turn underpass
- Mystic Avenue northbound at New Road
- Middlesex Avenue at Foley Street
- Assembly Square Drive at New Road/IKEA Way
- Fellsway (Route 28) at Mystic Avenue
- Fellsway (Route 28) at Assembly Square Drive (not cited, but included in the mitigation plans)
- Fellsway (Route 28) at Middlesex Avenue (not cited, but included in the mitigation plans)

Proposed mitigation at the above intersections is discussed further on. In addition to the mitigation measures cited above, Assembly Square Drive is to be reconstructed between Lombardi Street to the south and the Fellsway (Route 28) to the north. IKEA Way, a private road during Phase I-AA, is to be constructed in an alignment opposite New Road. New Road is to be modified to create a new signalized intersection with Assembly Square Drive that will serve as the main entryway to the new IKEA store.

Foley Street is to be improved to create the geometric changes needed to install a future traffic signal at Foley Street and new Assembly Square Drive.

H Appendices

(I) Traffic Impact and Access Study – Assembly Square Redevelopment – Phase I-AA

1 INTRODUCTION

Site Context and Background

The Site Context and Background identifies the procedure used to identify base case traffic volumes that include the assumed reoccupation of unoccupied portions of the Assembly Square Marketplace as part of the 'existing conditions' analysis by employing standard Institute of Transportation Engineers trip generation data. This is an acceptable and reasonable strategy.

Project Description

The analysis assumes the existing conditions redevelopment of Assembly Square Marketplace as part of 'background' traffic. The Phase I-AA project only involves the construction of the 340,000 square foot IKEA store on an 11.9-acre site plus infrastructure modifications that mitigate impacts of the IKEA store. Proposed infrastructure modifications such as the reconstruction of Assembly Square Drive and portions of New Road, and the construction of IKEA Way set the stage for the long-term larger development planned to encompass the entire Assembly Square District are broadly described.

Study Area

The study area for Phase I-AA includes 10 intersections, is the same as evaluated in prior studies, and is acceptable for the IKEA phase of the development project.

Subsequent phases of the overall Assembly Square redevelopment plan will incorporate an expanded study area.

Study Methodology

The study methodology employed for Phase I-AA is acceptable. The study was conducted in accordance with the Executive Office of Environmental Affairs (EOEA) and Executive Office of Transportation (EOT) traffic analysis guidelines and the City of Somerville Zoning Ordinance.

2 EXISTING CONDITIONS

Roadway Geometry

General descriptions of the roadway geometry of the arterials and access roads serving the Assembly Square Area are reasonable.

Traffic Volumes

Counts performed in January 2006 were, according to MassHighway seasonal count data, lower than average annual conditions by approximately 6%. VHB adjusted the volumes upward to reflect the seasonal variation, an acceptable procedure.

Safety Assessment

Two intersections exceed the statewide or district-wide average crash rates for signalized or intersections and both are proposed for mitigation prior to Phase I-AA, as the IKEA development will increase traffic volumes through these intersections – Route 28 at Mystic Avenue and Broadway and Lombardi Street near Broadway. In the former case, the mitigation involves signal hardware visibility enhancements plus a signal controller and signal timing upgrades. In the latter case, improvements to the closely spaced intersections involve geometric changes that are rather complicated and involve more than simply traffic analysis issues i.e., the impacts to Broadway traffic circulation and the perceived need of FRIT to create a strong gateway the I-93 southbound approach to the IKEA site.

In addition to the crash data reported at individual intersections, weaves along links such as the roadway between the I-93 northbound off-ramp to Route 28 and Middlesex Avenue and Mystic Avenue between Lombardi Street and New Road also are a concern within the Area. The Applicant proposes to address Lombardi Street/Broadway intersection area safety concerns with mitigation measures currently under design. The weaving section between the I-93 northbound off-ramp to the Fellsway (Route 28) and the northbound traffic on the McGrath and O'Brien Highway (Route 28) will continue to be a concern to be addressed during subsequent phases of the Assembly Square development.

While the analysis indicates that most intersections in the area have crash rates lower than statewide and district-wide average crash rates, this area is the site of numerous crashes, particularly along Mystic Avenue northbound/southbound and the Route 28 corridors, hence the State plans future improvements to this interchange area. It is of paramount importance that site-proposed mitigation measures minimize future crashes along both of these corridors and maximize the safety of regional and local pedestrian and bicycle crossings.

Pedestrian (and Bicyclist) Activity

As noted above under the Safety Assessment, future pedestrian and bicyclist access to the site is to be enhanced to the maximum extent possible. In keeping with the spirit of the 'smart growth' goal for the project site, future pedestrian and bicycle activity is expected to be encouraged and significantly higher than the relatively low levels of pedestrian and

bicycle activity found under existing conditions. As such, the Applicant proposes to improve the safety of pedestrian and bike crossings between the Somerville residential areas west of Route 28 and the Assembly Square site. A new Wellington Bridge Bike and Pedestrian Undercarriage is being funded to help improve the safety of pedestrians and bicyclists who would otherwise have to cross Route 28 at grade using traffic signals located at its Assembly Square Drive or Middlesex Avenue intersections. While the undercarriage does not completely eliminate the need for at grade pedestrian crossings of the Fellsway, it should reduce street-level pedestrian and bike crossing demands, particularly during critical afternoon and Saturday peak periods.

Public Transportation

The identification of existing public transportation services is acceptable. Three existing Massachusetts Bay Transportation Authority (MBTA) bus routes serve the site. While the Assembly Square development site is located adjacent to the Orange Line rapid transit/Haverhill Line commuter rail corridor, the nearest Orange Line stations are located in Boston (Sullivan Square) and Medford (Wellington) approximately a mile to a mile and a half away, with the nearest commuter rail station also at Wellington in Medford. Major public transportation enhancements to the Assembly Square area involving a proposed new Orange Line Station, are still many years away and not expected by the year 2011 forecast period for Phase I-AA.

3 FUTURE CONDITIONS

No-Build Conditions

This section provides an unorthodox description of the 'No-Build' traffic scenario. The presumption is that the former proposed IKEA on the waterfront is part of the 'No-Build' traffic scenario, such that the traffic conditions with the 'Build' scenario are lower than the traffic volumes with the 'No-Build' scenario, as the description of the 'No-Build' case has been dictated by Land Court rulings. While we understand the thought process that went into this assumption, we are unable to review traffic volumes that are representative of a *true* projected 2011 'No-Build' condition without an IKEA store.

Essentially, the VHB TIAS assumes that the year 2011 Phase I-AA volumes are 30-54% lower than 'permitted' volumes from an earlier study not reviewed by FST. The 2011 'No-Build' volumes are very similar to those contained in the February 28, 2007 Expanded Environmental Notification Form with Phase I Waiver Request. Like the current submission, the EENF indicated that year 2011 Build traffic volumes would be lower than the 2011 No-Build traffic volumes. The proposed IKEA development generates substantially fewer trips than the earlier proposed IKEA mixed use waterfront development. But, from the data provided, we are unable to tell what the projected 2011 traffic volumes in the Assembly Square area actually will be without the development of an IKEA store – a 'true' No-Build' scenario.

'No-Build' case impacts are a moot point as long as the 'Build' case traffic generated, which is expected to be lower than the 'No-Build' case impacts -- is adequately mitigated.

Historic Traffic Growth

VHB's assumed 1% background traffic growth plus known background traffic is an acceptable and conservative way to estimate background growth for the projected 2011 'No-Build' traffic conditions, as background traffic has not been growing in the recent past.

Site-Specific Growth

Traffic from the submitted list of non-project related developments is reasonable and acceptable to include in 'No-Build' traffic conditions.

Future Roadway Conditions

The listing of future roadway conditions discusses primarily those elements that are expected as part of the site's off-site mitigation measures (see comments further on). At this time, additional roadway changes other than those related to the IKEA development have not been assumed by the year 2011.

Future Public Transportation

The Orange Line Station is not contemplated to be in existence during the 2011 horizon year of Phase I-AA. Additionally, the Urban Ring is cited as having varying levels of connectivity to the Assembly Square site. By 2011, it is anticipated that only Phase 1 of the Urban Ring will be in existence, with no additional new services, but with potential service frequency enhancements. The Beyond Lechmere MBTA study of services is not expected to have an impact on transit access to Assembly Square.

No-Build public transportation service assumptions made for Phase I-AA are reasonable and acceptable.

Build Conditions

Trip Generation

Projected trip generation estimates of Phase I-AA are reasonable and acceptable.

The study estimates the Somerville IKEA or Phase I-AA will generate approximately 6, 200 vehicle trips on a typical weekday and 10,510 vehicle trips on a typical Saturday. During the highest hour on a typical weekday, the site is expected to generate a total of just under 200 vehicle trips during the morning peak hour and approximately 475 vehicle trips during the afternoon peak hour, and just over 1,000 vehicle trips during the mid-day Saturday peak hour.

Trip reductions were not taken for shared vehicle trips or transit trips, though some may in fact occur. It was reasonably assumed that 13% of trips to and from the site would come either from pass-by or diverted linked trips.

Trip Distribution and Assignment

The projected trip distribution and summary of traffic to and from the IKEA site is acceptable and reasonable.

4 TRAFFIC OPERATIONS ANALYSIS

Level of Service Criteria

The industry-standard Level of Service Criteria is reasonable and acceptable.

Level of Service Analysis

Summarized in Table 9 of the submission, the analysis is acceptable for the analytical assumptions made. Pending City concurrence with recommendations cited below, minor analysis assumptions are recommended. Please refer to the Mitigation section for peer review recommendations the anticipated impact on the level of service analyses at a few of the mitigated locations.

5 MITIGATION

Assembly Square Off-site Mitigation Plans – Traffic Plan Review

General

From a traffic analysis perspective, perhaps the most important issue is whether the proposed mitigation will sufficiently mitigate future traffic conditions with the IKEA in place. VHB's logic is that if the mitigation measures proposed previously for a larger project size were acceptable, than the mitigation measures proposed for Phase I-AA should suffice, as they include essentially the same mitigation as proposed for the larger project size, plus additional mitigation at the Route 28 signalized intersections with Assembly Square Drive and Middlesex Avenue. For the most part, as discussed below, we concur that off-site traffic mitigation measures proposed for Phase I-AA will sufficiently accommodate projected additional traffic volumes generated by the proposed IKEA development.

Mitigation at traffic signals assumes new pavement markings and signs in compliance with the Manual on Uniform Traffic Control Devices (MUTCD), as amended. New and replaced mast arms and signal poles must conform to the Somerville City standard equipment, 'Washington' mast arm and post design. Closely spaced signals are to be actuated and coordinated with one another under system control strategies.

Where possible without causing undue traffic delays, exclusive pedestrian crossing phases are to be provided with countdown timer pedestrian signals. Based on projected traffic volumes, exclusive pedestrian crossing phases can be accommodated at most affected signalized intersections with the exception of those on the Fellsway (Route 28). Exclusive pedestrian phases on the Fellsway signalized intersections would cause extreme traffic congestion due to the minimum crossing times required on such large intersections.

Broadway at Lombardi Street/I-93 Southbound off-ramp/Mystic Avenue South (Location # 1, Sheet 2 of 9)

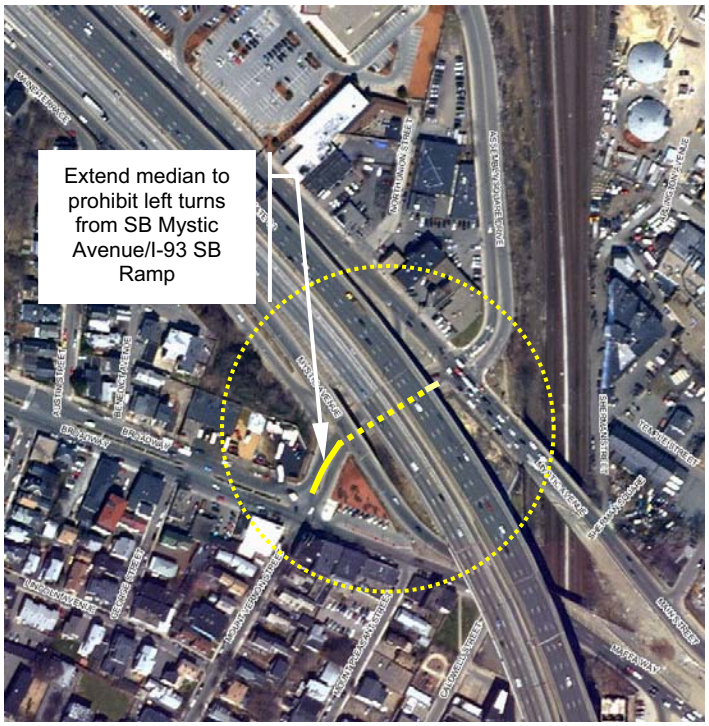
Traffic operations at three closely spaced intersections running the roughly 400-foot length of Lombardi Street require mitigation as a system:

- Lombardi Street at Broadway and Mount Vernon Street;
- Lombardi Street at Mystic Avenue SB/I-93 SB Off-ramp; and
- Lombardi Street at Mystic Avenue NB/Assembly Square Drive.

Mitigation proposed at location # 1involves the two westerly intersections of the above system. The concept calls for a modified controller, new vehicle detector loops (including bicycles), an exclusive countdown pedestrian phase, as well as queue detectors placed on the southbound Mystic Avenue approach north of Lombardi Street, new signs and pavement markings and replacement of signal heads.

It is our understanding that while the existing traffic signal controller has several years of useful life, we concur with the City Traffic Engineer's recommendation on this issue; i.e., to install a new controller with the caveat that the existing controller be recycled for potential use at another location within the City of Somerville.

Rather than the treatment illustrated on Sheet 2, it is recommended that *the median on Lombardi Street be extended along its entire length (see aerial photo below) to prevent potential left turning motorists attempting to access the IKEA store or Assembly Square Drive from turning left out of the intersection.* This would divert existing and future left turning motorists, including large trucks, to the U-turn slot. It would prevent potential blockage of the U-turn slot and the potential hazard of motorists turning left under stop sign control. Approximately half of IKEA customers are expected to arrive via this location. The design, if constructed as illustrated on the Sheet 2 plan, is expected to result in congestion and possibly a hazardous crossing issue between left turning motorists turning out of Mystic Avenue southbound/I-93 Southbound off-ramp and motorists on Lombardi Street. This left turn movement is currently used by a relatively small number of vehicles including trucks accessing the Home Depot component of the site.



Lombardi Street Corridor
(Base Map Source MassGIS)

The route followed by trucks – via Mystic Avenue northbound to New Road followed by a right turn onto Assembly Square Drive – is expected to be adequate to accommodate large trucks that must use this alternate route. The New Road intersection with IKEA Way and Assembly Square Drive has been adjusted to accommodate large trucks turning right from New Road onto Assembly Square Drive.

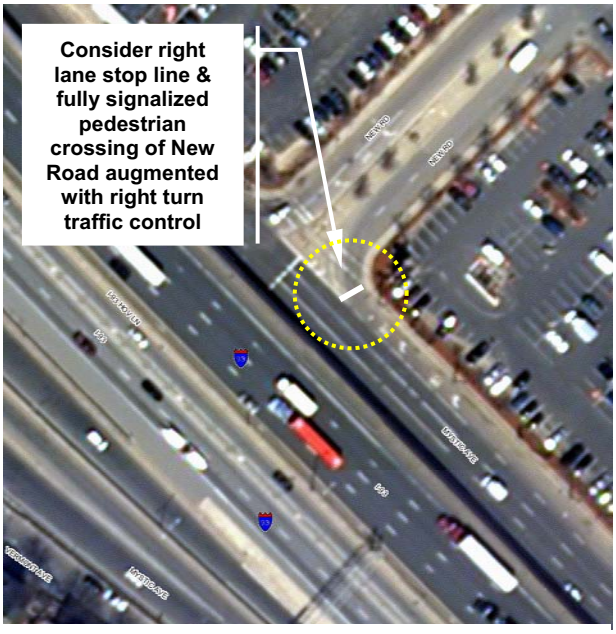
With inclusion of the median extended along the length of Lombardi Street, the conceptual mitigation plan is acceptable from a traffic perspective.

Lombardi Street at Mystic Avenue North and Assembly Square Drive (Location # 2, Sheets 3 and 4 of 9)

Mitigation proposed at this location includes a relocated and signalized U-turn approach, relocation of the median on Lombardi Street, a new signal phasing and timing plan, new mast arm mounted signal heads serving three approaches, incorporation of an exclusive count-down pedestrian signals, new vehicle detector loops (including bicycles), and installation of a new mast-arm mounted signal to control the relocated U-turn approach. The proposed mitigation plan is beneficial for the northbound Mystic Avenue traffic and the U-turning traffic, as it eliminates the weaving between the stop-controlled U-turning traffic and Mystic Avenue northbound traffic and also reduces the potential for pedestrian and bicycle crossing conflicts.

With the exception of the extension of the median on Lombardi Street as discussed above, the conceptual mitigation plan is acceptable from a traffic perspective. We note that the City Traffic Engineer is recommending that the signal controller at this intersection be replaced. As above, we defer to the City Traffic Engineer's recommendation on this issue with the caveat that the existing controller be recycled for potential use at another location outside the project area.

We note that based on recent City/Applicant traffic review meetings, the Applicant is exploring other possible mitigation measures that might permit traffic on Mystic Avenue SB/I-93 SB to access the site via Lombardi Street directly to Assembly Square Drive. We are not in a position to comment on an alternative treatment for traffic mitigation in this area until a specific traffic signal and concept plan has been prepared and analyzed.



New Road at Mystic Avenue NB
Base Map Source: MassGIS

New Road at Mystic Avenue Northbound (Location # 3, Sheet 5 of 9)

Mitigation proposed at this intersection includes the installation of new mast arm-mounted signal heads for northbound Mystic Avenue traffic, new post-mounted signal heads for southbound New

Road and new vehicle (bicycle) detectors on Foley Street only. The concept plan calls for the ability to make free right turns from Mystic Avenue northbound onto New Road. Protected pedestrian crossings are proposed across the north half New Road only, as pedestrians crossing the south half of New Road would be in conflict with free-right turning motorists.

Retention of the existing free right turn will be hazardous to pedestrians crossing New Road. It is recommended that the pedestrian phase be provided to create a *full-length pedestrian crossing* of New Road. Pedestrians or bicyclists crossing in this area will otherwise be in conflict with increased right-turning traffic to the IKEA store site. It is recommended that the *free right turn be replaced with a protected/overlapped right turn with the stop line located on the Mystic Avenue approach to the right turn, rather than none at all other than the crosswalk.* The right turn should be controlled with a green arrow to yellow arrow and red arrow display with the pedestrian phase only upon pedestrian actuation. This will have a minimal impact on traffic operations at this intersection.

Otherwise, the conceptual mitigation plan proposed at this intersection is acceptable from a traffic perspective. While the signal-timing plan has not yet been completed, the traffic analysis results indicate that an acceptable timing plan can be prepared further into design.

Foley Street at Middlesex Avenue (Location # 4, Sheets 6 and 7 of 9)

Mitigation proposed at this location includes new mast-arm mounted signals for both northbound and southbound Middlesex Avenue approaches. Signal heads for the Foley Street approach are proposed on the mast-arm for the southbound Middlesex Avenue approach. An exclusive pedestrian phase is proposed for the Foley Street and north Middlesex Avenue legs -- two of the three intersection legs. New vehicle (and bicycle) detectors are proposed on all three approaches to the intersection.

The conceptual mitigation plan proposed at this intersection is acceptable from a traffic perspective. While the signal-timing plan has not yet been completed, traffic analysis results indicate that an acceptable timing plan can be prepared further into design.

Mystic Avenue northbound at the Fellsway (Route 28) Southbound and I-93 northbound off-ramp (Location # 5, Sheet 8 of 9)

Mitigation proposed at this high crash rate location includes all new mast-arm mounted signal heads to enhance the signal visibility and reduce the crash rate and refreshed pavement markings. The conceptual mitigation plan proposed at this intersection is acceptable from a traffic perspective and must be coordinated with both MassHighway and the Department of Conservation and Recreation (DCR), who has jurisdiction over the signal. The existing pedestrian crossing of the Fellsway south of the intersection only allows pedestrians to access the median. *Pending DCR concurrence, it is recommended that a median sign facing crossing pedestrians coming from the south and fencing be installed adjacent to the guard rail to direct any pedestrians using the crosswalk to the proper crossing location.* Otherwise, existing and future pedestrians may attempt a hazardous crossing the southbound leg of the Fellsway toward the sidewalk on the north side of the McGrath Highway.

Assembly Square Drive at the Fellsway (Route 28) and Middlesex Avenue (Location # 6, Sheet 9 of 9)

Mitigation proposed at these two closely spaced intersections involves the creation of dual left turn lanes on both the Assembly Square Drive and Middlesex Avenue approaches to the Fellsway.

The ability of right turning motorists from Middlesex Avenue to change lanes to head northbound on the Fellsway prior to Assembly Square Drive is impaired when attempted to make the maneuver during the phase when northbound Fellsway traffic is moving. Additionally, the yield right turn movements may need to be signal controlled, since they adversely affect pedestrian crossings. Even though an exclusive pedestrian phase is not possible on these Fellsway intersections, every attempt should be made to reduce heavy volumes that cross pedestrian maneuvers at relatively high rates of speed. While the exclusive right turn lanes in and out of Assembly Square Drive and Middlesex Avenue are difficult for pedestrian safety, retention of the proposed free right turn lanes is essential to processing the significant right turns traffic volumes expected.

As has been noted at traffic design coordination meetings, there is a potential issue between motorists making left turns out of the Marketplace site driveway onto Assembly Square Drive during the PM peak period and traffic from the IKEA site. However, the volume projections indicate that this is primarily a problem during subsequent phases of the development, rather than the lower traffic volumes occurring by 2011 during Phase I-AA. This should be addressed at a later date. It is noted that left turning motorists have the option of traversing a driveway to access Middlesex Avenue via a right turn movement if the left turn becomes difficult.

Assuming the cross-section of Assembly Square Drive is not reduced between the Marketplace site driveway and IKEA Way/New Road, the conceptual mitigation plan proposed at these intersections is acceptable from a traffic perspective for the 2011 horizon analysis year. While a signal-phasing concept is provided, the signal-timing plan has not yet been completed. Traffic analysis results indicate that an acceptable timing plan can be prepared further into design for the Phase I-AA traffic conditions.

The short 420-foot weave section between the I-93 northbound off-ramp and the northbound Fellsway (Route 28) will remain an issue that should be addressed at some point in the future. This particular weaving segment is problematic because the traffic signal queues emanating from Middlesex Avenue tend to complicate traffic operations, as motorists need to be looking in front and behind them to negotiate weaving maneuvers.

Assembly Square Drive Roadway Plans – Traffic Review

Assembly Square Drive to the Fellsway (Route 28) intersection to Marketplace Site Drive (Sheet 55 of 72)

Assembly Square Drive in this area is proposed to have a variable width layout with a nine-foot wide median and two travel lanes in each direction totaling 27-feet in each direction comprised of two 11-foot travel lanes, a one-foot median offset, and a 15-foot outer

lane. Alternatively, with one travel lane in each direction and without on-street parking, retention of the proposed layout could accommodate a five-six foot bike lane or shoulder, an 11-12 foot travel lane, and a one-two foot offset from the median with the added width dedicated to green space. This issue was commented upon in FST's memo of July 24, 2007. The paved crossing for pedestrians could be reduced approximately 7-9 feet in each direction (i.e., an 18 to 20-foot barrel in each direction comprised of an 11- or 12-foot travel lane, a one or two-foot offset from the median, and a six-foot bike lane/shoulder). This treatment would eliminate two lanes of potential pedestrian crossing exposure at proposed unsignalized crosswalks, or for that matter at any midblock location they may happen to be crossing. These include six crosswalks on Assembly Square Drive between the Marketplace Site Drive and IKEA Way that would be unsignalized in the short term under Phase I-AA. The environmental change -- added green space -- would also be significant. [1]

Control of the intersection of the Marketplace Site Drive with Assembly Square Drive may become a problem in the future. It may be appropriate to consider a future prohibition of left turn egress from the Marketplace Site Drive should traffic crashes occur at a rate higher than statewide average rates at this intersection. However, on the basis of the expected left turn vs. through volumes on Assembly Square Drive during Phase I-AA, a problem at this location is not expected in the near term, as it should be operating at an acceptable level of service at all times until additional development beyond the IKEA store occurs at the Assembly Square development site.

If the City elects to support the four- to five-lane cross-section, the concept design as submitted is generally acceptable for Phase I-AA. The outer 15-foot lane is the minimum for a share the road condition as it does not specifically designate a 4-foot shoulder for potential use by cyclist, instead relying on motorists to leave space around cyclists. A full five-six foot wide and marked bike lane or shoulder would preferable for bicyclists who will be traversing Assembly Square Drive, but would increase the width of the paved surface of Assembly Square Drive.

<u>Assembly Square Drive – Just north of Marketplace Site Drive to just south of future 'C' Street (Sheets 56 and 57 of 72)</u>

The same comment regarding the proposed Assembly Square Drive cross-section is applicable. If the City elects to support the four- to five-lane cross-section, the concept design as submitted is generally acceptable for Phase I-AA. The exposure of pedestrians on the proposed crosswalk on Assembly Square Drive would be shortened if the cross-section is reduced in size. [2]

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1 It is recognized that the proposed 4-5 lane cross-section provides the potential opportunity for on-street parking, should it be desired in the future. However, as on-street parking on Assembly Square Drive has not been assumed in the site parking calculations, we assume it is not proposed.

2 In the long term, the ability of traffic from B Street to turn left onto Assembly Square Drive is problematic during the 2018 PM peak hour full build out volumes. We note that if motorists have trouble doing so, they will be able to access a proposed future traffic signal located at the intersection of C Street and Assembly Square Drive.

The inner curve radius of the horizontal curve on Assembly Square Drive is sufficient to accommodate a maximum travel speed of approximately 25 miles per hour. *As such, curve warning signs in accordance with the MUTCD as amended (2003 Edition) are recommended on both approaches to the Assembly Square Drive curve located just north of future A Street. The Applicant should confirm that the design at the horizontal curve is sufficient to accommodate the tracking of adjacent turning trucks without encroaching on the shoulder that will be used by cyclists.*

On Sheet 57, consideration should be given to striping the southbound left turn lane to C Street with transverse yellow markings (like those illustrated on Sheet 58) until future development occurs along C Street. This should be striped as a left turn lane only if the curb cut created is actually going to be used to provide access to the existing site area prior to the construction of the future C Street alignment into the future development area.

Assembly Square Drive – Just south of future 'C' Street to just north of future IKEA Way/New Road signalized intersection (Sheets 58 and 59)

Once again, the same comments regarding the cross-section and the City's decision on it are applicable during Phase I-AA.

Interim two-way stop control of Foley Street approaches to Assembly Square Drive is reasonable and acceptable. If the City elects to support the four- to five-lane cross-section, the concept design as submitted is acceptable for Phase I-AA.

Assembly Square Drive at IKEA Way/New Road signalized intersection (Sheets 60 and 61)

The geometry of this unconventional signalized intersection is adequate to accommodate a small truck and auto turning simultaneously. This intersection is generally less than ideal as, dual left turns -- i.e., those from southbound Assembly Square Drive to IKEA Way -- should be made at 90º or a shallower angle, not 120º as shown on the concept plan. Such a reverse curve turning movement is unusual for dual left turn movements. The intersection will need to be well lighted to alert motorists to its unusual features, as those on the inside left turn lane will try to cut the turning movement as close to the island as possible upon seeing how IKEA Way is aligned. There is the potential to reduce the size of the channelization island, which should be considered along with the potential relocation of the westbound stop line on IKEA Way and the southbound stop line on Assembly Square Drive. It is recognized that a reduction in the island size has drawbacks for the pedestrian environment. It is also recognized that the future IKEA Building is largely driving the design of this intersection.

If the potential reduced cross-section of Assembly Square Drive is provided at this intersection, primarily the north leg of the intersection would be affected. Right turns from IKEA Way would be under yield control into a single 11-12 foot northbound lane with the potential for a 6-foot shoulder that could be used for bicycle reservation, mirroring that provided on the south leg of Assembly Square Drive. The southbound Assembly Square Drive approach to IKEA Way/New Road would have an exclusive left turn lane and a general-purpose (all moves) lane still permitting the dual left turn movement into IKEA Way.

The westbound right turning movement from IKEA Way to Assembly Square Drive northbound is shown as a free-flow uncontrolled condition. This operation, while great for traffic flow, is hazardous for pedestrians who may be attempting to cross to or from the northeast corner of the intersection during periods (i.e., to and from the IKEA corner pocket park reservation) when substantial conflicting right turning volumes are occurring; i.e., the afternoon and Saturday peak hours. *It is therefore recommended the crosswalk from the channelization island to the northeast corner be considered for inclusion in the exclusive pedestrian phase with a pedestrian signal and right turn traffic signal incorporated on the northeast corner. The right turn should be controlled via a green/yellow/red arrow display with no right turn permitted on the red arrow. As envisioned, the heavy right turn would run continuously except when the exclusive pedestrian phase is actuated. A stop line would need to be added on the IKEA Way exclusive right turn lane approach to the crosswalk and a sign warning motorists to stop on a red arrow.*

While the phasing plan was submitted, the signal-timing plan has not yet been completed. The future AM and PM peak hour traffic analysis results indicate that an acceptable timing plan operating at a very good level of service can be prepared further into design. The pedestrian crossing phase duration would need to be increased over that contemplated in the current plan to accommodate the additional crossing distance across the right turn lane from IKEA Way.

Except for the relatively minor issues cited above, the concept design as submitted is generally acceptable for Phase I-AA if the City elects to support the proposed four- to five-lane cross-section.

<u>Assembly Square Drive just south of IKEA Way to Mystic Avenue signalized intersection (Sheets 61 and 62)</u>

These sheets are generally acceptable as illustrated. The plans call for a 20-foot bay on either side of a 6-foot median. Each travel lane is 12 feet wide with a proposed two-foot offset from the median. This cross-section is flexible enough to accommodate substantial additional traffic growth over the volumes projected.

Depending on the outcome of investigations pertaining to the Lombardi Street corridor between Broadway and Mystic Avenue northbound as discussed above, the alignment of the Assembly Square Drive approach to its intersection with Mystic Avenue north may need minor adjustments if the submitted plan is modified.

<u>Foley Street between Middlesex Avenue and north of Assembly Square Drive (Sheet 63)</u>

Once again, the same comments regarding the Assembly Square Drive cross-section and the City's decision on it are applicable during Phase I-AA. Otherwise, this sheet is acceptable as illustrated. It generally proposes stop control on Foley Street with conduits for future signal traffic control of the intersection once it meets traffic signal warrants. Foley Street is to be widened by a few feet on its eastbound approach to Assembly Square Drive to create an exclusive right turn lane.

New Road and IKEA Way between the median break on New Road and the easternmost IKEA access driveway to the rear building parking lot (Sheet 64)

This plan illustrates the transition from a dead end at the easterly end of IKEA Way to the four-lane divided segment of New Road and is generally acceptable. We question the need for the odd bend in IKEA Way with the yellow transverse striping and broken back curves. It would seem that this could be revisted to create standard curves for plowing and a normal lane addition transition.

Sign Summary (Sheet 65 of 72)

Signs illustrated are acceptable.

Loop Detector Details (Sheet 66 of 72)

This MassHighway sheet is acceptable.

40' – 45' Type II Mast Arms Cored Pier Foundations (Sheets 67 and 68 of 72)

Per the City of Somerville's request, an additional detail sheet should be added to conform to the 'Washington' pole design standard (refer to attached City of Somerville standard for poles and mast arms) for application to any signals on or off-site within City of Somerville roadway layouts. Pending DCR concurrence, the Sheets 67 and 68 as shown may be acceptable for the new traffic signal poles and posts on its Fellsway (Route 28) layout.

Assembly Square Drive Landscaping Plans (Sheets 69 and 70 of 72)

It is recommended that *the location of plantings be such to ensure that proper sight lines are provided at all unsignalized intersections for a projected 85th percentile design speed of 35 miles per hour. Sight lines at proposed unsignalized intersections should be plotted on the landscaping plans. Clear zones must be provided for a 3.5-foot eye level and height of 3.5 feet from ten feet back of the edge of pavement for the prevailing speed. For example, at an assumed 35 miles per hour design speed for a level area (less than $\pm$ 3%), the minimum required stopping sight distance is 250 feet and 390 feet for intersection sight distance. Proposed plantings must not encroach minimum sight lines at newly created unsignalized intersections for accommodating left and right turning movements,*

Assembly Square Drive Traffic Management Plans (Sheets 71 and 72 of 72)

The preliminary traffic management plans as submitted are generally reasonable and acceptable, as they are in conformance with the MUTCD (2003 Edition, as amended).

PS-028
GLH:gh

TRAFFIC IMPACTS PEER REVIEW

of

Final Level PUD Approval Phase I-AA

Assembly Square Redevelopment
Phase I-AA Traffic Impact and Access Study
And Mitigation Plans

Part II –Review of Compliance with Planning Board Decision
Transportation Related Conditions
(December 14, 2006)

IKEA Somerville, MA

Prepared for:
City of Somerville

Prepared by:
Fay, Spofford & Thorndike, LLC

August 9, 2007

CITY OF SOMERVILLE, MA.

FLUTED LIGHTING OR TRAFFIC POLES

General

The structure shall consist of a 12-flat fluted tapered pole & traffic signal mast arm, optional luminaire arm, decorative pole top finial, anchor bolts, base plate, and decorative base.

Calculations

Design calculations in conformance with AASHTO 1994 Edition, shall include mast arm, luminaire arm (optional), pole, base plate, and anchor bolt analysis. Tube drag coefficients shall be increased to include the effects of fluted shapes. Maximum loads and stresses shall be determined for the most critical wind direction. The pole shall be analyzed in its final deflected position per section 1.3.3(A)(2), at the arm to pole connection(s) and at the pole base. Also, at the mast arm connections, the pole is considered to be compact when the diameter/thickness ratio (D/t) does not exceed 52 for ASTM A595 Grade A tubes. Maximum arm and pole loads, stresses and combined stress ratios (CSR) shall be provided for the specified loading combinations, as well as maximum top of pole dead load rotation. Dead load stresses at welded connections shall be limited to 20 ksi. Shaft dimensions shall be equivalent in strength for the loads shown on the drawings.

Pole

The fluted pole shall be formed from tubes conforming to ASTM A595 Grade A with a minimum yield strength of 55 ksi, and have a constant linear taper of 0.14 in/ft. The flutes shall terminate approximately 1” above the decorative base to facilitate a smooth transition for aesthetic appeal. The shaft shall be one piece up to 41’, and contain no circumferential welded butt splices. Laminated tubes are not permitted. The pole shall have a reinforced 4.0" x 6.5" handhole with cover located 2'-0" from the pole base. Each pole shall be provided with a decorative end cap secured in place with set screws. A decorative finial (pineapple) will be securely attached on top of the pole end cap. The pole shall be hot dip galvanized and powder coated as specified in the finish specifications.

Mast Arm

The fluted mast arm shall be formed from tubes conforming to ASTM A595 Grade A with a minimum yield strength of 55 ksi, and have a constant linear taper of 0.14 in/ft. Arms up to 41' in length shall be manufactured and shipped in one piece. Circumferential welded tube butt splices and laminated tubes are not permitted. Each arm shall be provided with an end cap secured in place with set screws. The mast shall be hot dip galvanized and powder coated as specified in the finish specifications.

Luminaire Arm (Optional)

Truss Style Luminaire Arms shall be 2.38” outside diameter, standard ASTM A53 Grade B pipe (non-tapered) with a minimum yield strength of 36 ksi. Single Member Style Luminaire Arms shall either be 2.38” outside diameter, standard ASTM A53 Grade B pipe (non-tapered) with a minimum yield strength of 36 ksi *or* 3.0” to 4.6” outside base diameter, tapered standard ASTM A595 Grade A shaft with a minimum yield strength of 55 ksi. The luminaire arms shall have up to 15’ standard horizontal length measured from the inside face of the pole, and have a maximum

3.0’ rise (single member) or 3.5’ to 5.5’ (Truss Style) from the centerline of the arm connection. The arms shall be attached 6” below the pole top with a standard simplex connection. The two simplex connection plates shall be cast steel conforming to ASTM A27 Grade 35-65, and continuously fillet welded to the pole and arm. The plates’ shape shall allow the luminaire arm to be held in place by gravity while being secured by one (1) or two (2) 0.5” diameter hex head hub bolts. The bolt shall conform to ASTM A325 and be hot dip galvanized per ASTM A153. Arms shall be hot dip galvanized and powder coated as specified in the finish specifications.

Base Plate

Base plates shall conform to ASTM A36. Plates shall be integrally welded to the tubes with a telescopic welded joint and shall be hot dip galvanized and powder coated as specified in the finish specifications.

Anchor Bolts

Anchor bolts shall conform to the requirements of AASHTO M314 Grade 55 (ASTM F1554 Gr 55). The upper 12" of the bolts shall be hot dip galvanized per ASTM A153. Each anchor bolt shall be supplied with two hex nuts and two flat washers. The strength of the nuts shall equal or exceed the proof load of the bolts.

Fluting Process

The pole shall be cold rolled over a precision hardened steel mandrel to form a 12-flat flute shaft as specified. The fluted shaft shall have uniform, equally spaced “Doric” flutes. The flutes shall be formed with rollers in full contact with the material from the top of the crest, through the valley of the flute, to the top of the next crest. Individually rolled flutes or round poles with a separate fluted sheathing are not permitted.

Decorative Base

A “Washington” style cast aluminum decorative base shall be provided for each pole. The base shall be the clamshell type or equivalent to facilitate installation and have an adequate size closeable door opening to facilitate pole wiring access.

Finish Specifications

Galvanizing:
Surface Preparation

Prior to being incorporated into an assembled product, steel plates 0.75” or more in thickness shall be blast cleaned when required to remove rolled-in mill scale, impurities and non-metallic foreign materials. After assembly, all weld flux shall be mechanically removed. The iron or steel product shall be degreased by immersion in an agitated 4.5%-6% concentrated caustic solution elevated to a temperature ranging from 150 to 190 degrees Fahrenheit. It shall then be pickled by immersion in a heated sulfuric acid solution of 6%-13% concentration, with a controlled temperature between 150-190 degrees Fahrenheit. It shall then be rinsed clean from any residual effects of the caustic or acid solutions by immersion in a circulating fresh water bath. Final preparation shall be accomplished by immersion in a concentrated zinc ammonium chloride flux solution heated to 130 degrees Fahrenheit. The solution’s acidity content shall be maintained between 4.5-5.0 pH. The assembly shall be air dried to remove any moisture remaining in the flux coat and/or trapped within the product.

Zinc Coating

The product shall be hot-dip galvanized to the requirements of either ASTM A123 (fabricated products) or ASTM A153 (hardware items) by immersion in a molten bath of prime western grade zinc maintained between 810-850 degrees Fahrenheit. The entire product shall be totally immersed with no part of it protruding out of the zinc bath. This is to limit the risk of trapped contaminates containing chlorides and reduce the risk of bare spots (bare spots can occur when flux on the steel surface is burned away by heat of the first dip). Double dipping is a common practice but not recommended. Maximum aluminum content of the bath shall be 0.01%. Flux ash shall be skimmed from the bath surface prior to immersion and extraction of the product to assure a debris-free zinc coating.

Top Powder Coating:

General

An “Ebony Black” color will be used for all poles and decorative bases. The powder coat finish shall standardly consist of a Urethane or a Triglycidyl Isocyanurate (TGIC) Polyester Powder. In addition to these two powders a Super Durable Powder can be used which provides a minimum of 3 times the gloss retention, color retention and ultraviolet light (UV) resistance compared to the standard powder coatings. The decorative finial will be painted with an approved “Gold” or “Brass” color.

Surface Preparation and Powder Coating

The exterior steel surface shall be blast cleaned to Steel Structures Painting Council Surface Preparation Specification No. 7 (SSPC-SP7) requirements utilizing cast steel abrasives. Prior to the powder application, the zinc-coated substrate shall be preheated to a maximum temperature of 450 degrees Fahrenheit for a minimum of one (1) hour. Then all exterior surfaces shall be cleaned & coated with a Urethane or Triglycidyl Isocyanurate (TGIC) Polyester Powder or a Super Durable Powder (when required) to a minimum dry film thickness (DFT) of 2.0 mils (0.002”). The powder coating is electrostatically applied and then cured in a gas fired convection oven at a temperature range of 350 - 400 degrees Fahrenheit. The thermosetting powder resin shall provide both intercoat as well as substrate fusion adhesion that meets 5A or 5B classifications of ASTM D3359.

Quality Control

The powder coating facilities shall be owned and operated by the pole manufacturer to ensure a quality coating system.

Packaging

Prior to shipment small poles shall be wrapped in 0.188” thick Ultraviolet inhibiting plastic backed foam. Larger poles shall be cradled in a 1.0” rubberized foam base.

A. Transportation Management/Traffic Circulation

1) *The Applicant shall revise the Traffic Impact Assessment Study (TIAS) in consideration of comments included in the Peer Review memorandums prepared by FST reviewing Existing Conditions, No-Build Conditions, and Build Conditions, consistent with MEPA review.*

   The Applicant is in the process of revising the TIAS and has provided responses to comments made. The Phase I-AA traffic analysis was generally complies with the above condition, as it was done in a conservative manner consistent with the MEPA review requirements. Additional responses for subsequent phases are being addressed.

2) *Major actions to be taken prior to Phase 1-A include: expanding the impact study area, documenting/justifying trip proposed generation rates, trip distribution, and trip reduction rates.*

   The Applicant has complied by this requirement for Phase I-AA.

3) *The applicant shall consider issues discussed in Peer Review Memoranda. The Board shall consider the Peer Review Memoranda or any additional information when considering permit applications.*

   The Applicant has complied with this requirement for Phase I-AA. The Applicant has been meeting regularly with the Peer Reviewer to address traffic issues raised and has considered, and responded to many of the comments made. The submission for Phase I-AA is generally consistent with peer review findings, with the caveat that proposed conditions, recommended further on, be included with the approval.

4) *All mitigation involving traffic signal upgrades must include specific discussion and documentation of the ability of all controllers to be left in place to fulfill the functions required of them by proposed mitigation. In addition, all traffic control equipment and roadway elements must meet City of Somerville specifications and standards. The Applicant shall consider all recommendations referenced in the Traffic Impact and Access Study Memo; On-Site Circulation Memo; and the Pedestrian and Bicycle Circulation Memo prepared by Fay, Spofford & Thorndike (FST).*

   Again, the Applicant has generally complied with this requirement for Phase I-AA with the caveat that proposed conditions, recommended further on, be included with the approval.

5) *The Applicant shall also work with the Massachusetts Highway Department to include visible signage that will direct traffic to the site via highway and keep traffic at a minimum in residential neighborhoods.*

It is our understanding the Applicant is complying with the evaluation of MassHighway-related signage, though we have not seen documentation to this effect. A standard traffic sign plan was provided reviewed in the submission package for Assembly Square Drive, Foley Street Extension, IKEA Way, and the easterly portion of New Road. This submission is generally in compliance with the MUTCD, with the caveat that proposed conditions, recommended further on, are incorporated under Part III of this letter.

TRAFFIC IMPACTS PEER REVIEW

of

Final Level PUD Approval Phase I-AA

Assembly Square Redevelopment
Phase I-AA Traffic Impact and Access Study And Mitigation Plans

Part III –Summary Narrative and DRAFT Phase I-AA Transportation Related Conditions

IKEA Somerville, MA

Prepared for:
City of Somerville

Prepared by:
Fay, Spofford & Thorndike, LLC

August 9, 2007

Summary Narrative

The Applicant has submitted a comprehensive and well-organized package of on- and off-site mitigation measures to accommodate the future traffic circulation impacts of the proposed Phase I-AA /IKEA development within the Assembly Square area.

Attached Exhibits III-1 and III-2 summarize DRAFT on- and off-site mitigation measures that should be considered by the Planning Board during its review of the Special Permit Application for this site.

Proposed on-site mitigation includes:

- Assembly Square Drive reconstructed between the Fellsway (Route 28) and Mystic Avenue Northbound with a proposed traffic signal at New Road and IKEA Way including lighting, landscaping, and sidewalks. Signal coordination conduit for two additional future traffic signals – one at Foley Street/Assembly Square Drive and the other at C Street/Assembly Square Drive – will also be constructed for subsequent development phases.

- New Road reconstructed midway between its future intersection with IKEA Way and Assembly Square Drive and Mystic Avenue.

- IKEA Way easterly from Assembly Square Drive to IKEA parking access driveways

- Foley Street reconstructed between Middlesex Avenue to approximately 140 feet east of Assembly Square Drive.

Proposed off-street mitigation includes:

- Lombardi Street corridor including its intersections:
  - Broadway/Mount Vernon Street (modified traffic signal control);
  - Mystic Avenue Southbound (unsignalized) and
  - Mystic Avenue Northbound/Assembly Square Drive (modified traffic signal control with signal control added to U-turn).

- Mystic Avenue at New Street including new signal control with signs and pavement markings

- Middlesex Avenue at Foley Street including new signal control with signs and pavement markings

- Fellsway (Route 28) at Mystic Avenue Northbound/I-93 northbound off-ramp including new signal mastarms and signal indications and new pavement markings and signs.

- Fellsway (Route 28 at Middlesex Avenue and Assembly Square Drive including new signal control equipment, new channelization, and new signs and markings.

EXHIBIT III-1

DRAFT CONDITIONS

PHASE I-AA
IKEA DEVELOPMENT – ASSEMBLY SQUARE

ON-SITE TRAFFIC MITIGATION PROGRAM
CITY OF SOMERVILLE APPROVALS/CONCURRENCE REQUIRED[1]

Mitigation Items	Applicant Action	Anticipated Schedule	Notes
Assembly Square Drive between the Fellsway (Route 28) and Mystic Avenue Northbound; New Road between median break and Assembly Square Drive IKEA way east of Assembly Square Drive Foley Street between Middlesex Avenue and Assembly Square Drive (refer to overview traffic management plan, Sheet 71 of 72).	Permitting Design Construction Long term maintenance (Possible City of Somerville reimbursement)	- Refine Concept plan during site plan review process. Start final design following site plan approval by SPSR-A. - Construct prior to the issuance of certificate of occupancy permit for Phase I-AA IKEA buildings.	- Requires City of Somerville approval of full design PS&E & must satisfy MEPA requirements - Refer to Plan Sheets 55-72 of 72 and Sheet 9 of 9 from July 20 VHB July 20, 2007 preliiminary design submission package, as amended with City review comments. - IKEA Way at New Road and Assembly Square Drive shall be traffic signal controlled with exclusive pedestrian phase incorporated. Consider island geometry modifications to improve the safety of the dual left turn movement from Assembly Square Drive - All signal conduit shall be installed for future signals at Foley Street/Assembly Square Drive and C Street at Assembly Square Drive - Only if required, for implementation of modifications Applicant must obtain any necessary easements or land takings with the cooperation of the City of Somerville. - Long-term maintenance agreement to be negotiated with the City of Somerville.

EXHIBIT III-2

DRAFT CONDITIONS

PHASE I-AA
IKEA DEVELOPMENT – ASSEMBLY SQUARE

OFF-SITE TRAFFIC MITIGATION PROGRAM
CITY OF SOMERVILLE/MASS HIGHWAY/ DEPARTMENT OF CONSERVATION AND RECREATION (DCR)
APPROVALS/CONCURRENCE REQUIRED AS CITED BELOW[1]

Mitigation Item	Applicant Action	Anticipated Schedule	Notes
Broadway at and Mount Vernon and Lombardi Streets and Mystic Avenue at Lombardi Street and Assembly Square Drive (VHB Off-site Mitigation Locations # 1 & 2)	Design Construction	- Refine Concept plan during site plan review process. Start final design following site plan approval by SPSR-A. - Construct prior to the issuance of certificate of occupancy permit for Phase I-AA IKEA buildings.	- Requires MassHighway and City of Somerville approvals of full PS & E submission. - Refer to off-site improvements package of July 20, 2007 VHB Sheets 2 – 4 of 9 for concept sketches. - Concept sketch on Sheet 2 shall be modified to prohibit left turn out of Mystic Avenue Southbound via a median constructed on Lombardi Street between two medians illustrated on the concept sketch. - In addition to the Mystic Avenue southbound U-turn that is retained and signalized, only right turns shall be permitted from Mystic Avenue southbound. - Coordinate signal with Mystic Avenue Northbound, Lombardi Street, and Assembly Square Drive signal via new conduit. - Creation of a direct access from Mystic Avenue Southbound to Assembly Square Drive via Lombardi Street shall not be precluded from future consideration if found to be feasible.

EXHIBIT III-2
DRAFT CONDITIONS (Continued)

PHASE I-AA
IKEA DEVELOPMENT – ASSEMBLY SQUARE

OFF-SITE TRAFFIC MITIGATION PROGRAM
CITY OF SOMERVILLE/MASS HIGHWAY/ DEPARTMENT OF CONSERVATION AND RECREATION (DCR)
APPROVALS/CONCURRENCE REQUIRED AS CITED BELOW[1]

Mitigation Item	Applicant Action	Anticipated Schedule	Notes
New Road at Mystic Avenue northbound (VHB Off-site Mitigation Location # 3)	Design Construction	- Refine Concept plan during site plan review process. Start final design following site plan approval by SPSR-A. - Construct prior to the issuance of certificate of occupancy permit for Phase I-AA IKEA buildings.	- Requires City of Somerville approval of full PS & E package - Refer to off-site improvements package of July 20, 2007 VHB Sheet 5 of 9 for concept sketch. - Concept sketch on Sheet 5 shall be modified to incorporate signal control of the 'free' right turn onto New Road and a new stop line for a signal-controlled right turn lane and pedestrian signal shall be provided on the south east corner of the intersection.
Foley Street at Middlesex Avenue (VHB Off-site Mitigation Location # 4)	Design Construction	- Refine Concept plan during site plan review process. Start final design following site plan approval by SPSR-A. - Construct prior to the issuance of certificate of occupancy permit for Phase I-AA IKEA buildings.	- Requires City of Somerville Approval of full PS & E package - Refer to off-site improvements package of July 20, 2007 VHB Sheets 6 and 7 of 9 for concept sketches.

EXHIBIT III-2
DRAFT CONDITIONS (Continued)

PHASE I-AA
IKEA DEVELOPMENT – ASSEMBLY SQUARE

OFF-SITE TRAFFIC MITIGATION PROGRAM
CITY OF SOMERVILLE/MASS HIGHWAY/ DEPARTMENT OF CONSERVATION AND RECREATION (DCR)
APPROVALS/CONCURRENCE REQUIRED AS CITED BELOW[1]

Mitigation Item	Applicant Action	Anticipated Schedule	Notes
Fellsway (Route 28) at Mystic Avenue northbound/I-93 Northbound off-ramp (VHB Off-site Mitigation Location # 5)	Design Construction	- Refine Concept plan during site plan review process. Start final design following site plan approval by SPSR-A. - Construct prior to the issuance of certificate of occupancy permit for Phase I-AA IKEA buildings.	- Requires DCR approval and City of Somerville review of full PS & E package - Refer to off-site improvements package of July 20, 2007 VHB Sheet 8 of 9 for concept sketch. - Pending DCR concurrence, concept sketch on Sheet 8 shall be modified to incorporate fencing/signage on the median to direct pedestrians to the proper crossing locations.
Fellsway (Route 28) at Assembly Square Drive and Middlesex Avenue (VHB Off-site Mitigation Location # 6)	Design Construction	- Refine Concept plan during site plan review process. Start final design following site plan approval by SPSR-A. - Construct prior to the issuance of certificate of occupancy permit for Phase I-AA IKEA buildings.	- Requires DCR approval and City of Somerville review of full PS & E package - Refer to off-site improvements package of July 20, 2007 VHB Sheet 9 of 9 for concept sketch.
Fellsway – pedestrian and bicycle undercarriage from Shore Drive to Assembly Square Drive along south side of Mystic River	Provide $100,000 toward design and possible construction	- Prepare concept plan during site plan review and implementation cost estimate following site plan approval by SPSR-A. - Construct prior to the issuance of certificate of occupancy permit for Phase I-AA IKEA buildings.	- Requires DCR and City of Somerville approvals - Provides local access to future waterfront park on the Mystic River

EXHIBIT III-1/2 DRAFT CONDITIONS NOTE

ASSEMBLY SQUARE PHASE I-AA
TRAFFIC AND CIRCULATION CONDITIONS GENERAL NOTE

1 Applicant shall conform to standard City of Somerville requirements pertaining to the implementation of modifications to City of Somerville local streets including, but not limited to, the provision of crosswalks, vehicle detection including bicycles where new vehicle detection is proposed. Traffic signal poles and foundations shall also conform to City of Somerville standard, the so-called 'Washington' pole and mast arm design at all signals within City of Somerville rights of way.

All Phase I-AA buildings accessible to the public, traffic and pedestrian signals, walkways, bus stops, bus shelters, and road crossings shall comply fully with current Federal ADA/State MAAB access standards and requirements.

Memo

To: Ed Hollingshead

From: Gina A. Britton, P.E.

Date: August 14, 2007

Re: Water System Review
Assembly Square PUD, Phase 1-AA
IKEA Development and Assembly Square Drive Improvements
Somerville, Massachusetts

Below are comments and recommendations relative to the proposed Water System for the Assembly Square PUD in Somerville, Massachusetts.

The following items were reviewed in preparing these comments and recommendations:

- Section F - II (Water Supply and Distribution System) of the Assembly Square PUD Phase 1-AA Report, dated July 2007, prepared by Vanasse Hangen Brustlin, Inc. (VHB);
- Sheets 35 thru 44, from the Assembly Square Drive Utility Plans, dated July 2007, prepared by VHB;
- Sheet C-8 Utility Plan for Phase 1-AA, dated July 2007, prepared by VHB;
- FST internal Memo "Water System Review – Assembly Square Drive, Somerville, Massachusetts," dated December 2006, prepared by the author of this memo herein;
- Findings and Determinations of the Somerville Planning Board, December 14, 2006

A. General Comment

Is this submission indeed a Full Build-out submission? There are no plans or references to water system work on the "letter" streets, except for stubs left from the proposed Assembly Square Drive water main. Please clarify?

B. Water Demand Projections

The following questions and comments are presented regarding the water demand projections for the proposed development, for both Phase 1-AA and Full Build-out.

1. During a prior review (December 2006) it was noted that the domestic water demands for this project were based on the estimated sewer flow at a 1:1 ratio, in terms of gallons per minute (gpm). The ratio of water demand to sewer flow can vary from 0.5 to 2.0, depending on several factors. Some uses for water, relevant to this project, where the water does not return to the sewer system include irrigation, evaporation, and beverage production (such as in restaurants), resulting in more water demand than sewage flow.

2. The water demands presented in the December 2006 memo, based on a 1.4:1 ratio, are as follows:

Average Day Domestic Water Demand Comparisons

Work	VHB developed with 1:1 ratio (gpd)	VHB developed with 1:1 ratio (gpm)	Water Demands Developed with 1.4:1 ratio (gpm)	Potential increased water demand (gpm)
Phase 1-AA	27,750	19	27	8
Full Build-out (without Phase 1-AA)	934,885	649	908	259
Existing Customers	91,210	63	88	25
Total		731	1,023	292

This potential average day increase of 292 gpm extends through to the maximum day and fire flow demand as follows:

Maximum Day Demand (MDD) and Fire Protection Water Demands

Work	Future Average Day Demand	Future Maximum Day Demand	Future MDD plus 2,000 gpm Fire Flow	Future MDD 3,500 gpm Fire Flow
Phase 1-AA	27	47		
Full Build-out (without Phase 1-AA)	908	1,589		
Existing Customers	88	154		
Total	1,023	1,790	3,790	5,290

3. The Future Maximum Day Demand (MDD) plus 3,500 gpm Fire Flow may be as high as 5,290 gpm, which is 509 gpm more than what was presented in the report. Because of the varying degree of the ratio of water demand to sewer flow, it is recommended that the water demand be developed independently of the sewer flow, or that it be developed using a more conservative ratio than 1:1.

4. Water demands may be calculated in the same manner as the sewer flow was calculated, i.e., usage per fixture, in accordance with American Water Works Association (AWWA) Manual M32, Sizing Water Service Lines and Meters M22, Second Edition.

5. The flow test performed at Assembly Square Drive and McGrath Highway yielded a calculated flow of 5,645 gpm at 20 psi; and the flow test performed at the existing Home Depot property along Assembly Square Drive yielded a calculated flow of 4,573 gpm at 20 psi. The hydraulic model results state that the proposed water system can supply 4,780 gpm at a pressure range of 59-69 psi. Is VHB confident that the existing water system can deliver the proposed increase in demand to the Phase 1-AA and Full Build-out project areas?

6. What implications could an additional water demand increase (of potentially more than 500 gpm) have in the MWRA's model and the impacts to its system? What impacts could this have on the meter size at Meter 91 or the effects on the City of Somerville's system?

7. Has there been consideration for the use of "gray water" in any of the commercial water closets, thus reducing the potential water demand?

8. The approximate water demand generated by existing businesses within the PUD is presented as 91,210 gpd on page 7, section 2.2.1 of the report, and as 90,678 gpd on Figure 4. Please verify the correct demand from these customers.

9. Although it is a reasonable factor, what is the basis of the Average Day to Maximum Day 1.75 peaking factor?

C. Fire Protection Recommendations

1. The hydraulic model results state that the proposed water system can supply 4,780 gpm at a pressure range of 59-69 psi. Based on these results, the proposed water system appears to be able to meet the fire flow requirements established by ISO.

2. A fire protection engineer should be consulted to determine the fire protection requirement at each individual property, and whether a sprinkler system will be necessary for each building. Any additional fire protection facilities must also meet the requirements of the Somerville Fire Department.

D. Full Build-Out - System Design Comments and Recommendations

1. All materials shall be in accordance with the City of Somerville Water & Sewer Enterprise's Specifications and/or Rules and Regulations, latest issue.

2. Existing and proposed water mains should be shown in profile.

    a. A minimum of 5'-0" cover shall be maintained over all water mains, unless otherwise directed.

    b. A minimum vertical clearance of 1'0" between water mains and drains shall be maintained, unless otherwise directed.

3. All Sheets – All proposed hydrants, valves, valve boxes, tees, crosses, bends, reducers, and other fittings should be identified and labeled on the drawings, i.e. 20" – 45° bend, 20"x6" tee, etc.

4. Thrust restraint shall be provided at tees, bends, and other fittings as necessary.

5. Section 2.3, page 8 of the Assembly Square PUD Phase 1-AA Report states that the proposed water mains will be wrapped in polyethylene for corrosion protection. This should be clearly stated on the drawings as well, at least once on each sheet.

6. Sheet 35, 36, 42 - The size of the existing water main in the Marketplace loop should be labeled.

7. Sheet 37 and following - Where existing water mains are being abandoned, a note should be added stating that valve boxes should be removed and backfilled once the new water main is in service.

8. Sheet 38 and 39 - There is an existing water main and hydrant on Assembly Square Drive at the intersection of Foley Street. Is the hydrant being removed and the main abandoned?

9. Sheet 39 – Just above station 37+55.10 there is a symbol for a new water valve. This appears to be here by mistake as it is not connected to any new or existing water mains. Please clarify.

10. Sheet 39 and 43 – The proposed hydrant on Foley Street, approximately 460 feet west of the intersection with Assembly Square Drive, has two valves on its branch. Is this correct?

11. Where the proposed 20" water main in Assembly Square Drive is connecting to existing services, label the size of the existing service and the proposed fittings required for the connection.

12. Where the proposed 20" water main in Assembly Square Drive is connecting to existing hydrants, identify and label the proposed fittings required for the connection.

13. Sheet 40 – How is the proposed 20" water main in Assembly Square Drive going to be connected to the existing 12" water main in New Road? Identify and label the proposed fittings required for the connection.

14. Sheet 41 – How is the proposed 20" water main in Assembly Square Drive going to be connected to the existing 12" water main in Assembly Square Drive? Identify and label the proposed fittings required for the connection.

15. Sheet 42 – Show the symbols for the proposed connection between the existing 12" water main in Assembly Square Drive and the existing 12" water main in North Union Street? Since the existing lines cross but are not connected, vertical bends may be necessary to complete the connection. Identify and label these bends, and other fittings required for the connection, and show all items on the profile sheets.

16. Sheet 41 – The proposed 16" stub from Assembly Square Drive will be the connection to the Phase 1-AA work. Identify and label the proposed fittings required for the connection, as well as its purpose to connect to work "by others."

17. Where the proposed 20" water main in Foley Street is connecting to existing hydrants and services, identify and label the proposed fittings required for the connections.

18. Sheet 42 – The note along Middlesex Avenue, "Prop 20" DI Water Pipe, Ret Exist 12"W," should be amended to include, "Ret Exist 36" W."

19. Sheet 42 – There is an existing hydrant near the corner of Foley Street and Middlesex Avenue that does not have a lateral connection to any of the existing water mains. Please clarify.

20. Sheet 42 – The proposed connection on Middlesex Avenue to an existing 20" water main is not clearly defined. The connection appears to be at a meter, however the existing main appears to terminate a few feet from the manhole. Is the connection within the manhole? Please clarify. Provide and reference a detail for this connection.

21. Sheet 43 – How is the proposed 20" water main in Foley Street going to be connected to the existing 12" water main in Foley Street? Identify and label the proposed fittings required for the connection.

22. There are several locations where the proposed water main is shown as being encased (Sheet 35 – 20" tap of existing main on Middlesex Avenue, Sheet 42 – 20" main on Middlesex Avenue and Foley Street, Sheet 43 – 20" main on Foley Street). Sheet 37 – 20" stub from Assembly Square Drive into C Street, and Sheet 41 - 16" stub from Assembly Square Drive call out a <u>concrete</u> encased water pipe.

    a. Note the material that the pipe is being encased in (concrete, CDF, other insulation materials) at all locations, and the reason for the encasement (insufficient cover, heavy traffic, crossing other utilities, etc.). This information should also be shown on the profile sheets.

    b. Provide and reference a detail and cross section of the proposed water main with the pipe encasement.

22. Sheet 44 – Identify and label the proposed water mains going into IKEA Way from Assembly Square Drive.

23. All connections made between existing water mains and proposed water mains shall be made with the intent to minimize the interruption of service for the existing customers within the PUD.

E. Phase 1-AA - System Design Comments and Recommendations

1. Comments C.1 thru C. 5. shall be included as comments for the Phase 1-AA work also.

2. To maintain 300-foot spacing, a proposed hydrant should be installed at the following locations:

    a. Approximately 350 feet south of the connection between the 20-inch water main in IKEA Way and the 16-inch water main following the perimeter of the proposed IKEA building.

b. Approximately 180 feet east of the connection between the 20-inch water main in Assembly Square Drive and the 16-inch water main following the perimeter of the proposed IKEA building.

F. VHB's Approach to the Planning Board's Findings

The Planning Board's comments regarding the proposed water system (pages 21 and 22) for the Assembly Square Drive improvements, dated December 14, 2006, were addressed by VHB as follows:

1. Comment 1 was addressed adequately in regards to conducting additional hydraulic testing to ensure that the City's water system is capable of meeting the water demands of the project, while maintaining satisfactory pressures.

2. Comment 2 was not addressed adequately in regards to the need for a fire protection engineer to evaluate the fire protection needs of each building and that all fire protection facilities shall meet the requirements of the Somerville Fire Department.

3. Comment 3 was not addressed adequately in regards to the specified materials being in accordance with the City of Somerville Water and Sewer Enterprise's Specifications and/or Rules and Regulations. The section entitled "Water Distribution Construction Specification" on page 8 has a brief technical description of the new pipe, but none of the other materials and whether or not they are in compliance with the City's standards.

4. Comment 4 was partially addressed in regards to additional hydrants to be added to the proposed distribution system in order to maintain 300-foot spacing within the project area. It was recommended to add a hydrant on "G" Street 180 feet north of the intersection with IKEA Way. As stated in Comment A., nothing has been presented in this submission regarding the letter streets. All other hydrant placement recommendations were included.

5. Comment 5 was partially addressed in regards to including valves at all intersections, and labeling all tees, bends, reducers and other fittings. Valves were added at intersections, but labeling of items still needs to be addressed. See Comment D.3. above.

6. Comment 6 was partially addressed in regards to calculations for determining the connection sizes necessary at each property, and showing the connections on the drawings. The majority of this review is for the larger diameter transmission mains, therefore there would not typically be service connections on these lines. In other locations, the existing services are proposed to be connected to the new lines, and the size of the existing services should be labeled. See Comment D. 11. and 17. There should be some back-up information for why the domestic service line into the IKEA building was designed at 4-inch, or hydraulic analyses to show that 4-inch is adequate.

G. Conditional Approval Suggestions to Planning Board

1. The Planning Board states on page 4 of their comment letter, "Up to 400,000 square feet of the non-residential uses (i.e., office, retail, and hospitality) may be reallocated to residential use, but no sooner than 10 years from the date the PUD plan is approved, so long as permitted by new or modified applicable entitlements."

   The reallocation of 400,000 square feet of residential use to a different type of property use will warrant a re-evaluation of the water demands, using actual data when possible, to determine if improvements to the water system are warranted.

2. VHB must resolve the discrepancy between the water demand projections presented in the Section F - II (Water Supply and Distribution System) of the Assembly Square PUD Phase 1-AA Report and the potential for an additional 509 gpm of water required during for a fire during a maximum day demand.

3. The approval of the Somerville Fire Department must be obtained for all fire protection systems prior to final approval.

ENGINEERS
FST
Since 1914

Fay, Spofford & Thorndike, LLC
5 Burlington Woods
Burlington, MA 01803
781-221-1000

Memo

To: Edward D. Hollingshead

From: Robert H. Letourneau

Date: August 15, 2007

Re: Assembly Square PUD Full Build Development and Phase 1-AA Sewer Review

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Ed:

We have reviewed the Final Level PUD Approval Phase 1-AA (three-ring binder and plans) and the Phase 1-AA Roadway Improvement Plans. At the end of each comment, I indicate whether the comment refers only to the Phase 1-AA review, the Full Buildout review, or both.

1. Sewer manholes on Foley Street and Ikea Way are labeled with different designations on the 20' scale roadway improvement plans than in Appendix D of the Final Level PUD Approval Plan Report. (1-AA & Full Buildout)

2. At MH i4 (MH-45), the stub invert elevation was used to calculate slope (presented in Appendix D) for length P-8 instead of using the lower sewer main invert elevation. (1-AA)

3. In Appendix D, at MH-2, Stub-33 is labeled as Stub-31 in Gravity Pipe Report. (Full Buildout)

4. At two locations, large drain lines are shown at approximately the same elevation as the sewer. The conflicting drains may prohibit sewer connections on the north side of Foley Street from STA 208+00 to 210+20 and on the north side of Ikea Way from STA 111+75 to 112+90. Refer to Sheets 33, 34, 43 and 44 of the 20' scale plans. (1-AA)

5. There is less than 10' of separation between the sewer main and water main on Ikea Way from STA 110+50 to 113+20. See Sheet 44. (1-AA)

6. MH 6a (shown on the 20' scale plans) is not shown in Appendix D of the Final Level PUD Approval Plan Report. MH 6a appears to intercept an existing sewer that will remain in function. (1-AA & Full Buildout)

7. MH 1 in profile view (Sheet 26 of 20' scale plans) is plotted approximately 1' higher than the labeled invert elevation of 4.87'. (1-AA)

8. On Sheet 30, at approximately STA 43+70, there is an additional manhole plotted on the profile that is not shown on the plan (Sheet 41). This extra manhole is labeled as MH 12. The extra manhole should be removed from the profile and the manholes MH 13 and MH 14 should be relabeled as MH 12 and MH 13. (1-AA)

9. On Sheet 31, MH 14 should be relabeled as MH 13. See Comment 8 above. (1-AA)

10. On Sheet 34, MH i3 should be labeled as MH i4. (1-AA)

11. On Sheet 34, MH i3 should be shown at STA 111+12. (1-AA)

12. On Sheet 42, Note 1 in plan view states, "If removed utility is greater than 4 feet below finished grade, Contractor may abandon." Add the following: "unless conflicting with the location of a new utility." (1-AA)

13. At manholes where pipe sizes change, sewers shall be installed so that the hydraulic gradelines match or installed crown-to-crown. There are pipe diameter changes at MH 9, MH 6, and MH 3. Presently, the pipelines at these manholes are shown to be installed invert-to-invert. (1-AA)

14. As shown on Sheet 42, it is not clear how the new and existing sewers are intended to function. It appears that two existing sewers will be intercepted by the new sewer. It is unclear what will happen to the existing 12" sewer heading east from MH 15. In the Final Level PUD Approval Plan Report, it is stated that the existing sewer configuration on North Union Street will be modified in a later phase. On Sheet 42 at MH 16, the new 18" sewer will discharge to an existing 12" sewer, which in turn discharges to the MWRA system. Is it the intention that the existing 12" sewer will handle the flow for Phase 1-AA? What is the capacity of the existing 12" sewer? In what phase will the 12" sewer be replaced or the configuration modified? (1-AA & Full Buildout)

15. No sewer profile was submitted for the proposed sewers from MH 13 to MH 16, where the Assembly Square Drive sewer main ties into existing sewer on North Union Street. Sheet 42 shows the proposed 18" sewer discharging into an existing 12" sewer. The profile for this sewer should be added to the plans. Also, this pipeline should be added to the table in Appendix D and should be included in the capacity analysis. (1-AA & Full Buildout)

16. Reconcile projected flows of 3,696,667 gpd presented in Figure 3 versus 3,662,284 gpd in Appendix D. Does the table in Appendix D account for the existing flows? There appears to be at least four proposed sewer manholes that will intercept existing sewers. Have these flows been accounted for in the Appendix D table? (1-AA & Full Buildout)

17. We are concerned that the 18" interceptor may be undersized. The tabulation in Appendix D shows that the capacity of the proposed 18" sewer only slightly exceeds the projected peak flow rates. We have several concerns with the capacity analysis presented in the Gravity Pipe Report (Appendix D): (1-AA & Full Buildout)

    In the Gravity Pipe Report tabulation, a Manning's "n factor" of 0.010 was used to determine the flowing full capacity of the proposed sewers. While an n factor of 0.010 is fine for clean water in a newly installed PVC pipe, most engineering textbooks recommend using a minimum n factor of 0.013 for sewers (since interceptors are designed for a 20 to 40 year life, slime/solids buildup on surface of pipe, number of pipe joints, differential settlement, etc.).

    Peaking factor of 3.8 used by the Proponent for determining the peak flow rate is from a chart based on historical date for a range of communities with varying population densities. The proposed development is high density. The peaking factor of 3.8 may be low for this project.

    The peak flow rates used in the tabulation in Appendix D do not appear to have an infiltration/inflow component. While most sewers in the project area will be new PVC pipe, there will be some existing pipe connected to the new system. Also, as the system ages, I/I rates will increase in both the new PVC pipe and the existing pipe.

    There is a provision in the PUD that would allow the proponent to convert 400,000 square feet of either retail or commercial building space to residential use after ten years. This conversion would result in approximately an additional 360 residential units (based on the data presented in Appendix D) with a significantly higher wastewater contribution when compared to either retail or commercial space. While this provision cannot be acted upon for a period of ten years, the proposed sewer interceptor in Assembly Square Drive should be sized for that additional flow now.

    We feel that a more conservative approach is needed for sizing the Assembly Square Drive sewer taking into account the aforementioned factors:
    - n factor of 0.013
    - higher peaking factor
    - infiltration/inflow component
    - conversion to higher impact residential use

18. According to the Applicant's proposal as identified in the Somerville Planning Board Approval letter dated December 14, 2006:

> To ensure the economic viability of the project, the Applicant proposes to preserve flexibility to reallocate uses within the Master Plan as follows, with the provision that no use may be re-allocated to retail use:
>
> > Retail area may be re-allocated to office or residential uses at any time, so long as also permitted by new or modified applicable entitlements; No other use may be converted to retail.
> >
> > Residential area may be re-allocated to office use at any time, so long as permitted by new or modified applicable entitlements; and
> >
> > Up to 400,000 square feet of the non-residential uses (i.e., office, retail, and hospitality) may be re-allocated to residential use, but no sooner than 10 years from the date of the PUD plan is approved, so long as permitted by new or modified applicable entitlements.

The reallocation of up to 400,000 SF of non-residential usage to residential use may increase the net wastewater flows of the project. These potential flows are not identified in Figure 2 of the PUD. This was confirmed with a phone call to the applicant's engineering consultant (VHB). VHB stated that the flows generated by the residential buildings were calculated by assuming a 3-bed room unit per approximate 1,000 SF of residential development. Actual numbers of units and sizes have not been determined at this time as there is no residential component to the Phase being submitted on. This is conservative according VHB as the units in all likelihood shall be a mix of 1 BR, 2 BR and 3 BR units. Additionally, per the Somerville Planning Board Approval letter dated December 14, there is no minimum lot area, dwelling unit requirement for a PUD-A within the assembly Square-Mixed Use District (ASMD). As each phase of the project progresses, the applicant is required to obtain the necessary site plan approvals. However, it is unclear as to how the number of bedrooms per unit will be controlled. For this reason, we recommend that the interceptor sewer proposed for Assembly Square Drive be sized for this eventuality. (1-AA & Full Buildout)

19. The **City of Somerville Planning Board** approved the PUD Preliminary Master Plan subject to the conditions set forth in the Approval letter dated December 14, 2006. These conditions included the following with regards to the Sanitary Sewer System and are listed below in bold. Responses by VHB are indicated in italics and are contained in the Executive Summary of the Planned Unit Development (PUD) Preliminary Master Plan, Assembly Square Mall, Somerville MA.

1. **All site plan review submissions shall include profiles of the proposed sewer system. Applicant must ensure that there are no conflicts with other proposed utilities.**

   The proposed sewer mains to be located in Assembly Square Drive have been designed service the full build conditions to avoid future disturbance of Assembly Square Drive. The same applies to sections of Foley Street, New Road, and Ikea Way. The proposed design consists of an 8" main beginning at A Street then increasing to a 12" main at C Street then to an 18" at Foley Street and finally tying into an existing COS manhole at North Union Street. The existing main from the COS manhole ties into the MWRA Somerville Medford Branch Sewer.

   Profiles of the proposed sewers are included in the plan set.

This condition was generally met. Profiles of the sewers were provided on Sheets 26 through 34. Refer to comments 4, 8, 13, and 15 above relative to the review of the profile drawings.

2. **Applicant shall submit details of proposed pipe materials for review and approval during each site plan review process.**

   The proposed sewer pipe material is PVC SDR 35. Details of the proposed sewer system components are located in the plan set details.

The condition was met in part. On Sheet C-10 of the Final Level PUD drawings, there is a detail for a sewer manhole. On Sheet 7 of the Roadway Improvement Project drawings, there are details of typical utility trenches. Details should be included for manhole frames and covers and sewer service connections. All utilities shall be designed and installed in accordance with the City of Somerville's standards and specifications.

3. **Applicant shall make every effort to comply with DEP requirements that states "whenever possible" a minimum horizontal distance of ten feet shall be maintained between lines and water mains.**

   The sewer has been designed to provide at least 10' of separation from water lines where possible.

This condition was met except for Ikea Way (Sheet 44). Refer to comment 5 above.

4. **Applicant shall evaluate the impact the proposed project flows will have on the MWRA interceptor and the upstream and downstream municipal sewer system.**

   The proposed sewer design ties into a COS sewer which connects to the MWRA interceptor on North Union Avenue. The proposed mitigation in the Ten Hill Area will remove I/I at a ratio of four gallons of I/I removed for each gallon of sewer flow.

   The proposed mitigation will remove four times the proposed flow scheduled to go into the MWRA Somerville Medford Branch Sewer at the proposed North Union Street connection, which will allow the sewer flow from Phase I-AA to be added without any negative impacts.

It is our understanding that as yet, this condition has not been met. However, through communications with the proponent's engineer, VHB, the proponent is in discussions with the MWRA regarding this issue. The proponent will be required to obtain a connection permit from the MWRA and the MWRA has requested an evaluation of how the proposed flows will impact their system.

The proposed mitigation, as stated above, will remove four times the proposed **average daily** flow scheduled to go into the MWRA Somerville Medford Branch Sewer at the proposed North Union Street connection, which will allow the sewer flow from Phase I-AA to be added without any negative impacts. The I/I flows considered removed through mitigation are based on average daily flows. Pipeline capacity (including sewers) is determined based on peak flow rates. If a peak flow factor of 3.8 times the average daily flow is applied, the proposed peak sewer flow would be approximately equal to the flow removed through I/I mitigation. Further analysis of the impact to the MWRA interceptor and the upstream and downstream municipal sewer system seems warranted.

Based on the proponent's numbers, about 1.26 mgd of I/I can be removed within the Ten Hills sewer subsystem. Another 2.54 mgd must be removed from elsewhere in the City's sewer system tributary to the MWRA Somerville-Medford Trunk Sewer. If that amount cannot be removed from the system tributary to that same trunk sewer, flows from the subject project will have an impact on the facilities upstream of the proposed connection. Further evaluation of the MWRA and Somerville sewer systems may be warranted depending on the outcome of the I/I mitigation for the Full Buildout condition.

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City Hall - 93 Highland Avenue
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From: David P Glenn, P.E.
Fay, Spofford & Thorndike, LLC (FST)

Date: August 15, 2007

RE: Assembly Square Phase 1-AA
Planned Unit Development (PUD)
Somerville, MA.

As part of the continuing Peer Review for the City of Somerville, Fay, Spofford & Thorndike, LLC. (FST) has performed a review of the Stormwater Management System regarding the above referenced Assembly Square Phase 1-AA PUD application submitted by the Federal Realty Investment Trust (FRIT) for a site located in the Assembly Square area of Somerville. Materials received to date relative to this submittal include the following:

- Final Level PUD Approval Phase 1-AA Submission Binder; Assembly Square Phase 1-AA Site Plan Set (24 sheets), dated July 20, 2007; Phase 1-AA Roadway Improvement Project Assembly Square Drive Plan Set (72 sheets), dated July 20, 2007; Stormwater Management Report Assembly Square PUD Phase 1-AA (2 Volumes), dated June 2007; Stormwater Management Report Assembly Square PUD Full Build Development, dated June 2007, all as prepared by Vanasse Hangen Brustlin, Inc. (VHB), Transportation, Land Development, Environmental Services.

The Phase 1-AA Stormwater Management System was reviewed for conformance with the applicable sections of the Zoning Ordinances, PUD Preliminary Master Plan approval, dated December 14, 2006, Massachusetts Department of Environmental Protection (MADEP) Stormwater Management Standards and generally accepted engineering practice. Our review included a site visit of the project area on August 7, 2007 with the Proponent's Engineer, represented by Ms. Bethany Eisenberg and Mr. Michael Goodman of VHB. The purpose of the meeting was to obtain an overview of the project site and discuss initial comments as per FST. Subsequent to this meeting FST has received a supplemental submittal package that is currently being reviewed as of this date and upon completion of this review FST will forward a second review letter. Additional materials received include the following:

- Cross-section of bioretention garden; 30-scale plans of IKEA site (3 drawings); Drainage Outfall Plan and Profile (Drawings PP-1 and PP-2), dated July 27, 2007; New

Stormwater Outfall Preliminary Analysis, dated August 3, 2007; and Hydraulic Capacity Summary for New Outfall, dated July 27, 2007.

We offer the following **initial** comments and recommendations for the Planning Board's consideration based on our review of materials received prior to the August 7, 2007 site visit.

As discussed in the Site Plan Approval narrative, Phase1-AA includes the construction of a 340,000 square foot IKEA retail store and associated parking, construction of a new roadway, Assembly Square Drive and the reconstruction of existing Assembly Square Drive, Foley Road and New Road. The Phase 1-AA stormwater management system design will maintain the discharge of stormwater to the existing MWRA 84-inch Somerville Marginal Conduit (SMC) that outfalls downstream of existing Amelia Earhart Dam. Off-site roadway improvements include upgrades to the existing closed drainage system located within Assembly Square Drive, Foley Road and New Road. The Full-Build Out Design will construct a new/separate drainage outfall downstream of the Amelia Earhart Dam, with the existing storm drainage connection to the 84-inch SMC under Phase 1-AA to be abandoned.

IKEA Site Plan and Assembly Square Drive – Phase 1-AA

The submitted IKEA Site Plan and Assembly Square Drive Plan Set provide a layout of the proposed stormwater management system facilities, including catchbasins, manholes, piping, water quality units, bioretention garden and underground detention basins. The Stormwater Management Report includes calculations that provide an analysis of the site hydrology for existing and proposed conditions during the 2-, 10-, 25-and 100-year storm events. In addition, a hydraulic analysis was performed for the closed drainage system that discharges to the existing MWRA 84-inch Somerville Marginal Conduit (SMC) for existing and proposed conditions during the 2-, 10-, 25-and 100-year storm events. Our comments concerning the proposed stormwater management system are as follows:

a. To assist in our review, FST requested during the August 7, 2007 site visit, additional plans and supporting documentation. Information requested included larger scale (1"=30') plans of the IKEA Site Plan area, additional details and cross-sections of the proposed bioretention garden; underground detention basins and soil log information. As previously noted, FST has received a supplemental submittal package that is currently being reviewed.

b. As noted in the Stormwater Management Report, the proposed stormwater design for Assembly Square Drive, portions of Foley Street and IKEA Way were designed for the-10 year storm. The IKEA site was designed for 25-year storm event. FST recommends the applicant provide additional hydraulic calculations identifying the proposed catch basin inlet capacities for storm events greater than the 10- and 25-year storm events for the aforementioned roadways and IKEA site.

c. Under Proposed conditions for Phase 1-AA an area of approximately 9.6 acres (Drainage Area S-9 shown on Drawing F-4) is modeled as a stormwater basin prior to discharging into the new 60-inch drain pipe. This scenario is based on the existing businesses being vacated and allowing for the demolition of these existing structures. FST recommends the hydrologic analysis include an evaluation of the stormwater impacts if the existing businesses remain in place.

d. FST recommends the applicant provide final engineered drawings of the underground detention systems located on the IKEA site. Our review of the Geotechnical Reports revealed the underlying soils for depths up to 11-feet consist of urban fill material, silty sand, ash, brick, cinders, coal fragments with petroleum-like odors. The high ground water table varies in depth between 42-inches and 102-inches. The proposed underground detention within the parking lot area will be approximately 7-feet below grade. FST recommends the applicant provide additional documentation regarding the proposed construction methods and procedures to address the existing ground water table and soil conditions.

e. Review of the submitted plan indicates the water quality units will be located off-line from the proposed storm drainage line. We recommend additional details of the proposed layout be provided on the plans.

f. We note the Assembly Square Drive Plan Set indicates the design at 75 percent. FST questions the time frame for completion of Final Design Plans. Review of the roadway profile sheets indicates four manholes where the pipe size is increased, the pipe inverts and not the pipe crowns are matched, thereby resulting in the downstream crown being higher than the upstream crown. We recommend the applicant address this issue.

MADEP Stormwater Management Policy and Guidelines

FST offers the following comments on the proposed stormwater management system, specifically for compliance with the nine performance standards as outlined in the MADEP Stormwater Management Policy and Guidelines. In general, the applicant has addressed Stormwater Standards 1, 4, 5, 6 and 7.

- *Standard No. 2* requires peak flow attenuation (i.e. no increase in peak stormwater discharge rates). As discussed by VHB, the Phase 1-AA project will result in a reduction of the peak discharge rate for the 2-, 10-. 25-, and 100-year storm events to the existing MWRA 84-inch Somerville Marginal Conduit. As previously discussed, FST is requesting additional information be provided by the applicant to verify the above statement.

- *Standard No. 3* requires the loss of annual recharge to groundwater be minimized through the use of infiltration measures. As discussed by VHB, soils on the site are contaminated, compacted fill material, or poor quality material. Review of the Geotechnical Reports received by FST during the site visit of August 7, 2007 revealed the underlying soils for depths up to 11-feet consist of urban fill material, silty sand, ash, brick, cinders, coal fragments with petroleum-like odors. The estimated high ground water table varies in depth between 42-inches and 102-inches. Based on the above information, FST is in agreement the on-site soils are not suitable for infiltration.

- *Standard No. 8* requires an erosion and sedimentation control plan be implemented to prevent impacts during construction and land disturbance activities. The submitted erosion and sedimentation control narrative provides a general discussion on controls to be utilized during construction phases of the project. FST recommends prior to construction of Phase 1-AA a more detailed set of plans be provided identifying items such as sequence of construction, limits of phasing and placement/type of erosion control measures. Further, we note that any land area alteration in excess of one (1) acre will require compliance with the U.S. EPA

National Pollutant Discharge Elimination System (NPDES) permit, specifically the stormwater construction permit.

- *Standard No. 9* requires all stormwater management systems have an operation and maintenance plan to ensure the systems function as designed. As discussed by VHB, a draft operation and maintenance plan has been included in the Stormwater Management Report. The proposed stormwater management system includes street/parking lot sweeping, deep sump catch basins, water quality units, sediment forebay, bioretention garden, underground detention basins and green roof. FST recommends that all parties as identified in the draft operation and maintenance plan agree upon a clear understanding of the Maintenance Program for all of the storm drainage system components. The plan should also identify the stormwater management system owner and parties responsible for operation and maintenance for all of the stormwater facilities. Operation and maintenance of the stormwater facilities associated with IKEA Drive, Assembly Square Drive, Foley Street and New Road need to be addressed by the applicant.

Planning Board Preliminary Master Plan Approval – December 14, 2006

As noted in the Planning Board Preliminary Master Plan Approval, many of the conditions are expressly applicable to each site plan review submittal for each phase of the PUD. We therefore have provided our comments and recommendations regarding the Assembly Square Phase 1-AA PUD application in ***bold italics*** immediately following each condition as contained in the aforementioned approval.

D. Stormwater Management System:

1. Applicant shall provide additional information to the Planning Board to verify the adequacy of the existing MWRA 84-inch Somerville Marginal Conduit.

   As discussed by VHB, the Phase 1-AA project will result in a reduction of the peak discharge rate for the 2-, 10-, 25-, and 100-year storm events to the existing MWRA 84-inch Somerville Marginal Conduit. As previously noted, FST is requesting additional information be provided by the applicant to verify the above statement.

2. Applicant shall further investigate the alternative drainage design identified in the PUD application.

   The Full Build Development includes the alternate drainage design as described in the Preliminary Master Plan. The applicant is proposing to install a new 72-inch drain outfall from the Proposed Phase 1-AA 60-inch pipe located within Foley Street. The outfall will discharge below the Amelia Earhart Dam. We note that the Stormwater Management Report for the Full Build Development presents only a conceptual design of the 72-inch outfall. As this project moves towards final design, the applicant will need to provide additional details of the proposed drainage system, including plans and profiles and obtain the necessary permits. FST recommends status of the final design plans and required permits be discussed by the applicant with board.

3. Applicant shall provide the Planning Board with a status report on the receipt of necessary permits from MWRA

   As discussed by VHB, the applicant has received the final MWRA-8 approval for sewer in the IKEA property and will apply for the appropriate permit for the main connection. FST recommends a copy of the MWRA-8 approval be provided to the board and the applicant discusses status of the remaining permits.

4. Applicant shall provide a more detailed analysis of the site hydrology for existing and proposed conditions during the 2-, 10-, and 100-year storm events

   As discussed by VHB, the Phase 1-AA project will result in a reduction of the peak discharge rate for the 2-, 10-, 25-, and 100-year storm events to the existing MWRA 84-inch Somerville Marginal Conduit. As previously noted, FST is requesting additional information be provided by the applicant to verify the above statement.

5. Applicant shall meet with DCR and obtain any and all necessary permits from DCR. Applicant shall furnish the Planning Board with copies of these permits.

   As discussed by VHB, no DCR permit is required for this phase. It is our understanding under the Full Built Development construction of the new 72-inch storm drain outfall will require a DCR permit.

6. Applicant shall supply the Planning Board with copies of all test pit logs and locations for review.

   As previously noted, review of the test pit logs in the Geotechnical Reports revealed the underlying soils for depths up to 11-feet consist of urban fill material, silty sand, ash, brick, cinders, coal fragments with petroleum-like odors. The high ground water table varies in depth between 42-inches and 102-inches. Based on the above information, FST is in agreement the on-site soils are not suitable for infiltration.

   We do note, the proposed underground detention within the IKEA parking lot area will be approximately 7 feet below grade and recommend the applicant provide additional documentation regarding the proposed construction methods and procedures to address the existing ground water table and soil conditions.

7. Applicant shall provide a detailed series of Best Management Practices (BMP's) to demonstrate a total suspended solids (TSS) removal rate of at least 80 percent. Plans shall include locations of all proposed BMP's.

   As previously noted, the proposed stormwater management system facilities include BMPs such as deep sump catch basins, water quality units, sediment forebay, bioretention garden, underground detention basins and green roof. Review of the TSS Removal worksheets indicates an estimated TSS removal rate between 84 and 88 percent, which exceeds the design goal of 80 percent.

8. Applicant shall provide a detailed set of plans identifying items such as sequence of construction, limits of phasing, and placement/type of erosion control measures.

The submitted erosion and sedimentation control narrative provides a general discussion on controls to be utilized during construction phases of the project. FST recommends prior to construction of Phase 1-AA a more detailed set of plans be provided identifying items such as sequence of construction, limits of phasing and placement/type of erosion control measures. Further, we note that any land area alteration in excess of one (1) acre will require compliance with the U.S. EPA National Pollutant Discharge Elimination System (NPDES) permit, specifically the stormwater construction permit.

9. Applicant shall submit a stormwater maintenance program to the Planning Board. The maintenance program shall address the frequency of inspection/cleaning of the proposed water quality units. The plan shall also identify the stormwater management system owner and parties responsible for operation and maintenance of the stormwater facilities.

   A draft operation and maintenance plan has been included in the Stormwater Management Report. The proposed stormwater management system includes street/parking lot sweeping, deep sump catch basins, water quality units, sediment forebay, bioretention garden, underground detention basins and green roof. FST recommends that all parties as identified in the draft operation and maintenance plan agree upon a clear understanding of the Maintenance Program for all of the storm drainage system components. The plan should also identify the stormwater management system owner and parties responsible for operation and maintenance for all of the stormwater facilities. Operation and maintenance of the stormwater facilities associated with IKEA Drive, Assembly Square Drive, Foley Street and New Road need to be addressed by the applicant.

10. Applicant shall submit a soil management to the Planning Board in order to determine if soil conditions will allow for the inclusion of low impact design elements including, but not limited to, bio swales.

    As previously noted, review of the Geotechnical Reports revealed the underlying soils for depths up to 11-feet consist of urban fill material, silty sand, ash, brick, cinders, coal fragments with petroleum-like odors. The high ground water table varies in depth between 42-inches and 102-inches. Based on the above information, FST is in agreement the on-site soils are not suitable for infiltration. We do note a bioretention garden is proposed within the IKEA site to treat stormwater runoff from the elevated loading dock area and a portion of IKEA building roof will be designed as a green roof.

In FST's opinion, based on the review of materials submitted prior to the August 7, 2007 site visit, the applicant has addressed Condition Nos. 5, 6, 7, and 10. FST has requested the applicant to provide additional information to satisfy the requirements of Condition Nos. 1 and 4. We believe Condition Nos. 2, 3, 8 and 9 have been partially satisfied based on the materials reviewed by FST to date. We note to satisfy the requirements of Condition No.3, the applicant needs to provide a copy of the Final MWRA-8 approval to the Planning Board.

Assembly Square PUD Full Build Development – Stormwater Management Report

We have also reviewed the Stormwater Management Report, dated June 2007, for the Assembly Square PUD Full Build Development and offer the following comments and recommendations:

a) We request the applicant provide plans of the existing drainage system so that we can verify the flow lengths and flow paths in the time of concentration calculations for existing conditions.

b) In existing conditions, for Subcatchment M1, the plans indicate a break in the 30-inch pipe that leads to the 84-inch SMC. The time of concentration calculation assumes runoff from Subcatchment M1 will discharge to the 84-inch SMC via the 30-inch pipe. We recommend the applicant provide documentation that runoff will flow to the 84-inch SMC.

c) In existing conditions, for Subcatchment M2, the plans indicate a break from the 42-inch pipe to the 7.5-ft by 11-ft box conduit. The time of concentration calculation assumes runoff from Subcatchment M2 will flow from the 42-inch pipe to the 7.5-ft by 11-ft box conduit. We recommend the applicant provide documentation that these pipes are connected.

d) In existing conditions, it is not clear for Subcatchments R3 and R4 where the flow paths for the times of concentration end and the swale begins. The applicant needs to clarify.

e) In existing conditions, the applicant needs to provide additional documentation for the swale (Pond 1), including existing grading and details of the outlet control structure.

f) In proposed conditions, the flow path for Subcatchment M1 is in the opposite direction from the flow path used for existing conditions. The narrative does not indicate a new drainage system in the parking lot. The applicant needs to clarify.

g) In proposed conditions, for Subcatchment S-8 (Mixed Use Area – Street and Roofs), how was the 1.42 acres of grass cover determined?

h) In the StormCAD analysis for the full build condition, some pipes are at a negative slope. We recommend the applicant further review this issue.

i) In the StormCAD analysis, some of the pipes, particularly 8-inch diameter pipes, are flowing above full flow capacity, but do not appear to surcharge the drainage structures. We recommend the applicant further review this issue.

j) Given that some of the pipes are above capacity for the 10-year storm event, we request the applicant provide a hydraulic grade line analysis for the 25- and 100-year storm events so that we can assess the extent of surcharging on the project site.

k) We note that the applicant will need to apply for and obtain any MWRA and DCR permits required for the construction of the 72-inch outfall as the project moves towards final design. Status of these permits needs to be addressed by the applicant with the Board.

l) The applicant did not provide the locations of proposed BMPs, the construction sequence, limits of phasing, and placement of erosion and sedimentation controls plans for full build development. As the mixed-use portion of the project moves towards final design, this information will need to be provided for our review.

TABLE 1: CONDITIONS OF APPROVAL FOR ASSEMBLY SQUARE PHASE 1AA SPSR-A APPLICATION (PB2009-05)

PROCEDURAL

Condition #	Condition	Compliance Evaluated By:	Timeframe for Compliance	Notes
1	Approval is based on application materials prepared by Vanasse Hangen Brustlin, Inc., dated July 28, 2009 and stamped in at the City Clerk's office on July 28, 2009, revised by Assembly Square Drive plans 70 and 71 of 107 dated August 13, 2009; and Plans C6, C7, C8 and C9 dated August 17, 2009. Any changes to the submitted application materials that are not de minimis must receive Planning Board approval.	Planning Director, ISD	Building Permit (with the exception of completion of landscaping and other site work - before CO).	
2	The Applicant is responsible for notifying the Planning Staff at least twenty (20) working days in advance of a request for a Certificate of Occupancy from ISD. Issuance of a CO shall be contingent upon a satisfactory inspection of site work to ensure compliance with the conditions of this special permit.	Planning, ISD, DPW, T&P, Water, Fire, and Police	CO	

SITE DESIGN

Condition #	Condition	Compliance Evaluated By:	Timeframe for Compliance	Notes
3	Each of the two seasonal banners is limited to 15 feet in height, 45 feet in width, 30 days' duration and six times per year.	ISD	CO and Continuous	
4	Each of the 16 flags is limited to 12.5 feet in height and 4.5 feet in width. The flag poles are limited to 25 feet.	ISD	CO and Continuous	
5	No "promotional panels" may be placed in the surface parking lot.	ISD	CO and Continuous	
6	The water tower may not be used for commercial radio or communications devices.	ISD	CO and Continuous	
7	All aboveground utilities and mechanical equipment, including transformers, shall be screened from view in accordance with SZO 10.5. The Applicant is responsible for coordinating with utilities providers to ensure that facilities are designed and located in a manner that allows for their screening.	Planning / ISD	CO	
8	The Applicant must demonstrate adequate capacity for electricity, telecommunications, and gas for full build-out with confirmation by NSTAR, Keyspan, Verizon, RCN, and Comcast as applicable.	DPW	City Engineer Notice to Proceed	
9	Garbage pick-up on Assembly Square Drive may not occur during business hours and garbage may not sit on street while awaiting pickup.	ISD	CO and Continuous	
10	Street furniture, lighting, and design of crosswalks and sidewalks should conform to standards set in Unifying Design Guidelines for the Public Realm unless otherwise conditioned herein. Sidewalks deemed temporary by Planning staff may be temporarily noncompliant with these standards but must be brought into compliance once made permanent.	Planning	CO	
11	Lighting shall conform to both City of Somerville and Unifying Design Guidelines standards. If there is any conflict between these, the Applicant shall consult with DPW to identify acceptable standards.	DPW	Electrical Permit	

TABLE 1: CONDITIONS OF APPROVAL FOR ASSEMBLY SQUARE PHASE 1AA SPSR-A APPLICATION (PB2009-05)

LANDSCAPING AND OPEN SPACE

Condition #	Condition	Compliance Evaluated By:	Timeframe for Compliance	Notes
12	Applicant is responsible for maintaining and replacing as needed all landscaping that will be retained (not dedicated to the City), including vines and trees used to screen facilities. The Applicant shall be responsible for maintaining and replacing as needed landscaping in the triangular area designated Usable Open Space that is owned by the City and located adjacent to the southerly portion of Assembly Square Drive near Mystic Avenue. The Applicant shall sign a maintenance covenant acceptable to the City Solicitor and submit a copy to the Planning Department.	Law / Planning	CO and Continuous	
13	The Applicant shall maintain the water tower and keep it clean of graffiti. Graffiti complaints shall be resolved within 72 hours of reporting. The Applicant shall sign a maintenance covenant acceptable to the City Solicitor and submit a copy to the Planning Department.	Law / Planning & DPW	CO and Continuous	
14	The Applicant shall submit for review and approval by the City Solicitor a restrictive covenant providing for public access to all areas designated as Usable Open Space between the hours of 9:00 a.m. and 5:00 p.m. at a minimum. Upon approval by the City, the restrictive covenant shall be recorded in the Middlesex County Registry of Deeds.	Law / Planning	CO	
15	Irrigation must be provided for all planted areas to be dedicated to the City. The Applicant's landscape architect shall work with the City to select irrigation systems that are compatible with the City standards and shall submit two plans of the final design to the Planning Staff.	DPW	City Engineer Notice to Proceed	
16	The Applicant shall be responsible for ensuring that a mutually acceptable site is designated within the 1AA development for the installation of public art, to be paid for with the $75,000 contribution by IKEA as per the development covenant.	Planning / Law	CO	
17	The Applicant shall plant curb-side street trees in a continuous trench with structural soil in between each location or propose an alternative option of equal quality acceptable to the City.	DPW	City Engineer Notice to Proceed	

TRANSPORTATION & CIRCULATION

Condition #	Condition	Compliance Evaluated By:	Timeframe for Compliance	Notes
18	Existing signals at Mystic Avenue/Lombardi Street/Assembly Square Drive, and Lombardi Street/Broadway/Mt. Vernon Streetshall be preserved for use elsewhere in the City since new controllers will be provided at these intersections.	Traffic & Parking / DPW	City Engineer Notice to Proceed	
19	Approval of roadway design is contingent upon receipt of approval by other applicable agencies, including the Department of Conservation and Recreation, the Massachusetts Highway Department, and other agencies as deemed appropriate.	OSPCD	City Engineer Notice to Proceed	
20	The Applicant shall conform to standard City of Somerville and MUTCD requirements and Massachusetts Highway 2006 Guidelines pertaining to local streets including but not limited to vehicle detection (also for bicycles where new vehicle detection is proposed), traffic signal poles and foundations, and pavement material for mountable surface of roundabout and drop-off areas	Traffic & Parking	Prior to Street Acceptance	
21	All Phase 1AA publicly accessible buildings, traffic and pedestrian signals, walkways, bus stops and shelters, and road crossings shall fully comply with current Federal ADA/State MAAB access standards and requirements.	ADA Coordinator / DPW	CO	
22	A traffic calming table shall be provided at the intersections of Assembly Square Drive with D street.	DPW / Traffic & Parking	Prior to Acceptance of Assembly Square Drive	
23	Four-way crosswalks shall be provided at C Street and IKEA Way. Three-way crosswalks shall be provided at D Streets.	DPW / Traffic & Parking	Prior to Acceptance of Assembly Square Drive	
24	A traffic-calming table designed in consultation with DPW shall be provided across IKEA Way connecting the park with the pedestrian island.	DPW / Traffic & Parking	Prior to Acceptance of Assembly Square Drive	
25	The crosswalk connecting the Mystic River Reservation and the Marketplace parking lot shall be a 3-inch raised crosswalk.	Planning	Prior to Acceptance of Assembly Square Drive	
26	Planted medians shall be provided on Assembly Square Drive in accordance with the submitted street plans. Where it is practical, the Applicant will work with OSPCD staff to extend planted medians.	DPW	Prior to Acceptance of Assembly Square Drive	
27	Dedicated bicycle lanes shall be provided for the entire length of Assembly Square Drive without compromising the sidewalk or planting strip. Bicycle accommodation shall be provided on the south side of IKEA Way prior to the issuance of a C/O for IKEA and for the north side in later phases. The Applicant shall continue to work with OSPCD staff on striping of bicycle lanes at intersections; these details are not considered final as shown in the approved SPSR plans.	OSPCD	Prior to Acceptance of Assembly Square Drive	

TABLE 1: CONDITIONS OF APPROVAL FOR ASSEMBLY SQUARE PHASE 1AA SPSR-A APPLICATION (PB2009-05)				
28	Bicycle lanes along the entire length of Assembly Square Drive shall have bicycle lane stencils applied by the Applicant**or** by the City at the Applicant's expense.	OSPCD	Prior to Acceptance of Assembly Square Drive	
29	The Applicant shall place impenetrable (such as thorny) landscaping along the side of the path from the Mystic River reservation to the crosswalk entering Marketplace on Assembly Square Drive to discourage improper pedestrian crossing.	Planning	Prior to Acceptance of Assembly Square Drive	
30	Individual "U-Rack" bicycle racks or another model on the MAPC Standard Bike Racks Recommendation document shall be provided and spaced sufficiently to park at least 27 bicycles.	OSPCD	Prior to Acceptance of Assembly Square Drive	
31	Improvements shall be made to the intersection of Kensington Avenue from Mystic Avenue Southbound to Middlesex Avenue including ADA ramps, pedestrian crosswalk striping, pedestrian-scaled lighting, and advanced crosswalk beacons.	OSPCD	Prior to Acceptance of Assembly Square Drive	
32	A temporary turnaround must be constructed on IKEA Way in accordance with the plans approved by the Fire Department. This turnaround shall be kept free of snow, debris, and all other obstructions at all times.	DPW	CO	
33	Design and implementation of wayfinding signage shall be coordinated with and approved by Planning and Traffic and Parking Staff.	Planning / Traffic & Parking	Prior to Acceptance of Assembly Square Drive	
34	The Applicant shall regularly provide the City with traffic monitoring data collected from the built-in detection systems. In addition, for the first two years after issuance of the Certificate of Occupancy for IKEA, the Applicant shall provide the City semi-annually with a level-of-service analysis by a qualified traffic engineer based on actual field counts taken during the months of April and October (for a total of four reports over the two-year period). If any such report shows an overall intersection level-of-service below LOS D, the Applicant's engineer shall collect further data to determine whether such level of service regularly falls below LOS-D and, if so, shall recommend actions to be taken to improve the level of service. Should the Applicant decline to undertake such recommended actions at the applicant's expense, the City will exercise its right to condition future phases of the PUD-A Preliminary Master Plan on the Applicant's implementation of such actions. Under no circumstances shall the Applicant's declining to undertake the recommended actions give rise to the Building Inspector's revocation of the Certificate of Occupancy for the IKEA store.	Traffic & OSPCD	Post CO for two-years.	
35	In order to provide financial security for the performance of the conditions of this SPSR-A, the City shall be able to enforce the Applicant's duties and liabilities under the Transportation Management Association provisions of that certain Settlement Agreement by and between it, FR Sturtevant Street, LLC, FR Assembly Square, LLC, the Mystic View Task Force, Inc., and certain individuals, as it may exist and be operative.	Law	Post CO indefinitely	
36	Documentation shall be provided demonstrating how parking areas will be managed (i.e. monitoring and signage) to prevent all-day parking by T-users.	Planning / Traffic & Parking	CO	
37	Showers and lockers shall be provided for employees as part of a comprehensive Transportation Demand Management Plan.	ISD	CO	
38	Applicant will work collaboratively with the City, at least four months prior to the Grand Opening of IKEA, to draft a Grand Opening Management Plan including overflow parking strategies, Police detail (paid for at the Applicant's expense) and temporary directional signage.	Planning	4 months prior to CO	
39	Roadway treatment for the bus pullout in front of IKEA shall be constructed with standard base course and concrete pad that is finished with bituminous asphalt.	DPW	City Engineer Notice to Proceed	
	The Proposed Mitigation for the seven proposed intersections includes the following in the 25% design drawings. The Applicant agrees that these are to be included in the 100% design. Where an intersection is described as having an "exclusive pedestrian crossing" it shall remain "exclusive" unless otherwise approved by the City's traffic engineer.	DPW	City Engineer Notice to Proceed	

TABLE 1: CONDITIONS OF APPROVAL FOR ASSEMBLY SQUARE PHASE 1AA SPSR-A APPLICATION (PB2009-05)				
	Location #1* Lombardi St/Mystic Avenue NB/Assembly Square Drive · New traffic signal controller to I-93 U-turn SB Off ramp at Mystic Avenue hard wired to all other intersections. · Pedestrian crosswalks and countdown pedestrian signal heads with protected phase. · Bike Detection on all approaches of the intersection. · Geometric changes including islands, new curbs, lane striping, and traffic signs. · Fire Pre-emption Opticom system used. · All new equipment and/or street furniture and lighting must be built to City Specification. ** Note: on off-site mitigation plan cover sheet this is referred to as Location #2*			
	Location #2* Lombardi St/Broadway/Mt Vernon · New traffic signal controller hard wired to all other intersections. · Pedestrian crosswalks and countdown pedestrian signal heads with exclusive phase. · Bike Detection on all approaches of the intersection. · Geometric changes including traffic islands, medians, new curbs, lane striping and traffic signs. · Fire Pre-emption Opticom system used. · All new equipment and/or street furniture and lighting must be build to City Specification. ** Note: on off-site mitigation plan cover sheet this is referred to as Location #1*			
	Location #3 Mystic Avenue NB/New Road · New traffic signal controller hard wired to all other intersections. · Pedestrian crosswalks and countdown pedestrian signal heads with protected phase. · Geometric changes, new curbs, lane striping, and traffic signs. · Fire Pre-emption Opticom system used. · All new equipment and/or street furniture and lighting must be build to City Specification.			
40	Location #4 Middlesex Avenue NB/Foley Street · New traffic signal controller hard wired to all other intersections. · Pedestrian crosswalks and countdown pedestrian signal heads with exclusive phase. · Geometric changes, new curbs, lane striping, and traffic signs. · Fire Pre-emption Opticom system used. · All new equipment and/or street furniture and lighting must be built to City Specification.			
	Location #5 Mystic Avenue NB/I-93 NB Off-Ramp/Route 28 · New signal heads added on South side of the interchange to improve visibility by motorists. · New lane striping and traffic signs. · Fire Pre-emption Opticom system incorporated if approved by DCR.			
	Location #6 Route 28/Assembly Square Drive · New traffic signal controller hard wired to all other intersections. · Pedestrian crosswalks and countdown pedestrian signal heads with concurrent phase if approved by DCR. · Bike Detection on all approaches to the intersection and appropriate shoulder striping is required on the Assembly Square Drive approach to Route 28. · Geometric changes including islands, and new curbs, lane striping, and traffic signs. · Fire Pre-emption Opticom system used if approved by DCR. · All new equipment and/or street furniture and lighting must be built to City Specification.			

TABLE 1: CONDITIONS OF APPROVAL FOR ASSEMBLY SQUARE PHASE 1AA SPSR-A APPLICATION (PB2009-05)				
	Location #7 Route 28/Middlesex Avenue New traffic signal controller hard-wired to all other intersections. · Pedestrian crosswalks and countdown pedestrian signal heads with concurrent phase if approved by DCR. · Bike Detection on all approaches to the intersection. · Geometric changes including islands and new curbs, lane striping, and traffic signs. · Fire Pre-emption Opticom system used if approved by DCR. · All new equipment and/or street furniture and lighting must be built to City Specification.			
	Location #8 Kensington Pedestrian Crossing · New pedestrian flashing signal control, pedestrian-scaled lighting. · Pedestrian crosswalks, ADA ramps and sensor. · Signs and pavement markings for crosswalks, advanced crosswalk beacon.			
STORMWATER, WATER, SEWER				
Condition #	Condition	Compliance Evaluated By:	Timeframe for Compliance	Notes
41	100% construction drawings (stormwater design) shall retain the following features as previously agreed: 1) change the catch basin connections from 8-inch to 12-inch diameter pipes; 2) add 4 additional catch basins along the length of Assembly Square Drive at key locations to improve overall catch basin efficiency; and 3) submit a Storm Water Pollution Prevention Plan (SWPPP) and a Final Stormwater Management System Operation and Maintenance Plan with the final Construction Documents.	Peer Review	Prior to Building Permit	
42	100% construction drawings (sewer) shall retain the following features as previously agreed: 1) adjust the alignment of the water line within the future IKEA Way to provide at least 10-foot separation from the sewer line; 2) use 4.0 peaking factor instead of 3.8 when evaluating peak sewer flows for the full-build condition; 3) use 1.7 bedrooms per residential unit when calculating average daily sewage flow rates; 4) maintain pipe sizes for pipe runs P-26, P-27 and P-28 at 12-inch diameter; and 5) increase diameter of proposed 6-inch sewers to 8-inch minimum.	Peer Review	Prior to Building Permit	
43	100% construction drawings (water) shall retain the following features as previously agreed: 1) installation of additional fire hydrants at locations shown on IKEA site and along Assembly Square Drive as coordinated with the Somerville Fire Department and as shown on plans dated 9/25/07.	Peer Review	Prior to Building Permit	
44	Prior to the issuance of the building permit, the applicant shall revise construction drawings to respond to final written comments of the City's peer review consultants dated 9/16/07 (Gina Britton re: water), 9/26/07 (David Glenn re: storm water), and 9/27/07 (Bob Letourneau re: sewer). This decision is conditional upon review and approval of the revised plans by the City's peer review consultants. This review shall be at the applicant's expense and will be limited to confirming that issues raised in peer review memos have been addressed in the final construction drawings.	Peer Review	Prior to Building Permit	
LINKAGE				
Condition #	Condition	Compliance Evaluated By:	Timeframe for Compliance	Notes
45	The linkage payment shall be made in accordance with the SZO. Final linkage amounts will be payable prior to the issuance of any Certificate of Occupancy based on the final gross square footage of the building, which may not exceed 340,000 gross square feet (not including structured parking). A Linkage fee would not be required for the structured parking component.	Planning	CO	
EMERGENCY SERVICES				
Condition #	Condition	Compliance Evaluated By:	Timeframe for Compliance	Notes
46	All traffic control signal installations or improvements made within or around the development shall include a system to allow for manual operation of signals by a handheld device as allowed by Mass Highway and DCR.	Traffic & Parking	City Engineer Notice to Proceed	
	The Applicant shall provide the following equipment relative to the radio-based emergency master and street call boxes:	Fire Department	CO	
	a. 1-Remote Vision Screen			

TABLE 1: CONDITIONS OF APPROVAL FOR ASSEMBLY SQUARE PHASE 1AA SPSR-A APPLICATION (PB2009-05)				
47	b. 2- Vision-21 System Processors, consisting of:			
	2- V21SP-3 System Processor alarm receivers;			
	2- Hardwire Decoders for wire boxes;			
	2 - DTX Radio Modules;			
	2 - V21CM-1 Charger Modules with battery backup;			
	2 - Form 4 relay interface boards; and			
	2 - Installation Kits to include: 2 antennas; 2 antenna mounting brackets; all interface cables; box data entry; and all antenna cable, connectors, and grounding equipment.			
48	The Applicant has agreed to provide 3 solar powered radio based Fire call boxes to the City for use along the City's bike path project (Cambridge/Somerville/Medford path).	Fire Department	CO	
49	The building shall be wired to include a provision for installation of surveillance cameras that focus on exterior public areas and that can be remotely viewed by Somerville Police.	Police Department	CO	
50	Verification shall be provided that all locations within the IKEA building and parking structure allow for clear radio transmission by Police and Fire Departments which may conduct spot checking.	Police / Fire	CO	
51	Video monitoring records of areas within the IKEA development, especially interior areas where large numbers of people will likely gather, shall be maintained for a period of time reasonably acceptable to the Somerville Police Department.	Police	CO and continuous	
52	The Applicant shall establish an area within the building available for temporary use by the police department with telephone and computer connections where police officers can meet with members of the public, write reports, or use as a command post for special or public events within the development.	Planning	CO	
53	The Applicant shall provide a bi-directional amplifier system for police and fire radio frequencies.	Police / Fire	CO	

ENVIRONMENTAL				
Condition #	Condition	Compliance Evaluated By:	Timeframe for Compliance	Notes
54	Snow plowed from the development shall be limited to the on-site storage area as shown in Layout and Materials plan "C-6" noted in Table 2 or disposed of properly.	ISD	CO and continuous	
55	To reduce effects of light trespass and glare, all lights used in public and parking areas shall be fully shielded and installed and maintained to preserve the shielding characteristics.	Planning	CO	
56	The Applicant shall, within two hours of the store's closing, turn off all IKEA wordmarks on the building except the largest sign on the west elevation, which will remain internally and externally lit, and turn off all lights around both circles of flags and both facade banners. The Applicant shall strive to reduce the brightness of security lights within and around the store by 50% while ensuring that lighting levels are sufficient to provide for the safety of employees and visitors.	Planning	CO and continuous	
57	Construction stormwater management (BP):	Planning / DPW		
	After stabilization, remove and suitably dispose of temporary erosion control measures.		CO	
58	Long-term Stormwater Management (BP): In addition to construction stormwater management, include measures to ensure that after construction:	Planning / DPW	CO	
	a. Massachusetts Department of Environmental Protection Stormwater Management Standards are met to the maximum extent practical; and		CO	
	b. Stormwater management systems have operation and management plans.			
59	Plant Selection: The landscape architect should review the list Massachusetts Prohibited Plant List published by the Massachusetts Department of Agricultural Resources and eliminate any proposed installation of plants on the list (http://www.mass.gov/agr/farmproducts/Prohibited_Plant_Index2.htm).	OSPCD	CO	
60	Any work for Phase 1AA that lies within the 100-foot buffer zone will require approval by the Somerville Conservation Commission.	Planning	CO	
61	Notification must be made immediately to the City of Somerville Fire Department and Office of Sustainability and Environment (OSE) if any underground storage tank (UST) is discovered.	OSE / Planning	Ongoing	
62	Notification must be made, within the time period required under applicable regulations, to the Massachusetts Department of Environmental Protection (DEP) if there is any release of oil, hazardous materials**,** or regulated hazardous substances at the site. The City's OSE office and the Board of Health shall also be notified.	OSE / Planning	CO	

TABLE 1: CONDITIONS OF APPROVAL FOR ASSEMBLY SQUARE PHASE 1AA SPSR-A APPLICATION (PB2009-05)				
63	Copies of all disposal records of the soil and UST and any other DEP related paperwork should be kept on the Site office in order to maintain added transparency required to the project of this size.	OSE / Planning	Ongoing	
64	The Applicant's Licensed Site Professional (LSP) shall keep the City's OSE informed about soil remediation for oil and hazardous material and any specific issue that can be considered as imminent threat to human health and/or environment (OHM) as defined by Massachusetts Chapter 21E and the Massachusetts Contingency Plan (MCP) (and any applicable Federal statutes or regulations).	OSE / Planning	Ongoing	
65	Applicable State and Federal regulations regarding air quality shall be strictly observed including without limitation continuous dust control during demolition and construction.	OSE / Planning	CO	
66	Asbestos identified prior to demolition or encountered during demolition shall be handled in accordance with state statutes and regulations including without limitation meeting OSHA requirement.	OSE / Planning	Ongoing	
MISC.				
67	The chain link fence along the MBTA railroad shall be black in color and in conformance with MBTA specifications. IKEA will be responsible for its maintenance, repair and replacement.	ISD	Ongoing	
68	The applicant shall submit a final design of the gateway "light feature" for Planning Staff approval	Planning	CO	
69	Provided this SPSR-A is not appealed or, if appealed, such appeal has been dismissed or otherwise resolved in favor of the Applicant within sixty (60) days of the filing of the appeal, the one-year extension granted in Case No. PB2007-29-R0809 shall be null and void and of no further effect.			