

# SPECIAL PERMIT APPLICATION

VOLUME 3



399 Binney Street  
Cambridge, Massachusetts

**Submitted to:**  
Planning Board  
City of Cambridge

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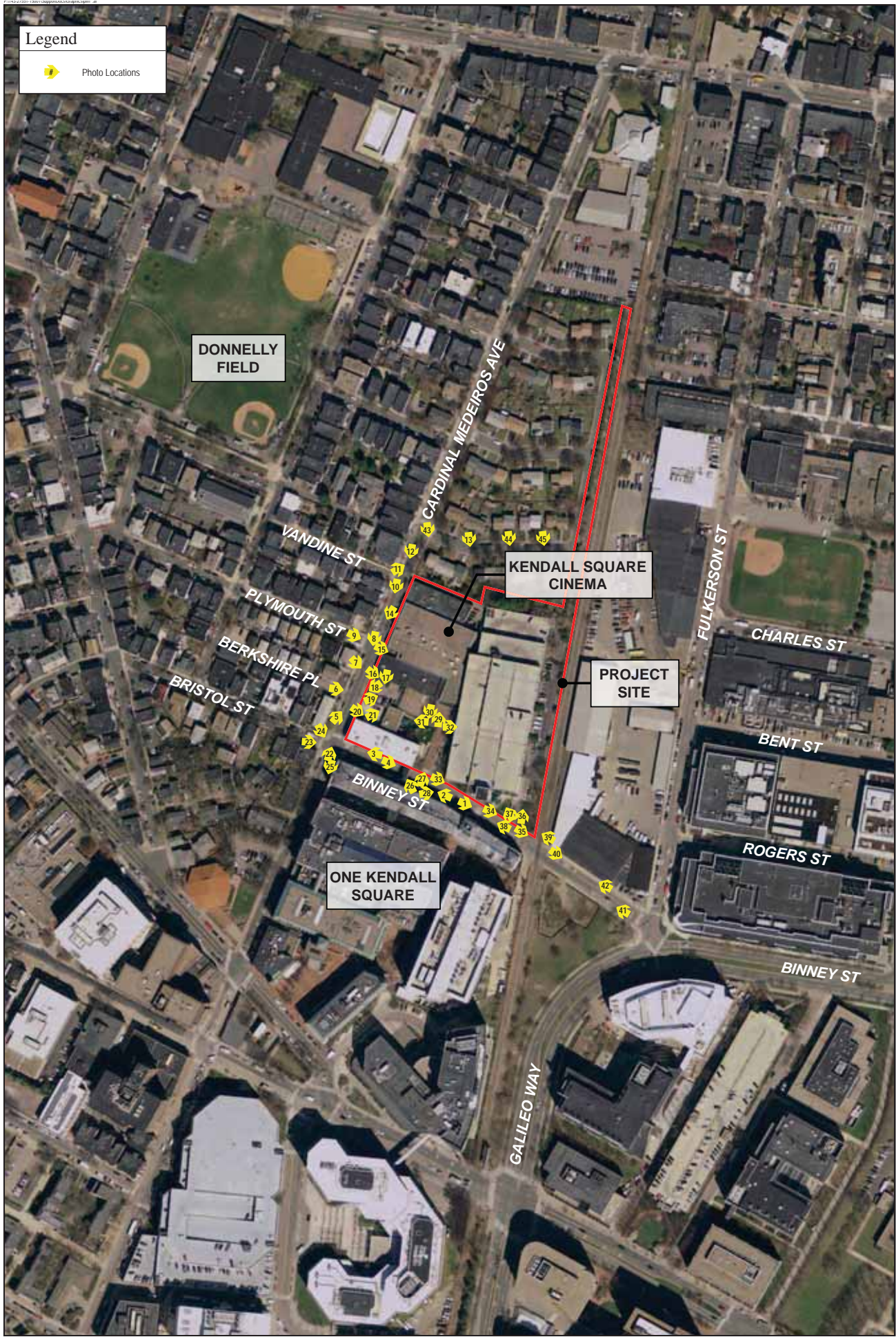
**Appendix D** LEED Checklist and Green Building Report

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Photo Locations





One Kendall Square  
399 Binney Street  
Cambridge, MA



One Kendall Square  
399 Binney Street  
Cambridge, MA



5. Looking Northeast at loading dock area on site from Cardinal Medeiros Ave



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One Kendell Square  
399 Binney Street  
Cambridge, MA



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One Kendell Square  
399 Binney Street  
Cambridge, MA



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One Kendell Square  
399 Binney Street  
Cambridge, MA





One Kendell Square  
399 Binney Street  
Cambridge, MA



One Kendell Square  
399 Binney Street  
Cambridge, MA



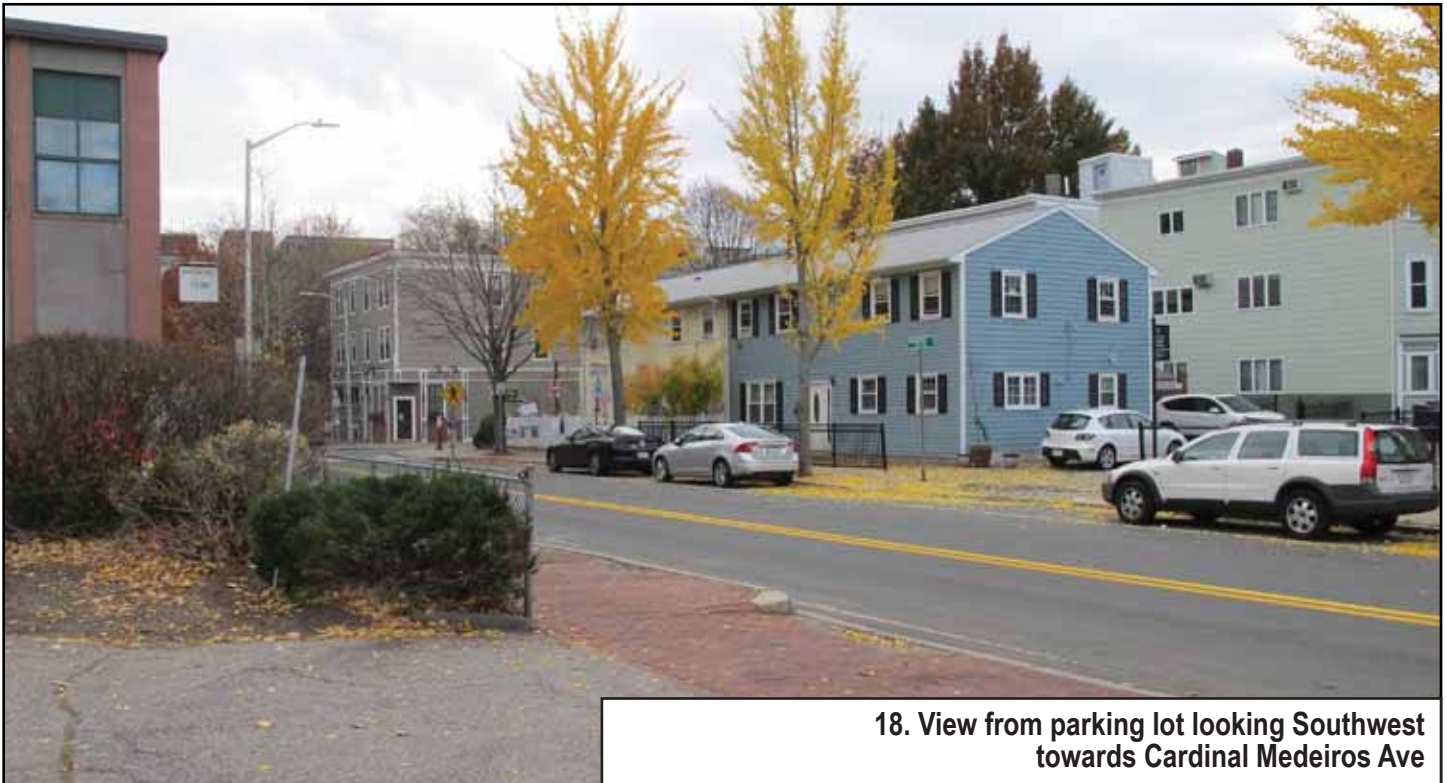
15. View of bollards outside rear doors of the Kendal Square Cinema



16. View towards the parking garage from parking lot at building #1700



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18. View from parking lot looking Southwest towards Cardinal Medeiros Ave

One Kendell Square  
399 Binney Street  
Cambridge, MA



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21. View of loading dock with building #1700 and parking structure in the background



22. View looking North at intersection of Cardinal Medeiros Ave and Binney St

One Kendall Square  
399 Binney Street  
Cambridge, MA



One Kendall Square  
399 Binney Street  
Cambridge, MA



25. Looking South on Cardinal Medeiros Ave along building #1400



26. View on Binney St towards building #1500

One Kendall Square  
399 Binney Street  
Cambridge, MA





27. View of entrance to the parking garage and pedestrian walkway to the Cinema



28. View of the front of the parking garage on Binney St

One Kendall Square  
399 Binney Street  
Cambridge, MA



29. View of the front entrance to the Cinema



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One Kendall Square  
399 Binney Street  
Cambridge, MA



31. View looking West in front of Cinema entrance



32. View looking East in front of Cinema entrance towards parking garage

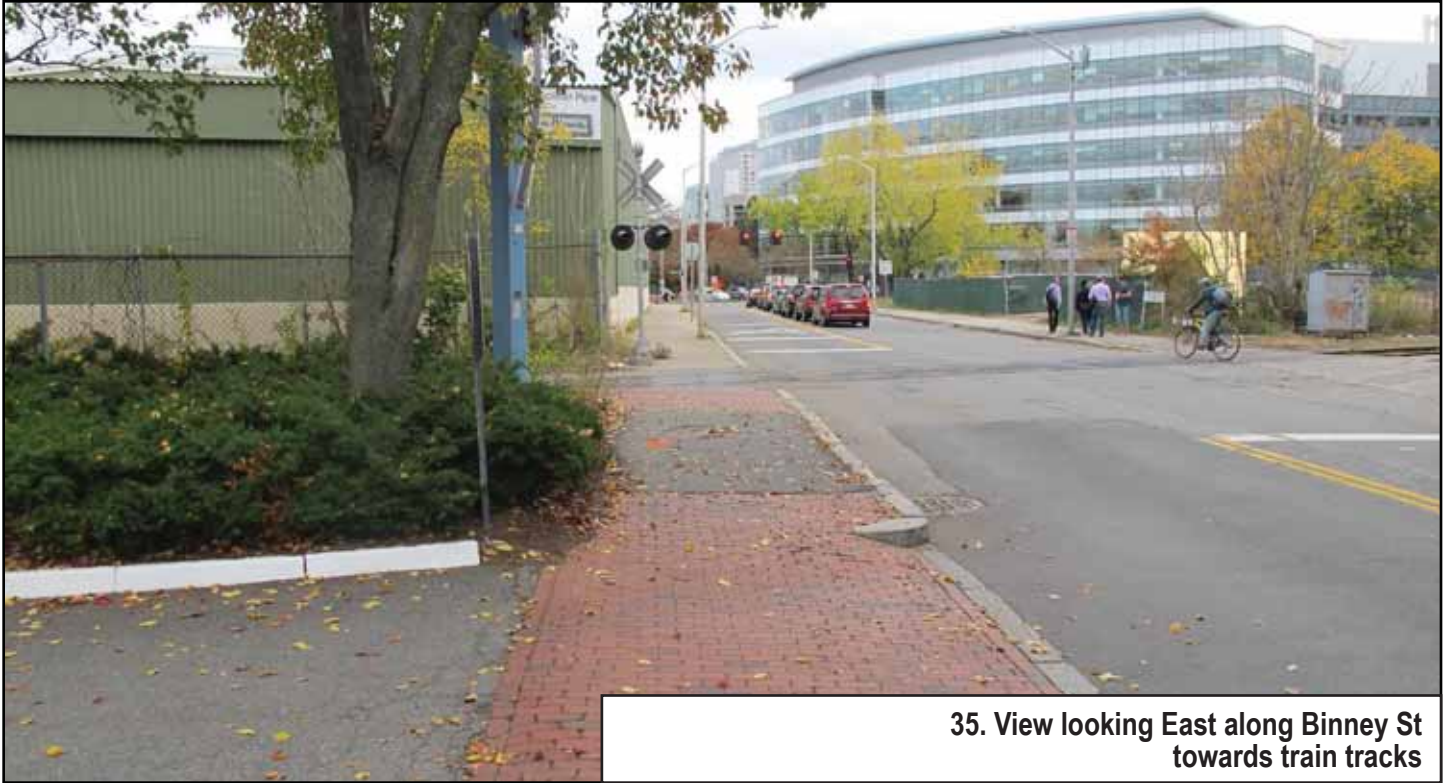


33. View looking East along Binney St from parking garage entrance



34. View looking East along Binney St in front of fenced in playground

One Kendall Square  
399 Binney Street  
Cambridge, MA

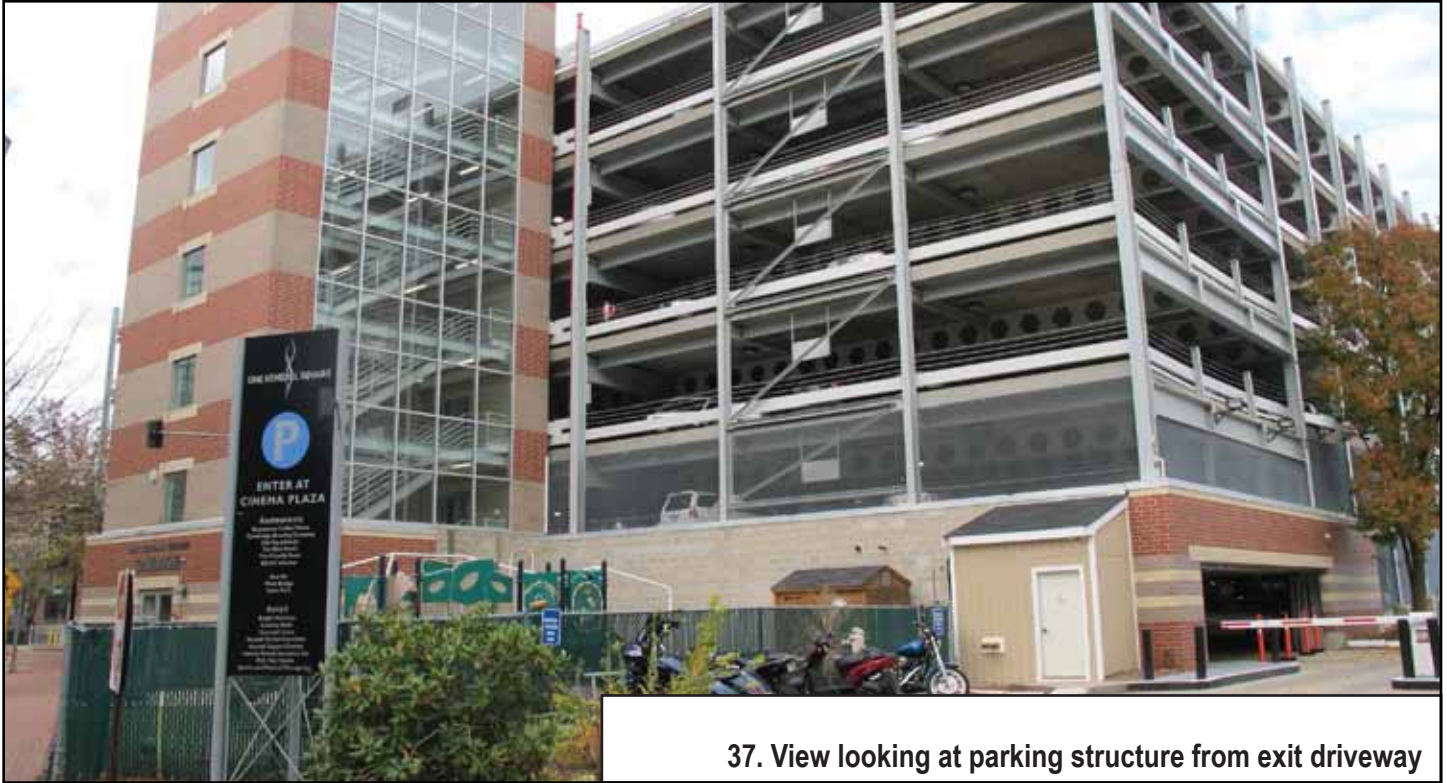


35. View looking East along Binney St towards train tracks



36. View looking North at exit of parking garage

One Kendall Square  
399 Binney Street  
Cambridge, MA



37. View looking at parking structure from exit driveway

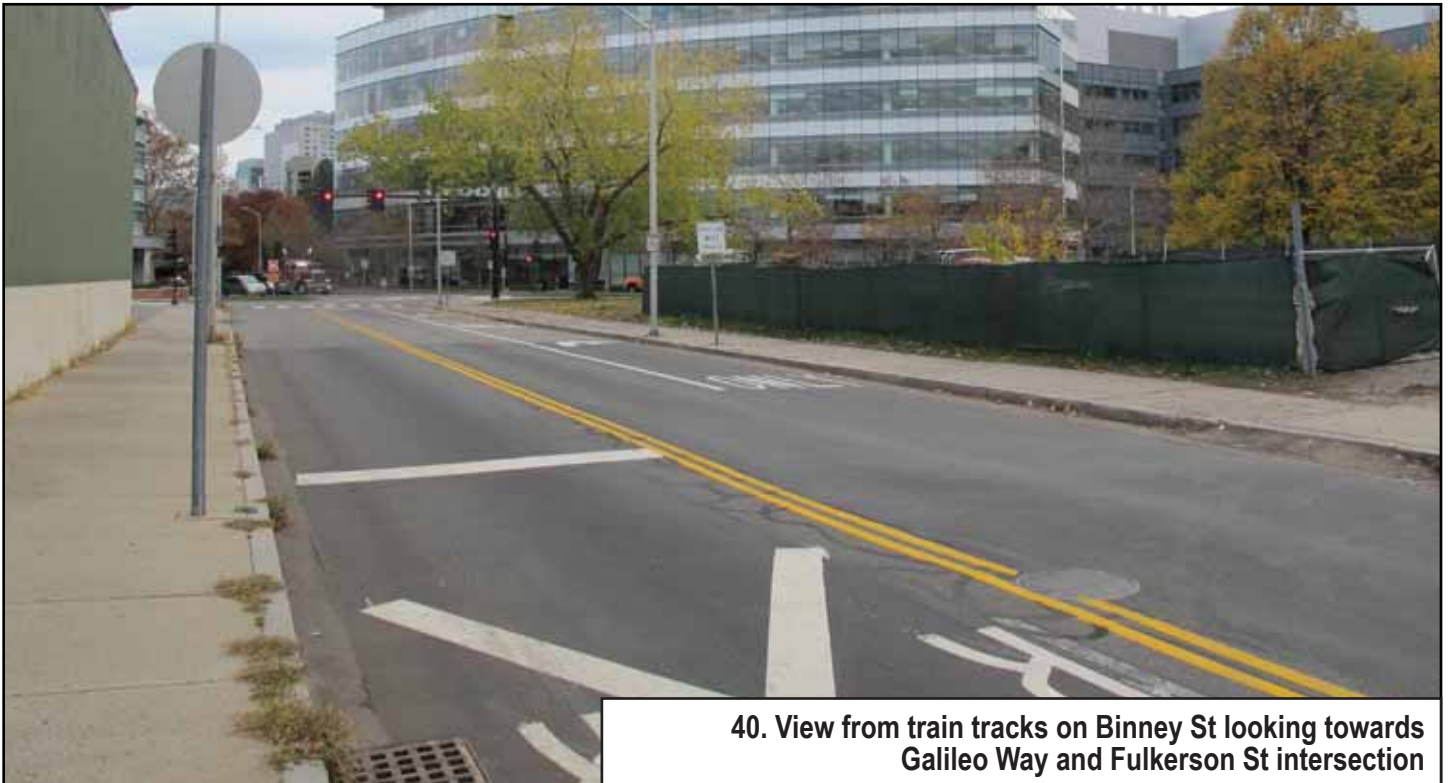


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One Kendall Square  
399 Binney Street  
Cambridge, MA



39. View of parking garage from train tracks on Binney St



40. View from train tracks on Binney St looking towards Galileo Way and Fulkerson St intersection

One Kendall Square  
399 Binney Street  
Cambridge, MA



41. View from intersection of Galileo Way and Fulkerson towards Binney St



42. View looking West down Binney St towards train tracks

One Kendall Square  
399 Binney Street  
Cambridge, MA





43. View looking South towards residential area on Cardinal Medeiros Ave.



44. View looking South towards parking garage from residential area.

One Kendell Square  
399 Binney Street  
Cambridge, MA



45. View looking South towards parking garage from residential area.

**MEMORANDUM**

**TO** Ray Urban (bh+a)  
**FROM** Jeff Fullerton (Acentech)  
**DATE** December 11, 2015  
**SUBJECT** 399 Binney Street – Exterior Sound Emissions Study  
**PROJECT NO** 626875

We have performed a study of the exterior sound emissions from the exterior mechanical system equipment for the 399 Binney Street project in Cambridge, MA. The project will consist of a new office/lab with a ground-floor retail occupancy. The mechanical system equipment that serves the building will be located on the 4<sup>th</sup> floor rooftop. This report establishes the parameters for the design and selection of mechanical equipment and noise control elements so that when built and operated, the building will be in compliance with the City of Cambridge Noise Regulation.

**ACOUSTICAL GOAL**

The City of Cambridge Noise Ordinance requires that building sound emissions not exceed sound levels at different properties within the various zoning districts. The most stringent are the sound levels at residentially zoned properties. The sound levels at these properties need to be less than 60 dBA during daytime hours (7am to 6pm Mon.–Sat.) and less than 50 dBA at all other times (6pm to 7am Mon.–Sat. and all of Sunday). The regulations for the Residential Sound Levels also include octave band sound level requirements, which are listed below.

**Table 8.060E – City of Cambridge Noise Regulation**

<i>Time</i>	<b>31.5</b>	<b>63</b>	<b>125</b>	<b>250</b>	<b>500</b>	<b>1,000</b>	<b>2,000</b>	<b>4,000</b>	<b>8,000</b>	<b>dBA</b>
Daytime (7am to 6pm Mon.-Sat.)	76	75	69	62	56	50	45	40	38	60
All other times	68	67	61	52	46	40	33	28	26	50

The City of Cambridge also has requirements for sound levels at commercial and industrial zoned properties, though these sound levels are higher (less stringent) at 65 dBA and 70 dBA, respectively, at any times.

There are residential properties near the new 399 Binney Street Building. To the west and northwest, there are numerous residences along Cardinal Medeiros Ave. across the street from the building. There are also residences to the northwest, though these are more distant than the residences to the west. The remaining nearby properties are mainly commercial at this time and are not anticipated to have significant sensitivity to the project sound emissions.

We anticipate that the residential sound level requirements are the criteria by which the City would assess a potential noise complaint from future residences around the building. These sound levels are used in the following analysis of the 399 Binney Street equipment sound emissions, which are discussed below.

Note that manufacturers do not measure or estimate sound levels at 31.5 Hz for their equipment. Given this lack of information, we cannot estimate or predict the sound levels in this frequency band for compliance with the City noise ordinance. This is generally not a concern, since this equipment tends to produce less noise at this frequency than the other frequencies.

Since sound levels from multiple pieces of equipment will be additive, we have designed each piece of equipment to be about 7 dBA lower than the 50 dBA goal, so that their combined total sound is still compliant on the days when all of the equipment may operate at full capacity simultaneously. This margin of compliance is reflected in the sound power level data below.

## ROOFTOP EQUIPMENT

The rooftop equipment includes the following components:

- Energy recovery unit (approximately 25,000 cfm capacity);
- Cooling towers (approximately 500 ton capacity);
- Emergency generators (one 300 kW for base building, potentially others for office tenants);
- Potential condensing units (for tenant server rooms)

This equipment will be located on the 4<sup>th</sup> floor rooftop.

### Energy Recovery Unit

Energy recovery units typically produce sound to the environment from the outside air intake and the exhaust discharge. At this stage of the design, the specific energy recovery unit has not been selected and therefore no specific sound level data is available. The selection and design of the equipment will not produce sound higher than the following levels:

<i>ERU Openings</i>	<i>Energy Recovery Unit Sound Power Level Limits</i>							
	<i>63</i>	<i>125</i>	<i>250</i>	<i>500</i>	<i>1,000</i>	<i>2,000</i>	<i>4,000</i>	<i>8,000</i>
Outside air intake or	97	95	87	79	74	67	64	63
Exhaust discharge								

These sound levels can be achieved through a combination of appropriate fan selection and sound attenuation applied to either the inside of the equipment or at the exterior of the openings.

### Cooling Towers

A preliminary model of cooling tower has been developed for the project. This particular model (Evapco UT-29-321) included sound level data that was used for this analysis. The selected tower includes a Super Low Sound fan and Water Silencers. The cooling towers will also be screened by a wall to occlude the visual appearance of the equipment and to reduce the sound levels to the surrounding properties.

Using the sound level data and presuming that the screen wall is a sound barrier, we found that the sound levels of this model were acceptable for meeting the sound level limits at the adjacent residences to the west. These sound levels were:

<i>Cooling Tower condition</i>	<i>Cooling Tower Sound Power Level Limits</i>							
	<i>63</i>	<i>125</i>	<i>250</i>	<i>500</i>	<i>1,000</i>	<i>2,000</i>	<i>4,000</i>	<i>8,000</i>
Full capacity operation	97	95	87	85	83	80	77	79

Note that the cooling tower will have a wall that is as tall as the tower to reduce the cooling tower sound level to the compliance goal at the neighboring residences. This sound barrier can be either a sheet metal cladding on the inside surface of the visual screen wall or a metal barrier panel with insulation. The other side of the screen wall can be an open louver providing merely a visual screen of the equipment.

It is also useful to note that there are other models of cooling towers that can achieve these sound power levels. Towers that can achieve these sound power levels or lower would be acceptable in place of this particular model.

### Emergency Generators

Generally, the use of an emergency generator during a power outage is not required to meet the noise ordinance for the period when the outage occurs. However, it is important that the generator meet the noise ordinance when the generator is tested periodically. Testing is recommended to be performed during daytime hours (7am to 6pm Mon.–Sat.) and often it is convenient to perform the testing on a weekend, when the occupants of the building are not present. During this time period, the generator would need to meet the daytime sound levels at the neighboring residences. We also presume that the multiple generators are tested individually, rather than simultaneously. Based on these conditions, the following are the sound levels to be met by the generator installation.

**Individual Emergency Generator Sound Pressure Level Limits (at 50ft)**

<b>Emergency Generator condition</b>	<b>63</b>	<b>125</b>	<b>250</b>	<b>500</b>	<b>1,000</b>	<b>2,000</b>	<b>4,000</b>	<b>8,000</b>
Mechanical and Exhaust sources	78	74	65	58	53	46	43	40

These sound pressure levels have been reported at 50 ft, which is often the distance used by the generator manufacturers for designing the equipment noise control. To achieve these sound levels, we anticipate it may be necessary for the generators to include sound rated enclosures and super critical mufflers.

**Condensing Units**

The potential condensing units used for cooling a server room should be located at least 10 feet from the edge of the 4<sup>th</sup> floor roof. Provided this equipment has overall sound power levels less than 80 dBA, these will not contribute significantly to the sound from the rooftop equipment.

**Transmittal**

Date December 23, 2015  
Project 399 Binney Street, Cambridge, MA  
Re Tree Inventory and Arbor Study  
To David Lefcourt, City Arborist (617-349-6433)  
From Robyn Reed, RBA  
Total pages 9 + transmittal  
Copy David Brunelle, Jones Lang LaSalle  
Joel Bargmann, bh+a, inc.  
Rich McKinnon, McKinnon Company

Hi David,

Enclosed, please find the following documents for review and certification for the proposed project at 399 Binney Street, Cambridge, MA prepared for submittal as required in advance of the project's Special Permit Application:

- (1) One existing tree inventory for the parcel and its adjacent street trees prepared by the team's certified arborist, David Anderson of Hartney Greymont plus HG cover letter
- (3) Three Arbor Study plans at 24x36 prepared by RBA
  - L2 Existing Inventory and Plan
  - L3 Inventory and Removals Plan
  - L4 Tree Planting Plan

Note that all plans quantify only trees within the property lines having an 8" or greater diameter breast height as discussed.

Please feel free to contact me directly, should you have any questions or are in need of any clarifications.

Happy holidays!

Hartney Greymont  
A Division of The Davey Tree Expert Company  
433 Chestnut Street  
Needham, Massachusetts 02492  
Telephone 781.444.1227  
Telefax 781.455.6698  
e-mail: trees@hartney.com



December 22, 2015

Robyn Reed  
Richard Burk Associates  
7 Davis Square  
Somerville, MA 02144-2955

Dear Robyn,

I have attached the Tree Survey for the trees at One Kendall Square, North Block. This includes species, DBH (diameter at breast height), and condition of tree(s) as of October 2, 2015.

We separated the street trees from the trees on private property.

Please call me if you have any questions.

Sincerely,

A handwritten signature in blue ink that reads "David M. Anderson". The signature is fluid and cursive, with the first name "David" being the most prominent.

David M. Anderson  
Massachusetts Certified Arborist #1549

DMA/e



## One Kendall Square Tree Survey/Evaluation

Surveying Arborist  
Patrick Boyle MCA And Arthur Engdahl MCA

Number	Species	DBH	Height	Condition	Additional Information
		DBH is in inches			

### Section I - 1500 Binney Street towards Cinema

1	Norway maple	16.5	25 ft.	Excellent	
2	Linden	14	25 Ft.	Excellent	
3	Crabapple	11	16 ft.	Excellent	
4	Crabapple	7	9 ft.	Good	
5	Crabapple	12	10 ft.	Excellent	
6	Red maple	7	35 ft.	Good	
7	Red maple	8	35 ft.	Good	
8	Red maple	7	35 ft.	Good	
9	Pear	12	35 ft.	Good	
10	Pear	13.5	35 ft.	Good	

### Beginning with tree at far end of building toward Binney Street

11	Pear	12	40 ft.	Good	
12	Pear	12	40 ft.	Good	
13	Pear	13	40 ft.	Good	
14	Pear	11	40 ft.	Fair	

Hazard Tree

### On Binney Street moving toward Railroad tracks East

15	Crabapple	6	13 ft.	Fair	
16	Crabapple	8	13 ft.	30% dead	
17	Crabapple	10	15 ft.	30% dead	





18	Ginkgo	4.5	15 ft.	Poor	street tree
19	Ginkgo	4	15 ft.	Poor	street tree
20	Linden	6	15 ft.	Good	street tree

**Section II Train tracks side of garage**

21	Pear	12	30 ft.	Good
22	Pear	18	30 ft.	Good
23	Pear	11	30 ft.	Good
24	Pear	11	30 ft.	Poor
25	Pear	13	30 ft.	Good
26	Pear	12	30 ft.	Good
27	Pear	13	30 ft.	Fair
28	Pear	12	30 ft.	Good
29	Pear	15	30 ft.	Good

Straight down fence line toward back of garage

30	Pear	15	30 ft.	Good
31	Pear	17	30 ft.	Good
32	Pear	16	30 ft.	Good

Next to building

33	Pear	17	30 ft.	Poor	Hazard Tree
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Fence line

34	Arborvitae clump	34	20 ft.	Good
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Hartney Greymont  
433 Chestnut Street  
Needham, Ma 02493

David Anderson, MCA

35 Arborvitae clump      14      20 ft.      Good

Next to garage

36 Pear      14      20 ft.      Fair

37 Pear      7      20 ft.      Fair

38 Pear      10      20 ft.      Fair

**Section III Back side of garage**

39 Red maple      13      40 ft.      Fair

40 Red maple      13      40 ft.      Fair

41 Mulberry      9      25 ft.      Excellent

42 Hemlock      8      20 ft.      Poor

43 Hemlock      8      30 ft.      Poor

44 Hemlock      9      30 ft.      Good

45 Hemlock      8      30 ft.      Poor

46 Hemlock two-stem      8      20 ft.      Poor

47 White pine      18      40 ft.      Good

48 White pine      12      40 ft.      Good

49 White pine      12      40 ft.      Good

50 White pine      12      40 ft.      Good

51 White pine      12      40 ft.      Good

52 Green ash      16      40 ft.      Good

53 Green ash      11      40 ft.      Good

54 Green ash      8.5      40 ft.      Good

55 White pine      12      30 ft.      Fair

56 Siberian elm      2      12 ft.      Good



Section 4

1500 Binney Street away from garage moving toward Cardinal Mederios Ave

57 Linden	4.5	18 ft.	Poor	Street Tree
58 Linden	4.5	12 ft.	Poor	Street Tree
59 Linden	4.5	12 ft.	Poor	Street Tree
60 Linden	4	9 ft.	Poor	Street Tree
61 Linden	5	9 ft.	Poor	Street Tree

Cardinal Mederios Ave North

62 Gingko	5	20 ft.	Fair	Street Tree
63 Norway maple	13.5	35 ft.	Good	@loading dock

1700 Kendall Square

64 Norway maple	14	25 ft.	Good	parking lot
65 Norway maple	17.5	25 ft.	Good	parking lot

Cardinal Mederios Ave

66 Gingko	4	16 ft.	Poor	Street Tree
67 Hackberry	2	8 ft.	Excellent	Street Tree
68 Norway maple	7	20 ft.	Poor	Street Tree
69 Red maple	4	15 ft.	Poor	Street Tree
70 Gingko	3	15 ft.	Excellent	Street Tree
71 Pear	12	18 ft.	Excellent	Street Tree

Total DBH                    752 inches

Species                    DBH    Height                    Condition



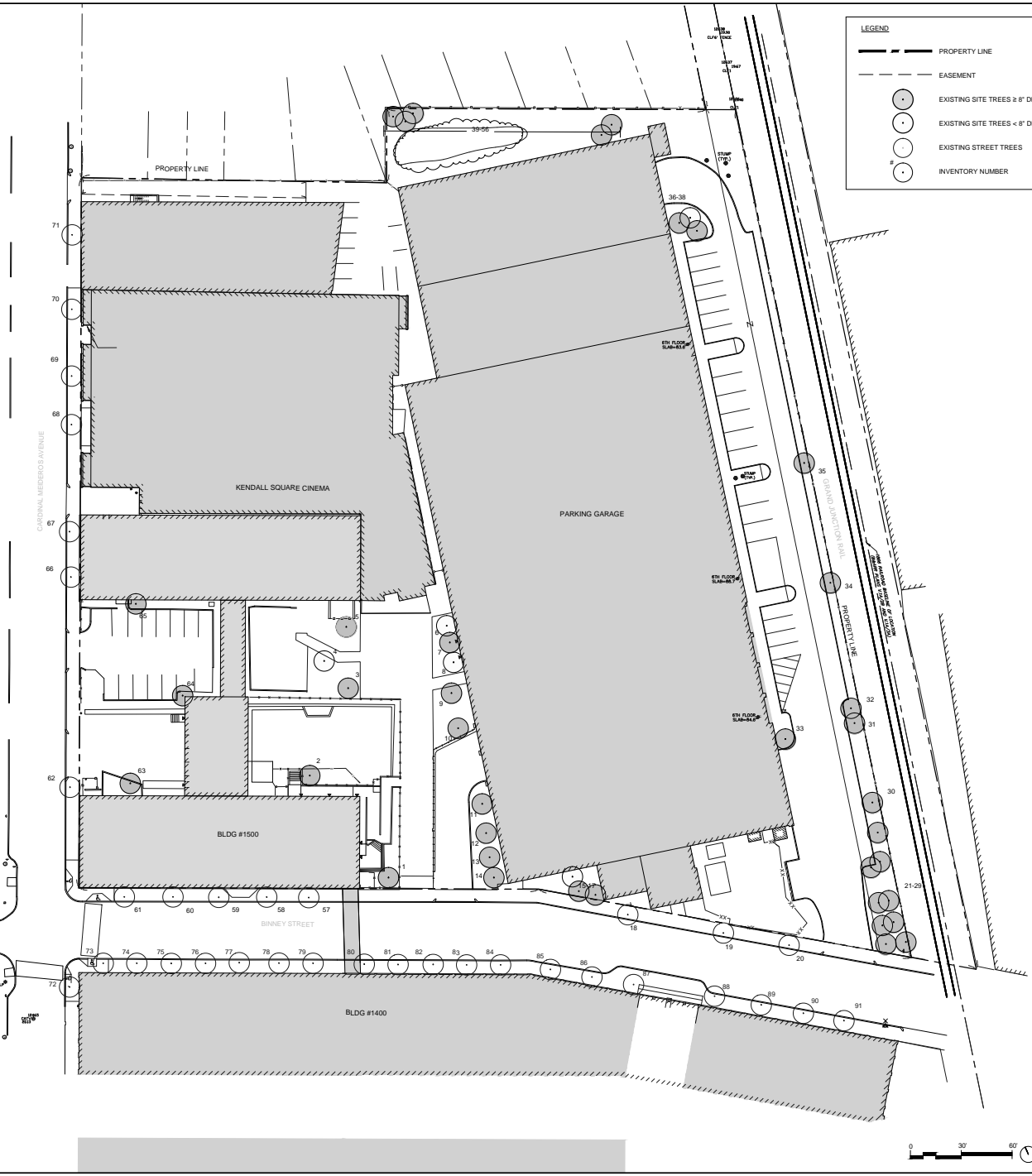
## Section 5 Outside Spec- Opposite side on Street

### 1400 One Kendall Square Binney Steet South Side

72 Norway maple	8	28 ft.	Dead	Street Tree
73 Gingko	2	12 ft.	Excellent	Street Tree
74 Gingko	7	25 ft.	Poor	Street Tree
75 Gingko	7	25 ft.	Poor	Street Tree
76 Gingko	7	20 ft.	Poor	Street Tree
77 Gingko	7	20 ft.	Poor	Street Tree
78 Gingko	9	30 ft.	Fair	Street Tree
79 Gingko	8	25 ft.	Poor	Street Tree
80 Gingko	10.5	20 ft.	Fair	Street Tree
81 Gingko	9	20 ft.	Poor	Street Tree
82 Gingko	9	20 ft.	Poor	Street Tree
83 Gingko	9	20 ft.	Poor	Street Tree
84 Gingko	7	20 ft.	Poor	Street Tree
85 Gingko	11	20 ft.	Fair	Street Tree
86 Gingko	7	20 ft.	Fair	Street Tree
87 Gingko	5	18 ft.	Fair	Street Tree
88 Gingko	7	16 ft.	Fair	Street Tree
89 Linden	9	20 ft.	Good	Street Tree
90 Linden	8	18 ft.	Poor	Street Tree
91 Linden	7	18 ft.	Fair	Street Tree

Total DBH

154 inches



**LEGEND**

- — — — — PROPERTY LINE
- - - - - EASEMENT
- EXISTING SITE TREES ≥ 8" DBH
- EXISTING SITE TREES < 8" DBH
- EXISTING STREET TREES
- # INVENTORY NUMBER

 Hartney Greymont  
433 Chestnut Street  
Needham, MA 02462

David Anderson, MCA

**One Kendall Square Tree Survey/Evaluation**

Surveying Arborist  
Patrick Boyle MCA/ISA And Arthur Engdahl MCA/ISA

Number	Species	DBH	Height	Condition	Additional Information
<b>Section I - 1500 Binney Street towards Cinema</b>					
1	Norway maple	16.5	25 ft.	Excellent	
2	Linden	14	25 ft.	Excellent	black text indicates tree greater than or equal to 8" dbh
3	Crabapple	11	16 ft.	Excellent	
4	Crabapple	7	9 ft.	Good	gray text indicates tree less than 8" dbh
5	Crabapple	12	10 ft.	Excellent	
6	Red maple	7	35 ft.	Good	
7	Red maple	8	35 ft.	Good	
8	Red maple	7	35 ft.	Good	
9	Pear	12	35 ft.	Good	
10	Pear	13.5	35 ft.	Good	

**Beginning with tree at far end of building toward Binney Street**

11	Pear	12	40 ft.	Good	
12	Pear	12	40 ft.	Good	
13	Pear	13	40 ft.	Good	
14	Pear	11	40 ft.	Fair	Hazard Tree

**On Binney Street moving toward Railroad tracks East**

15	Crabapple	6	13 ft.	Fair	
16	Crabapple	8	13 ft.	30% dead	
17	Crabapple	10	15 ft.	30% dead	

**Section II Train tracks side of garage**

21	Pear	12	30 ft.	Good	
22	Pear	18	30 ft.	Good	
23	Pear	11	30 ft.	Good	
24	Pear	11	30 ft.	Poor	
25	Pear	13	30 ft.	Good	
26	Pear	12	30 ft.	Good	
27	Pear	13	30 ft.	Fair	
28	Pear	12	30 ft.	Good	
29	Pear	15	30 ft.	Good	

**Straight down fence line toward back of garage**

30	Pear	15	30 ft.	Good	
31	Pear	17	30 ft.	Good	
32	Pear	16	30 ft.	Good	

**Next to building**

33	Pear	17	30 ft.	Poor	Hazard Tree
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**Fence line**

34	Arborvitae clump	34	20 ft.	Good	
35	Arborvitae clump	14	20 ft.	Good	

**Next to garage**

36	Pear	14	20 ft.	Fair	
37	Pear	7	20 ft.	Fair	
38	Pear	10	20 ft.	Fair	

**Section III Back side of garage**

39	Red maple	13	40 ft.	Fair	
40	Red maple	13	40 ft.	Fair	
41	Mulberry	9	25 ft.	Excellent	
42	Hemlock	8	20 ft.	Poor	
43	Hemlock	8	30 ft.	Poor	
44	Hemlock	9	30 ft.	Good	
45	Hemlock	8	30 ft.	Poor	
46	Hemlock two-stem	8	20 ft.	Poor	
47	White pine	18	40 ft.	Good	
48	White pine	12	40 ft.	Good	
49	White pine	12	40 ft.	Good	
50	White pine	12	40 ft.	Good	
51	White pine	12	40 ft.	Good	
52	Green ash	16	40 ft.	Good	
53	Green ash	11	40 ft.	Good	
54	Green ash	8.5	40 ft.	Good	
55	White pine	12	30 ft.	Fair	
56	Siberian elm	2	12 ft.	Good	

**Cardinal Medeiros Ave North**

63	Norway maple	13.5	35 ft.	Good	@loading dock
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**1700 Kendall Square**

64	Norway maple	14	25 ft.	Good	parking lot
65	Norway maple	17.5	25 ft.	Good	parking lot

**ARBOR STUDY PROJECT SITE DBH CALCULATIONS**

EXISTING SITE DBH (≥ 8") TOTAL	642.0 INCHES
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**ARCHITECT**  
**bha**  
Bargmann Hendrie + Archetype, Inc.  
300 A Street  
Boston, MA 02210  
617 350-0450 Tel  
617 350-0215 Fax  
www.bhakis.com

**PROJECT NAME**  
**399 Binney St**  
399 Binney St  
Cambridge, MA 02139

**CLIENT**  
**DivcoWest**  
One Kendall Square, Suite  
83201 Cambridge, MA 02139  
617 720-7400

**PROJECT TEAM**  
**STRUCTURAL ENGINEER**  
McNamara Salvia, Inc.  
101 Federal Street 11th Floor  
Boston, MA 02110  
617 737-0040

**MEP/FP ENGINEER**  
AHA Consulting Engineers  
24 Harnwell Ave # 9  
Lexington, MA 02421  
781 372-3000

**CIVIL & TRAFFIC ENGINEER**  
Tetra Tech  
100 Nickerson Road  
Marlborough, MA 01752  
508 786-2200

**LANDSCAPE ARCHITECT**  
Richard Burk Associates, Inc.  
7 Davis Square  
Somerville, MA 02144  
617 623-2300

**GEOTECHNICAL ENGINEER**  
McPhail Associates, LLC  
2208 Massachusetts Avenue  
Cambridge, MA 02140  
617 868-1420

**ACOUSTIC CONSULTANT**  
Acantech Consulting, Inc.  
23 Moulton Street  
Cambridge, MA 02138  
617 499-8000

**CONSTRUCTION MANAGER**  
Commodore Builders, Inc.  
80 Bridge Street  
Newton, MA 02458  
617 614-3500

**REVISIONS**

1		
2		
3		
4		
5		

**DRAWING TITLE**  
**ARBOR STUDY**  
Existing Tree  
Inventory and  
Plan

**DRAWING INFORMATION**

12-23-2015  
DATE OF ISSUE

Special Permit Application

DESCRIPTION: 11" x 30" x 0"

SCALE: 1/8" = 1'-0"

1511

PROJECT #

FILE NAME

**DRAWING NUMBER**  
**L2**  
Copyright BHA, Inc.

**One Kendall Square Tree Survey/Evaluation**

Surveying Arborist  
 Patrick Boyle MCA/ISA And Arthur Engdahl MCA/ISA

Number	Species	DBH	Height	Condition	Additional Information
<b>Section I - 1500 Binney Street towards Cinema</b>					
1	Norway maple	16.5	25 ft.	Excellent	Indicates tree 28" to be removed
2	Linden	14	25 ft.	Excellent	
3	Crabapple	11	16 ft.	Excellent	
4	Crabapple	7	9 ft.	Good	
5	Crabapple	12	10 ft.	Excellent	Indicates tree less than 8" dbh to be removed
6	Red maple	7	35 ft.	Good	
7	Red maple	8	35 ft.	Good	
8	Red maple	7	35 ft.	Good	
9	Pear	12	35 ft.	Good	
10	Pear	13.5	35 ft.	Good	
		<b>- 87 inches</b>			
Beginning with tree at far end of building toward Binney Street					
11	Pear	12	40 ft.	Good	
12	Pear	12	40 ft.	Good	
13	Pear	13	40 ft.	Good	
14	Pear	11	40 ft.	Fair	Recent Tree
		<b>- 48 inches</b>			
On Binney Street moving toward Railroad tracks East					
15	Crabapple	6	13 ft.	Fair	
16	Crabapple	8	13 ft.	30% dead	
17	Crabapple	10	15 ft.	30% dead	
<b>Section II Train tracks side of garage</b>					
21	Pear	12	30 ft.	Good	
22	Pear	18	30 ft.	Good	
23	Pear	11	30 ft.	Good	
24	Pear	11	30 ft.	Poor	
25	Pear	13	30 ft.	Good	
26	Pear	12	30 ft.	Good	
27	Pear	13	30 ft.	Fair	
28	Pear	12	30 ft.	Good	
29	Pear	15	30 ft.	Good	
Straight down fence line toward back of garage					
30	Pear	15	30 ft.	Good	
31	Pear	17	30 ft.	Good	
32	Pear	16	30 ft.	Good	
Next to building					
33	Pear	17	30 ft.	Poor	Hazard Tree
		<b>- 17 inches</b>			
Fence line					
34	Arborvitae clump	34	20 ft.	Good	
35	Arborvitae clump	14	20 ft.	Good	
		<b>- 48 inches</b>			
Next to garage					
36	Pear	14	20 ft.	Fair	
37	Pear	7	20 ft.	Fair	
38	Pear	10	20 ft.	Fair	
		<b>- 24 inches</b>			
<b>Section III Back side of garage</b>					
39	Red maple	13	40 ft.	Fair	
40	Red maple	13	40 ft.	Fair	
41	Mulberry	9	25 ft.	Poor	
42	Hemlock	8	20 ft.	Poor	
43	Hemlock	8	30 ft.	Poor	
44	Hemlock	9	30 ft.	Good	
45	Hemlock	8	30 ft.	Poor	
46	Hemlock two-stem	8	20 ft.	Poor	
47	White pine	18	40 ft.	Good	
48	White pine	12	40 ft.	Good	
49	White pine	12	40 ft.	Good	
50	White pine	12	40 ft.	Good	
51	White pine	12	40 ft.	Good	
52	Green ash	16	40 ft.	Good	
53	Green ash	11	40 ft.	Good	
54	Green ash	8.5	40 ft.	Good	
55	White pine	12	30 ft.	Fair	
56	Siberian elm	2	12 ft.	Good	
		<b>- 31.5 inches</b>			
Cardinal Medeiros Ave North					
63	Norway maple	13.5	35 ft.	Good	@loading dock
		<b>- 13.5 inches</b>			
64	Norway maple	14	25 ft.	Good	parking lot
65	Norway maple	17.5	25 ft.	Good	parking lot
		<b>- 31.5 inches</b>			

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**PROJECT NAME**  
**399 Binney St**  
 399 Binney St  
 Cambridge, MA 02139

**CLIENT**  
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 617 720-7400

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**ACOUSTIC CONSULTANT**  
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 617 499-8000

**CONSTRUCTION MANAGER**  
 Commodore Builders, Inc.  
 80 Bridge Street  
 Newton, MA 02459  
 617 614-3500

**REVISIONS**

1	
2	
3	
4	
5	

**DRAWING TITLE**  
**ARBOR STUDY**  
 Inventory and Removals Plan

**DRAWING INFORMATION**

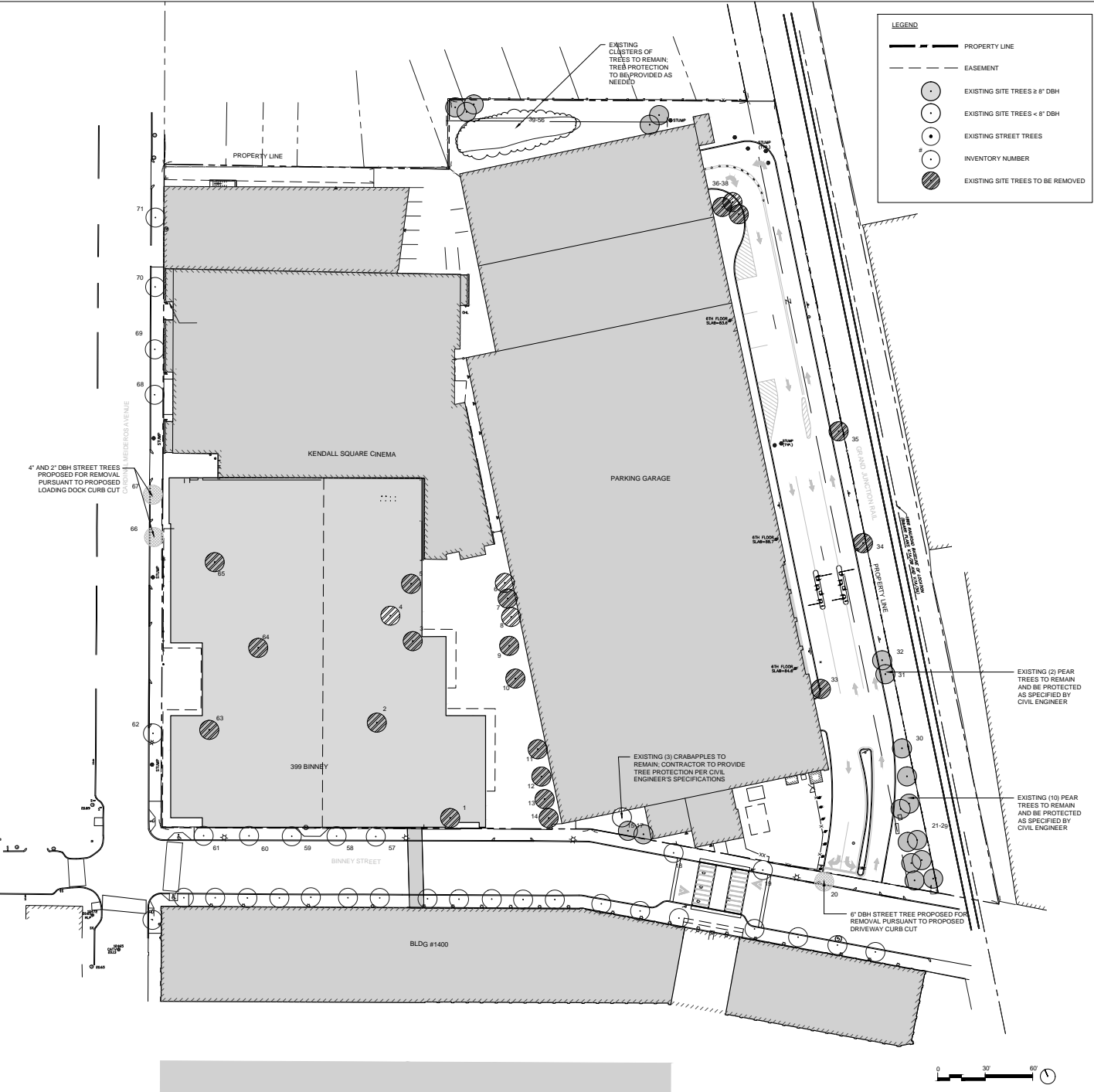
12-23-2015  
 DATE OF ISSUE  
 Special Permit Application  
 DESCRIPTION:  
 SSSR  
 SIZE: 1511  
 DATE: 12/23/15  
 PROJECT #:  
 REFERENCE:

**DRAWING NUMBER**  
**L3**

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**LEGEND**

- PROPERTY LINE
- - - EASEMENT
- EXISTING SITE TREES ≥ 8" DBH
- EXISTING SITE TREES < 8" DBH
- EXISTING STREET TREES
- # INVENTORY NUMBER
- EXISTING SITE TREES TO BE REMOVED



\*\* NOTE: Street trees indicated as possible removals not included within these calculations

ARBOR STUDY PROJECT SITE DBH CALCULATIONS	
EXISTING SITE DBH (≥ 8") TOTAL	642.0 INCHES
REMOVALS SITE DBH (≥ 8") TOTAL	-269.0 INCHES

TREE PLANTING SCHEDULE - SITE TREES							
KEY	QTY	BOTANICAL NAME	COMMON NAME	SIZE	DBH	ROOT	COMMENTS
BP	51	BETULUS POPULIFOLIA "WHITESPIRE"	WHITESPIRE GREY BIRCH	2.5" CAL	127.5	B&B	SINGLE STEM AND MULTI-STEM MIX
GB	18	GINKGO BILOBA "AUTUMN GOLD"	AUTUMN GOLD GINKGO	2" CAL	36.0	B&B	SINGLE STEM
					<b>163.5</b>	<b>NEW DBH</b>	

TREE PLANTING SCHEDULE - STREET TREES							
KEY	QTY	BOTANICAL NAME	COMMON NAME	SIZE	DBH	ROOT	COMMENTS
BPS	4	BETULUS POPULIFOLIA "WHITESPIRE"	WHITESPIRE GREY BIRCH	2.5" CAL	10.0"	B&B	SINGLE STEM

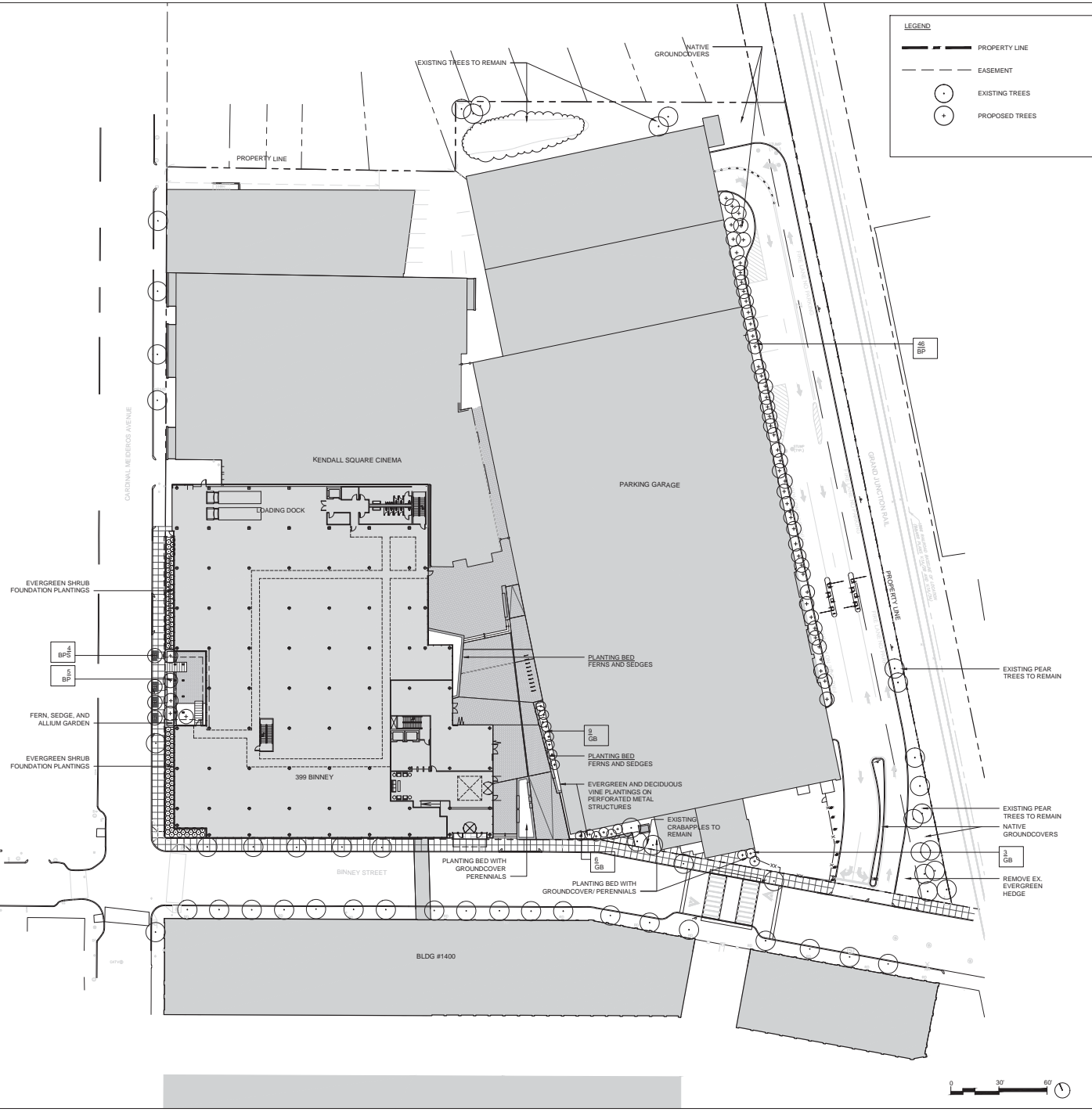
**LEGEND**

— — — — — PROPERTY LINE

- - - - - EASEMENT

○ EXISTING TREES

⊕ PROPOSED TREES



\*\* NOTE: DBH totals for project site trees only. Street trees indicated as possible removals and/or additions not included within these calculations.

ARBOR STUDY PROJECT SITE DBH CALCULATIONS	
EXISTING SITE DBH (≥ 8") TOTAL	642.0 INCHES
REMOVALS SITE DBH (≥ 8") TOTAL	-269.0 INCHES
NEW TREES (ADDITIONAL DBH)	+163.5 INCHES
NET REDUCTION DBH TOTAL	-105.5 INCHES

January 4, 2016

Community Development Department  
City of Cambridge  
344 Broadway  
Cambridge, MA 02139

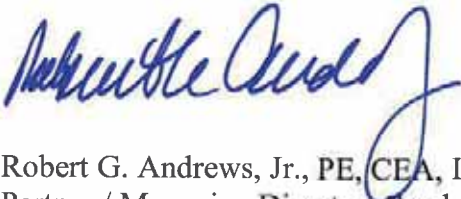
Re: 399 Binney St., Cambridge, MA

To Whom It May Concern:

In accordance with Section 22 of the City of Cambridge Zoning Ordinance, I, Robert G. Andrews, Jr., PE, CEA, LEED AP BD+C, as the lead Sustainability Engineer overseeing the planning and design of the referenced project, hereby certify that I am knowledgeable of the project's green building strategies, designs, plans and details and to the best of my knowledge this project has been planned and designed so as to meet the requirements of the Zoning Ordinance, and comply with the prerequisites and earn the credits necessary to achieve Gold certification (60 points) using the LEED for Core and Shell v2009 Rating System.

Accompanying this affidavit are an updated LEED Checklist and Green Building Report, dated January 4, 2016, which reflect the design of the project and document our point score and approach to achieving the prerequisites and selected credits.

Sincerely,



Robert G. Andrews, Jr., PE, CEA, LEED AP BD+C  
Partner / Managing Director, Cambridge Office  
Mass Engineer License #: 36400



CC: Ray Urban, BH+A  
Jeff Longnecker, DivcoWest

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**399 Binney Street  
DVF IV One Kendall Garage, LLC  
Cambridge, MA**

**ARTICLE 22 SUSTAINABILITY NARRATIVE**

Prepared for

**DivcoWest Real Estate Services, Inc.  
One Kendall Square, Suite B3201  
Cambridge, MA 02139**

Prepared By:



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**January 4, 2016**

## **Sustainable Design Narrative**

### **Introduction**

The Project team, with strong support from the project developer, is pursuing sustainable design and construction for the project, which will include review and evaluation of the requirements of Article 22 of the Cambridge Zoning ordinance relative to the City's Green Building policies and procedures. The City is actively promoting measures to encourage buildings to decrease energy and water use and cost, improve the efficiency and useful life of building systems and infrastructure, and reduce the burdens imposed by buildings on city services, the environment, and public health.

The Project architectural/engineering/construction team includes several LEED Accredited Professionals, including the Sustainability Consultant, Robert G. Andrews, Jr., PE, CEA, LEED AP BD+C, along with several other lead architects, engineers and construction personnel. Mr. Andrews' responsibilities include meeting with the Proponent, Design Team and Construction Manager in a sustainable design charrette early in the Project, to identify the environmental design goals, motivations and issues, discuss the LEED program impact on the design, build consensus and included gaining LEED program buy-in from team members.

A LEED checklist for 399 Binney St. is provided at the end of this section to identify sustainability design objectives for this Project, highlights of which are included below. The project buildings will be registered with USGBC/GBCI to certify under the LEED for Core and Shell program. Several of the site credits can be documented and applied to the building. System design solutions have been developed in an effort to achieve the targeted LEED credits. The final design and construction of the Project will create sustainable buildings to promote the internal building environmental quality for the occupants, enhance the surrounding neighborhood locally, and reduce environmental impacts globally.

The following LEED Prerequisites and Credits are targeted for certification:

### **Sustainable Sites**

1. Construction Activity pollution Prevention (Prerequisite)  
A management plan will enforce measures to protect adjacent areas from pollution.
2. Site Selection (Credit 1)  
The Project Site has previously been completely developed and is located in an urban area. This development does not violate any of the established criteria. This credit is expected to be achieved.
3. Development Density (Credit 2)  
The density of the Project development is compatible with surrounding sites. This credit is expected to be achieved.

4. Alternative Transportation: Public Transportation Access (Credit 4.1)  
Public transportation access is included in the project. The project is located within ¼ mile of several MBTA bus lines. This credit is expected to be achieved.
5. Alternative Transportation: Bicycle Storage and Changing Rooms (Credit 4.2)  
Bicycle storage is provided in the adjacent parking garage areas for tenants. A bike rack for additional bicycles is provided at grade level near the main entrance of the building for visitors. Changing rooms with showers will be provided inside the building. This credit is expected to be achieved.
6. Alternative Transportation: Low-Emitting and Fuel-Efficient Vehicles (Credit 4.3)  
Preferred parking will be provided with signage for low-emitting / fuel-efficient vehicles as part of the overall Parking Management plan. This credit is expected to be achieved.
7. Alternative Transportation: Parking Capacity (Credit 4.4)  
Parking for occupants and visitors will be provided in the adjacent parking garage. The number of total parking spaces designed meets the requirements of Zoning. No new parking is expected to be added as part of the project. This credit is expected to be achieved.
8. Stormwater Design (Credits 6.1)  
The site for the proposed building will be served by a new drainage system consisting of deep sump/hooded catch basins, roof leaders, drain manholes and high density polyethylene (HDPE) pipes that connect to the existing municipal system. Stormwater management facilities for water quantity control and attenuation of the peak rate of stormwater runoff includes a subsurface retention system and a green roof. While Best Management Practices (BMPs) will be used to provide water quality treatment including deep sum/hooded catch basins, the improved areas of the site do not contribute TSS loads as they consist only of roof and pedestrian areas (plaza and courtyard). Therefore, only credit for 6.1 is expected to be achieved. Credit SSc6.1 is also a Regional Priority Credit.
9. Heat Island Effects (Credits 7.1, 7.2)  
More than 50% of the parking on site is located inside the adjacent parking garage. A combination of vegetated and “high-emissivity” roof systems will be used for covering all areas of the roof. These credits are expected to be achieved. Both credits are also Regional Priority Credits.
10. Tenant Design and Construction Guidelines (Credit 9)  
The landlord and design team will create a tenant manual that explains the sustainable aspects of the building and site, and that also encourages the tenants to seek LEED certification for their fit-ups. This credit is expected to be achievable.

## **Water Efficiency**

1. Water Efficient Landscaping (Credit 1)  
Landscape plantings will be selected to be climate appropriate, and irrigation systems will be designed to enable the project to reduce potable water consumption by at least 50% over conventional means. This credit is expected to be achieved.
2. Water Use Reduction (Prerequisite 1, Credit 3)  
Appropriate low-flow and low consumption plumbing fixtures (1.28 GPF toilet, 1/8 GPF urinals, 0.35 GPM sensor type lavatory faucets, 1.5 GPM sink faucets, and 1.5 GPM showerheads) are specified to achieve a reduction in water usage of at least 30% over the baseline.

## **Energy and Atmosphere**

1. Fundamental Commissioning (Prerequisite 1)  
Commissioning of the Mechanical and Electric building systems will be performed.
2. Minimum Energy Performance (Prerequisite 2)  
The energy code utilized for the Project will be the Massachusetts Stretch Energy Code at a minimum, and ASHRAE Standard 90.1-2007 for LEED documentation purposes.
3. Refrigerant Management (Prerequisite 3)  
No CFC-based refrigerants will be utilized for the Project.
4. Optimize Energy Performance (Credit 1)  
Preliminary calculations show it is possible that the building will perform approximately 21% better than ASHRAE 90.1-2007 Energy Standard minimum requirements in order to comply with Stretch code requirements. A high-efficiency water-source heat pump system is planned, with rooftop enthalpy heat exchanger ERU for ventilation, along with an enhanced building envelope, low-flow hot water fixtures, and enhanced core area and site lighting design, all of which will incorporate high-efficiency equipment and control strategies.
5. On-site Renewable Energy (Credit 2)  
This credit will be explored further as the design progress. The economics of using garage roof-mounted solar PV will be investigated and may be implemented.
6. Enhanced Commissioning (Credit 3)  
An independent commissioning authority will be contracted to perform on-board design reviews and re-commission the building systems after occupancy. This credit is expected to be achieved.
7. Enhanced Refrigerant Management (Credit 4)  
The HVAC units will be specified with refrigerant type and quantity in order to meet the requirements of this credit.

8. Measurement and Verification (Credit 5.1 and 5.2)

Measurement and verification equipment is provided in the design to enable the property management staff to perform on-going reviews of system operations, environmental conditions and indoor air quality, energy and water use, and review the potential for improvements. Tenant electric and water use will be metered. The building will utilize a networked DDC control system to operate the HVAC systems equipment, track operating times and generate maintenance alarms, and monitor system performance. This credit is also expected to ensure compliance with the City of Cambridge Municipal Energy Use Reporting Ordinance. These credits are expected to be achieved.

9. Green Power (Credit 6)

The project will investigate the cost of purchasing renewable energy credits in the amount of at least 35% of the electricity used in the building, based on the results of the energy model, and may purchase 70% to achieve an innovation point for Exemplary Performance.

## **Materials and Resources**

1. Storage and Collection of Recyclables (Prerequisite)

Facilities are provided at each floor level and in the loading dock for collection of recyclable materials before removal to the recycling facility.

2. Construction Waste Management (Credit 2)

The Construction Manager will implement a waste management plan that will seek to divert at least 75% of construction and demolition waste material removed from the site from landfills through recycling and salvaging. This credit is expected to be achieved, and may be pursued aggressively with the demolition materials in an effort to gain an exemplary performance credit of at least 95% construction waste recycling.

3. Recycled Content (Credit 4)

Project Specifications will encourage provision and tracking of materials with recycled content where practical. This credit is expected to be achieved.

4. Regional Materials (Credit 5)

Project specifications will encourage provision and tracking of materials that have been manufactured and extracted or harvested within 500 miles of the project site.

5. Certified Wood (Credit 6)

Project specifications will encourage providing and tracking wood and lumber materials that comply with the requirements of the Forestry Stewardship Certification program.

## **Indoor Environmental Quality**

1. Minimum IAQ Performance (Prerequisite 1)

The ventilation code utilized for the Project will be ASHRAE Standard 62.1-2007, as required by LEED and the present Massachusetts Building Code.

2. Environmental Tobacco Smoke Control (Prerequisite 2)  
The entire building will be designated as a non-smoking facility. This will be included in the lease terms, and appropriate signage will be located around the site.
3. Outdoor Air Monitoring (Credit 1)  
The rooftop outside air ventilation supply unit will be provided with outside air measurement and tracking devices, which will initiate an alarm if the OA quantities vary by more than 10% from the design quantity. This credit is expected to be achievable.
4. Increased Ventilation (Credit 2)  
The rooftop outside air supply unit capacity will be calculated for office and light/dry lab occupancy. The unit will be provided with additional outside air capacity to meet the requirements of this credit. This credit is expected to be achievable.
5. Construction IAQ Management Plan (Credit 3.1)  
An Indoor Air Quality Management plans will be implemented during the construction phase per the requirements of this credit. This credit is expected to be achieved.
6. Low-Emitting Materials (Credits 4.1, 4.2, 4.3, 4.4)  
Adhesives, sealants, paint, coatings, and core area flooring materials will be specified with low-VOC content limits as prescribed by the respective applicable standards. Composite wood products will be specified to have no added urea – formaldehyde. These credits are expected to be achieved.
7. Indoor Chemical and Pollutant Source Control (Credit 5)  
A permanent entryway system will be installed at the main (high-volume) building entrance to prevent air contaminants from entering the building. Housekeeping areas will be separated by full-height walls and exhausted to outside to comply with the requirements of this credit. The rooftop ventilation air handling unit is expected to be provided with appropriate filtration to meet the credit. This credit is expected to be achieved.
8. Thermal Comfort (Credit 7)  
The building envelope and HVAC systems are designed to meet the requirements of ASHRAE 55-2004. This credit is expected to be achieved.

### **Innovation and Design Process**

Only three Innovation and Design Credits may be achieved by the Exemplary Performance path. These exemplary performance credits are listed as Maybe on the scorecard in case not all are achieved.

1. Exemplary Performance: Construction Waste Management MRc2 (IDPc1.1)  
As noted above, the project will seek to divert more than 95% (by weight) of the construction and demolition waste generated on site from landfills.

2. Exemplary Performance: Recycled Content MRc4 or Regional Materials MRc5 (IDPc1.2)  
The project will seek to exceed the requirements of one of these credits and achieve more than 30% compliant materials.
3. Exemplary Performance: Green Power EAc6 (IDPc1.3)  
As noted above, the project will investigate purchasing renewable energy credits to offset at least 70% of the electricity used in the building, as calculated by the energy model, to achieve an exemplary performance credit.
4. Exemplary Performance: Development Density and Community Connectivity SSc2 (IDPc1.4)  
The project will review and calculate the possibility of complying with BOTH the Community Connectivity and the Development Density requirements of this credit in an effort to achieve the innovation point for exemplary performance.
5. Innovation in Design: Sustainable Housekeeping (IDPc1.5)  
The project intends to adopt a sustainable housekeeping policy where all cleaners, cleaning equipment and procedures used in common areas comply with Green Seal Standard GS-37. This credit would also comply with the requirements of the LEED for Existing Building: Operations and Maintenance.

END OF SUSTAINABLE DESIGN NARRATIVE

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# LEED 2009 for Core and Shell Development

## Project Checklist

One Kendall Square (399 Binney St.) Core/shell project 02142

concept 1/4/16

### 23 5 Sustainable Sites Possible Points: 28

Y	N	?	Prereq			
Y			Prereq 1	Construction Activity Pollution Prevention		
1			Credit 1	Site Selection	1	
5			Credit 2	Development Density and Community Connectivity	5	
	1		Credit 3	Brownfield Redevelopment	1	
6			Credit 4.1	Alternative Transportation—Public Transportation Access	6	
2			Credit 4.2	Alternative Transportation—Bicycle Storage and Changing Rooms	2	
3			Credit 4.3	Alternative Transportation—Low-Emitting and Fuel-Efficient Vehicles	3	
2			Credit 4.4	Alternative Transportation—Parking Capacity	2	
	1		Credit 5.1	Site Development—Protect or Restore Habitat	1	
	1		Credit 5.2	Site Development—Maximize Open Space	1	
1			Credit 6.1	Stormwater Design—Quantity Control	1	
	1		Credit 6.2	Stormwater Design—Quality Control	1	
1			Credit 7.1	Heat Island Effect—Non-roof	1	
1			Credit 7.2	Heat Island Effect—Roof	1	
	1		Credit 8	Light Pollution Reduction	1	
1			Credit 9	Tenant Design and Construction Guidelines	1	

### 5 2 3 Water Efficiency Possible Points: 10

Y	N	?	Prereq			
Y			Prereq 1	Water Use Reduction—20% Reduction		
2		2	Credit 1	Water Efficient Landscaping	2 to 4	
	2		Credit 2	Innovative Wastewater Technologies	2	
3		1	Credit 3	Water Use Reduction	2 to 4	

### 13 11 13 Energy and Atmosphere Possible Points: 37

Y	N	?	Prereq			
Y			Prereq 1	Fundamental Commissioning of Building Energy Systems		
Y			Prereq 2	Minimum Energy Performance		
Y			Prereq 3	Fundamental Refrigerant Management		
6	11	4	Credit 1	Optimize Energy Performance	3 to 21	
		4	Credit 2	On-Site Renewable Energy	4	
2			Credit 3	Enhanced Commissioning	2	
2			Credit 4	Enhanced Refrigerant Management	2	
3			Credit 5.1	Measurement and Verification—Base Building	3	
		3	Credit 5.2	Measurement and Verification—Tenant Submetering	3	
		2	Credit 6	Green Power	2	

### 5 6 2 Materials and Resources Possible Points: 13

Y	N	?	Prereq			
Y			Prereq 1	Storage and Collection of Recyclables		
	5		Credit 1	Building Reuse—Maintain Existing Walls, Floors, and Roof	1 to 5	
2			Credit 2	Construction Waste Management	1 to 2	
	1		Credit 3	Materials Reuse	1	
1		1	Credit 4	Recycled Content	1 to 2	
1		1	Credit 5	Regional Materials	1 to 2	
1			Credit 6	Certified Wood	1	

### 8 3 1 Indoor Environmental Quality Possible Points: 12

Y	N	?	Prereq			
Y			Prereq 1	Minimum Indoor Air Quality Performance		
Y			Prereq 2	Environmental Tobacco Smoke (ETS) Control		
1			Credit 1	Outdoor Air Delivery Monitoring	1	
1			Credit 2	Increased Ventilation	1	
1			Credit 3	Construction IAQ Management Plan—During Construction	1	
1			Credit 4.1	Low-Emitting Materials—Adhesives and Sealants	1	
1			Credit 4.2	Low-Emitting Materials—Paints and Coatings	1	
1			Credit 4.3	Low-Emitting Materials—Flooring Systems	1	
		1	Credit 4.4	Low-Emitting Materials—Composite Wood and Agrifiber Products	1	
1			Credit 5	Indoor Chemical and Pollutant Source Control	1	
	1		Credit 6	Controllability of Systems—Thermal Comfort	1	
1			Credit 7	Thermal Comfort—Design	1	
	1		Credit 8.1	Daylight and Views—Daylight	1	
	1		Credit 8.2	Daylight and Views—Views	1	

### 3 3 Innovation and Design Process Possible Points: 6

Y	N	?	Prereq			
		1	Credit 1.1	Innovation in Design: Exceed MRc2 to >95%?	1	
		1	Credit 1.2	Innovation in Design: Exceed MRc4 or MRc5 to >30?	1	
		1	Credit 1.3	Innovation in Design: Exceed EAc6 to 70%?	1	
1			Credit 1.4	Innovation in Design: Exceed SSc2?	1	
1			Credit 1.5	Innovation in Design: Sustainable Housekeeping	1	
1			Credit 2	LEED Accredited Professional	1	

### 3 1 Regional Priority Credits Possible Points: 4

Y	N	?	Prereq			
1			Credit 1.1	Regional Priority: SSc6.1	1	
1			Credit 1.2	Regional Priority: SSc7.1	1	
1			Credit 1.3	Regional Priority: SSc7.2	1	
	1		Credit 1.4	Regional Priority: SSc3? EAc2 (1%)? MRc1.1 (75%)?	1	

### 60 28 22 Total Possible Points: 110

Certified 40 to 49 points Silver 50 to 59 points Gold 60 to 79 points Platinum 80 to 110