

The new neighborhood street, the common driveways referenced above and the fire lane/access drive that circles the Site, along with various of the Project's parking spaces, will be located within five feet of the Site's property lines as shown on the plans submitted with this Application. Because the Project is located entirely within the Flood Plain, an underground parking facility is not feasible and the Existing Property is accordingly constrained, whereas the Project's parking spaces and access drives are designed to comply with the Ordinance's minimum design criteria for parking facilities. The portions of the drives and parking spaces located within five feet of the Site's property lines primarily abut an existing access drive, an active train track or other property of BRE/CPD and, in any case, are appropriately screened.

H. 19.25 Project Review Special Permit

In granting a Project Review Special Permit under Section 19.20 of the Ordinance, the Planning Board is required to make the following findings:

- 1) The Project will have no substantial adverse impact on city traffic within the study area as analyzed in the required traffic study.

As described in the TIS, the Project is expected to have limited impact on traffic and will not cause congestion, hazard, or substantial change to the established neighborhood character. The TIS indicates that the project is expected to have 15 exceedences of Planning Board Criteria out of 115 data entries. One exceedence relates to a change in VLOS D to VLOS E at the Alewife Brook Parkway/Rindge Avenue intersection in the AM peak hour only. The remaining 14 exceedences all result from pre-existing pedestrian LOS E conditions at several area intersections.

- 2) The Project is consistent with the urban design objectives of the city as set forth in Section 19.30 of the Ordinance.

As described below, the Project conforms with the Citywide Urban Design Objectives set forth in Section 19.30 of the Ordinance.

I. 19.30 Citywide Urban Design Objectives

- 1) Pursuant to Section 19.31 of the Ordinance, new projects should be responsive to the existing or anticipated pattern of development. Indicators include:

(a) Heights and setbacks provide suitable transition to abutting or nearby residential zoning districts that are generally developed to low scale residential uses.

The heights and setbacks of the Parking Structure and the Residential Building are complementary to the surrounding buildings and similar to the residential uses within the Triangle District. The nearest residential uses are 30 CambridgePark Drive which contains approximately 311 units, 130 CambridgePark Drive which will contain approximately 220 units and 160 CambridgePark Drive which will contain approximately 398 units. The Residential Building's maximum height of 105 feet is permitted by special permit at the Site. The Parking Structure's moderate height of approximately 84 feet can be allowed by special permit at the Site. The Residential

Building has been designed with a minimum 12-foot setback from the new neighborhood street, the curb at the East Component's main entry plaza and the curb at the West Component's main entry plaza. The Residential Building is distinct in character and design and of a lesser height than surrounding office buildings.

(b) New buildings are designed and oriented on the lot so as to be consistent with the established streetscape on those streets on which the project lot abuts. Streetscape is meant to refer to the pattern of building setbacks and heights in relationship to public streets.

The Residential Building will activate the street edge for the length of the building along the new neighborhood street through the thoughtful placement of key building support spaces and residential amenity spaces. The entrance sequence to the Residential Building is consistent with, and complements, the scale of the urban street network. When approaching on CambridgePark Drive, the pedestrian and vehicular entrance is marked through the form and massing of the West Component's corner, clad with richly toned brick panels. The entry sequence terminates at a landscaped urban plaza, supporting vehicular drop-off for residents, visitors and a potential car-sharing program, as well as a series of smaller open spaces for pedestrian activity. A bike common area, with room for bicycle repair and informal gathering is located near the building entrance and will promote further activation of the streetscape. The Residential Building's façade has been designed with a variation of setbacks and parapet heights to create a pedestrian scaled streetscape. The Parking Structure will replace existing surface parking and will enable the future construction of a pedestrian and bicycle bridge connecting the Alewife Overlay District's Quadrangle and Triangle Districts.

(c) In mixed-use projects, uses are to be located carefully to respect the context, e.g. retail should front onto a street, new housing should relate to any adjacent existing residential use, etc.

The Residential Building is not a mixed-use project. Nonetheless, the orientation of the Parking Structure and the Residential Building balances the needs of residents with the visual and safety concerns of passersby. The Residential Building is thoughtfully located to present an animated view of the West Component's main entry from CambridgePark Drive, along with extensive landscaping to activate the entry area and provide an improved streetscape. Outdoor amenities for residents are located in at-grade and above-grade courtyards. The height and massing of the Residential Building have been carefully articulated to relate to the surrounding context. The West Component is five-stories and has been designed to complete the urban plaza at 130 CambridgePark Drive. The East Component is taller, and its design relates to 30 CambridgePark Drive along with the adjacent rail and highway.

(d) Where relevant, historical context is respected, e.g. special consideration should be given to buildings on the site or neighboring buildings that are preferably preserved.

There are no neighboring historic buildings or buildings that are preferably preserved on or adjacent to the Site.

- 2) Pursuant to Section 19.32 of the Ordinance, development should be pedestrian and bicycle-friendly, with a positive relationship to its surroundings. Indicators include:

(a) Ground floors, particularly where they face public streets, public parks, and publicly accessible pathways, consist of spaces that are actively inhabited by people, such as retail stores, consumer service businesses and restaurants where they are allowed, or general office, educational or residential uses and building lobbies. Windows and doors that normally serve such inhabited spaces are encouraged to be a prominent aspect of the relevant building facades. Where a mix of activities are accommodated in a building, the more active uses are encouraged facing public streets, parks and pathways.

The ground floor of the Residential Building will include active residential uses. The main entrance to the West Component will create a focal point from the CambridgePark Drive approach and anchor the pedestrian activity envisioned for the Site. All of the active uses of the Residential Building face the new neighborhood street with the opportunity to engage the surrounding pathways and plazas. The ground-level parking facility will be hidden from view by the entry lobby, residential amenity spaces, leasing offices, bicycle storage facilities and accompanying landscaping measures.

In commercial districts, such active space consists of retail and consumer service stores and building lobbies that are oriented toward the street and encourage pedestrian activity on the sidewalk. However, in all cases such ground floor spaces should be occupied by uses (a) permitted in the zoning district within which the building is located, (b) consistent with the general character of the environment within which the structure is located, and (c) compatible with the principal use for which the building is designed.

The ground floor of the Project will be occupied by uses that are permitted at the Site, that are consistent with the neighboring environment and that are compatible with the principal residential use. Such ground floor uses include lobbies, a leasing office and bicycle storage and repair facilities.

(b) Covered parking on the lower floors of a building and on-grade open parking, particularly where located in front of a building, is discouraged where a building faces a public street or public park, and publicly accessible pathways.

The Residential Building is designed with an enclosed, on-grade parking facility because the Site is located within the Flood Plain Overlay District. The parking facility is designed to minimize the visibility of the parking area from the new neighborhood street. No surface parking spaces are provided in the front of the Residential Building along the new neighborhood street, although eight temporary parking spaces for visitors are provided in close proximity to the Residential Building's lobbies and leasing office. Due to the existing dimensional restraints, governing the depth of the Site, it is not feasible to eliminate the parking spaces immediately adjacent to the new neighborhood street and within the ground level of the Parking Structure. These spaces will be primarily designated as accessible parking spaces and screened from the pedestrian sidewalk through a series of architectural and landscape elements.

(c) Ground floors should be generally 25-50% transparent. The greatest amounts of glass would be expected for retail uses with lesser amounts for office, institutional or residential use.

The ground floor of the Residential Building, facing the new neighborhood street, is approximately 50% glass, which consists of a portion of the enclosed entry vestibules, lobby spaces, residential amenity spaces, adjacent leasing office and bicycle storage space.

(d) Entries to buildings are located so as to ensure safe pedestrian movement across streets, encourage walking as a preferred mode of travel within the city and to encourage the use of public transit for employment and other trips. Relating building entries as directly as possible to crosswalks and to pathways that lead to bus stops and transit stations is encouraged; siting buildings on a lot and developing site plans that reinforce expected pedestrian pathways over the lot and through the district is also encouraged.

All building entries are designed to instill a safe pedestrian experience. Walking to the Alewife MBTA Station is encouraged through generous sidewalks, pathways and crosswalks that connect and complete the existing pedestrian network for this area of the Triangle District. Landscaped areas with rain gardens help soften the streetscape environment while also creating interest along the pedestrian paths. Building entries are located along the length of the new street to both activate the streetscape and allow for multiple ways of accessing and crossing through the Site.

The Project is in close proximity to the Alewife Reservation and to the Alewife MBTA Station, which will provide alternate commuting and recreational options for the residents. The Parking Structure will enable the future construction of a pedestrian and bicycle bridge between the Alewife Overlay District's Quadrangle and Triangle Districts, extending the pedestrian and bicycle network to the adjacent communities.. As described in more detail below, pedestrian movement to and through the Site will be provided for in a safe manner.

(e) Pedestrians and bicyclists are able to access the site safely and conveniently; bicyclists should have, secure storage facilities conveniently located on-site and out of the weather. If bicycle parking is provided in a garage, special attention must be [p]aid to providing safe access to the facilities from the outside.

Pedestrians and bicyclists will be able to access the Project safely and conveniently. The Site is located in close proximity to the Alewife Reservation, and has ready access to the extensive bicycle and pedestrian trails in Cambridge, Arlington, and Watertown. Signalized crosswalks are located at the intersections of CambridgePark Drive with Alewife Station Access Road and with Alewife Brook Parkway. There are three unsignalized crosswalks across CambridgePark Drive, midway between Alewife Brook Parkway and Alewife Station Access Road, at 100 CambridgePark Drive and at 150 CambridgePark Drive.

The Project provides enclosed, secure, on-site parking for 104 bicycles inside the Parking Structure. Four bicycle storage rooms, containing 291 bicycle spaces are located within the Residential Building to provide convenient bicycle access for all residents and encourage non-automotive transportation. The bicycle storage facilities are separate from the automobile parking area and have safe, direct access to the outside. Bicycle pump and repair facilities will also be provided for resident use. Additionally, several outdoor racks are provided near the entries to the Residential Building for short-term bicycle parking to encourage the use of bicycles for multiple trips throughout the day.

(f) Alternate means of serving this policy objective 19.32 through special building design, siting, or site design can be anticipated where the building form or use is distinctive such as freestanding parking structures, large institutional buildings such as churches and auditoriums, freestanding service buildings, power plants, athletic facilities, manufacturing plants, etc.

The Project complies with the policy objective 19.32.

- 3) Pursuant to Section 19.33 of the Ordinance, the building and site design should mitigate adverse environmental impacts of a development upon its neighbors. Indicators include:
 - (a) Mechanical equipment that is carefully designed, well organized or visually screened from its surroundings and is acoustically buffered from neighbors. Consideration is given to the size, complexity and appearance of the equipment, its proximity to residential areas, and its impact on the existing streetscape and skyline. The extent to which screening can bring order, lessen negative visual impacts, and enhance the overall appearance of the equipment should be taken into account. More specifically:
 - (i) Reasonable attempts have been made to avoid exposing rooftop mechanical equipment to public view from city streets. Among the techniques that might be considered is the inclusion of screens or a parapet around the roof of the building to shield low ducts and other equipment on the roof from view.
 - (ii) Treatment of the mechanical equipment (including design and massing of screening devices as well as exposed mechanical elements) that relates well to the overall design, massing, scale and character of the building.
 - (iii) Placement of mechanical equipment at locations on the site other than on the rooftop (such as in the basement), which reduces the bulk of elements located on the roof; however, at-grade locations external to the building should not be viewed as desirable alternatives.
 - (iv) Tall elements, such as chimneys and air exhaust stacks, which are typically carried above screening devices for functioning reasons, are carefully designed as features of the building, thus creating interest on the skyline.
 - (v) All aspects of the mechanical equipment have been designed with attention to their visual impact on adjacent areas, particularly with regard to residential neighborhoods and views and vistas.

The Project is designed to minimize negative impacts on its surroundings and enhance the overall appearance of the existing streetscape and skyline. First and foremost, the Project significantly improves the appearance of the Site by replacing an existing surface parking lot with a thoughtfully designed and landscaped first class, residential building and a parking structure. The design is mindful of its highly visible location near Route 16. Minimal mechanical equipment will be located on the roof of the Residential Building and will be located out of sight line to the maximum extent possible. All unit HVAC is provided by mechanical equipment located within the units with the exception of the low-profile rooftop air-conditioning units which are located in the center of the West Component, out of view from the street and nearby open spaces. Several pieces of mechanical equipment are located in enclosed, out of sight, at-grade rooms or penthouse spaces in the East Component and wall-mounted gas meters are appropriately located on the south side of the Residential Building, across from the railroad tracks and away from the publicly accessible areas of the Site.

(b) Trash that is handled to avoid impacts (noise, odor, and visual quality) on neighbors, e.g. the use of trash compactors or containment of all trash storage and handling within a building is encouraged.

The trash/recycling storage and handling for the Residential Building are contained within the Residential Building to avoid noise, odor, and visual impacts on the neighbors and Residential Building residents. Centralized trash and recycling rooms are provided on each floor of the Residential Building, with chutes connecting to a main trash/recycling room at the parking level. In compliance with the Ordinance, no refuse storage areas are located in the front yard or anywhere on-grade outside of the Residential Building.

(c) Loading docks that are located and designed to minimize impacts (visual and operational) on neighbors.

The Residential Building is 100% residential and does not require, or provide, a loading facility. A generous loading/unloading area for resident move ins/outs is provided along, but off of, the access drive on the east side of the East Component. This provides a secure area that will not block traffic circulation, with direct access to a building entry and elevator core.

(d) Stormwater Best Management Practices and other measures to minimize runoff and improve water quality are implemented.

The Project implements stormwater Best Management Practices and other measures to minimize runoff and improve water quality in accordance with the Massachusetts Stormwater Handbook for both water quality and quantity. Stormwater quality requirements are anticipated to be achieved with the use of deep sump and hooded catch basins, water quality units and infiltration systems. Additionally, the Project has been designed in accordance with the Alewife Area Stormwater Management Guidelines, May 2006. As such, the Project provides detention of the difference between the 2-year 24-hour pre-construction runoff and the post-construction 25-year 24-hour runoff. This is

anticipated to be accomplished with a pre-cast underground detention/infiltration system designed to promote groundwater recharge and reduce peak stormwater flow rates exiting the Site. As described above, the stormwater management design for the Project has been approved by the Cambridge Conservation Commission in connection with the approved Order of Conditions.

(e) Landscaped areas and required Green Area Open Space, in addition to serving as visual amenities, are employed to reduce the rate and volume of stormwater runoff compared to pre-development conditions.

The Project incorporates Low Impact Development (LID) design features into its overall stormwater management design, including natural, porous pavement along the rear access drive, landscape islands, a vegetative upper level building courtyard, and underground stormwater detention systems working together as part of a stormwater management system to increase stormwater infiltration and reduce the rate and volume of stormwater runoff.

(f) The structure is designed and sited to minimize shadow impacts on neighboring lots, especially shadows that would have a significant impact on the use and enjoyment of adjacent open space and shadows that might impact the operation of a Registered Solar Energy System as defined in Section 22.60 of the Ordinance.

The Project is surrounded by railroad tracks to the south, an access drive to the east, a new neighborhood street and 30 CambridgePark Drive to the north and the proposed residential building at 130 CambridgePark Drive to the west. The Residential Building is set at heights (as defined in the Ordinance) of approximately 105 feet, 85 feet and 70 feet. The Parking Structure is set at a height (as defined in the Ordinance) of approximately 85 feet. Shadow modeling has illustrated that shadows from the Project will not impact the uses of the abutting properties during the summer months. During the winter months, for example the month of December, the Project will cast modest shadows north of the Residential Building. The way in which the proposed building has been sited, as far away from adjacent buildings to the north and with a street and plaza between the proposed development and 130 CambridgePark Drive to the west, serves to reduce the Project's shadow impact. These shadows will not impact operation of a Registered Solar Energy System.

(g) Changes in grade across the lot are designed in ways that minimize the need for structural retaining walls close to property lines.

The Project minimizes changes in grade across the relevant property. A small wall is required along the rear property line along the MBTA tracks, but the wall is minimal in height.

(h) Building scale and wall treatment, including the provision of windows, are sensitive to existing residential uses on adjacent lots.

The Residential Building's scale is broken down carefully to address the pedestrian scale along the new neighborhood street and complement the surrounding architecture. In addition, window position, scale and wall treatment have been carefully considered in the existing context to ensure compatibility for both expected residents and users of the adjacent residential buildings. Balconies and small terraces along the north façades of the Residential Building activate the streetscape, create interest across the facades and speak clearly to the residential feel of the Project. This vertical community continues and is accentuated on the southern side of the Residential Building through larger roof decks, terraces and courtyard spaces which are activated with large windows and balconies for the residences.

(i) Outdoor lighting is designed to provide minimum lighting and necessary to ensure adequate safety, night vision, and comfort, while minimizing light pollution.

Architectural lighting will be designed to provide the minimum lighting necessary to ensure adequate safety, night vision and comfort as well as to minimize light pollution. The Residential Building entrance fronting on the new neighborhood street will provide a soft "glow" to the entry courtyards, accenting the safety and pedestrian friendly lighting around the Residential Building. Architectural lighting will be used to illuminate key features of the Residential Building roofline. The lighting for the Residential Building will comply with the City's lighting ordinances and LEED requirements.

(j) The creation of a Tree Protection Plan that identifies important trees on the site, encourages their protection, or provides for adequate replacement of trees lost to development on the site.

The Project is a redevelopment of an existing site which is currently almost entirely covered with a parking lot. A Tree Study and Plans were submitted to the City of Cambridge Arborist on December 23, 2013. The Project will remove a total of 228 caliper inches of trees deemed to be significant on the Existing Property, but new trees will be planted on site in connection with the Project to replace the 228 caliper inches of trees lost. The new tree plantings will provide greater variation and density of trees on site.

- 4) Pursuant to Section 19.34 of the Ordinance, projects should not overburden the City infrastructure services, including neighborhood roads, city water supply system, and sewer system. Indicators include:

(a) The building and site design are designed to make use of water-conserving plumbing and minimize the amount of stormwater run-off through the use of best management practices for stormwater management.

As described above, the Project's stormwater management system has been designed to incorporate best management practices and has been approved by the Cambridge Conservation Commission. Water-conserving plumbing fixtures will be installed in each residence, and potable water will be submetered so that residents are aware of their own usage.

(b) The capacity and condition of drinking water and wastewater infrastructure systems are shown to be adequate, or the steps necessary to bring them up to an acceptable level are identified.

Sewer Service Infrastructure

Sanitary

The Residential Building contains a total of up to 481 bedrooms, resulting in 52,910 gallons per day (gpd) of sewer flows, per calculations performed as required under Title 5 of the State Environmental Code and related regulations at 310 CMR 15. Because sewer flows will be above the 50,000 gpd threshold, the Project will require a Sewer Connection Permit from the Massachusetts Department of Environmental Protection. Additionally, the Project will be required to reduce stormwater inflow and infiltration (I/I) at a 4:1 ratio (211,640 gallons) from the existing City of Cambridge Sewer System. The Applicant is working with the City's Department of Public Works to indentify existing I/I issues in the vicinity of the Site that can be corrected in connection with the Project to meet the 4:1 reduction requirement.

The sanitary sewage from the Project will be collected and discharged into the existing 48-inch sewer system that runs through the Site from Wheeler Street to CambridgePark Drive. The proposed service connection from the Parking Structure will be a 6-inch pipe and for the Residential Buildings an 8-inch pipe to carry the anticipated waste. Both the 6-inch and 8-inch services will be connected to a common new sewer prior to connecting to the City sewer line with a single 10-inch pipe.

Stormwater

The proposed storm water management system has been designed in a manner that will exceed the provisions of the Department of Environmental Protection (DEP) Stormwater Management Policy for a new construction project. The design is also in conformance with the City of Cambridge stormwater management guidelines, as outlined in the document "Wastewater and Stormwater Management Guidance" dated May 2008 and the Concord-Alewife Area Stormwater Management Guidelines.

The stormwater generated by the Project will be collected by a series of catch basins and roof drains prior to being detained and discharged to the City drainage line on the Site. The detention system consist of a pre-cast concrete chambers located in the rear of the buildings and in the front of the East Component. Due to high ground water onsite and the detention requirements, the drainage tanks will be watertight and provide attenuation only of stormwater. The stormwater tanks have been designed to provide a reduction in the proposed 25-year peak rate runoff to be comparable with the existing 2-year peak rate runoff. The stormwater will then be conveyed, via gravity, to an existing City drain on the Site. All of the proposed catch basins have been designed with sumps and hoods, consistent with the above-referenced guidelines. The proposed stormwater management

of the Site has been reviewed by MassDEP and the City, and has been approved as part of the Order of Conditions.

As part of the Project's stormwater management improvements, an existing approximately 80-year old, 72-inch City drain line that currently bisects the Site, will be relocated to the northern edge of the Site. The new drain line will extend the useful life of the City's infrastructure, thereby reducing near term maintenance and repair costs, and provide additional manholes, which will allow increased access for maintenance and repair purposes.

In addition to the typical sanitary sewer connection, the City of Cambridge requires developments in this area to provide an on-site sewerage storage tank for use during significant rainfall storm events. The Residential Building's storage tank, located on the east side, provides approximately 8-hours of storage with a safety factor, which equates to a 26,500 gallon tank. This system will be connected to the City's remote monitoring system that will activate when the CSO pump activates at the pumping station. When the peak subsides, the wastewater will be released by the City. In the event of an unusually long storm event in which the tank capacity is exceeded, the system is also equipped with an overflow.

The Cambridge Department of Public Works has indicated that the City's existing sanitary system has the capacity to handle the Project's sewerage discharge, and will be required to remove I/I, as described above, at a ratio of 4 gallons of I/I for every 1 gallon of Project sanitary flow.

Water Service Infrastructure

The Project will require approximately 52,910 gallons per day for its domestic water demands. The Cambridge Department of Public Works has indicated that the existing water supply system has the capacity to handle the Project's proposed domestic and fire protection services. Flow tests with the Cambridge Department of Public Works will be performed to confirm the system capacity.

(c) Buildings are designed to use natural resources and energy resources efficiently in construction, maintenance, and long-term operation of the building, including supporting mechanical systems that reduce the need for mechanical equipment generally and its location on the roof of a building specifically. The buildings are sited on the lot to allow construction on adjacent lots to do the same. Compliance with Leadership in Energy and Environmental Design (LEED) certification standards and other evolving environmental efficiency standards is encouraged.

The West Component will seek Silver certification under LEED for Homes Mid-rise and the East Component will seek Silver certification under LEED for New Construction. An overview of the Project's LEED compliance is contained in the LEED Narrative and LEED Checklist submitted with this Application.

- 5) Pursuant to Section 19.35 of the Ordinance, new construction should reinforce and enhance the complex urban aspects of Cambridge as it has developed historically. Indicators include:

(a) New educational institutional construction that is focused within the existing campuses.

N/A to the Project.

(b) Where institutional construction occurs in commercial areas, retail, consumer service enterprises, and other uses that are accessible to the general public are provided at the ground (or lower) floors of buildings. Where such uses are not suitable for programmatic reasons, institutional uses that encourage active pedestrian traffic to and from the site.

N/A to the Project.

(c) In large, multiple-building non-institutional developments, a mix of uses, including publicly accessible retail activity, is provided where such uses are permitted and where the mix of uses extends the period of time the area remains active throughout the day.

N/A to the Project.

(d) Historic structures and environments are preserved.

N/A to the Project.

(e) Preservation or provision of facilities for start-up companies and appropriately scaled manufacturing activities that provide a wide diversity of employment paths for Cambridge residents as a component of the development; however, activities heavily dependent on trucking for supply and distribution are not encouraged.

The Project will be a complementary use to the existing, and future commercial and residential uses in the area, introducing additional residential living, convenient for employees of the surrounding office buildings.

- 6) Pursuant to Section 19.36 of the Ordinance, expansion of the inventory of housing in the city is encouraged. Indicators include:

(a) Housing is a component of any large, multiple building commercial development. Where such development abuts residential zoning districts substantially developed to low-scale residential uses, placement of housing within the development such that it acts as a transition/buffer between uses within and without the development.

(b) Where housing is constructed, providing affordable units exceeding that mandated by the Ordinance. Targeting larger family-sized middle income units is encouraged.

The Residential Building is 100% residential, and will add 378 additional residential dwelling units to the housing inventory of the City. A range of unit types are provided, of which approximately 65% will be one bedroom plus den units, two-bedroom units, two-bedroom plus den units or three-bedroom units. The remainder of the units will be studios, with a limited number of micro units. The Residential Building will include affordable units in compliance with the Ordinance.

- 7) Pursuant to Section 19.37 of the Ordinance, enhancement and expansion of open space amenities in the city should be incorporated into new development in the city. Indicators include:
 - (a) On large-parcel commercial developments, publicly beneficial open space is provided.
 - (b) Open space facilities are designed to enhance or expand existing facilities or to expand networks of pedestrian and bicycle movement within the vicinity of the development.
 - (c) A wider range of open space activities than presently found in the abutting area is provided.

The Project enhances and expands open space amenities in the City. The outdoor courtyard spaces and pool area will provide new outdoor recreation areas for residents, and on-grade landscaping enhances the new neighborhood street. The planting strategy for the Site utilizes drought tolerant native or adapted species along the perimeter of the Site and transitions to a blend of native and hardy ornamental materials closer to the Residential Building. All irrigated planting areas will employ efficient drip tubing. The Site will provide the 25% permeable area required under Section 20.96.1 of the Ordinance.

IV. CONCLUSION

As described above, the Project is appropriate to the Site and surroundings. It provides needed additional housing, including affordable housing, to the City's housing stock. The Project has a minimal transportation impact on the area roadways and enhances adjacent properties. Beyond that, by providing a bridge landing in our garage, the Project should improve traffic conditions beyond the Alewife Overlay District 6. Finally, the Project will replace an existing surface parking lot with parking structure and a thoughtfully designed and landscaped, first class, residential building, with only a modest increase in the number of parking spaces that currently exists. In short, the Project furthers the objectives of the Zoning Ordinance and applicable planning studies of the area in several significant ways. Accordingly, for the reasons set forth above, the Applicant respectfully requests that the Board find that the Project satisfies all applicable requirements of the Ordinance in connection with the granting of the requested Special Permits and amendments to the Existing 125 CPD Special Permit and the Existing 150 CPD Special Permit.

Sewer Service Infrastructure Narrative

Sanitary

The sanitary sewage from the proposed residential buildings will be collected and discharged into the existing 48-inch sewer system that runs through the property from Wheeler Street to CambridgePark Drive. The proposed service connection from the parking garage will be a 6-inch pipe and for the residential buildings an 8-inch pipe to carry the anticipated waste. Both the garage 6-inch and residential 8-inch services will be connected to a common new sewer prior to connecting to the City sewer line with a single 10-inch pipe. The Project is working with the City to coordinate the new sanitary and stormwater connections. The existing site is currently comprised of a parking lot and there is no sanitary flow credit for the existing use of the site. A breakdown of the project's sewer design flow rates are as follows:

Proposed Sanitary Sewer Flows¹:

Use	GPD/Unit	Unit	GPD
Residential	110 per bedroom	481 bedrooms	52,910 gpd
Parking Garage	none	-	negligible
Total Proposed Sanitary Flows			52,910 gpd

1. Proposed Sanitary flow calculations per 310 CMR 15.203

In addition to the typical sanitary sewer connection, the City of Cambridge requires developments in this area to provide an on-site sewerage storage tank for use during significant rainfall storm events. The storage tank, located in the front parking area of the west residential building, and provides approximately 8-hour storage with a factor of safety, which equates to a 26,500 gallon tank. This system will be connected to the City's remote monitoring system that will activate when the CSO pump activates at the pumping station. When the peak subsides, the wastewater will be released, by the City.

The amount of discharge anticipated for the project will trigger a sewer connection permit with the Massachusetts Department of Environmental Protection. Additional sewer improvement requirements imposed by DEP and the City to the existing system will be required. Inflow and Infiltration (I/I) mitigation will be required at a removal rate of 4:1 at locations to be determined by the City Engineer. The anticipated I/I removal is 211,640 gpd for the project.

Stormwater

The proposed storm water management system has been designed in a manner that will exceed the provisions of the Department of Environmental Protection (DEP) Stormwater Management Policy (hereinafter, the "Policy") for a new construction project. The design is also in conformance with the City of Cambridge stormwater management guidelines, as outlined in the document "Wastewater and Stormwater Management Guidance" dated May 2008 and the Concord-Alewife Area Stormwater Management Guidelines.

The stormwater generated by the Project will be collected by a series of catch basins and roof drains prior to being detained and discharged to the City drainage line on the property. The detention system consist of a pre-cast concrete chambers located in the rear of the buildings and in the front of the East Building. Due to high ground water onsite and the detention requirements, the drainage tanks will be watertight and provide attenuation only of stormwater. The stormwater tanks have been designed to provide a reduction in the proposed 25-year peak rate runoff to be comparable with the existing 2-year peak rate runoff. The stormwater will then

be conveyed, via gravity, to an existing City drain on the property. All of the proposed catch basins have been designed with sumps and hoods, consistent with the Guidelines.

Water Runoff Rates

The proposed project provides attenuation required to reduce offsite peak runoff rates that are less than the pre-development conditions. Attenuation is achieved through the use of precast stormwater detention tanks.

The subsurface detention system provides adequate detention to reduce peak flows from the site during the 2, 10, 25 and 100-year storms as follows:

Peak Flow Rates Summary – 180R CambridgePark Drive Residences

	Existing Flows (cfs)	Proposed Flows (cfs)	Peak Runoff Decrease (cfs)
2-year Peak Runoff	13.6	7.4	-6.2
10-year Peak Runoff	20.3	10.8	-9.5
25-year Peak Runoff	24.4	12.7	-11.7
100-year Peak Runoff	29.4	25.1	-4.3

Water Quality

The proposed drainage system has been designed to exceed the recommended 80% TSS removal goal with the implementation of the following:

- Deep Sump (6-foot) and Hooded Catch Basins (per City of Cambridge standard)
- StormCeptor Water Quality Units

Groundwater Recharge

Groundwater recharge is provided with the reduction of impervious surface on site.

Conclusions

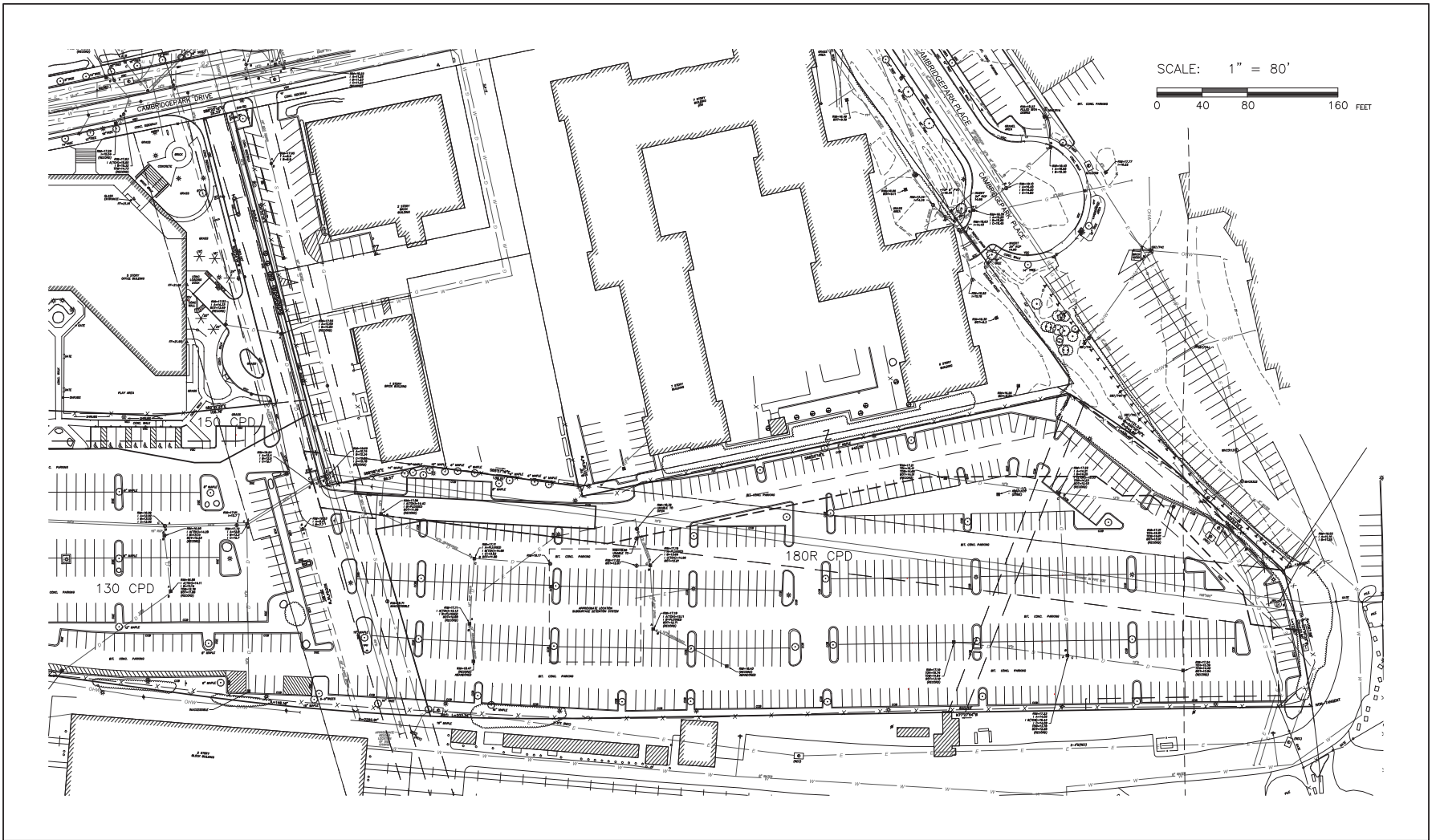
The project has been designed to meet, and in some cases exceed, the applicable provisions of the Stormwater Management Standards and the City of Cambridge Stormwater Management Guidelines.

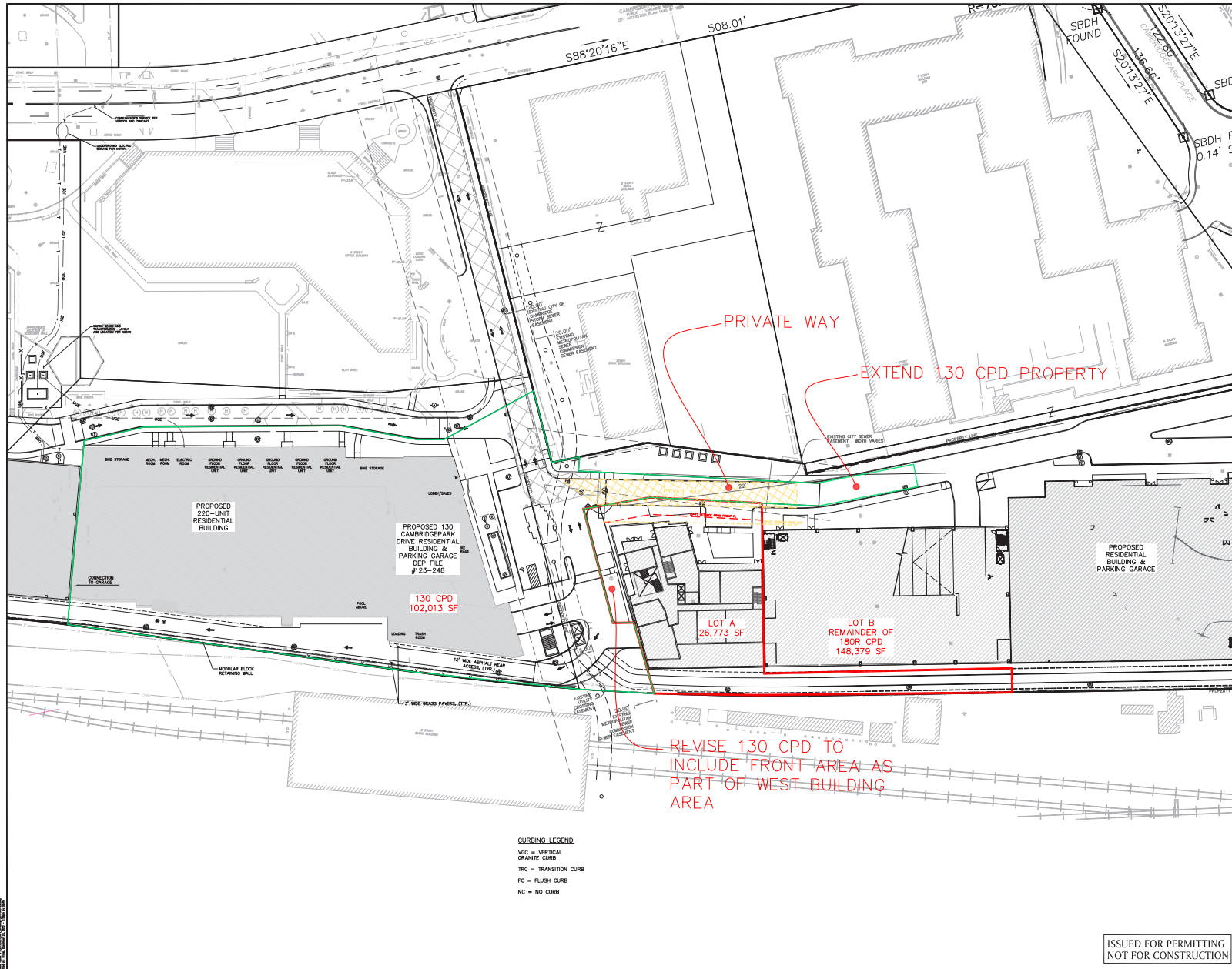
Water Service Infrastructure Narrative

The Project will require approximately 52,910 gallons per day for its domestic water demands, based on the sanitary flow calculations per 310 CMR 15.203. The project proposes to install a new City watermain connecting to the proposed looped watermain at 130 Cambridgepark drive. The newly proposed watermain, as part of this project, will be stubbed at the West property line for future connection/looping to Cambridgepark Place. The project is actively seeking approval through abutting properties to complete the looping, but at this time there is no agreement. All domestic water services and fire services required for the Project will be connected to this new 8-inch water main. All water service connections and watermain layouts will fully coordinated with the City Water Department and its requirements.

The capacity and condition of the existing water supply infrastructure is currently under investigation. Hydrant flow tests will be performed to determine the capacity area. Should it be determined that there is inadequate pressure to provide the required flows for the potable water, a booster pump will be added to the project to handle the deficiency. All connections will be fully coordinated with the City Water Department.

The fire protection system design will be coordinated with the City Fire Chief along with the installation and location of new fire hydrants to be located on the new looped 8-inch water main.





PRELIMINARY PLAN

DAVID P. BANCARILLA
PROFESSIONAL ENGINEER

NOTICE OF INTENT
PLAN SET

THE RESIDENCES
AT 180R

CAMBRIDGEPARK DRIVE

IN
CAMBRIDGE
MASSACHUSETTS
(MIDDLESEX COUNTY)

DECEMBER 9, 2013

POTENTIAL SUBDIVISION

REVISIONS:

NO.	DATE	DESC.

APPLICANT/DEVELOPER:

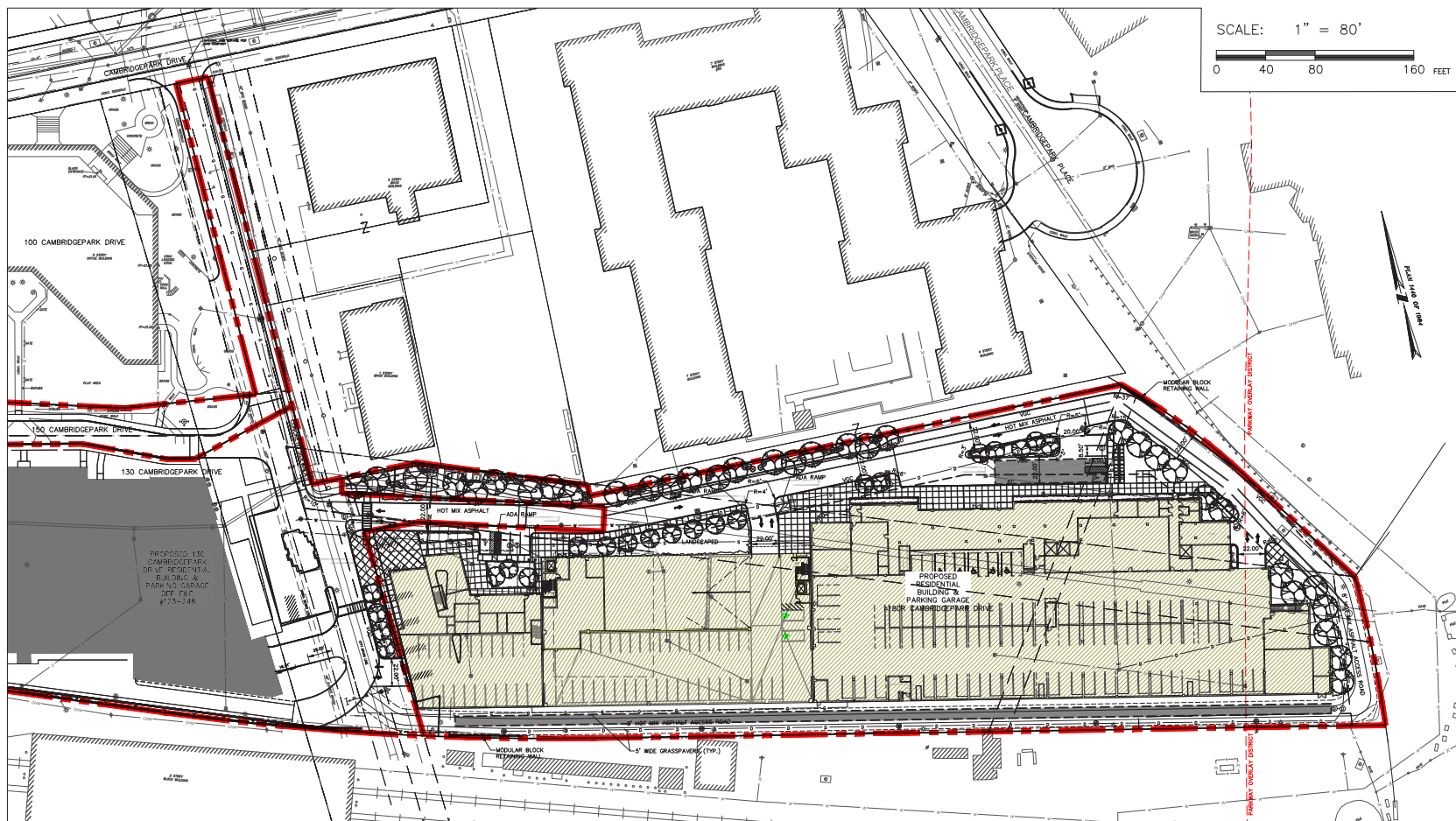
THE MCKINNON COMPANY
1 LEIGHTON ST., UNIT 1905
CAMBRIDGE, MA 02141

PREPARED FOR:
BRE/CDP, LLC
C/O EQUITY OFFICE
125 SUMMER STREET, 17TH FLOOR
BOSTON, MA 02110

BSC GROUP
15 Elkins Street
Boston, Massachusetts
02127
617.896.4300

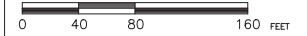
© 2013 BSC Group, Inc.
SCALE: 1" = 30'


FILE: PRJ_2317505-CIVIL-DRAWINGS
DWG. NO: 2317505-LM
JOB. NO: 2317505 SHEET C-101

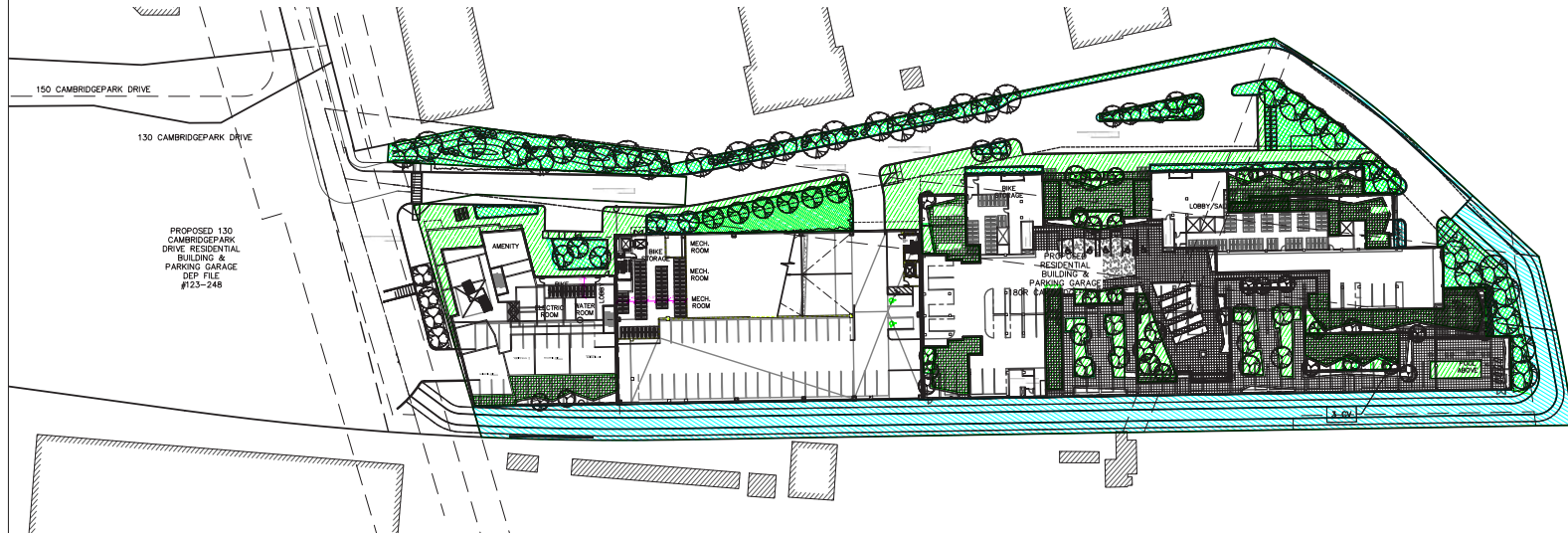


180R CAMBRIDGE PARK DRIVE TOTAL PROPOSED OPEN SPACE CALCULATIONS

SCALE: 1" = 80'



OPEN SPACE KEY 180R CPD:		OPEN SPACE CALCULATIONS:			
			EXISTING	PROPOSED	% OF TOTAL LOT AREA
		TOTAL PERMEABLE OPEN SPACE	NA	43,700± S.F.	25%
		TOTAL OPEN SPACE	NA	30,300± S.F.	17.3%
LOT AREA = 174,496 S.F.					
REQUIRED PERMEABLE OPEN SPACE: 25% OF 174,496 S.F. = 43,700 S.F.					
REQUIRED TOTAL OPEN SPACE: 15% OF 174,496 S.F. = 26,200 S.F.					





December 20, 2013

BSC Project No. 2.175.05

Mr. Hugh Russell, Chairman
Cambridge Planning Board
City Hall Annex
344 Broadway
Cambridge, MA 02139

15 Elkins Street
Boston, MA 02127

Tel: 617-896-4300
800-288-8123
Fax: 617-896-4301

www.bscgroup.com

**RE: 180R CambridgePark Drive Residences
Flood Storage Mitigation Certification**

Dear Mr. Russell and Members of the Board:

As required by Section 20.75 of the Cambridge Zoning Ordinance and by the Massachusetts Wetlands Protection Act (WPA), the project site's flood storage capacity was evaluated for storm events up to and including the 100-year storm to determine if the proposed site development would reduce the available flood storage capacity at the site.

We determined that the construction of the residences at 180R CambridgePark Drive as proposed would result in a net loss of the site's available flood storage for certain incremental flood elevations. Therefore, in accordance with the Zoning Ordinance and the WPA, the flood loss will need to be compensated, or mitigated, for the loss of flood storage for those incremental elevations where the loss took place.

To compensate for the lost available flood storage, the proposed under the building parking will be elevated such that the area under the parking will mitigate the lost available flood storage at the exact flood elevations where the loss will take place for the site improvements.

The Flood Report and associated design drawings highlights the evaluation results and provides in detail the incremental and cumulative available flood storage calculations for the proposed project. The attached Flood Report has been submitted as part of a Notice of Intent Application to the Cambridge Conservation Commission. At their December 9, 2013, regularly scheduled meeting the Commission unanimously voted to approve the Project and the proposed flood plain impacts and mitigation measures.

In accordance with Section 20.75 of the Zoning Ordinance and with the requirements of the Wetlands Protection Act, BSC Group certifies that the 180R CambridgePark Drive Residences project and the associated site improvements (as presented in the Special Permit package) provide the required compensation for the flood storage losses due to the construction of the proposed building, parking garage, and infrastructure. The site's flood storage capabilities will not be adversely affected by the construction of said improvements.

Sincerely,
BSC GROUP, INC.

David P. Biancavilla, PE
Senior Associate, MA Registration Number: 47846



Engineers

Environmental
Scientists

GIS Consultants

Landscape
Architects

Planners

Surveyors

FLOOD REPORT

The Residences at 180R CambridgePark Drive
CAMBRIDGE, MASSACHUSETTS

NOVEMBER 18, 2013

Applicant/Developer:



The McKinnon Company
1 Leighton St. Unit 1905
Cambridge, MA 02141

Owner:

BRE/CDP, LLC
125 Summer Street
17th Floor
Boston, MA 02110

BSC Job Number: 2-3175.05

Prepared by:

BSC Group
15 Elkins Street
Boston, MA 02127

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AVAILABLE FLOOD STORAGE PLANS
FLOOD STORAGE BUILDING CROSS-SECTION

SECTION 1.0

PROJECT NARRATIVE

1.01 EXISTING SITE FLOOD PLAIN CONDITIONS

Portions of the existing property at 180R (the Project) are located within the outer limits of the 100-year floodplain as shown on the current FEMA Map dated June 4, 2010. A 100-year flood elevation of 6.8 NAVD 1988, as shown on Cross Section “12P” in the Study, was taken at a section across the river to the north of the project to define the 100-year flood elevation.

The existing conditions survey provided as part of this project and all calculations and supporting documentation has been prepared on Cambridge City Base. As such, the 100-year flood elevation conversion is required as follows;

FEMA Flood Elevation	= 6.8' NAVD 1988
Conversion to NVGD 1929	+0.8' = 7.6 NVGD 1929
Conversion to Cambridge City Base	+10.84 = 18.44 CCB

The existing site elevations within the limits of the work vary from a low point of 17+/-' CCB to elevation 19'+/- CCB. This relatively flat site consists of low areas separated from higher areas, some above the 100-year elevation of 18.44' CCB and others slightly below. Generally, the center of the existing parking lot is depressed and within the 100-year flood elevation and the surrounding areas are above the 100-year flood elevations.

1.02 POST-DEVELOPMENT FLOOD PLAIN CONDITIONS

The post development site condition has been designed to lessen the impact to the existing floodplain and to provide additional flood storage onsite. A total of 100,022 square feet and 2,003 cubic yards (54,081 cubic feet) of the 100-year flood plain area exist on the property. The project proposes to mitigate the impacts from the development by constructing the proposed residential building and parking above the existing 100-year flood plain such that available flood storage is provided under the footprints of the residential building and parking garage and additional storage surrounding the connecting areas. The following is a summary of the proposed impacts to the 100-year flood plain;

	Existing Conditions	Post-Development Conditions
100-year Flood Plain Area	100,022 sf	74,430 sf
100-year Flood Plain Volume	2,003 cy (54,081 cf)	2,099 cy (56,673 cf)

As required by the Cambridge Department of Public Works, the flood mitigation area has been designed such that after flooding events the area under the slabs of the parking garage and residential building can be cleaned of sediments and debris left from receding flood waters. This area is to be paved and sloped such that building maintenance staff will be able to wash debris from access covers located in the slab out the building and garage to the south. Debris can then be collected and disposed.

SECTION 2.0

FLOOD VOLUME MITIGATION CALCULATIONS

2.0 FLOOD VOLUME MITIGATION CALCULATIONS

The majority of the project site lies within Bordering Land Subject to Flooding (i.e. the flood plain), as defined by the Massachusetts Wetlands Protection Act (the “Act”). A Flood Insurance Study of the City of Cambridge was performed and dated June 4, 2010. This Study provided elevations for the 10-, 50-, 100- and 500-year floods in the area of Little River behind to the north of CambridgePark Drive.

Specifically, Cross Section “12P” in the Study was taken at a section across the river approximately to the north of the project. The flood elevations for this cross section are as follows:

Table 1 Current FEMA Flood Elevations*

	10-year	50-year	100-year	500-year
Cross Section “12P” (Little River)	3.1 NAVD 1988 14.7 CCB**	4.9 NAVD 1988 16.5 CCB**	6.8 NAVD 1988 18.44 CCB**	10.7 NAVD 1988 22.3 CCB**

* Reference: June 4, 2010 FEMA Flood Insurance Study
Datum: North American Vertical Datum (NAVD)

** CCB = City of Cambridge Base

Flood Storage Volumes

The Act requires that no project shall displace more flood volume than what currently exists at that site. The Act further requires that any loss in flood storage shall be compensated, or mitigated, for any project that results in a loss of flood storage for each incremental elevation where the loss took place. With the construction of residential buildings and a parking garage, flood storage has been mitigated by site grading and by providing flood storage within the crawl space under the proposed residential buildings.

Calculations to determine the amount of available flood storage due to the construction of this project have been performed for each elevation increment between existing grade and the current flood elevation of 18.44’ CCB. The proposed condition available flood storage volume was then compared to the existing condition available flood storage provided for the same elevation increments.

Using Autodesk Civil 3D design software, the available flood storage volumes for the existing site were determined and the results are provided herein. The software compared the existing contours of the site to each incremental (per foot) flood elevation up to the Project’s proposed 100-year flood elevation, 18.44’ CCB. The total volume per increment was calculated and tabulated (see Table 1 below). The same process was performed for the proposed grading of the site along with separate manual calculations for the area under the proposed residential buildings.

Table 1: Existing Available Flood Storage

Elevation	Existing Incremental Available Flood Storage (CY)	Existing Cumulative Available Flood Storage (CY)
Up to 16.44	0	0
16.44 to 17.44	50	50
17.44 to 18.44	1,953	2,003

Table 2: Proposed (Post-Development)
Available Flood Storage

Elevation	Proposed Incremental Available Flood Storage (outside garage and building) (CY) a	Proposed Incremental Available Flood Storage (under buildings) (CY) b	Total Proposed Incremental Available Flood Storage (CY) a+b	Proposed Cumulative Available Flood Storage (CY)
Up to 16.44	0	0	0	0
Up to 17.44	96	30	126	126
17.44 to 18.44	448	1,525	1,973	2,099

To determine the total loss (or gain) of available flood storage for the post-development conditions, the total available storage volume for the post-development was compared to the total available storage volume for the pre-development condition for *each incremental elevation*. The net result was determined and the findings are as follows (see Table 3 below):

Table 3: Net Incremental Available Flood Storage

Elevation	Existing Incremental Available Flood Storage (Table 1) (CY) a	Proposed Incremental Available Flood Storage (Table 2) (CY) b	Net Unadjusted Incremental Available Flood Storage (CY) b-a
Up to 16.44	0	0	0
Up to 17.44	50	126	76
17.44 to 18.44	1,953	1,973	20

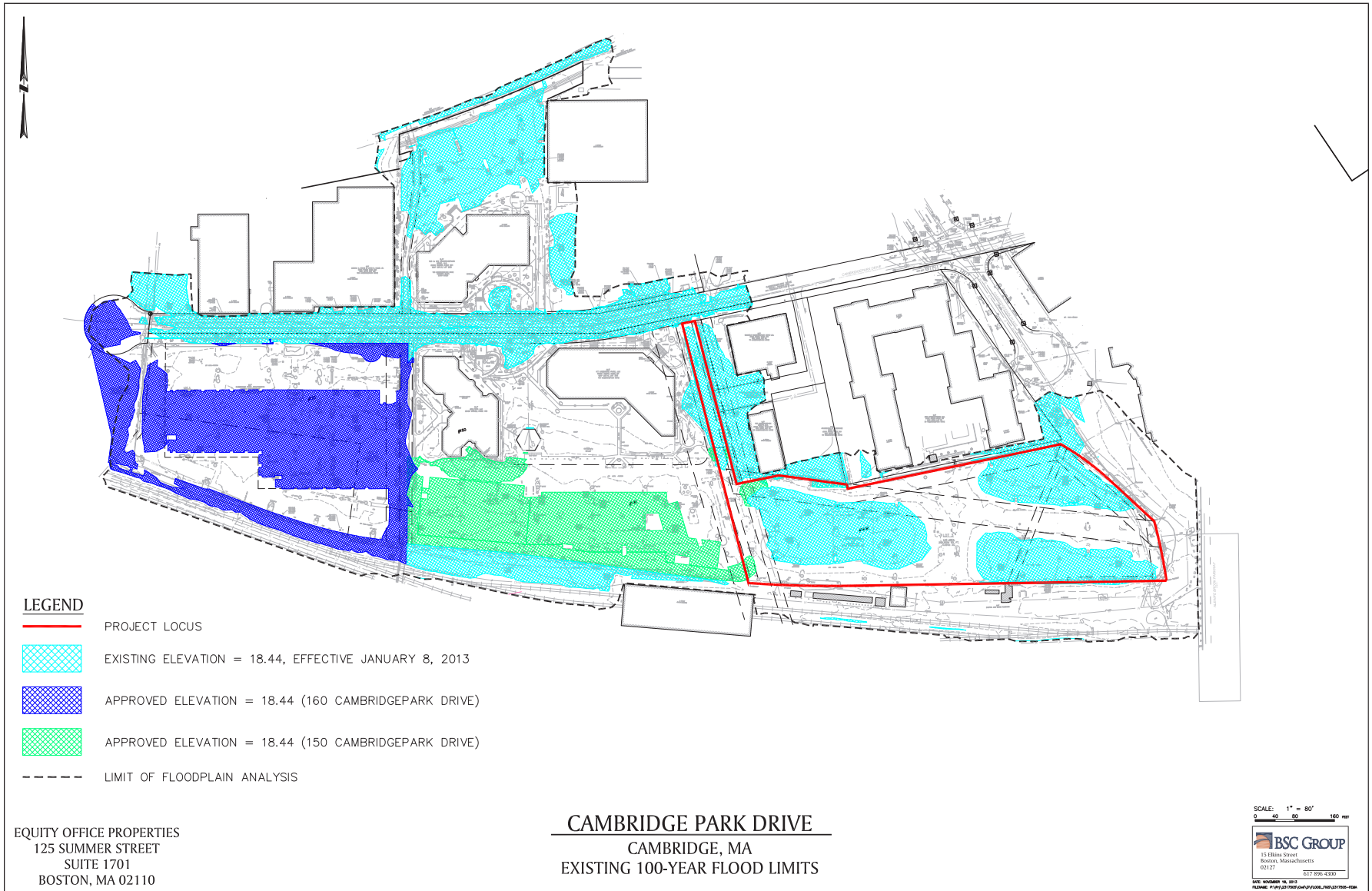
As shown in Table 3, the proposed site improvements result in a net increase in available flood storage for the site. The increase in available flood storage can be attributed to the site re-grading and the compensatory storage area provided under the proposed residential building's garage.

The proposed crawl spaces under the buildings provide additional flood storage volumes on site to help mitigate the project impacts. Flood waters will be able to flow unrestricted in and out of the crawl space by large inlets that consist of a vertical grates along the south side. Calculations for the available flood storage under the building are based on providing incremental storage under the building on an incremental basis only. No credit is taken for any elevations above or below the given elevation the project seeks to mitigate. This approach allows an unrestricted flow of flood waters for both increasing and receding to flow through the vertical grates to be installed.

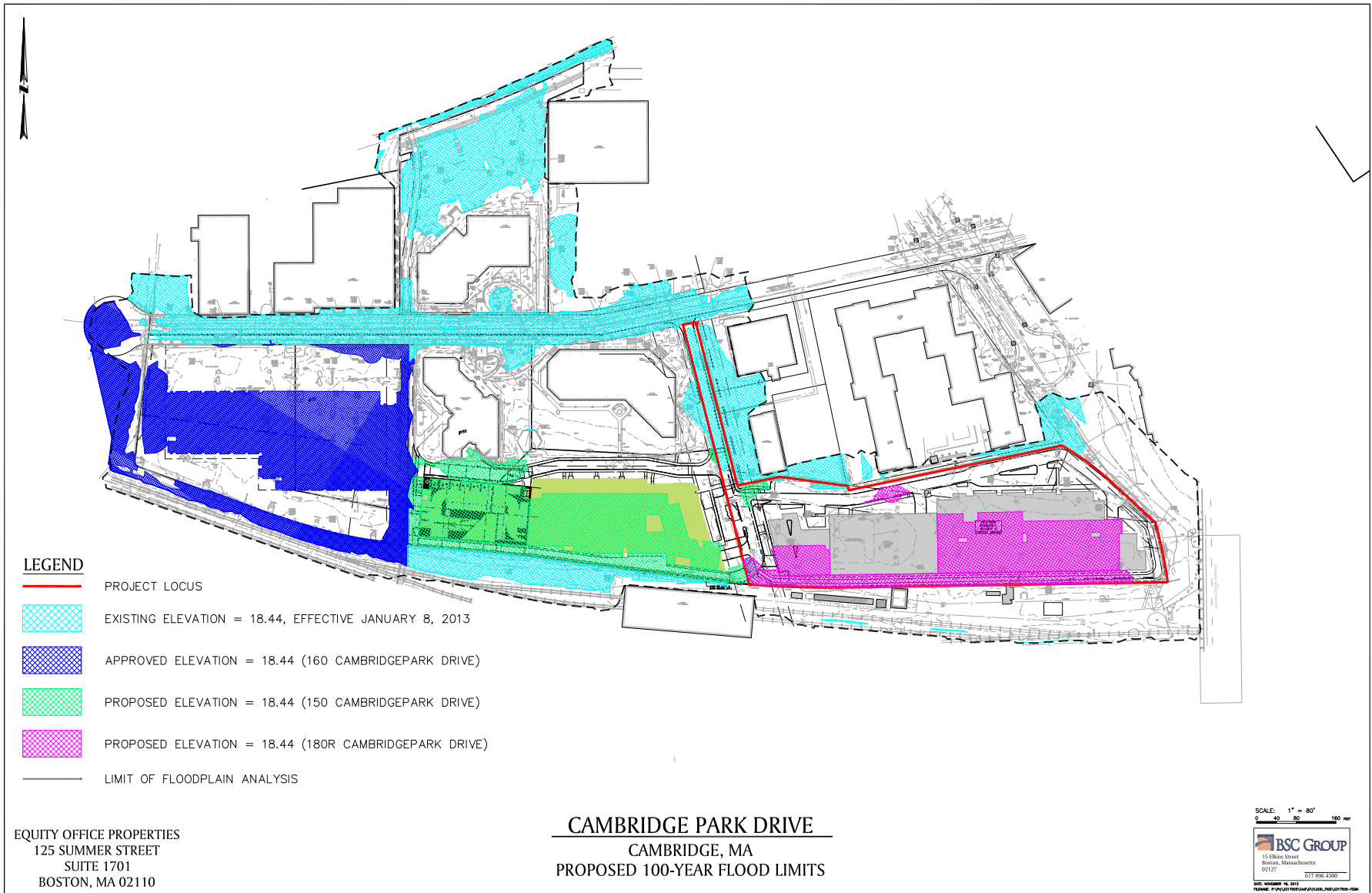
Conclusion

In accordance with the Wetlands Protection Act, the proposed improvements provide the required compensation to the flood storage loss due to the construction of the proposed buildings and infrastructure.

APPENDICES



PRE-DEVELOPMENT FLOOD PLAIN MAP



POST-DEVELOPMENT FLOOD PLAIN MAP