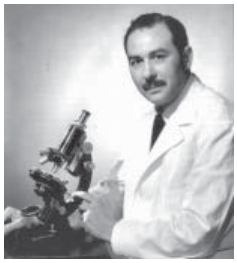
INSTITUTIONAL MASTER PLAN





DANA-FARBER
CANCER INSTITUTE

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Introduction

1.1 Introduction

The Dana-Farber Cancer Institute, Inc. (DFCI) is pleased to submit this Institutional Master Plan (IMP), prepared pursuant to Articles 73 and 80 of the Boston Zoning Code (BZC) and the Interim Guidelines for the Longwood Medical and Academic Area (LMA).

DFCI is a private, not-for-profit research, ambulatory healthcare and teaching institution in Boston, Massachusetts. A licensed acute-care hospital, DFCI has been a pioneer in the development of cancer treatments used around the world.

Over the next ten years, DFCI proposes a master plan designed to meet its research goals, accommodate the projected growth in patient visits, and enhance the patient environment. In order to address all of these concerns, DFCI will need to combine construction of a new building on an underutilized site in the LMA with renovation of existing facilities and expanded leasing of off-site facilities.

DFCI proposes to construct a new 13-story building, the Center for Cancer Care, at 450 Brookline Avenue, a project which will create much needed clinical care space and consolidated parking. Once this project is completed, DFCI proposes renovation and reuse of vacated space in the Dana, Mayer, Shields Warren, and Jimmy Fund buildings, enabled by transfer of program activities to the new building. A series of urban design and streetscape improvements will be implemented to improve the pedestrian experience and the appearance of the DFCI campus.

These projects will help DFCI continue to achieve its central goal of providing expert, compassionate care to children and adults with cancer, while advancing the understanding, diagnosis, treatment, cure, and prevention of cancer and related diseases. These projects will allow the Institute to accommodate growth and new and innovative technology.

This IMP includes the following chapters:

1.0 Introduction
2.0 Existing Campus and Context
3.0 Future Needs and Master Plan / Urban Design Goals
4.0 Proposed IMP Projects
5.0 Transportation Access Plan

6.0 Infrastructure Systems
7.0 Sustainable Design
8.0 Community Benefits
9.0 Consistency with Interim Guidelines

Chapter 1.0 includes a brief description of DFCI, a discussion of the Institute's mission and objectives, a summary of the proposed IMP projects, a description of the evolution of the IMP and the proposed Center for Cancer Care project since the IMPNF/PNF was filed on March 21, 2006. It also includes a description of the public participation process to date.

A Draft Project Impact Report/ Draft Environmental Impact Report for the Center for Cancer Care project is being filed simultaneously with this IMP to satisfy the requirements of Article 80B, Large Project Review, of the Boston Zoning Code and of the Massachusetts Environmental Policy Act (MEPA).

1.2 Description of DFCI History, Existing Campus, and Mission

DFCI is a Harvard-affiliated, non-profit teaching hospital with a worldwide reputation for offering cancer patients the best treatment available today while developing tomorrow's cures through cutting-edge research. DFCI is a significant generator of clinical and related activity and employment, and brings approximately $168 million of research grant funding to Boston each year. It is a noteworthy employer of Boston residents and invests in community outreach and innovative service programs throughout the city and region.

1.2.1 History

DFCI was founded in 1947 by the late Sidney Farber, MD. Its original focus was to provide compassionate, state-of-the-art treatment to children with cancer, while simultaneously supporting research into the causes, treatments, and cures of the future. In 1969, DFCI officially expanded its programs to include patients of all ages, and in 1974 the Institute became known as the Sidney Farber Cancer Center in honor of its founder. Acknowledging the support of the Charles A. Dana Foundation, the Institute incorporated under its present name in 1983.

Dana-Farber Cancer Institute has been supported in the fight against cancer by the Jimmy Fund since 1948, when the Variety Club of New England and Boston Braves baseball team joined together to help "Jimmy," a 12-year-old cancer patient. Since then, thousands of events coupled with the generosity of millions of people have helped the Jimmy Fund raise more than $270 million toward the goal of eradicating cancer. Tens of thousands of people participate in more than 300 fundraising events each year, and more than 3,000 volunteers help organize and run these events.

Some of the key milestones in DFCI's fight against cancer and other life-threatening diseases are listed below:

Before 1960

- Dr. Farber and his team of clinicians and laboratory scientists are the first to attain temporary remissions of acute lymphocytic leukemia in children.
- Dr. Farber and colleagues achieve the first remission in Wilms' tumor of the kidney, a common form of childhood cancer. Employing combined therapies, they boost cure rates from 40 to 85 percent.

1960's

- Researchers develop means to collect, preserve and transfuse blood-clotting factors called platelets to control bleeding, a critical step to combating this common side effect of cancer chemotherapy.

1970's

- Studies involving pediatric and adult patients continue to demonstrate the effectiveness of using multiple drugs to cure many forms of cancer. Foundation leaders help to pioneer this strategy, known as combination chemotherapy.
- Researchers clone the gene RAS and demonstrate that, when mutated, this gene – the first known human oncogene – helps spur development of many common human tumors.

1980's

- Having developed monoclonal antibodies to purge cancer cells from bone marrow, physician-researchers pioneer autologous ("self") bone marrow transplantation as a treatment for childhood leukemia. This procedure enables patients to tolerate extremely high doses of chemotherapy and radiation to eradicate their disease.
- Researchers introduce the CA-125 blood test for ovarian cancer, used to monitor the progress of patients undergoing treatment. Later researchers devise a similar test for breast cancer, DF-3.
- Dana-Farber immunologists identify the human T-cell receptor, a complex of molecules that enable immune cells to recognize foreign invaders.
- Researchers are among the first to suspect a relationship between the retrovirus that causes human T cell leukemia (HTLV-1) and the one that causes AIDS (HIV-1).
- Institute scientists help pioneer development of a new generation of anti-cancer drugs, called immunotoxins, which deliver a potent poison to cancer cells via monoclonal antibodies, leaving normal cells unscathed.

1990's

- Pointing to a flaw in a gene known as p53, researchers demonstrate that susceptibility to developing cancer can be passed from one generation to the next.

2000's

- Scientists at Dana-Farber and the Whitehead Institute find a gene "signature" in several types of tumors that suggest they are likely to spread to other parts

of the body, potentially leading to tests for determining whether tumors have the potential to metastasize.

- Dana-Farber scientists report that the drug getifimib produces dramatic benefits in non-small cell lung cancer patients, a potentially life-saving discovery for tens of thousands of patients around the world every year.

1.2.1.2 DFCI Today

Today, DFCI continues its tradition of excellence and innovation with comprehensive outpatient clinical facilities serving adults and children, and world-class scientific and clinical research programs. DFCI is one of only 39 federally designated Comprehensive Cancer Centers and is now the lead Institute of the largest of these centers, the Dana-Farber / Harvard Cancer Center, a collaboration among DFCI, Harvard Medical School, Harvard School of Public Health, and other Harvard teaching hospitals. It is also one of only 20 federally designated centers for AIDS research. For the fourth straight year, Dana-Farber Cancer Institute has been rated the top cancer hospital in New England and the fifth best in the nation by US News and World Report in the magazine's annual "America's Best Hospitals" guide.

DFCI's continued leadership in the care for patients with cancer and the research of this and other diseases is demonstrated below:

- Basic and clinical research at Dana-Farber have been critical in the development of combination chemotherapy – the use of several drugs to treat cancer – as well as cancer vaccines and antiangiogenic therapies, which choke off tumors' blood supply.
- With its partner institutions, Massachusetts General Hospital (MGH) and Brigham and Women's Hospital (BWH), DFCI directs one of the most sought-after clinical and research fellowship programs in the country.
- DFCI pioneered the creation of individual disease centers in which patients can be seen by several specialists in a single location. The Institute has also been a national leader in incorporating patients and family members' viewpoints into the organizational decision-making process.
- DFCI scientists are at the forefront of efforts to develop a new generation of therapies targeted at genetic mutations associated with cancer, work that has already resulted in new therapies for previously untreatable conditions.
- In conjunction with Brigham and Women's Hospital, DFCI operates one of the oldest and largest bone marrow and stem cell transplant programs in the world, completing more than 4,000 such transplants since the program began in 1972.

1.2.2 Existing Campus

The existing 3.3-acre DFCI campus is located in the middle of the densely developed urban area known as the Longwood Medical and Academic Area (LMA). The Institute's buildings are clustered within two city blocks formed by Longwood Avenue to the north, Brookline Avenue to the west, Binney Street to the east, and the Medical Area Total Energy Plant to the south. Its existing buildings were constructed between 1949 and 1995. The DFCI campus location is shown in Figures 1-1 and 1-2 at the end of this chapter.

In 1997, DFCI purchased the property at 454 Brookline Avenue, which included a 17,864 square feet (SF) two-story office building and small 30-space parking lot. This purchase completed DFCI's ownership of the block bounded by Brookline Avenue, Jimmy Fund Way, Binney Street and the MATEP property. Combined with the adjacent Redstone Building, the 454 Brookline Avenue property created a developable parcel to accommodate future growth of DFCI.

In addition, DFCI occupies leased space in several facilities located near the central campus within the LMA, as well as in multiple locations in Boston, Brookline, and the surrounding metropolitan region.

The DFCI extended campus with remote locations occupied in Boston and Brookline is shown in Figure 1-3.

1.2.3 Mission and Objectives

The stated mission of Dana-Farber Cancer Institute is to:

"Provide expert, compassionate care to children and adults with cancer while advancing the understanding, diagnosis, treatment, cure and prevention of cancer and related diseases."

In the fall of 2003, DFCI adopted a Strategic Plan that committed the Institute to conquering at least one form of cancer in the next ten years. To achieve this goal, DFCI must make itself the "model cancer center," an ideal place for putting science to work. The Strategic Plan is based upon the premise that the most dramatic patient-care advances occur when experts in disparate fields come together to attack common problems. Opportunities for collaboration and interaction between researchers and clinicians are vital to this concept, not only within the Institute itself, but also with other Harvard-affiliated hospitals and schools. DFCI President Edward Benz describes the goal of the Strategic Plan as making Dana-Farber, "even more than at present, a place where insights are contagious and the serendipitous becomes routine."

1.3 Program Needs

The following summarizes program activities required to accomplish DFCI's objectives in the areas of patient care, research, clinical research, technology transfer, and administration.

1.3.1 Patient Care

Dana-Farber Cancer Institute provides screening, prevention, diagnosis, and treatment for all types of cancer, treating patients in twelve specialized care centers. Clinical services include stem cell/bone marrow transplantation, infusion (chemotherapy), pathology, radiology, radiation oncology, and surgery.

DFCI shares its clinical care responsibilities with several other Harvard-affiliated hospitals, giving patients access to a wide range of specialists. Adult care is delivered through Dana-Farber/Brigham and Women's Cancer Care, a component of Dana-Farber/Partners CancerCare, a joint program involving DFCI, BWH and Massachusetts General Hospital (MGH). Dana-Farber provides outpatient clinics and support facilities while all inpatient treatment is provided at DFCI's clinical partners.

DFCI and Children's Hospital Boston (CHB) have worked together for more than fifty years to provide care to children with cancer. In 2000, this history of collaboration was formalized by the creation of the Dana-Farber/Children's Hospital Cancer Care (DF/CHCC). This formation helps to create a seamless patient care experience for children whose illness requires the full spectrum of inpatient and outpatient hematology or oncology pediatric services. Outpatients are seen at DFCI's Jimmy Fund clinic, while patients requiring hospitalization are treated at Children's Hospital Boston.

Since its founding, DFCI has sought to provide comprehensive cancer care. Caregivers at DFCI include social workers, nutritionists, pain specialists, and other support staff as well as physicians and nurses. The Institute offers a range of services that complement medicine-based therapy—programs addressing the emotional and psychological needs of both patients and families. As more and more people survive cancer, concerns about life after treatment has become increasingly important and DFCI has developed new programs to counsel survivors about the health challenges they may face in the future.

1.3.2 Research

DFCI is unique in its focus on innovation linked to compassionate care. It is renowned for its discoveries and contributions to basic, translational, and clinical research. DFCI receives funding for its research programs from the National Institutes of Health (NIH), the National Cancer Institute, the National Institute of Allergy and Infectious Diseases, private industry partners and individual private contributions.

DFCI's research activities are organized within six departments intended to facilitate scientific communication and collaboration among investigators at all levels. In addition, DFCI has established 17 integrative centers that will oversee collaborative activities, bringing together investigators with diverse approaches to work on common problems in cancer science and to innovate in the design and delivery of services to patients and families living with cancer diagnoses.

1.3.3 Clinical Research

While scientific discovery is an integral piece of Dana-Farber's mission, the main focus of its research program is to move discoveries quickly into the clinics where they can benefit patients.

DFCI implements hundreds of clinical trials, designed to test the experimental treatments of the future. The clinical research mission is two-fold: to ensure that the patients who participate in these trials receive continuity of care with a high level of safety, and to obtain and process samples of tissue, blood, and urine according to the complicated and demanding research protocols.

1.3.4 Technology Transfer

As research centers, academic institutions have become great sources of technology. The passage of the Bayh-Dole Act in 1980 by Congress permitted academic institutions such as Harvard University and Dana-Farber Cancer Institute to take title to government-funded inventions developed at such institutions. This legislation required the academic institutions to initiate out-licensing efforts and to share any resulting royalties with inventors. These technology transfer efforts have created a strong incentive for industry to work with academia in the form of research collaborations.

As a leader in cancer investigation and treatment, DFCI is an attractive site for industry-funded research. Currently, over thirteen bio-pharma firms, including several local companies such as Merck, Amgen, Genzyme, Novartis, and Millenium, sponsor research initiatives at DFCI. It is expected that this collaboration with industry will continue to be fostered in the future.

The revenue received by DFCI from the licensing growth of its technology innovations has steadily increased since the inception of the Institute's technology transfer program. In the last fiscal year period of 2005, Dana-Farber received over six million dollars in licensing revenue, the majority of which was generated as royalties from the sale of products. In addition, fourteen startup companies based on Dana-Farber technology have been formed since 1991. This new venture activity not only contributes to local economic development, but is also viewed by the Institute as an important part of recruitment and retention of quality faculty. It is anticipated that

the formation of startups will continue to be an important component of DFCI's technology transfer program going forward.

1.3.5 Administrative Departments

DFCI has substantial administrative and support operations that are needed to run its primary clinical and research missions. These include departments for information technology, communications, development, facilities, finance, and other management functions.

1.4 DFCI Facility Needs

DFCI's physical facilities require significant improvements to maintain the current level of patient care and research and to continue at the forefront of new advances in the scientific and medical professions. DFCI's existing buildings are aging, and were built to meet different standards and accommodate smaller, less technologically sophisticated equipment. There are limits to how much the spaces and infrastructure can be renovated in an attempt to adapt them to current clinical and research standards and new technology. The limited floor-to-floor heights, mechanical space and systems capacity, and the absence of large areas of structure-free floor space for new functions, equipment and ancillary spaces have made it difficult for DFCI to operate efficiently or respond nimbly to the changes and advances in the treatment and prevention of cancer.

1.4.1 Patient Volume Growth

Not only is the existing type and allotment of space outdated and inadequate to new requirements, but the extraordinary growth in the numbers of patient visits, the length of their treatments, and services to cancer survivors have strained DFCI's facility resources to the limit. Although cancer mortality is declining, cancer incidence is expected to rise due to early detection and an aging population. Between 2002 and 2004, adult patient visits rose over 11 percent annually; pediatric visits rose over nine percent. With this trend, total outpatient visits are expected to rise by 220 percent by 2017.

1.4.2 Off-Site Relocation

In order to concentrate its clinical and research facilities on its main LMA campus, Dana-Farber has been relocating off-site support and administrative functions determined to be non-critical with respect to their location. It is expected, as DFCI's research and clinical programs grow, that administrative functions will expand and will require additional off-site accommodation.

DFCI has attempted to accommodate essentially related programs of clinical care and research with the optimal adjacencies and access connections. Where appropriate,

certain research and research-support functions have been moved far beyond the LMA and its surroundings. However, there is a limit to the type and amount of program space that can be shifted to remote locations, and excessive distance can impact the effectiveness of certain services. DFCI has currently transferred over 409,000 SF of its facilities off-campus, with over 260,000 SF relocated outside the LMA.

1.4.3 Strategies for Growth

In order to alleviate the pressure on outdated and overcrowded facilities, DFCI proposes a four-part expansion and space reallocation plan. By demolishing two low, outdated buildings and using the area of the adjacent surface parking lot, DFCI will be able to build an efficient, modern clinical facility without physically expanding its campus beyond the property it currently owns in the LMA. The Center for Cancer Care development provides an opportunity to shift the parking currently housed in the Dana Building on levels 2 and 3 and the surface parking lot to new underground parking beneath the new building. This frees up the parking levels in the Dana Building to be refurbished and reused for clinical, administrative, or research support activities, which in turn allows decompression of these program spaces and permits other internal upgrades and expansions throughout the DFCI campus. Finally, since DFCI is committed to providing and maintaining effective clinical and research density at its main campus, it will continue the current practice of leasing additional space in nearby and distant locations for program functions which do not require immediate physical adjacency.

1.5 Institutional Master Plan Summary

DFCI has prepared a facility development plan to meet the growing and evolving program needs described above. This IMP presents the facility initiatives anticipated within the next ten years. The goal of these initiatives is to transform DFCI's facilities into a state-of-the-art complex to serve the Institute's clinical and research needs and goals. Figure 1-4 illustrates the IMP projects proposed in the following chapter.

Through this series of facility developments and improvements, DFCI strives to create a campus that:

- Accommodates patient-care needs and enhances the patient experience.
- Facilitates access to DFCI's partner institutions for both staff and patients.
- Supports interdisciplinary collaboration between researchers and clinicians.
- Accommodates the proliferation of avenues of research that have characterized recent scientific advances.

The following is a summary of the IMP projects with which DFCI proposes to meet these goals:

1.5.1 Center for Cancer Care

DFCI proposes to construct a new building on two adjacent parcels presently occupied by 454 Brookline Avenue, the Redstone Building, and a 30-space surface parking lot. The one and two-story, outdated buildings represent an under-utilized resource in a prime location. DFCI's proposed new 13-story facility, the Center for Cancer Care, will use this site to present a significant, visible new public presence and sense of entry to the Institute. The proposed building program will provide approximately 275,000 gross square feet (GSF) of space above-grade that will accommodate clinical programs, patient and family services, clinical support space, a street-level lobby and new main entrance and retail space. The proposed building will have consolidated below-grade parking.

In order to enhance the collaboration between clinicians and researchers considered vital in the advancement of the fight against cancer, the Center for Cancer Care will be connected on nine levels to the adjacent Smith Laboratories Building. The new entrance, accessible from both Brookline Avenue and Jimmy Fund Way, will feature a two-story lobby/atrium providing access to the third-level walkway system that links all of Dana-Farber's buildings and connects with Children's and Brigham and Women's hospitals. The new entrance will reorient the public face of Dana-Farber to Brookline Avenue, and away from the existing ineffective front entrance on Binney Street. Construction of a tunnel under Jimmy Fund Way is proposed to connect the P2 level of the Center for Cancer Care with clinical support facilities at the L2 level of the Dana Building and to facilitate service access between the Dana Building, the Center for Cancer Care, the Smith Building, and upgraded loading docks in Smith and Dana. A DPIR/DEIR has been filed simultaneously with this IMP to seek Article 80 approval from the City of Boston and MEPA approval from the Commonwealth of Massachusetts for this project.

1.5.2 Campus Improvement Projects

DFCI is planning a series of improvements on its main campus designed to improve the pedestrian experience and provide a more friendly, open and active street frontage. These improvements will be accomplished in phases over a 5 to 7 year period after completion of the Center for Cancer Care, as funding permits. Improvements under consideration for the Dana Building include widening the sidewalk in front of the Dana Building along Jimmy Fund Way, infill of some or all of the existing drop-off along Binney Street, and improvements to the façade at the lower levels to complement the façade of the new building.

Other potential improvements to the campus include upgrades to graphics, banners, and lighting, the creation of a buffer at the Smith Laboratories Building between pedestrians and the loading dock, and the creation of an improved exterior seating area at the Jimmy Fund Building along Binney Street.

1.5.3 Dana Infill Projects

Once construction of the Center for Cancer Care is completed, DFCI plans to begin the enclosure and renovation of the Dana Building vehicular drop-off and the parking decks on levels 2 and 3. These reused areas will serve a combination of clinical administration, research, and other institutional uses.

1.5.4 Renovations to Existing Facilities

Phased renovations are also planned to retrofit existing space vacated due to moves to the new building. These modifications are expected to include expansion and renovation of several clinical care and clinical support departments located in existing buildings, and renovation and reuse of other areas for patient and family services, research programs and administrative functions.

1.5.5 Future Leased Space

Anticipated construction activities on Dana-Farber's main campus will accommodate the Institute's anticipated growth in its clinical core programs for the ten-year term of the IMP. In recent years, DFCI has moved to accommodate non-critical functions and activities in off-site leased space. Following completion of the Center for Cancer Care, Dana-Farber will continue to maintain these functions in leased space within the LMA and at its North and South campuses, which are shown in Figure 1-5. It is anticipated that administrative and support activities will remain and continue to grow in these and other off-site locations. Future administrative office locations have not yet been identified.

DFCI has signed a lease and begun fit-out and occupation of approximately 49,400 SF at 27 Dry Dock Avenue, which is located in the Marine Industrial Park in South Boston. These facilities will be used for the partial relocation of several departments from the LMA campus. Programs planned for this Harbor Campus space include Health Information Systems, Materials Management, biomedical research laboratories, an animal imaging facility, and Cryorepository operations.

In order to meet its strategic objectives, Dana-Farber expects to expand its research operations to additional leased properties in and around the LMA. Approximately 51,000 GSF of space has recently been leased at the Center for Life Sciences, now under construction on Blackfan Street. It is expected that this space will accommodate both wet and dry research expansion that is urgently needed. Further expansion of leased space for research activities may be required.

1.5.6 Satellite Facilities

For several years, Dana-Farber Cancer Institute has had a vision of care that extends beyond the LMA. With patients saying that it was sometimes difficult to make their way into Boston for treatment, and with Dana-Farber's patient volume growing, the

Institute saw a need to expand its sites of care by opening satellite clinics as shown in Figure 1-6.

DFCI has successfully opened its first satellite clinic at Faulkner Hospital in Jamaica Plain, and plans to open additional satellites at the Milford Regional Medical Center in Milford, the South Shore Hospital in Weymouth, and New Hampshire Oncology Hematology in Londonderry, New Hampshire in 2008.

1.5.7 Term of the IMP

The term of this IMP is ten years beginning with its anticipated approval in late 2007. The schedule for the Center for Cancer Care calls for site clearing and preparation to begin in the fall of 2006, with initial occupancy targeted for the first quarter of 2011. Construction of the Dana Infill Project and Façade Improvements, and renovation and backfill of vacated space in the existing DFCI buildings is expected to commence in 2011 and continue in phases over the succeeding years.

1.5.8 Evolution of the IMP and CCC Project

Development on the Dana-Farber campus is currently governed by the DFCI IMP, which was submitted to the BRA in August 1993. DFCI's IMP described its proposed new biomedical research building as well as a number of follow-on renovation projects. The IMP was subsequently approved by the BRA and the Boston Zoning Commission and went into effect on April 8, 1994. In October 1997, DFCI completed construction of the Richard A. and Susan F. Smith Laboratories Building, the primary project contained in the 1994 IMP. The Smith Building, a twelve-story research facility with six below-grade parking levels, provided DFCI's researchers with a modern facility in which to pursue basic science and clinical applications research. Following completion of this project, subsequent updates to the IMP were filed, the most recent being on July 31, 1998.

Since that IMP, DFCI has acquired the 454 Brookline Avenue property, formerly leased from Children's Hospital, completing ownership of a rectangular plot across Jimmy Fund Way from the original portion of the campus and clearing the way for the development of a new building. As part of the planning, DFCI first proposed submitting an amendment to update and reinstate the prior IMP in lieu of generating a new IMP. However, in response to the BRA's Scoping Determination, DFCI agreed to submit an entirely new IMP for review and approval by the BRA. By letter dated May 26, 2006, DFCI confirmed with the Boston Redevelopment Authority that DFCI would file a new Institutional Master Plan as opposed to an Amendment to the prior Master Plan for the DFCI campus (which had lapsed). The Authority also confirmed that even though the Scoping Determination by the Authority was based on a Project Notification Form/Institutional Master Plan Amendment dated March 2006, the change from an amendment to the lapsed Master Plan to a new Master Plan is appropriate.

This document responds to the issues, questions, and requests raised in the BRA's Scoping Determination. DFCI has specifically made significant changes to the main project in the proposed IMP, the Center for Cancer Care, including reducing the height and size of the proposed building as well as adjusting the massing.

1.6 Community Benefit Summary

DFCI contributes to its neighboring communities and the city at large through a comprehensive community benefits package. In the fiscal year 2005, DFCI spent over ten million dollars in support of community and city-wide benefits programs. Below is a brief summary; Chapter 8, Community Benefits, describes these efforts in more detail.

1.6.1 Community-Based Cancer Control Initiatives

As the lead institution in a comprehensive cancer center designated by the National Cancer Institute, Dana-Farber implements its community benefits program utilizing a disease-specific approach that focuses on cancer prevention and risk assessment targeted to underserved and at-risk populations. Guided by the Institute's expertise on cancer, Dana-Farber's community outreach efforts are concentrated throughout the diverse neighborhoods of Boston. Dana-Farber is committed to educating the community about cancer through its collaborative work with partners such as community-based organizations, health centers, schools, and government agencies. Dana-Farber is working throughout Boston to raise awareness about the importance of cancer prevention, screening, early detection, treatment, and research with an emphasis on addressing health disparities among underserved communities.

Some highlights of DFCI's community-based cancer control initiatives include:

- *Breast and Cervical Screening Collaborative (BCSC)*: provides 1,800 annual cancer screens for low-income uninsured women from diverse cultural, linguistic, and socioeconomic backgrounds.
- *Boston Mammography Van:* is the only mobile mammography service in Massachusetts and has provided screenings to more than 3,200 women at over 25 different community sites throughout the city in 2004 and over 10,000 screenings total since its inception in 2002.
- Exploring expansion of DFCI's community outreach mission by partnering with Whittier Street Health Center to provide cancer control programs in the Roxbury community. Initiatives under discussion include cancer education, screening, and programs to assess eligibility for clinical trials.
- *Prostate Cancer Outreach and Screening:* occurs through both an education and screening that utilizes the DFCI Blum Family Education and Resource Van and educational workshops co-sponsored with DPH's Men's Health Partnership Program.

- *DFCI Patient Navigators:* help patients from underserved populations receive care and support at Dana-Farber/Brigham and Women's Cancer Center by identifying and addressing barriers these patients face, such as language, culture, race, ethnicity, or income, and make sure that they receive timely follow-up and treatment.

1.6.2 Career Employment and Training Initiatives

Dana-Farber engages in a number of career development and educational training initiatives. Dana-Farber maintains partnerships with Boston area high schools and colleges to provide underrepresented students of color internship opportunities to explore and pursue careers in health and science. Dana-Farber has educational partnerships with many Boston schools including Boston Latin School, Fenway High School, and Madison Park Technical Vocational High School to place students who have a specific interest in health and science and whose high school coursework focuses on these areas.

In addition to working with youth and young adults, Dana-Farber currently offers career development opportunities for its 3,557 staff members. In collaboration with community-based organizations, educational institutions and other healthcare and research institutions, Dana-Farber provides comprehensive training and educational programs for entry and mid-level employees. These programs include training for staff members in healthcare skills and English as a second language. DFCI also sponsors programs to promote the advancement of staff members of color within the Institute.

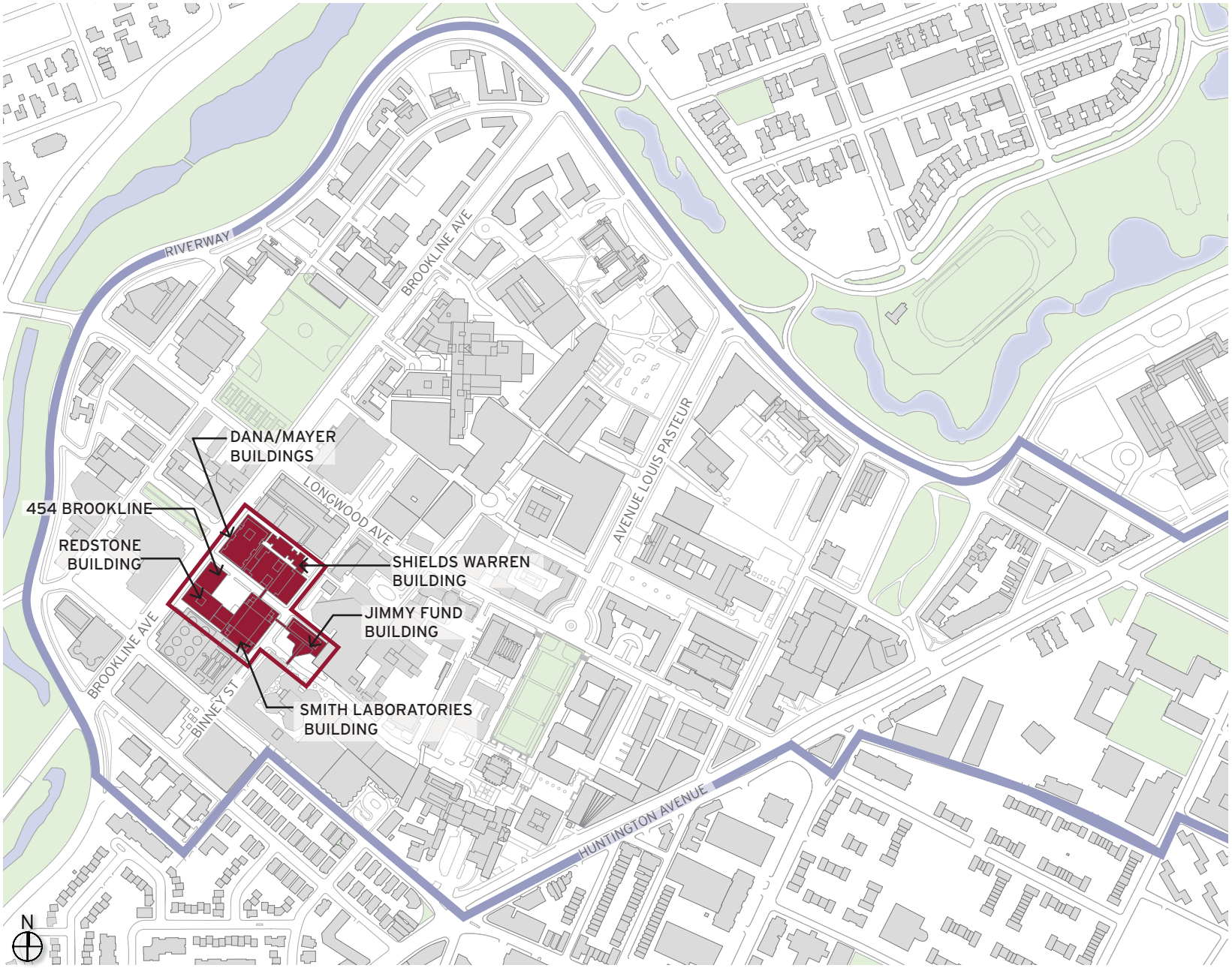
1.6.3 Project Benefits

The construction of the new building and associated renovations to existing Dana-Farber facilities will contribute directly to the economy by providing numerous employment opportunities. Chapter 8 of this IMP discusses these benefits in detail.

1.7 Public Participation

DFCI is committed to involvement of neighboring communities, institutions, city agencies, and interested groups as it develops its long-range plans for the future. Through December of 2006, over 60 meetings have been held with public agencies and officials, neighborhood groups, and abutters and other institutional organizations to discuss the proposed IMP and the projects it describes. Public and community organizations with which DFCI representatives have met include the Boston Redevelopment Authority, Boston Civic Design Commission, Boston Transportation Department, Department of Public Works, Public Improvements Commission, Inspectional Services Department, Boston Water and Sewer Commission, MASCO, DFCI's Institutional Advisory Group, now known as the Task Force and the LMA Forum as well as elected public officials and community

representatives and residents. DFCI will continue to meet with interested parties and listen responsively to their suggestions and concerns as the IMP review process proceeds.



LEGEND

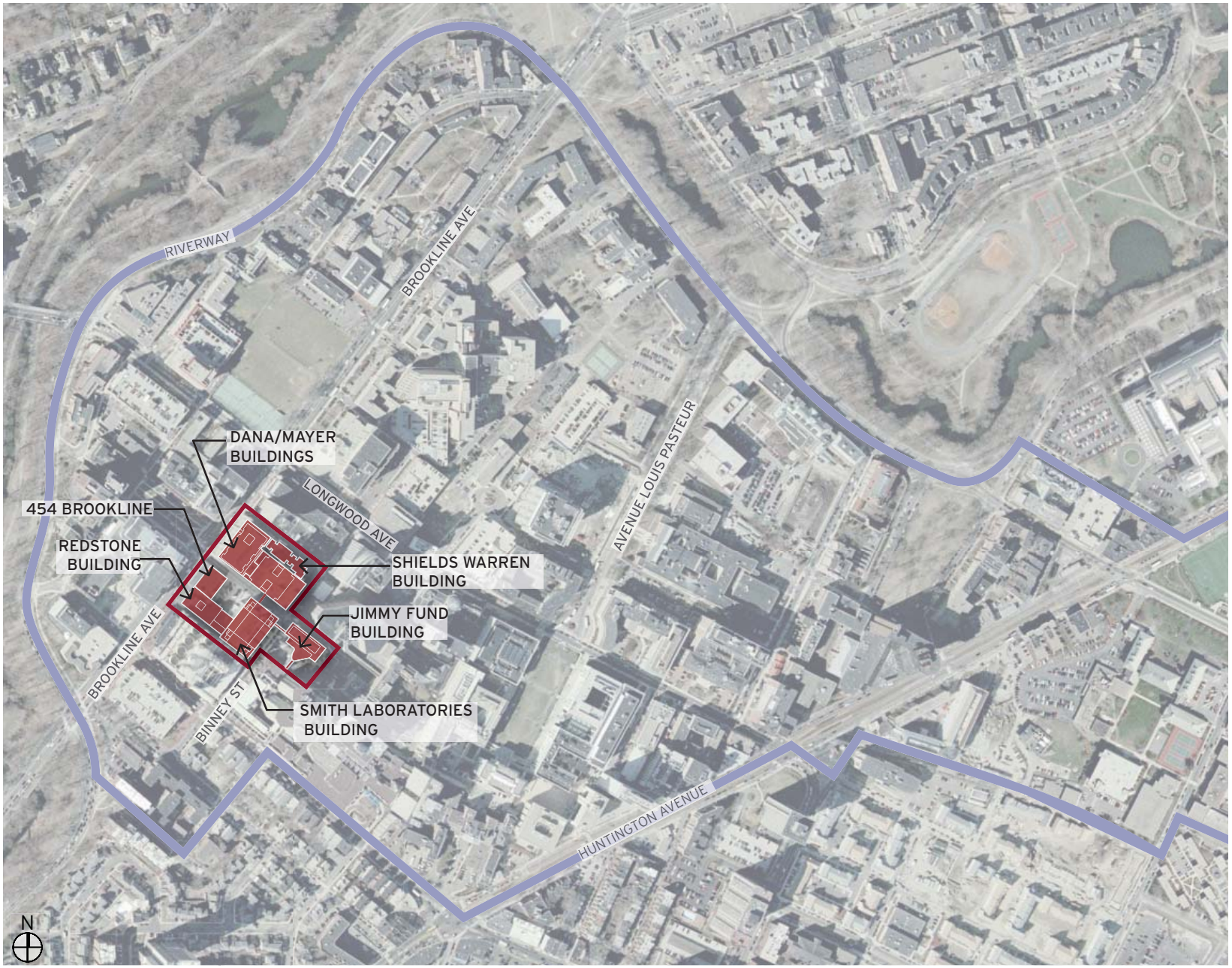
- DFCI Owned Facilities
- DFCI Campus
- Longwood Medical and Academic Area

SOURCE: DFCI Facilities

DANA-FARBER CANCER INSTITUTE
INSTITUTIONAL MASTER PLAN

Campus Location

FIGURE 1-1



LEGEND

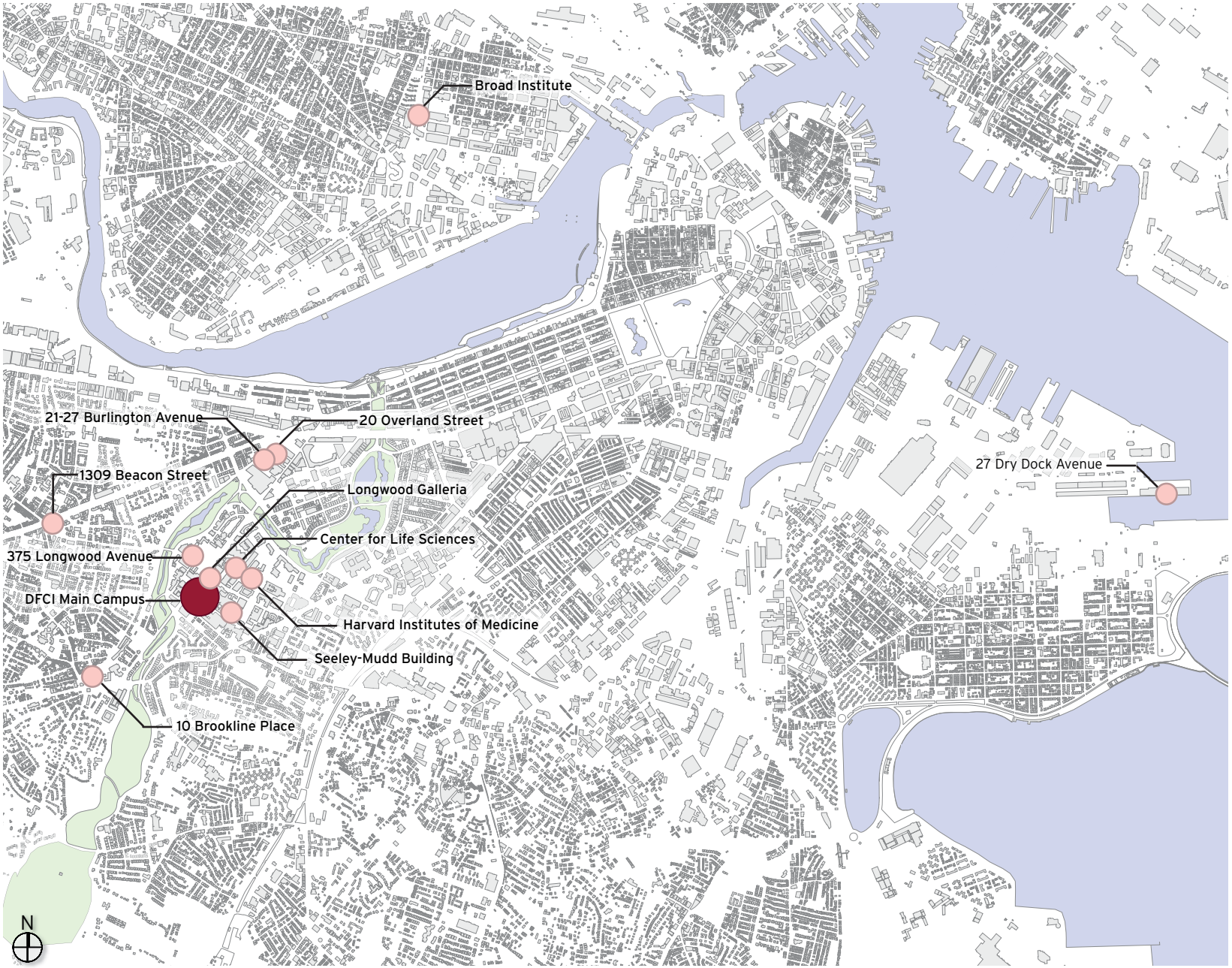
- DFCI Owned Facilities
- DFCI Campus
- Longwood Medical and Academic Area

SOURCE: BRA & DFCI Facilities
NOTE: Aerial photograph taken prior to removal of structure at 454 Brookline avenue.

DANA-FARBER CANCER INSTITUTE
INSTITUTIONAL MASTER PLAN

Campus Location - Aerial Photo

FIGURE 1-2



LEGEND

DFCI Owned Facilities

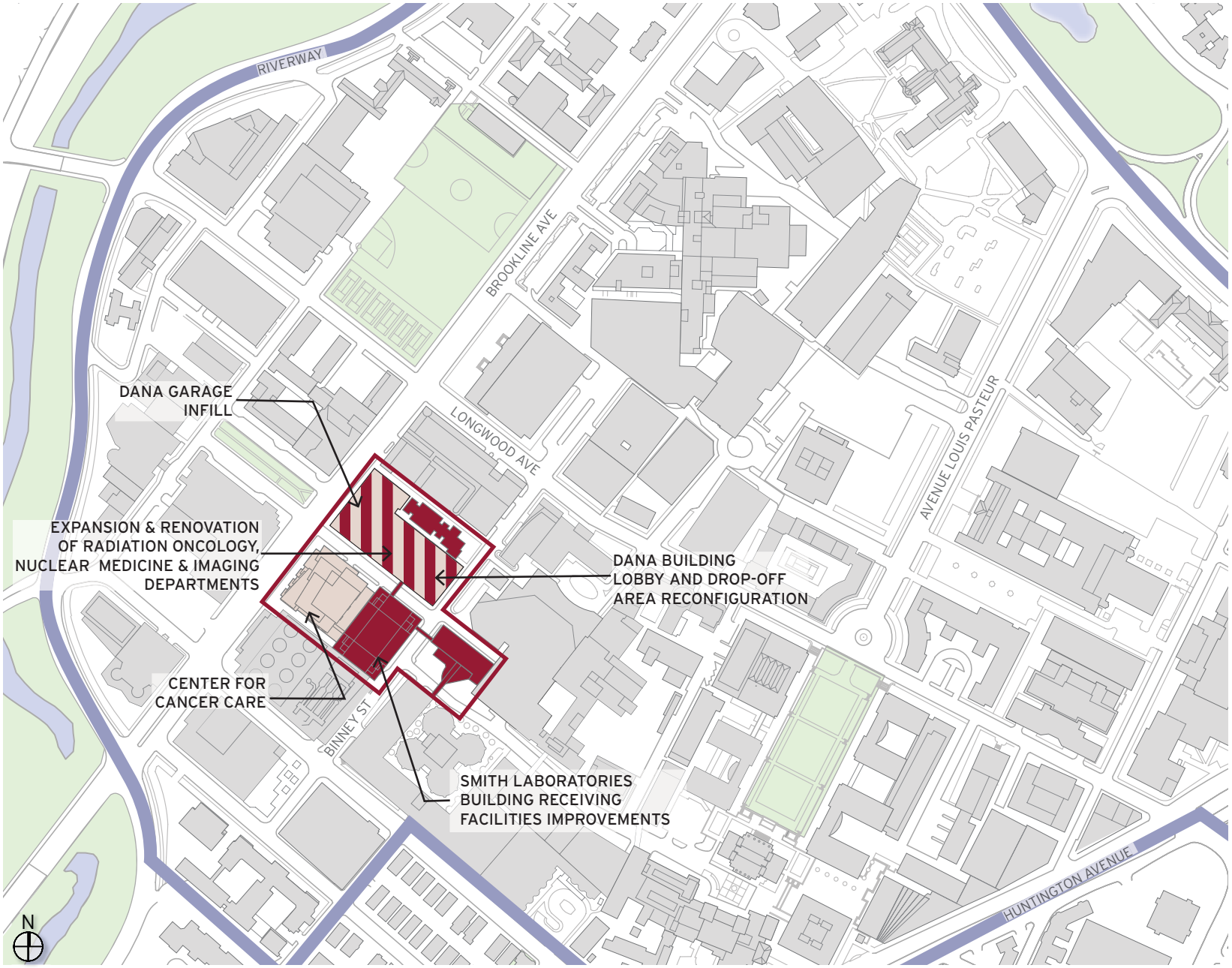
DFCI Leased Facilities

SOURCE: DFCI Facilities

DANA-FARBER CANCER INSTITUTE
INSTITUTIONAL MASTER PLAN

Remote Campus Locations

FIGURE 1-3



LEGEND

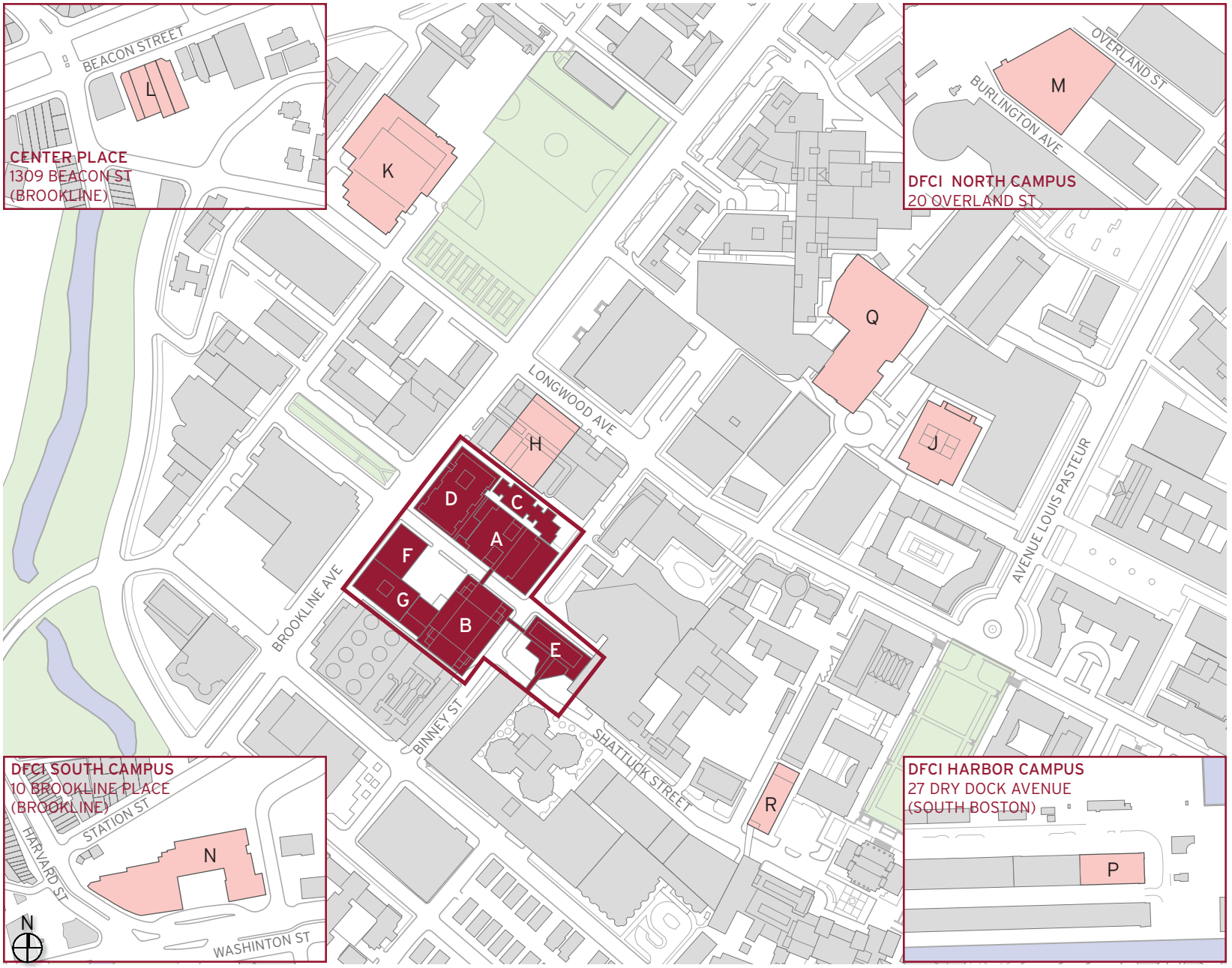
- DFCI Owned Facilities
- Proposed IMP Projects
- DFCI Campus
- Longwood Medical and Academic Area

SOURCE: DFCI Facilities

DANA-FARBER CANCER INSTITUTE
INSTITUTIONAL MASTER PLAN

Proposed IMP Projects

FIGURE 1-4



LEGEND

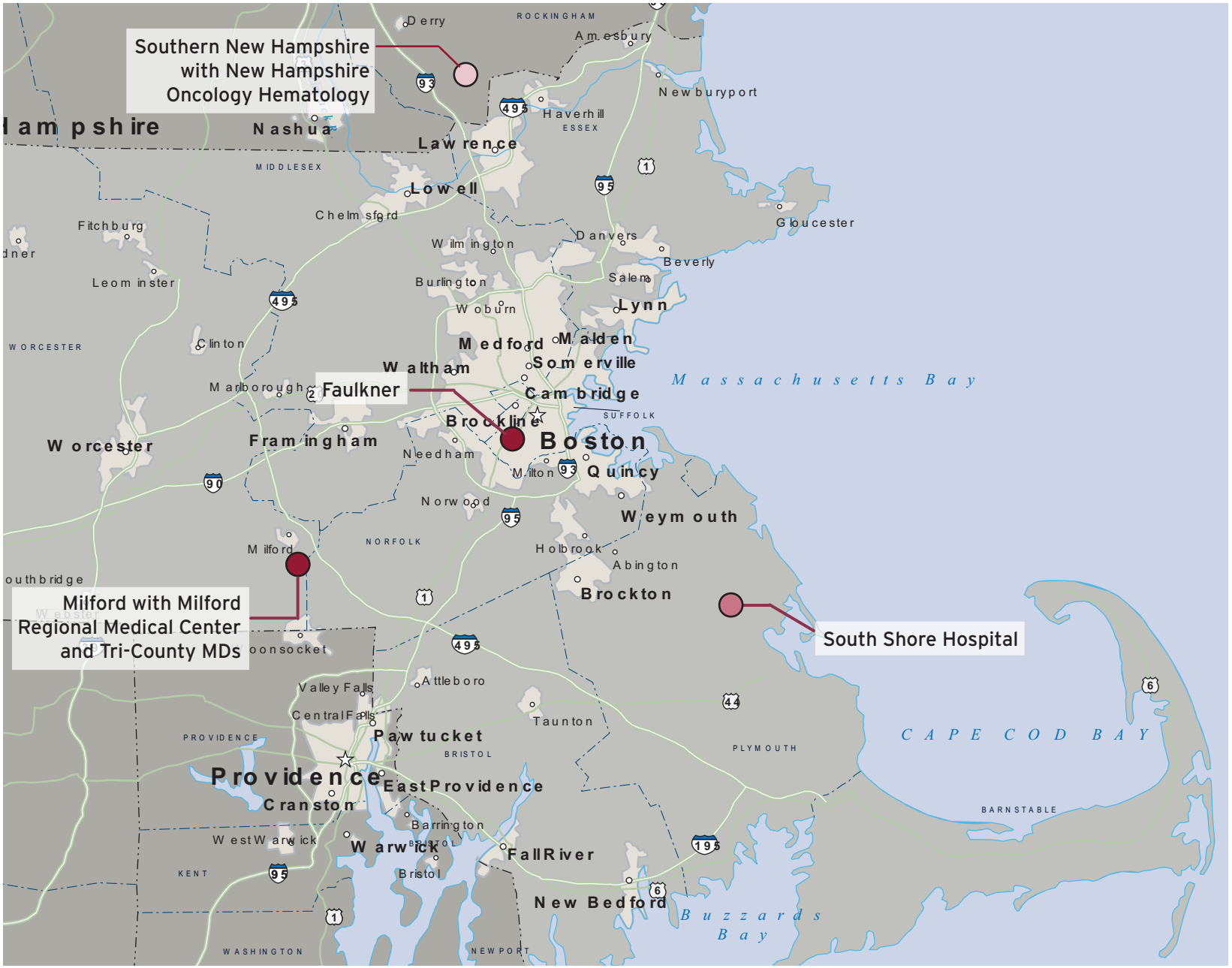
- DFCI Owned Facilities
- A Dana Building
- B Smith Laboratories Building
- C Shields Warren Building
- D Mayer Building
- E Jimmy Fund Building
- F 454 Brookline
- G Redstone Building
- Leased Properties
- H Longwood Galleria
- J Harvard Institutes of Medicine
- K 375 Longwood Avenue
- L 1309 Beacon Street
- M 20 Overland Street / 21-27 Burlington Avenue
- N 10 Brookline Place West
- P 27 Dry Dock Avenue
- Q Center for Life Sciences
- R Seeley-Mudd Institute

SOURCE: DFCI Facilities

DANA-FARBER CANCER INSTITUTE
INSTITUTIONAL MASTER PLAN

Existing DFCI Facilities

FIGURE 1-5



DANA-FARBER CANCER INSTITUTE
INSTITUTIONAL MASTER PLAN

DFCI Satellite Facilities

FIGURE 1-6

2

Existing Campus and Context

2.1 Introduction

This chapter summarizes the Dana-Farber Cancer Institute's history and the history of its campus in the LMA. It also describes DFCI's existing facilities, including owned property in the LMA, leased space in and around the LMA, and remote leased properties. This chapter also analyzes the land use, open space, and view corridors surrounding the DFCI campus, and summarizes the existing pedestrian circulation and vehicular circulation and service throughout the LMA and within DFCI.

2.2 History of DFCI and Campus Development

The following section briefly narrates highlights of the institutional history of DFCI and the related history and development of its present-day campus. Figures 2-1 and 2-2 at the end of this chapter provide timelines for the following sections.

2.2.1 Founding

In 1947, Sidney Farber, M.D., established the Children's Cancer Research Foundation (CCRF) and introduced the first research program in chemotherapy for children with cancer. The foundation's primary focus was the compassionate and humane treatment of children with cancer. At the same time, Dr. Farber worked with medical researchers to begin to better understand and combat the disease.

One year after the CCRF was founded; the Variety Club of New England organized a radio broadcast from the bedside of a young leukemia patient named "Jimmy" as he was visited by members of the Boston Braves baseball team, owned by Lou Perini. Contributions poured in to buy Jimmy a television set on which to watch the Braves, and the "Jimmy Fund" was launched. The Jimmy Fund would prove a powerful source of funding for the new foundation.

2.2.2 Incorporation

In 1951, Dr. Farber's foundation was incorporated in the Commonwealth of Massachusetts as Children's Cancer Research Foundation, Inc. That same year, the

foundation completed the construction of its new Jimmy Fund Building, which was financed by the fund of the same name. As the Institute continued to grow, this building was expanded from four to eight floors in 1958. The new Institute with its new facility was bolstered by several important local and national partnerships over the next two decades. When the Boston Braves moved to Milwaukee, Tom and Jean Yawkey, the owners of the Boston Red Sox, named the Jimmy Fund their team's official charity. In 1956, the Massachusetts Chiefs of Police Association also designated the Jimmy Fund as its official charity. The family of Hollywood movie mogul Louis B. Mayer, a patient of Dr. Farber, also significantly contributed to the cause of fighting cancer by donating five million dollars to support the construction of the Louis B. Mayer Laboratories, and the Charles A. Dana Foundation made the first of several major grants to the CCRF in 1962.

2.2.3 Expansion of Charter

In 1969, the Institute's charter was officially expanded to provide services for patients of all ages, and, in 1973, the CCRF received federal designation as a regional comprehensive cancer center. Dr. Farber died that same year, and the Children's Cancer Research Foundation was renamed the Sidney Farber Cancer Center in 1974 in honor of its founder, becoming the Sidney Farber Cancer Institute two years later. In 1976, the Charles A. Dana Building was completed. This major clinical and research building significantly expanded the Institute's capacity for patient care.

In 1980, Institute President Baruj Benacerraf, M.D., received the Nobel Prize for work that unveiled the genetic underpinnings of the human immune system. The Institute was becoming a world leader in cancer treatment and research. In the same year, the Pan-Massachusetts Challenge was founded. This annual two-day, 192-mile Sturbridge-to-Provincetown bicycle ride has since grown into the Jimmy Fund's single largest fund-raising event.

2.2.4 Dana-Farber Cancer Institute

The Sidney Farber Cancer Institute was renamed Dana-Farber Cancer Institute in 1983 in recognition of generous support from the Charles A. Dana Foundation. The new name honored industrialist Charles A. Dana, who shared Dr. Farber's conviction that there is "no such thing as a hopeless case."

By the late 1980's, two of every three children who entered the Jimmy Fund Clinic walked out cured, and more than half of all people with cancer were cured. As part of Dana-Farber's 40th anniversary in 1987, the first patient reunion united cancer survivors and their families for a day of celebration and education. In the same year, the $7.5-million Claudia Adams Barr Program in Innovative Basic Cancer Research was established with a challenge grant by Institute Trustees J. Wayne and Delores Barr Weaver to foster innovative research by the Institute's most talented researchers.

As the Institute continued to expand, new facilities were built and new programs were chartered. In 1988, the Louis B. Mayer Research Laboratories Building opened, providing state-of-the-art facilities in which to pursue answers to the many questions surrounding cancer. The Thomas A. Yawkey Research Laboratories on the future site of the Longwood Galleria were dedicated in 1990, adding more research space for basic and applied science laboratory work.

In 1993, Dana-Farber initiated the Women's Cancers Program to reduce the incidence of cancers in women, specifically breast cancer, lung cancer and gynecological and reproductive cancers. A National Advisory Council composed of local and national leaders was formed to raise funds for and public awareness of the program. That same year, Dana-Farber established the High Risk Research Clinic, one of the nation's first genetic testing programs for members of families with an inherited susceptibility to cancer. In 1995, DFCI continued to expand its facilities with the dedication of the Abraham D. Gosman Adult Clinic in its Dana Building, which was devoted to treatment of adult cancer patients.

2.2.5 Institutional Growth and New Partnerships

In 1996, DFCI joined with Massachusetts General Hospital and Brigham and Women's Hospital to create Dana-Farber/Partners CancerCare, a joint venture that offers adult cancer patients the combined strengths of three of the world's leading centers for cancer care and research. That same year, the Eleanor and Maxwell Blum Patient and Family Resource Center opened, providing assistance to patients and families seeking information on cancer-related topics, and housing a collection of books, pamphlets, computer materials, and audio and videotape resources.

DFCI and the Jimmy Fund celebrated 50 years of progress in the fight against cancer and related diseases in 1997. The commemoration included a patient reunion, a scientific symposium that featured nationally and internationally known scientists, and a celebration in which a portion of Deaconess Road (between the Smith and Dana buildings) was renamed "Jimmy Fund Way."

The Richard A. and Susan F. Smith Laboratories Building, a new 12-story structure devoted to cancer research, was dedicated in October, 1996. The approximately 255,000-net-square-foot building houses more than 500 Dana-Farber researchers, state-of-the-art laboratories, an expanded library, parking and specialized research centers. Also in 1997, the Gillette Center for Women's Cancers opened in the Dana Building. With financial support from the Gillette Company, the center provides a full range of services for women with breast and gynecologic cancers. The center also includes the Houghton Mifflin Patient and Family Resource Room, where patients can gain information on their condition and its treatment, and the Friends of Dana-Farber Boutique, which sells wigs, hats, scarves, and other items of use to patients.

In 1997, the Institute's inpatient beds were moved to facilities at Brigham and Women's Hospital, where they remain under Dana-Farber license, as part of the implementation of Dana-Farber/Partners CancerCare. This move allowed DFCI to

open several floors of new clinics in the Dana Building dedicated to adult outpatient care.

In 1998, Dana-Farber welcomed back the original "Jimmy," 62-year-old Carl Einar Gustafson, who, as a 12-year-old patient of Institute founder Sidney Farber, M.D., helped launch the Jimmy Fund in 1948. That same year, Dana-Farber opened its first on-site radiation therapy center in the Dana Building. The Institute also established the nation's first Adult Patient and Family Advisory Council. This Council has become a model for other centers seeking to involve patients and their families in developing the highest standard of comprehensive and compassionate healthcare.

The Dana-Farber/Harvard Cancer Center was formed in 1999, placing the Institute at the hub of cancer research and prevention within the Harvard medical community. Creating new links between Dana-Farber researchers and their colleagues at Harvard Medical School and other Harvard-affiliated hospitals, the program also strengthened the Institute's efforts in cancer prevention by tapping the expertise of epidemiologists at the Harvard School of Public Health. In 2000, the Institute formalized its 50-year-plus affiliation with Children's Hospital of Boston with the creation of Dana-Farber/Children's Hospital Cancer Care, designed to enhance the quality and continuity of care at the two institutions.

In September 2004, as part of an ongoing effort to create a model cancer center, Dana-Farber and Brigham and Women's Hospital formalized their partnership in adult oncology with the creation of the Dana-Farber/Brigham and Women's Cancer Center (DF/BWCC). The Center encompasses the cancer programs at both partner hospitals, as well as those at Faulkner Hospital, Brigham and Women's at Chestnut Hill, and other satellite locations. Services cover the full care continuum--from screening, prevention, diagnosis, and treatment to survivorship, palliatve care, and end-of-life care.

The Center for Experimental Medicine at Dana-Farber was established in 2001, reflecting a focus on "translational research". This center coordinates the Institute's efforts to convert laboratory advances into better treatments for patients. Also in 2001, the Kraft Family Blood Center moved to new, expanded quarters in the Jimmy Fund Building, designed to accommodate collection of 7,000 bags of platelets a year for patients at Dana-Farber and Brigham and Women's Hospital.

DFCI's history has been one of continued innovation, compassion, and collaboration from its founding to its present-day role as a national leader in the treatment and research of cancer. Almost sixty years since its inception, DFCI continues to be motivated by the same principles of compassionate care for cancer patients and rapid bench-to-bedside information transfer that inspired Dr. Sidney Farber in 1947.

2.3 Existing Campus Description

2.3.1 DFCI Campus and Facilities

2.3.1.1 Main Campus

Dana-Farber Cancer Institute's main campus is located in the heart of the LMA, consisting of 1,167,166[1] GSF of owned building space in seven buildings on eight parcels that total approximately 145,165 SF. With the exception of the Jimmy Fund Building, the campus is bounded by Brookline Avenue and Binney Street between the Medical Area Total Energy Plant (MATEP) and the Longwood Galleria. The Jimmy Fund Building is located on the east side of Binney Street at the end of Jimmy Fund Way. Although Jimmy Fund Way roughly bisects the campus, elevated walkways connect the Dana and Smith buildings and the Smith and Jimmy Fund buildings. Due to its location and the importance of the joint programs with Dana-Farber's clinical partners, the Jimmy Fund Building features a direct connection to the new clinical building at Children's Hospital and to the Amory Building at Brigham and Women's Hospital via an elevated walkway over Shattuck Street.

DFCI's core campus is composed of seven buildings owned by the Institute as shown in Figures 2-3, 2-4 and 2-5 at the end of this chapter. These include purpose-built research laboratory and clinical buildings as well as structures that have been renovated to accommodate DFCI programs. Building addresses, areas, uses, heights, conditions, and floor levels are summarized in Table 2.1 at the end of this chapter.

Clinical facilities are currently located in the Dana, Jimmy Fund, and Shields Warren buildings. DFCI's research facilities are presently housed in Smith, Dana, Jimmy Fund, and Mayer buildings.

The main public entrance to the Dana-Farber campus is currently located at the Binney Street entrance to the Dana Building. For most patients, this is the way they approach the campus. Other key pedestrian entry points to DFCI buildings include an entrance across from the Galleria food court to the Shields Warren Building, an entrance to the Mayer Building off Brookline Avenue, entrances to the Smith Building and 454 Brookline Avenue, on Jimmy Fund Way, and the Jimmy Fund Building on Binney Street and on Children's Way. The Institute buildings are also interconnected and linked to Children's Hospital Boston and Brigham and Women's Hospital by a system of third-level pedestrian bridges.

[1] The total area includes all program area as well as structure, mechanical, common space, parking storage and other spaces excluded from the definition of Gross Floor Area as defined by the Boston Zoning Code.

2.3.2 Leased Facilities

In recent years, DFCI has relocated to more remote sites uses for which a central core campus location is not critical. Leased space near the core campus in the LMA is located at 375 Longwood Avenue and within the Longwood Galleria. Dry research facilities are presently located in 375 Longwood Avenue, while various clinical and clinical support offices and other administrative groups are located at Longwood Galleria.

Urgent demands for on-site space to accommodate DFCI strategic initiatives as well as relocation of administrative departments in preparation for the demolition of 454 Brookline Avenue have prompted DFCI to increase its amount of leased space north of its main campus. As of March 2006, DFCI had transferred some functions to approximately 76,000 GSF of office and research space at 21-27 Burlington Avenue and 20 Overland Street, just south of Kenmore Square. This area has been designated as DFCI's North Campus. Programs on this campus include research laboratories and research support services, communications offices, data processing and information services, and other administrative healthcare support services. South Campus facilities for development, fiscal services, and other administrative departments are located in Brookline Village at 10 Brookline Place.

As part of the preparation for demolition of the Redstone Building, DFCI has relocated some of its animal research facilities to Harvard Medical School. Several research programs occupy space at Harvard Medical School, including the Chemical Biology program in the Seeley G. Mudd Building and DFCI's cancer vaccine research at the Harvard Institutes of Medicine on Blackfan Street. Additional research space is leased as part of the Broad Institute at MIT located at 320 Charles Street in Cambridge. DFCI plans to accommodate additional space needs of its research programs through the acquisition of leased space in and around the Longwood Medical and Academic Area and has signed a lease agreement for approximately 51,000 GSF at the Center for Life Sciences.

DFCI is expanding its off-site facilities to the Marine Industrial Park in South Boston in 2007 through the addition of 49,361 GSF of space in 27 Dry Dock Avenue to be used for clinical support, research laboratories, and administrative support functions. Relocation of these activities to this new Harbor Campus will permit near-term expansion of urgently needed clinical care facilities in the main campus.

DFCI is also relocating its materials management facility to 27 Dry Dock Avenue at the Marine Industrial Park. This will transfer control of the schedule, type, and size of materials delivery to its LMA campus from the suppliers to DFCI, permitting the Institute to use smaller trucks at off-hours, reducing congestion and significantly improving the opportunity to manage its facilities.

As of December 1, 2006, DFCI holds leases for a total of 409,460 GSF of space. Under a lease dating to the construction of Smith Building, a total of 42,412 GSF of laboratory space on two floors of the Smith Building is leased to BWH. DFCI intends

to reoccupy this space upon expiration of the Brigham and Women's Hospital lease in 2017.

The future use of off-site leased property to accommodate DFCI space needs is expected to continue after completion and occupancy of the proposed new Center for Cancer Care Building. DFCI is committed to retaining core campus space primarily for uses that cannot be accommodated elsewhere and will continue to maintain its non-critical and administrative and support facilities off-site.

Figure 2-6 at the end of this chapter graphically locates DFCI's existing owned and leased properties, and Tables 2.1 and 2.2 on the following pages summarize these properties.

2.3.3 Places of Assembly

Table 2-1 lists the existing spaces for assembly and meeting on the DFCI campus.

Table 2-1 Places of Assembly

Building Name	Floor	Room	Room Name	Occupancy*
Dana Building	16	D1620	Smith Family Room	253
Dana Building	1	D100L8	Forbes Chapel	32
Dana Building	L1	DL147	Cable Dining Room	122
Jimmy Fund Building	G	G43	Variety Club Auditorium	242
Jimmy Fund Building	8	JF836A/B	Raynes Conference Room	58
Smith Building	3	304	Board Room	73
Smith Building	3	308-309	Divisible Conference Room	94

**As defined by the Massachusetts Building Code, 780 CMR, based on size of space.*

2.3.4 Floor Area Ratio

The composite Floor Area Ratio (FAR) of the existing buildings on the DFCI Main Campus is approximately 5.94, as shown in Table 2-2. The FAR for the Dana-Farber Institutional District, which includes the Dana/Mayer lot, the Shields Warren lot, the Smith lot, the Jimmy Fund lot, and the Redstone lot, as defined by the 1993 IMP, is 6.63. The FAR for the more recently acquired 454 Brookline parcel is 1.02. Figure 2-7 at the end of this chapter depicts the FAR for DFCI facilities.

Table 2-2: DFCI Campus Floor Area Ratio (FAR) for Existing Buildings

Parcel	Lot Area (SF)	Gross Floor Area* (GSF)	FAR
Dana/Mayer	55,519	378,850 Dana	8.63
		100,080 Mayer	
Smith (2 parcels)	29,430	225,402	7.66
Jimmy Fund	15,109	87,187	5.77
Redstone (2 parcels)	15,576	15,520	1.00
454 Brookline	17,838	18,271	1.02
Shields-Warren	11,693	36,874	3.15
TOTAL	145,165	862,184	5.94

**Gross Floor Area measured per Boston Zoning Code definition for FAR calculation purposes*

2.4 DFCI Campus Context Analysis

2.4.1 Land Use Analysis

The LMA is a highly concentrated urban environment with a unique concentration of hospitals, medical institutions, and institutions of research and higher learning. Major categories of land use include education, research, and healthcare, with housing, cultural, and commercial uses at the periphery and along major arterials. These uses are described in Figure 2-8.

The DFCI campus is situated towards the southwest corner of the LMA, in the area of Brookline Avenue, Jimmy Fund Way and Binney Street.

To the north of DFCI, across a pedestrian alley, is the Longwood Galleria, situated at the corner of Brookline Avenue and Longwood Avenue, with the Beth Israel

Deaconess Medical Center (BIDMC) East Campus beyond. DFCI's entrance to the Shields-Warren Building is opposite an entrance to the Galleria food court, creating a strong connection between these two buildings. The structure immediately to the north of the Galleria, BIDMC's Shapiro Building, steps back from the street and features an outdoor terrace, which provides a long view of the Dana Tower.

To the east, DFCI is bounded by Binney Street, with the exception of the Jimmy Fund Building, which occupies a block adjacent to Children's Hospital Boston to the north and Brigham and Women's Hospital to the south. The Jimmy Fund Building is linked to both of these institutions through the third-level pedestrian bridge system.

On the west side, the DFCI campus runs along Brookline Avenue opposite the Joslin Diabetes Center, Joslin Park, and the Beth Israel Deaconess Medical Center West Campus. DFCI's interconnected Dana/Mayer Building façade and the low profiles of 454 Brookline and the Redstone Building form an under-animated street edge along Brookline. These buildings do not presently contribute spatially or urbanistically to the streetscape, nor do they relate to the Joslin Park green space on the opposite side of Brookline Avenue.

To the south of DFCI, are a pedestrian alley and building owned by and housing the Medical Area Total Energy Plant (MATEP), which serves many LMA institutions with electricity, steam and chilled water. Figure 2-9 identifies the institutions in the LMA.

The existing buildings in the LMA range from single story structures to 27-story towers. Most buildings are under 13 stories in height. DFCI's existing buildings range from 1 story to the 15-story Dana Tower, which places the campus in the mid-height range for the LMA. Figure 2-10 graphically describes this relationship. Institutional campuses and parcels in the LMA range in density from .23 FAR to 9.9 FAR. The DFCI campus has a total composite FAR of 5.94, which places it at the middle range for the LMA. Figure 2-11 graphically describes the FAR distribution throughout the medical institution area of the LMA.

2.4.2 Public Pedestrian Area Analysis

The LMA is surrounded by the Back Bay Fens and the Fenway and Riverway portions of the Emerald Necklace to the North and West. Significant public pedestrian spaces within the LMA include the Harvard School of Medicine's formal grass quadrangle on axis with Avenue Louis Pasteur, Joslin Park across Brookline Avenue from the DFCI campus, the Winsor School playing fields at the corner of Brookline and Longwood Avenues, and Evans Way Park, the historic greenspace between the Gardner Museum, Mass. College of Art, and the Wentworth residence halls. Smaller areas of green space permeate the educational campuses along the Fenway and Avenue Louis Pasteur.

Currently, the only public pedestrian areas within the DFCI campus itself are a seating terrace located between the Longwood Galleria building and the Shields Warren building, and a seating area located beside the Jimmy Fund building on Binney Street. Figure 2-12 graphically locates these spaces on the DFCI campus and the public pedestrian spaces within and adjacent to the LMA.

2.4.3 Historic Resources

Several properties listed on or determined to be eligible for the National Register of Historic Places are located within one eighth of a mile of the project site, but not on the DFCI campus, as are several resources included in the Inventory of Historic and Archaeological Assets of the Commonwealth. These properties were identified in the PNF/IMP Amendment filed in March 2006. Following that filing, the proponent has received determinations of no adverse impacts from the Boston Landmarks Commission and the Massachusetts Historic Commission. Historic resources are discussed in detail in the DPIR/DEIR submitted simultaneously with this document.

2.4.4 View Corridor Analysis

Figure 2-13 and photo sheet Figures 2-14 to 2-17 at the end of this chapter graphically describe the four important view corridors through and around the DFCI campus:

Brookline Avenue:
This major view corridor (Figure 2-14) bisects the LMA and continues uninterrupted from its intersection with Boylston Street (Route 9) in Brookline to the south, to its termination at Kenmore Square to the north. The portion of the LMA adjacent to this artery (including the DFCI campus) is located on a slight rise compared to the surrounding Fenway neighborhood of Boston and Longwood neighborhood of Brookline; long views to the Emerald Necklace intersecting Brookline Avenue at either end of the LMA are obtainable on clear days. For many patients, visitors, and employees, their first glimpse of DFCI is the Dana Building tower rising from behind the Galleria as they approach from the north, or the corner of the Mayer Building with the Dana Tower behind it as they approach from the south along Brookline Avenue.

Jimmy Fund Way:
Intersecting Brookline Avenue at right angles, Jimmy Fund Way (Figure 2-15) cuts through the DFCI campus and forms its spatial and visual core. It frames the view from the east side of Brookline Avenue across to Joslin Park and the Beth Israel Deaconess Medical Center and Joslin Diabetes Center buildings around it. From Joslin Park, Jimmy Fund Way provides a long view through the heart of the DFCI campus to the Jimmy Fund Building. This view corridor is affected by the pedestrian bridge which spans Jimmy Fund Way between the Smith and Dana buildings at the third floor level.

Binney Street:
Binney Street (Figure 2-16), forms the eastern edge of most of the DFCI campus. It rises from its termini at Longwood Avenue and Francis Street to the intersection with Jimmy Fund Way. The view from the intersection with Longwood Avenue past the drop-off and existing main entrance to the Dana Building is an important overall image of the campus that visitors see as they enter DFCI. This view corridor is framed by many loading docks and currently service facilities on both sides of the street. It is also affected at the third level by the pedestrian bridge which links the Smith Building and the Jimmy Fund Building.

Shattuck Street:
Shattuck Street (Figure 2-17) runs from Harvard Medical School to Binney Street and the DFCI Smith Laboratories Building. It is a significant linear spine and pedestrian connection through the LMA, with many entrances to Harvard, Children's Hospital, Brigham & Women's and Dana-Farber buildings. The Smith Building forms a dramatic visual terminus at the west end, intersected by the articulated glazed bridge between Jimmy Fund and Amory Buildings. The east end, approaching the focal Countway Library building, benefits from improved pedestrian paving treatment. The view corridor is impacted by the back-side character of many abutting facilities, with rear entrances, service docks, oxygen tank farm, multiple bridge crossings, and vehicular and service traffic conflicting with pedestrian movement.

2.4.5 Pedestrian Circulation Analysis

Pedestrian facilities surrounding DFCI and within the study area include sidewalks that vary in width from six feet to fifteen feet, crosswalks at major intersections, and universal access ramps. Important pedestrian connections through the DFCI campus generally follow existing roadways and driveways, particularly Binney Street, Jimmy Fund Way, and Brookline Avenue. Additionally, the MATEP alley provides an additional pedestrian connection between Binney Street and Brookline Avenue that is available for pedestrian access only. MASCO and its member institutions recognize the importance of providing safe and efficient pedestrian facilities and continue to study and re-evaluate pedestrian needs in the area.

2.4.6 Vehicular Circulation and Service Summary

The Dana-Farber Cancer Institute campus is located on Brookline Avenue in the LMA. DFCI is located east of Brookline Avenue, south of Longwood Avenue and north of Francis Street. Binney Street and Shattuck Street intersect in the middle of the DFCI campus. In addition to Brookline Avenue and Longwood Avenue, arterials serving the area include the Riverway, the Fenway, Park Drive, Boylston Street, and Huntington Avenue. Brookline Avenue carries approximately 27,600 vehicles on an average weekday near the DFCI campus.[2] Longwood Avenue carries approximately

[2] Blackfan Research Center Draft Project Impact Report, filed with the Boston Redevelopment Authority, March 2002.

14,000 vehicles on an average weekday.[3] Primary access to the DFCI Campus is provided via Brookline Avenue and Jimmy Fund Way. Access to the campus is also provided via Binney Street, which connects to both Longwood Avenue and Francis Street. The Dana Building garage driveway and drop-off/pick-up area are both located on Binney Street. The Smith Building garage driveway and 454 Brookline Avenue surface parking lot are both located on Jimmy Fund Way. Patient access via ambulance and chair car are provided via the existing Dana Building drop-off area.

DFCI currently controls approximately 1,454 off-street parking spaces, with 340 parking spaces available for use by its patients and visitors, and 1,114 parking spaces available to staff and physicians. About 498 (34 percent) of these parking spaces are located on the DFCI campus and another 316 (22 percent) are nearby on sites adjacent to or near DFCI facilities. Approximately 640 parking spaces (44 percent) are located off-site in remote parking facilities. The majority of employees who park off-site either walk or use shuttle buses to travel between the DFCI campus and these remote parking facilities.

Loading activities for the DFCI campus are handled at two centralized locations:

- Dana Building loading dock (adjacent to the Shields-Warren Building; driveway located on Binney Street)
- Smith Laboratories Building loading dock (also located on Binney Street).

In addition to the above, some minor loading activities continue at the Jimmy Fund Building loading dock on Shattuck Street for localized deliveries and service.

[3] Joslin Diabetes Center Institutional Master Plan, filed with the Boston Redevelopment Authority, July 2002.

Table 2-3: DFCI-Owned Facilities

Map Key	Building Name	Address of Nearest Entry	Building Use (1)	Year Built	Cond-ition (2)	Approx. Roof Height	Floors Above Grade	Floors Below Grade	Approx. Zoning Gross Floor Area (3, 4)	Comments
All Within Main Campus										
A	Dana Building	44 Binney Street	Outpatient clinics, research, administrative/support	1972	NI	172	15	2	378,850	The primary location for patient care on the DFCI campus. Connects to the Smith Building at the third level. Its entrance on Binney Street is difficult to identify.
D	Mayer Building	440 Brookline Avenue	Research, offices, retail	1986	G	103	6	2	100,080	Spans the Dana Building's parking decks
C	Shields Warren Building	50 Binney Street	Administrative offices, support, clinical and patient services	1964	G	58	5	1	36,874	Purchased from the New England Deaconess Hospital in 1992. Shields Warren's first floor is a busy thoroughfare between the lobby and the Longwood Galleria.
B	Smith Laboratories Building	1 Jimmy Fund Way	Research, parking (below grade), administrative	1995	G	183	12	7	225,402	At the third level, Smith Building provides connections to both the Dana and Jimmy Fund buildings via pedestrian bridges. Its loading dock area on Binney Street receives a majority of the shipments arriving at DFCI. Two upper floors accommodate a secure vivarium.

Map Key	Building Name	Address of Nearest Entry	Building Use (1)	Year Built	Cond -ition (2)	Approx. Roof Height	Floors Above Grade	Floors Below Grade	Approx. Zoning Gross Floor Area (3, 4)	Comments
All Within Main Campus										
E	Jimmy Fund Building	35 Binney Street	Research, auditorium, blood donor center	1949/ 1958	F	105	8	1	87,187	Constructed in two phases. Accommodates the Kraft Family Blood Donor Center, the Clinical Research Center, and the Institute's auditorium. Directly connects to the Smith Building and Children's Hospital and Brigham and Women's Hospital, potential to be an inter-institutional hub in the future.
G	Redstone Building	462 Brookline Avenue	Vivarium	Circa 1916/ 1921	NI	23	1	0	15,520	A former automobile garage, the present building has been greatly altered since its construction. It will be demolished for construction of the proposed new DFCI facility at 450 Brookline Avenue.
F	454 Brookline Building	454 Brookline Avenue	Administrative Offices	1957	NI	35	2	0	18,271	Purchased from Children's Hospital Boston by Dana-Farber in 1997. Will be demolished for the proposed new building.
								Total:	**862,184**	See note 5.

Notes:

1. *Includes Hospital Use and High Impact Subuses (facility of public assembly, nursing residence, parking facility, power plant, centralized heating or cooling plant, or ambulatory clinical care facility(*
2. *Condition Codes: G= Good, F= Fair, NI= Needs Improvement*
3. *Gross Floor Area of building as defined by Boston Zoning Code Article 2A excludes subgrade garage space, basement building support areas such as mechanical, storage, electrical, etc., and mechanical floors*
4. *Smith Building area in table above includes 42,412 GSF presently leased to BWH*
5. *An additional 304,982 SF of space is owned by DFCI and is used for subgrade parking, basement building support areas, and mechanical floors and penthouses. Total owned property is 1,167,166 SF*

Table 2-4: DFCI-Leased Facilities as of January 2007

Map Key	Building Name	Address of Nearest Entry	Current Uses	Approx. Gross Floor Area (3, 4)	Lease Expiration
H	Longwood Galleria	342 Longwood Avenue / 400 Brookline Avenue	Administrative Offices	32,862	Various
K	375 Longwood Avenue	375 Longwood Avenue	Administrative Offices	36,514	3/31/2007 with option to renew
J	Harvard Institutes of Medicine	4 Blackfan Circle	Research Laboratories	24,180	9/30/2012
R	Seeley-Mudd Institute at HMS	40 Ames Street	Research Laboratories	4,000	6/30/2011
Q	Center for Life Sciences	3 Blackfan Circle	Research Laboratories	50.716	12/31/2017 with option to renew
			Central Campus Subtotal:	148,272	
L	Center Place	1309 Beacon Street West, Brookline	Administrative Offices	10,113	10/21/2012 with option to renew
N	10 Brookline Place	10 Brookline Place, Brookline Village	Administrative Offices	84,751	8/31/2011 with option to renew
			South Campus Subtotal:	94,864	
M	21-27 Burlington Street	21-27 Burlington Street	Research support and core labs	25,726	9/31/2009
N	20 Overland Street	20 Overland Street	Administrative Offices	50,318	9/31/2009
			North Campus Subtotal:	76,044	
P	27 Dry Dock Avenue	27 Dry Dock Avenue	Support, Administration, Research	49,361	3/31/2016 with option to renew
			Harbor Campus Subtotal:	49,361	
__	Broad Institute	320 Charles Street, Cambridge	Research Laboratories	10,000	12/31/2006 with option to renew
__	Faulkner Hospital	1153 Centre Street, Boston	Clinic	12,950	5/31/2011 with option to renew
__	Warehouse, Garage, Other	Various	Administrative Offices and Support Facilities	17,969	Various
			Other Subtotal:	40,919	
			Total:	**409,460**	

TOTAL GROSS FLOOR AREA OWNED OR LEASED BY DFCI: 1,576,626 SF
(Includes parking, mechanical, and other space not included in zoning definition.)

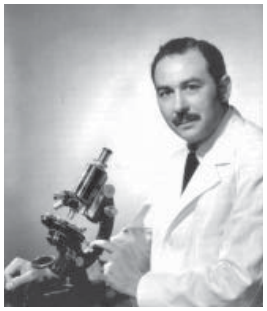
1950

Incorporation: In 1951, Dr. Farber's foundation was incorporated in the Commonwealth of Massachusetts as Children's Cancer Research Foundation, Inc. That same year, the foundation completed the construction of its new Jimmy Fund Building, which was financed by the fund of the same name. As the Institute continued to grow, this building was expanded from four to eight floors in 1958. Throughout this time, the Institute received enormous support from the Boston Braves. When the team moved to Milwaukee, Tom and Jean Yawkey, the owners of the Boston Red Sox, named the Jimmy Fund their team's official charity.

1983

Dana-Farber Cancer Institute: In recognition of significant contributions made by industrial philanthropist Charles A. Dana and his family foundation, Sidney Farber Cancer Institute was renamed Dana-Farber Cancer Institute in 1983. The Charles A. Dana foundation marked the occasion with a 10 million dollar grant to Dana-Farber. By the late 1980's, two of every three children who entered the Jimmy Fund Clinic walked out cured, and more than half of all people with cancer were cured.

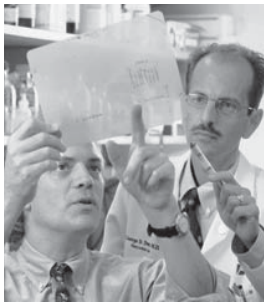
1940's 1950's 1970's 1980's 1990's 2000's



Founding: Dr. Sidney Farber was driven by the idea that the only thing standing between cancer science and cures was diligent research, sufficient funding and the national will to bring it about. While at the Children's Hospital in Boston, he achieved the first clinical remission with chemotherapy ever reported for childhood leukemia. He then spent 30 years furthering his research, launching one of the world's premier cancer centers along the way

Expansion of Charter: In 1969, the Institute's charter was officially expanded to provide services for patients of all ages, and, in 1973, the CCRF received federal designation as a regional comprehensive cancer center. Dr. Farber died that same year, and the Children's Cancer Research Foundation was renamed the Sidney Farber Cancer Center in 1974 in his honor, becoming the Sidney Farber Cancer Institute two years later. In 1976, the Charles A. Dana Building was completed. This major clinical and research building significantly expanded the Institute's capacity for patient care

New partnerships: In 1996, DFCI joined with Massachusetts General Hospital and Brigham and Women's Hospital to create Dana-Farber/Partners Cancer Care to combine the strengths of three leading institutions. The Dana-Farber/Harvard Cancer Center was formed in 1999, placing DFCI at the hub of cancer research and prevention within the Harvard medical community. In 2000, the Institute formalized its long affiliation with Children's Hospital of Boston by creating Dana-Farber/Children's Hospital Cancer Care, and in 2004, DFCI and Brigham and Women's Hospital established the Dana-Farber/Brigham and Women's Cancer Center to cement their partnership in providing a continuum of care in adult oncology.



Beginning in 1970, construction of the **Charles A. Dana Building** got underway with the helpful support of 5 million dollars granted toward the project by the Dana Foundation. The new building represented the embodiment of Dr. Sidney Farber's dream of a comprehensive cancer facility. At its completion in 1976, the 10 million dollar Dana Building offered a 17 floor facility providing an abundance of clinical and laboratory spaces for the Institute.

1972

1996

Inspiring the film, *Strong as Iron*, during the construction of the **Richard A. and Susan F. Smith Laboratories Building** in 1996, a special bond between iron workers and young cancer patients watching the construction of the new building developed. In 1997 the Smith Building was completed, and the 12-story structure provided space for more than 500 Institute investigators, new laboratories and an expanded library.

1940's

1952

1958

1976

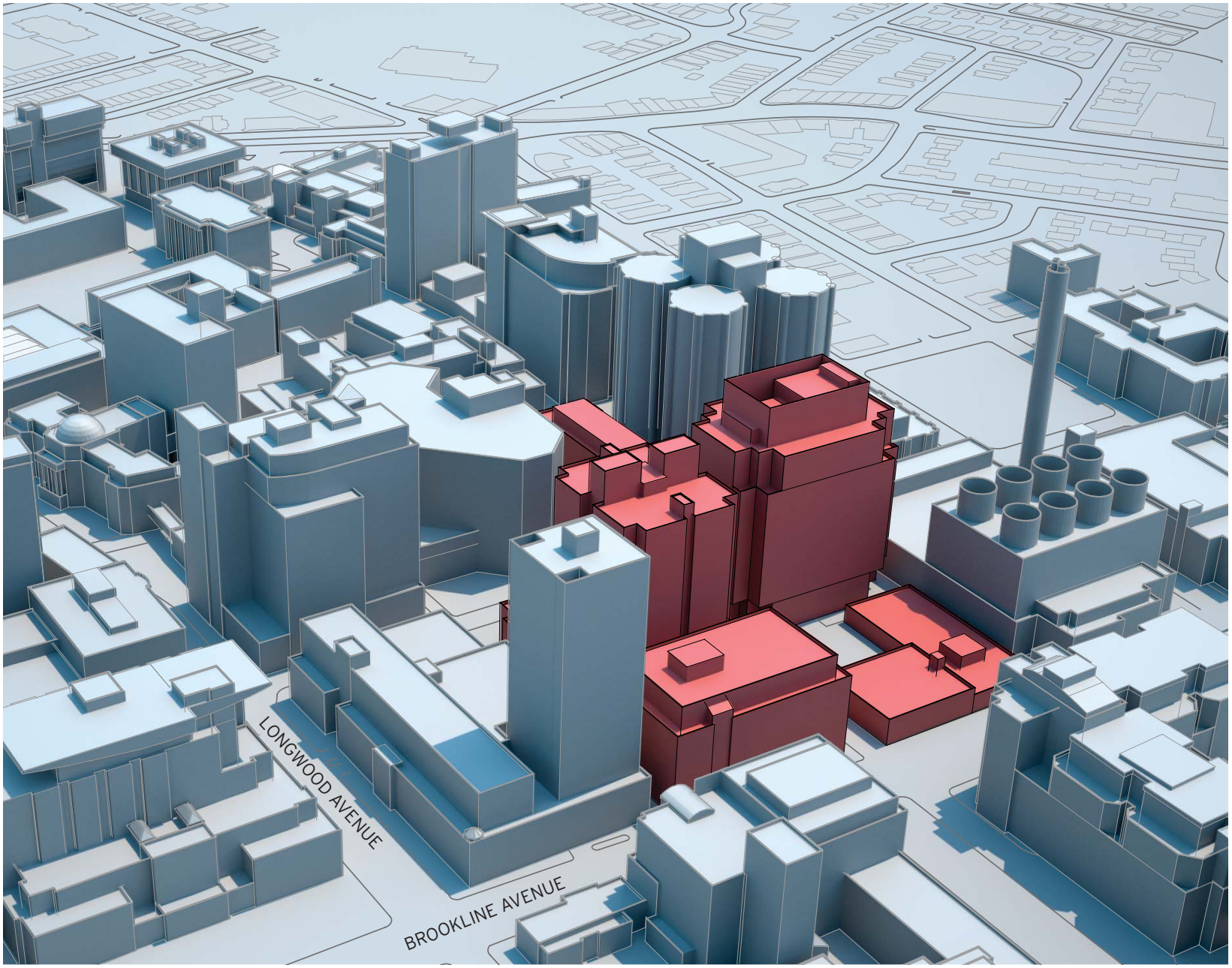
1988

1997

2000

At its completion in 1952, the **Jimmy Fund Building** had a final cost of 1.47 million dollars. The five-story edifice contained generous laboratory space in addition to a brand-new outpatient clinic. Most of the expenses were raised through the Jimmy Fund and private donations, but a $400,000 grant from the National Cancer Institute aided in funding the project. The original design incorporated footings to accommodate the weight of four future floors, which were eventually added to the structure in 1958.

After movie giant Louis B. Mayer was treated at the Institute for Leukemia in 1957 by Dr. Sidney Farber, he considered him "the single most important man I have ever met." In the late 1980's, Mayer's foundation contributed 5 million dollars which allowed for the creation of the **Louis B. Mayer Research Laboratories Building**. This new structure provided important research facilities for the Instutute to use in its on-going pursuit for answers in the fight against cancer.



LEGEND

DFCI Owned Facilities

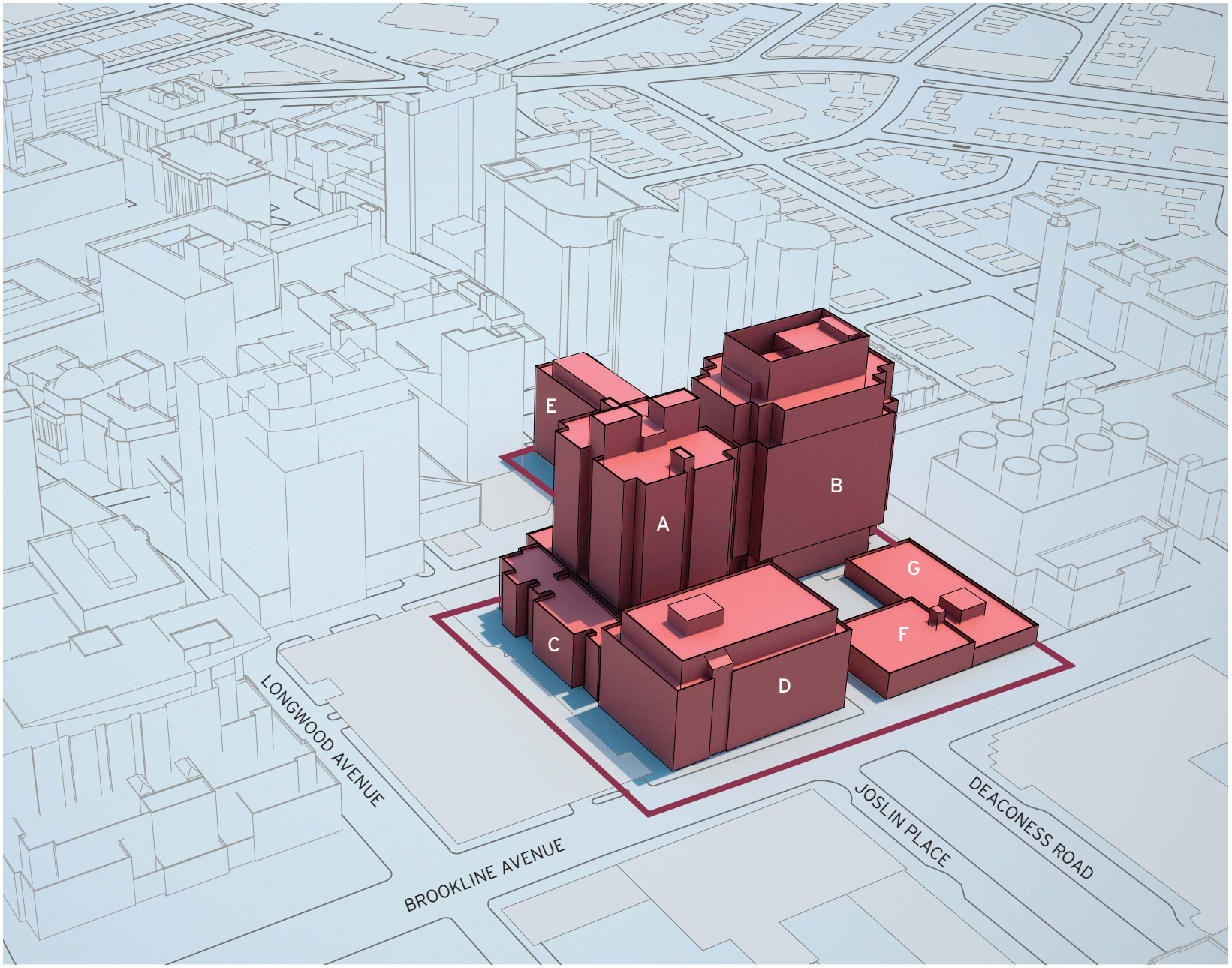
NOTE: See Figure 2-4 for Campus Building Names

SOURCE: BRA & DFCI Facilities

DANA-FARBER CANCER INSTITUTE
INSTITUTIONAL MASTER PLAN

Existing DFCI Campus in LMA Context

FIGURE 2-3



LEGEND

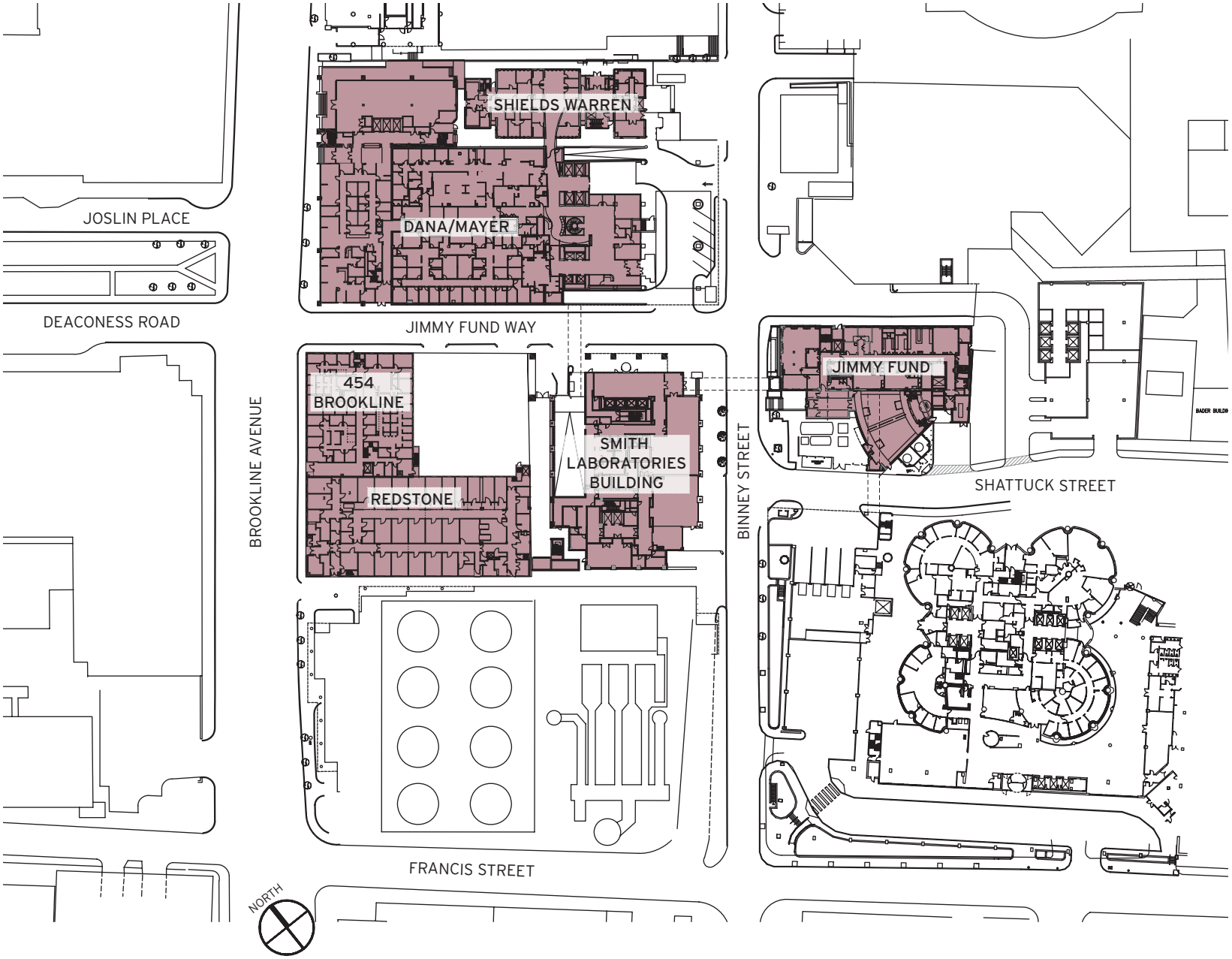
- DFCI Owned Facilities
- DFCI Campus
- A Dana Building
- B Smith Laboratories Building
- C Shields Warren Building
- D Mayer Building
- E Jimmy Fund Building
- F 454 Brookline
- G Redstone Building

SOURCE: BRA & DFCI Facilities

DANA-FARBER CANCER INSTITUTE
INSTITUTIONAL MASTER PLAN

Existing DFCI Campus

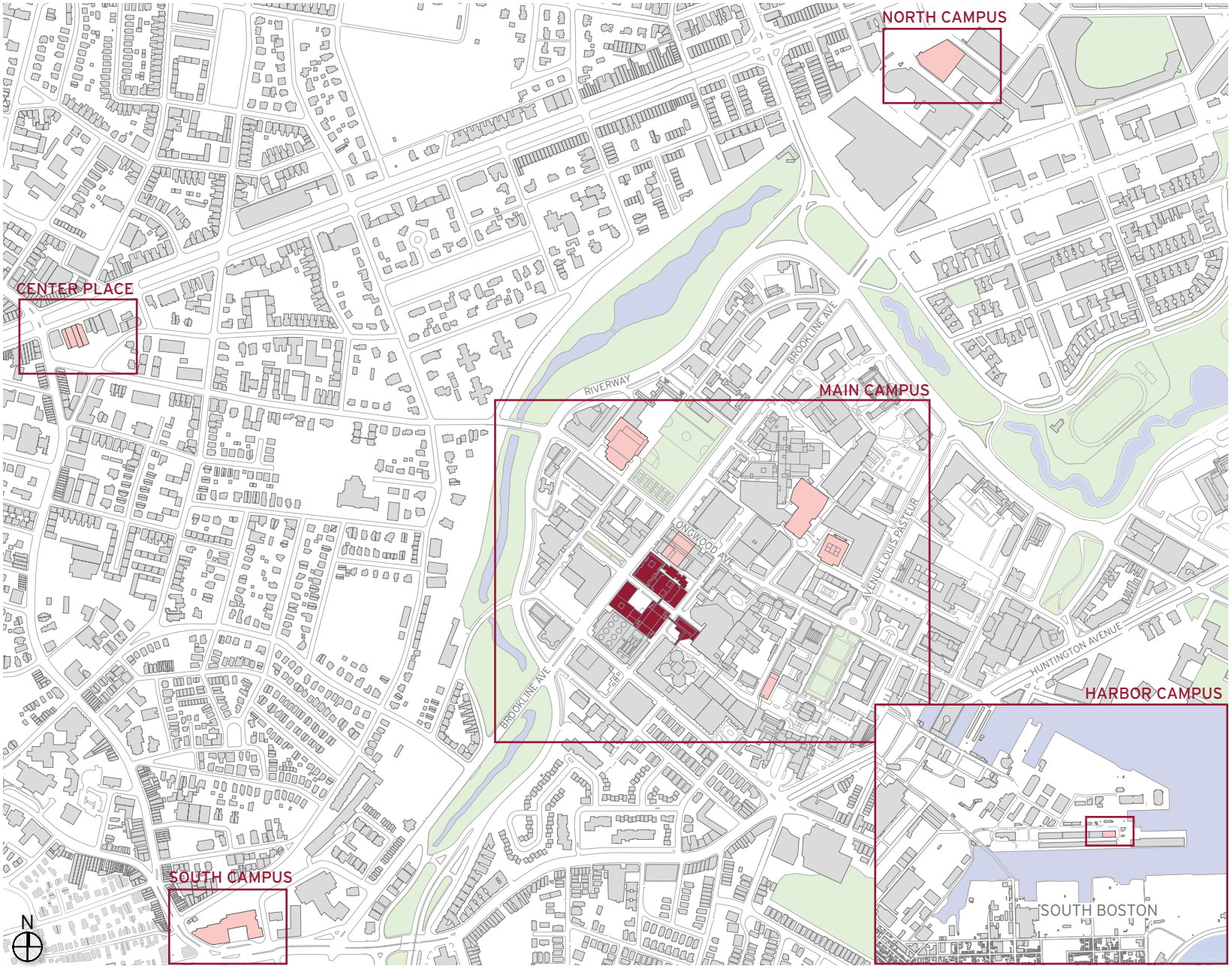
FIGURE 2-4



DANA-FARBER CANCER INSTITUTE
INSTITUTIONAL MASTER PLAN

Existing DFCI Site Plan

FIGURE 2-5



LEGEND

DFCI Owned Facilities

Leased Properties

Not Shown - Broad Institute (Cambridge)

SOURCE: DFCI Facilities

DANA-FARBER CANCER INSTITUTE
INSTITUTIONAL MASTER PLAN

DFCI Facilities

FIGURE 2-6

LEGEND

Campus FAR

Combined FAR for DFCI Institutional District

= 6.63 FAR

Combined FAR for DFCI Institutional District + 454 Brookline Avenue

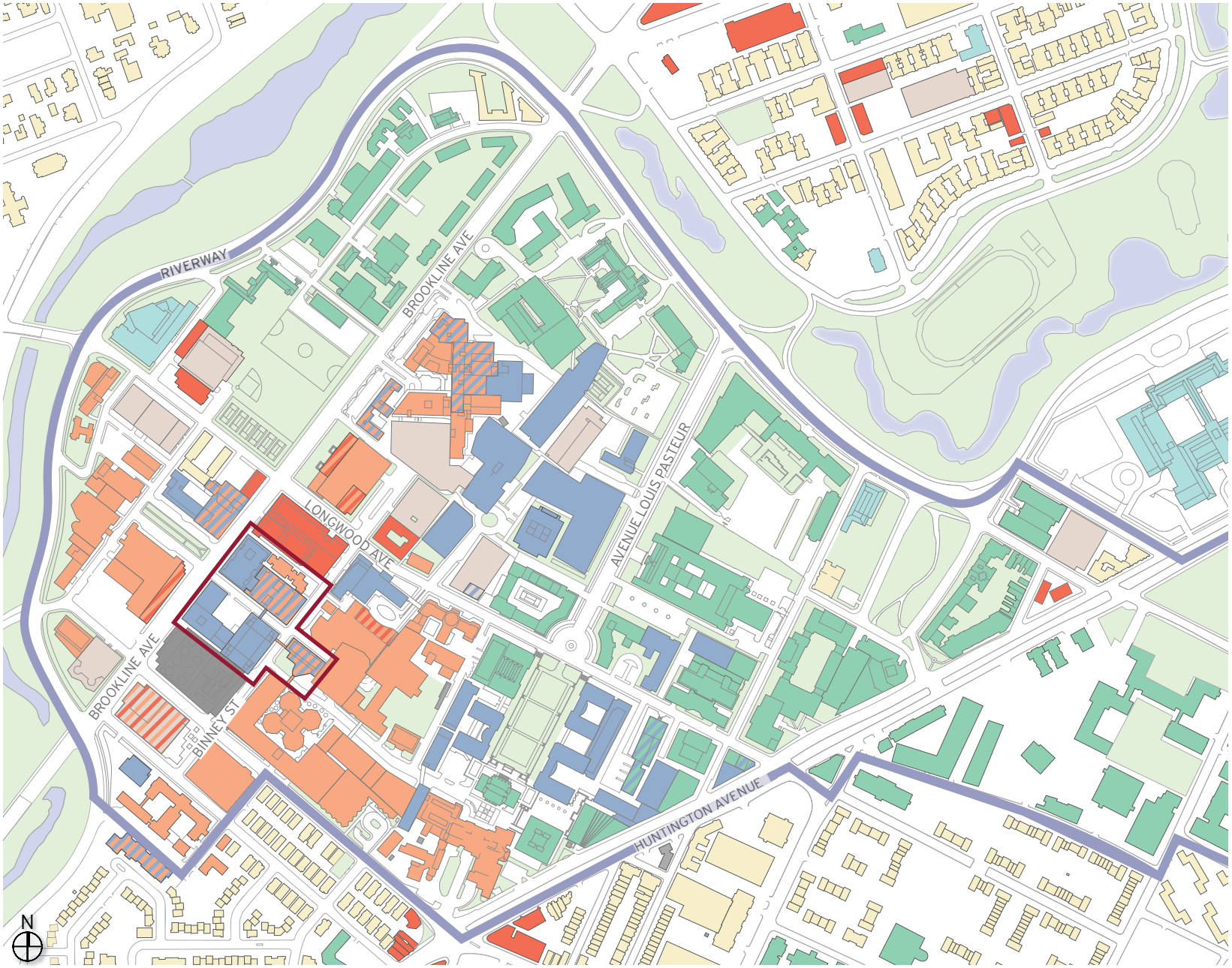
+ = 5.94 FAR

SOURCE: DFCI

DANA-FARBER CANCER INSTITUTE
INSTITUTIONAL MASTER PLAN

Existing Campus FAR

FIGURE 2-7



LEGEND

Predominant Land Use

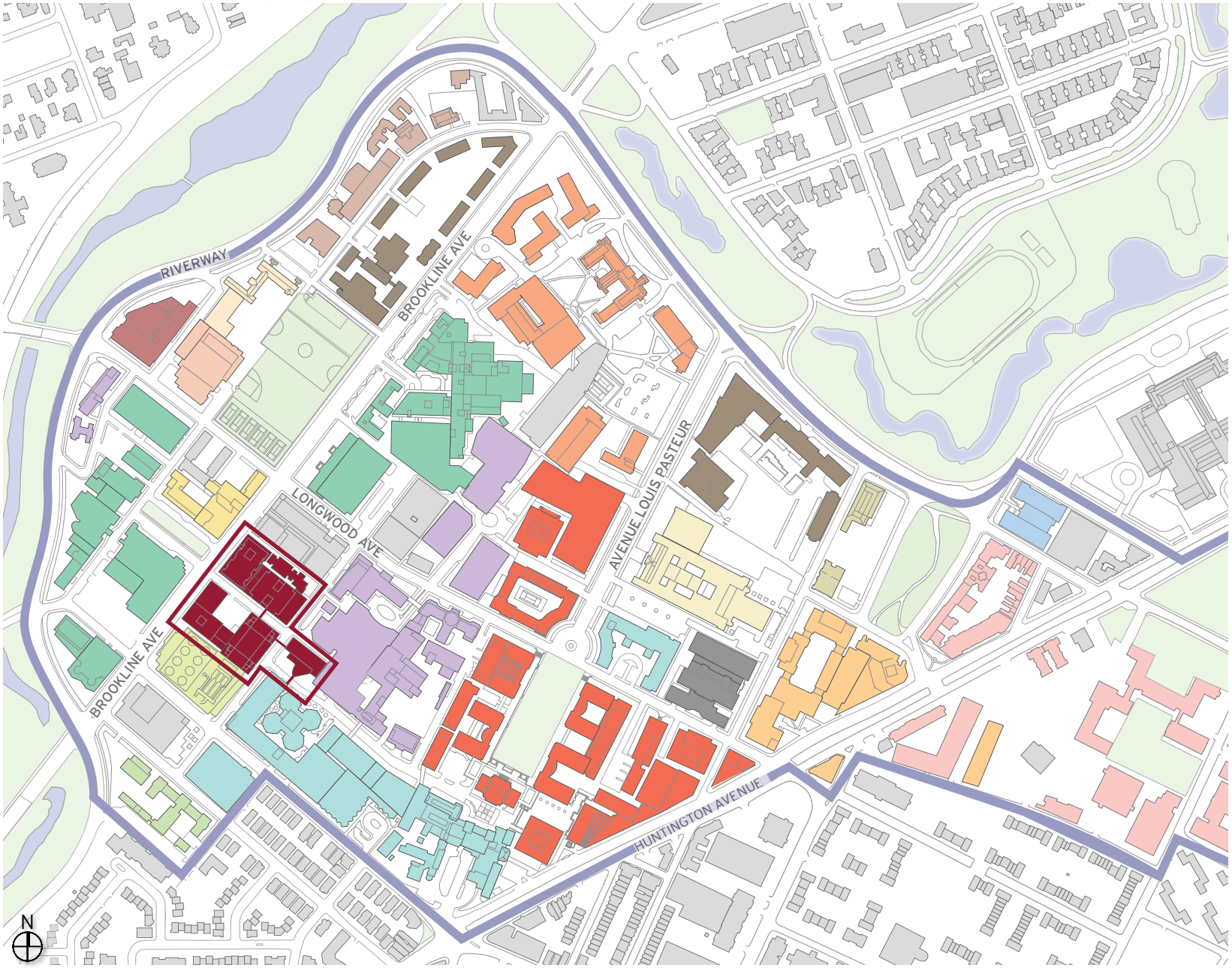
- DFCI Campus
- Education
- Research
- Health Care
- Housing
- Parking
- Cultural / Religious
- Commercial, Office, Hotel and / or Mixed-Use
- Utility
- Green Space
- Hatch Indicates Mixture Of Uses

SOURCE: MASCO (July 2006), BRA & DFCI

DANA-FARBER CANCER INSTITUTE
INSTITUTIONAL MASTER PLAN

Existing Area Land Use

FIGURE 2-8



LEGEND

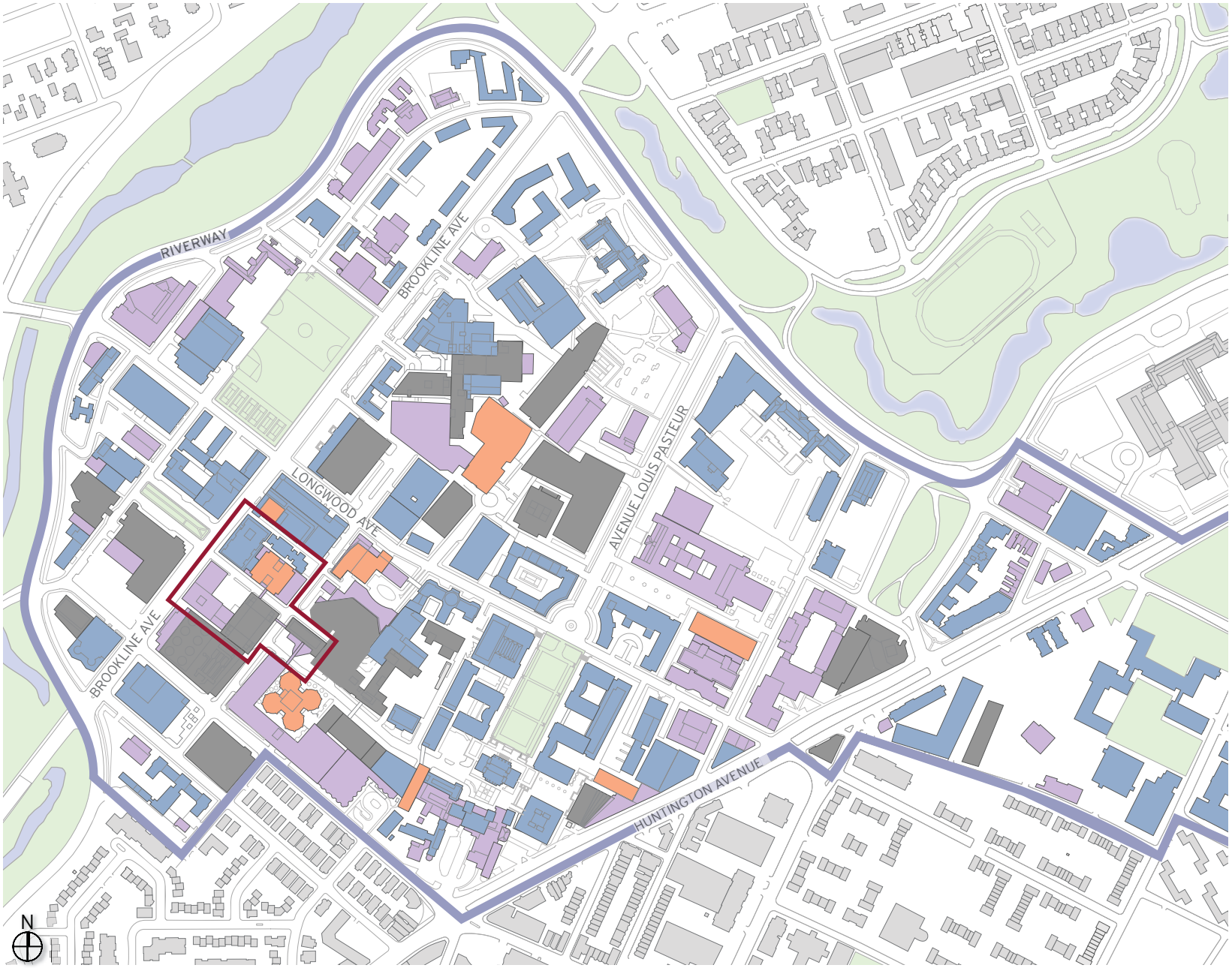
- DFCI Campus
- Longwood Medical and Academic Area
- Dana-Farber Cancer Institute
- Brigham and Women's Hospital
- Children's Hospital Boston
- Massachussetts Mental Health Center
- Beth Israel Deaconess Medical Center
- Joslin Diabetes Center
- Harvard University
- Massachussetts College of Pharmacy
- MASCO
- Emmanuel College
- Massachussetts College of Art
- Boston Latin School
- Isabella Stewart Gardner Museum
- Wentworth Institute of Technology
- Simmons College
- Wheelock College
- The Winsor School
- Temple Israel
- MATEP
- School of the Museum of Fine Arts

SOURCE: MASCO

DANA-FARBER CANCER INSTITUTE
INSTITUTIONAL MASTER PLAN

LMA Institutions

FIGURE 2-9



LEGEND

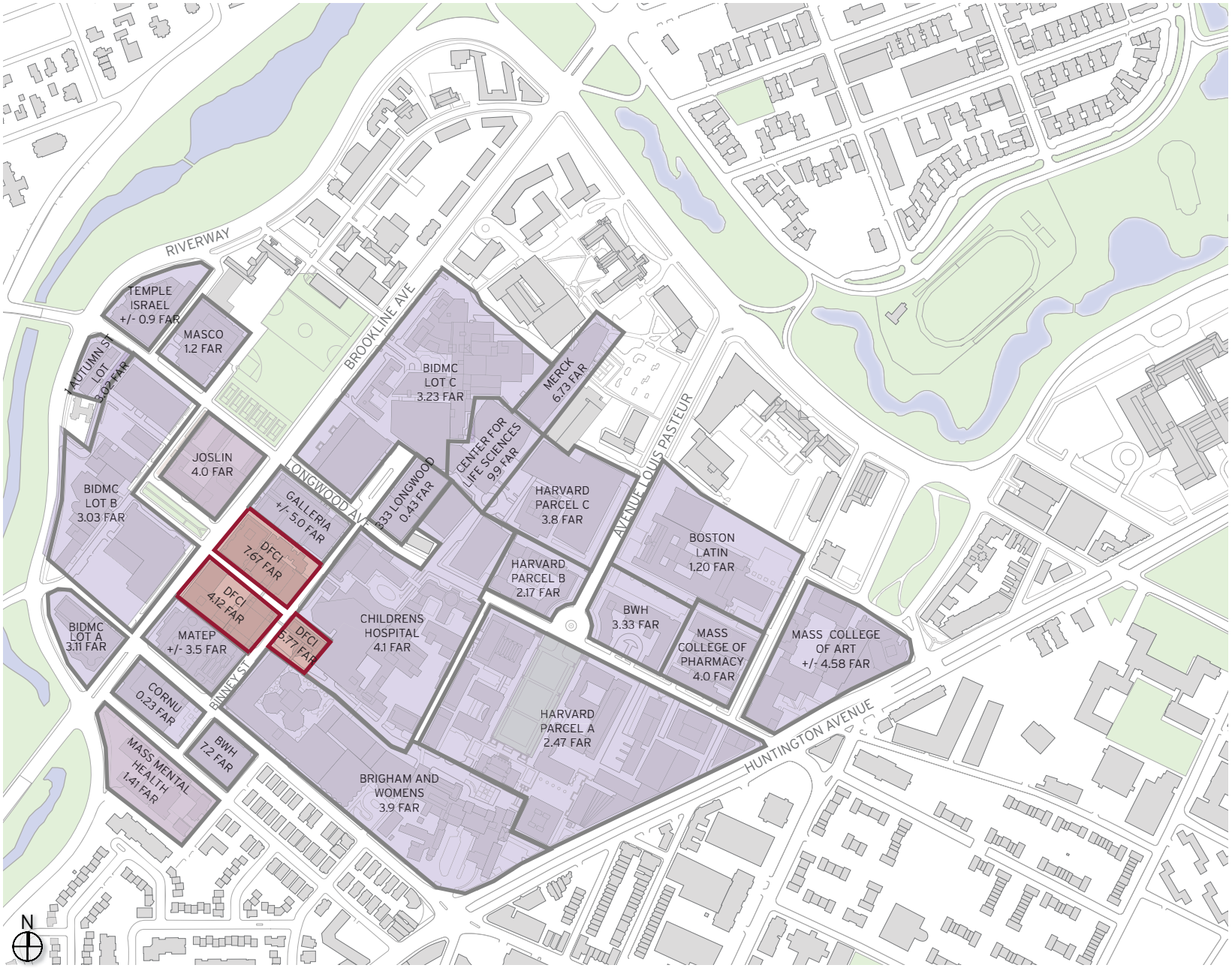
- DFCI Campus
- Longwood Medical and Academic Area
- 13+ Story Building
- 8-12 Story Building
- 4-7 Story Building
- 1-3 Story Building
- Street Level

SOURCE: MASCO & DFCI

DANA-FARBER CANCER INSTITUTE
INSTITUTIONAL MASTER PLAN

Existing Area Building Heights

FIGURE 2-10



LEGEND

DFCI Owned Facilities

All Others

FAR = Floor Area Ratio

*NOTES

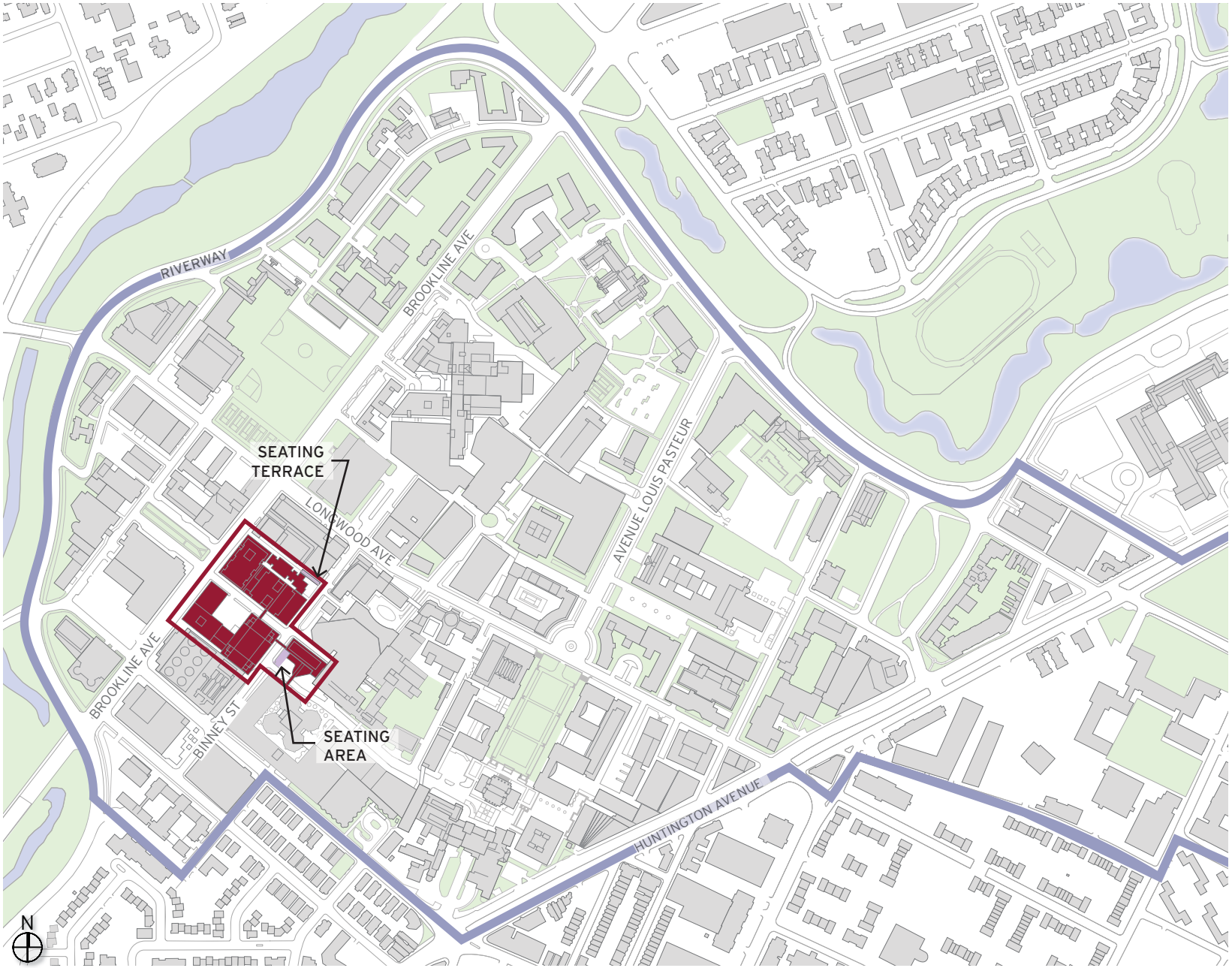
FAR reflect existing buildings as of 2006; projects in construction at the time or approved since are not included.

SOURCE: MASCO & DFCI

DANA-FARBER CANCER INSTITUTE
INSTITUTIONAL MASTER PLAN

Existing Floor Area Ratios

FIGURE 2-11



LEGEND

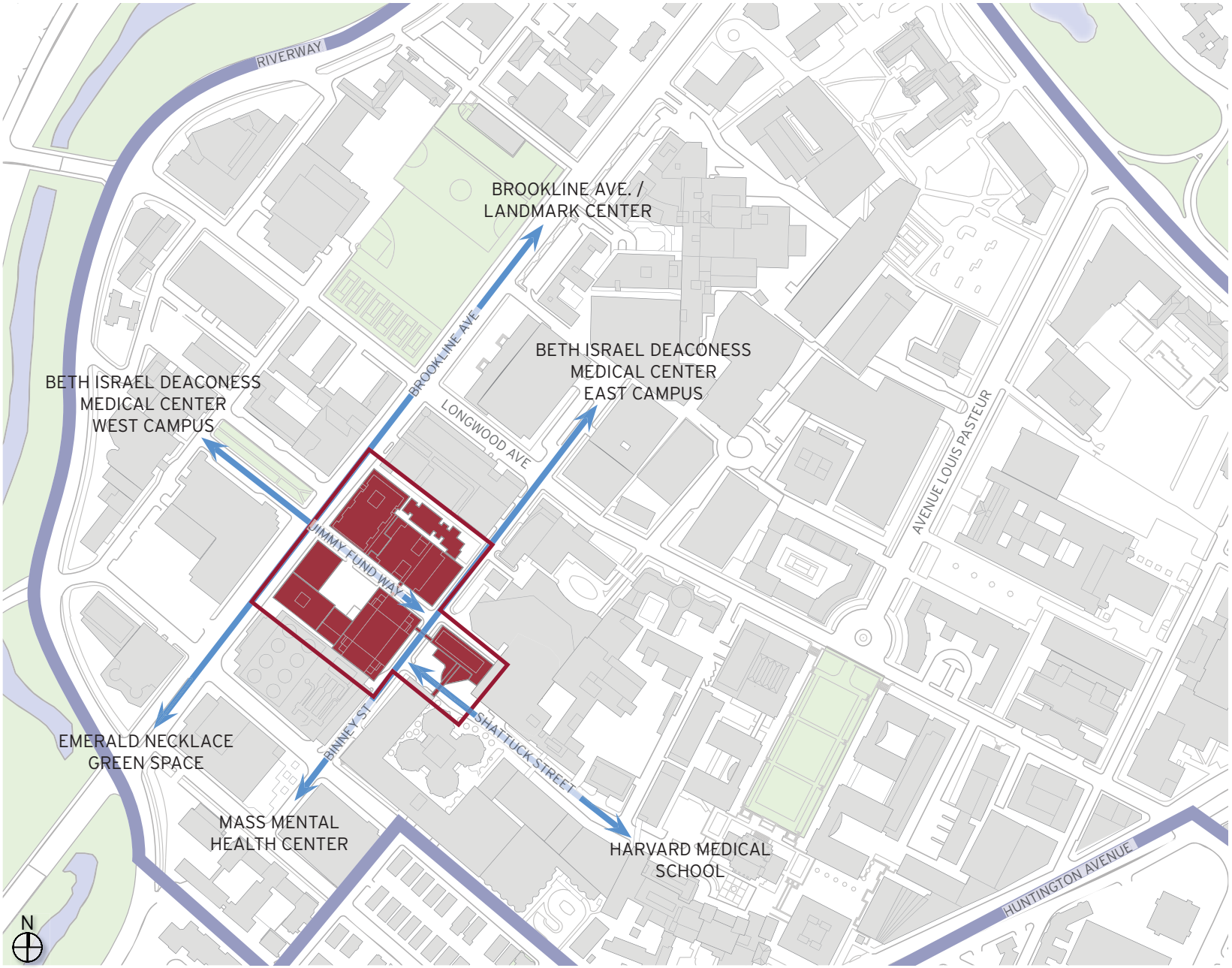
- DFCI Owned Facilities
- Longwood Medical and Academic Area
- DFCI Campus
- Built Space
- DFCI Public Pedestrian areas
- Public Pedestrian areas

SOURCE: MASCO & DFCI

DANA-FARBER CANCER INSTITUTE
INSTITUTIONAL MASTER PLAN

Existing Public Pedestrian Areas in / around LMA

FIGURE 2-12



DANA-FARBER CANCER INSTITUTE
INSTITUTIONAL MASTER PLAN

Existing View Corridors

FIGURE 2-13

SOUTH-WEST

NORTH-EAST

NORTH-WEST

SOUTH-EAST

DANA-FARBER CANCER INSTITUTE
INSTITUTIONAL MASTER PLAN

Jimmy Fund Way

FIGURE 2-15

SOUTH-WEST

NORTH-EAST

NORTH-WEST

SOUTH-EAST

3

Future Needs / Urban Design

3.1 Introduction

This chapter describes the Dana-Farber Cancer Institute's current and future physical needs in the context of the Institute's mission, mission-driven master plan, and urban design goals. These issues are discussed within the framework of the forces for change in cancer care, including projected patient growth and research expansion, the current condition of DFCI's facilities, and the challenges it faces related to the type and amount of available space. This chapter also details potential and current development locations for the Institute in the context of future growth and population projections for patients and staff. These opportunities and strategies for development are related to DFCI's master plan goals and urban design approach.

3.2 Forces for Change in Fighting Cancer

Since its founding in 1947, DFCI has been committed to providing compassionate, state-of-the-art treatment to cancer patients, while supporting research into the causes, treatments and cures for cancer. In the course of its history, DFCI has pioneered many of the discoveries that have changed the face of cancer treatment, and has gained prominence as an internationally renowned cancer center. In the 21st century, the fight against cancer continues as the understanding of its causes and mechanisms advance. As populations continue to live longer within increasingly complex and stressful environments, more patients are diagnosed with cancer than ever before. However, as medical technology and methods of care grow more effective and advanced, more patients survive the disease with longer and more complex treatment regimes.

As DFCI contemplates the future, there are many factors that will influence its battle against cancer.

- *Demographics:* Despite declining cancer mortality, cancer incidence and prevalence are expected to rise due to early cancer detection and a growing aging population, which is characterized by a higher incidence of cancer. This year approximately 565,000 Americans are expected to die of cancer. Cancer represents the second leading cause of death in the U.S., one of every four deaths. The National Institutes of Health estimates that in 2005, the overall costs for cancer were $209.9 billion, which includes medical costs and loss of

productivity due to illness or premature death.[1] It is estimated that the number of Americans diagnosed with cancer will double from 1.3 million in 2000 to 2.6 million in 2050 if cancer incidence rates follow the current patterns.[2]

- *Scientific Advances and the Changing Nature of Discovery*: Genomics and the new biological disciplines that arise from it have greatly enhanced scientists' ability to understand the interactions of cancer cells in their hosts and to develop more effective therapeutic and diagnostic agents. Because the sequence of all the individual genes in the human genome is now known, scientists are now able to identify the exact mutations in any tumor. The high-output technologies created to sequence the genome have spun off other technologies that allow investigators to profile cancer cells at the genetic level. These developments have required the expansion of the field of cancer research to new disciplines that include chemistry, biophysics, computational biology, and systems analysis. The increasingly interdisciplinary nature of research is expected to change the way in which research is conducted and in which care is delivered. These breakthroughs and advancements in technology will provide options not currently available for cancer diagnosis and treatment.
- *Genomics and Personalized Healthcare*: The ability to customize a patient's diagnosis and treatment based upon genetic make-up, family history, and/or drug receptivity will change the way that patients receive treatment.
- *Breakthroughs in Technology*: Advances in technology will allow care-givers to use imaging techniques to pinpoint tumors and to more precisely target them with radiation therapy.
- *Shift to Outpatient Care:* Cancer care will continue to shift to the outpatient setting. This trend will be accompanied by increased acuity and intensity of care as well as increased application of those treatments such as chemotherapy and radiation therapy that serve the needs of ambulatory patients.
- *Increasing Consumerism*: Patients will be increasingly aware of their treatment options and will actively participate in choosing their cancer providers and course of care.
- *Changing Reimbursement*: Funding for scientific research and cancer care reimbursement will continue to change as therapies and technologies evolve.

3.3 Impacts on DFCI Facilities

DFCI has initiated planning processes to respond to these forces. DFCI's Strategic Plan, completed in 2003 and now being updated, introduced changes designed to make its scientific programs more responsive to the urgent need to convert laboratory breakthroughs into practical new treatments.

[1] "Cancer Facts & Figures 2006," American Cancer Society.
[2] "Annual Report Shows Overall Decline in U.S. Cancer Death Rates; Cancer Burden is Expected to Rise with an Aging Population." Cancer, Volume 94, No. 10, May 15, 2002.

As part of this process, in May 2006 Dana-Farber Cancer Institute initiated planning intended to shape its vision for patient care in the future. Undertaken by a broad spectrum of DFCI physicians, staff, patients and planners, this effort focused on understanding the ever-evolving nature of cancer care and research, and on articulating DFCI's ideal future patient experience.

3.3.1 Increased Patient Volume

The aging population, the increased numbers of patients seeking second opinions from DFCI specialists, and higher survival during and following longer periods of treatment have contributed to an increase in the number of patients DFCI treats and the duration of their care. Treatments such as radiation therapy and chemotherapy have allowed more and more patients to be treated on an outpatient basis. Patients undergoing these therapies may make daily or weekly visits to DFCI clinics for an extended period, and this trend has contributed to the rise in the number of visits per patient.

Between 2002 and 2005, DFCI has seen adult patient visits increase over 11 percent per year and pediatric visits rise over eight percent annually. This trend is expected to continue, with overall patient visits projected to increase from 203,000 in 2006 to 455,000 by 2016.

In order to accommodate the rising volume of adult patient visits, additional exam rooms and chemotherapy-delivering infusion chairs are necessary. DFCI expects that its current total of 70 exam rooms will need to grow to 105 rooms, and that its current count of 88 infusion chairs will need to grow to 150 by 2011. Projecting past this, at the present rate of growth, this number will need to increase to 154 exam rooms and 264 infusion chairs by 2017. The completion of the Center for Cancer Care, the central project described in this IMP, is a core component of DFCI's strategy to accommodate these needs for the next ten years.

As part of its strategy to accommodate growing patient volumes, Dana-Farber is also developing a network strategy involving satellite clinical service locations. In partnership with Faulkner Hospital and Brigham and Women's Hospital, Dana-Farber Cancer Institute has begun to provide cancer care services at that site. Other locations are also being planned.

The projected continued rise in outpatient treatment has implications not only for the number of treatment rooms required to accommodate exams and infusion, but also for other clinical support services that include diagnostic radiology, radiation therapy, pharmacy and clinical laboratories, which are expected to grow in similar proportion. Increased patient volume is producing a concomitant increase in numbers of clinicians and support personnel, with additional office and consulting space already urgently needed. Table 3-1 details the projected growth across all of DFCI's clinical programs.

Table 3-1 Projected Growth in Clinical Programs

Projected Growth: Clinical Programs	FY 2002 Patient Visits	FY 2004 Patient Visits	FY 02 – 04 Average Annual Growth	Projected FY 2011 Patient Visits	Projected FY 2017 Patient Visits	FY 04 - 15 Assumed Annual Rate of Growth
Adult outpatient clinic patient visits	86,809	101,979	11.9%	176,000	258,000	FY06 – 17 =8%;
Pediatric outpatient clinic visits	9,059	10,782	9.1%	11,600	12,000	1%
Adult infusion patient visits	41,104	51,762	11.7%	115,000	203,500	FY 06-17 =12%
Pediatric infusion patient visits	8,298	9,655	7.9%	10,350	11,000	1%

3.3.2 Impacts of Scientific Discovery on Patient Care

In addition to increased patient visits, future cancer care will be strongly influenced by advances in science and technology. While neither researchers nor care-givers can predict with certainty what the cancer center of the future will be, several trends can be discerned.

As scientific discovery develops to allow researchers to understand the fine distinctions in the genetics and biochemistry of each patient, it is expected that care will become increasingly customized based each patient's unique genetic and biochemical make-up. Infusion therapies will become longer and more complex, requiring tighter monitoring, and patients will want to be within easy access of their care-givers as well as the pharmacy and laboratories that support patient treatment.

Imaging will become increasingly important not only to diagnosis, but also to treatment and evaluation of the success of therapies. Imaging equipment now being developed will provide both greater resolution and multimodal capability in a single machine. In order to meet the expected demand for imaging services by 2016, Dana-Farber Cancer Institute plans to double its capacity through a major expansion of its Radiology and Nuclear Medicine departments following the completion of the Center for Cancer Care. Radiation therapy will continue to be an important method of treatment with increasingly precise targeting of tumors possible. DFCI is currently planning to construct a third radiation therapy suite in the Dana Building

in 2007, with an additional one to two linear accelerators projected after completion of the Center for Cancer Care.

Other changes in technology that will affect patient care include advancements in information technology that will benefit both patients and staff by facilitating collection of patient information and patient tracking. DFCI envisions that patients will be able to obtain information, communicate, and register for treatments and exams from home. At the same time, data and other research input that will have a significant influence on the development of experimental therapies will be collected with greater efficiency and precision.

3.3.3 Increases in Patient Support Services

The rising incidence of cancer, the evolution of more customized care, and the increasing consumerism in healthcare will mean that more patients will desire more detailed information about options for their course of treatment as well as about services available to help them through the difficult period of cancer diagnosis and treatment. DFCI has been a pioneer in developing an array of services for patients and families. These include the Blum Information Resource Center, language interpreters, financial counselors, support groups, psychologists, social workers, and special centers that offer alternative therapies and assist patients with survivorship issues. To further assist patients in navigating the care system and to inform them about these support programs, DFCI is developing the Center for Patients and Families (CPF) to act as a portal for the broad array of services at DFCI. The CPF will be directly accessible to patients when they enter the new Center for Cancer Care and will provide information concerning programs that will help both patients and family members cope with cancer diagnosis and treatment.

3.3.4 Impacts of Scientific Advances on DFCI Research

In response to the proliferation of new areas of cancer research, DFCI has outlined a series of strategic initiatives designed to enhance the Institute's research mission. These range from expansion of analytical programs such as the Biostatistics and Population Sciences groups, to development of new centers for cancer systems biology, applied cancer science, molecular experimental pathology, and clinical and translational research labs. Although some of these initiatives are still in the planning stages, Dana-Farber is committed to implementing these programs as quickly as possible.

Support for research activities is provided by a variety of services that include the research library, protocol administration for research studies, graphics support for scientific publications, cell growth and processing facilities, DNA analysis, and animal resources required to stay at the forefront of cancer research.

Finally, newer models of research that increasingly stress collaborative efforts have resulted in a reassessment of functional relationships within Dana-Farber. An

important component of research at DFCI is the relationship between researchers and clinicians and the potential for translation of research findings rapidly to clinical protocols and vice versa. These are seen as effective ways to work toward solving the complex riddles of cancer and to improve patient care. Easy access between the research and clinical areas in new space development will be increasingly necessary to facilitate this critical mission—a feature that is sorely lacking in the configuration and relationships between existing DFCI facilities. Facilitating access between existing research facilities and new clinical space at DFCI and its partner clinical institutions will enhance the ability of DFCI researchers to translate research findings into cancer treatments as quickly as possible.

Part of the scope of scientific advancement at DFCI is the transfer of innovative research between the Institute and scientific and pharmaceutical companies. The scope of technology transfer between DFCI and the related healthcare innovation industry is vast compared to DFCI's small physical presence in Boston and the LMA. DFCI currently maintains partnerships with thirteen bio-pharma firms, involved in research trials and commercialization of research outcomes. This activity not only contributes to local economic development, but is also viewed by the Institute as an important advantage in recruitment and retention of quality faculty.

Preliminary estimates indicate that, to accommodate new research initiatives and to provide for modest growth of existing programs, the Institute will need to expand the space devoted to research from 326,020 net square feet (NSF) in 2006 to approximately 485,000 NSF in 2011 and roughly 577,000 NSF in 2017.

3.3.5 Patient Care Advances through Clinical Research

Dana-Farber Cancer Institute presently operates more than 400 adult and pediatric therapeutic clinical trials, in which many potential future treatment methods are tested. The clinical research enterprise must ensure that the patients who participate in these trials receive continuity of care with a high level of safety, and must be well-organized to obtain and process samples of tissue, blood and urine according to the complicated and demanding research protocols. As treatment becomes individualized, more and more of Dana-Farber's patients will be involved in cancer-related research. Customized therapies will require unique patient treatment protocols, with more blood and tissue samples taken to serve as the foundation for treatment and provide information for research.

Dana-Farber's Clinical Research Center (CRC) was created in 2003 to accommodate the special needs of patients and researchers participating in trials of drugs being tested for the first time in humans. Treatment protocols for these new therapies are often lengthier in duration, lasting up to ten hours, and more strictly regulated than other clinical trials. The CRC, currently located in the Jimmy Fund Building, provides eight infusion chairs in an environment designed to keep patients comfortable during these long treatments. As the number of patients enrolled in

these clinical trials is expected to grow, DFCI will need to increase its current 8 CRC infusion chairs to 24 chairs by 2011.

As more patients become involved in cancer research, it is expected that the number of specialists participating in each patient's care will likely increase, resulting in greater need for collaboration between researchers, clinicians, pharmacists, computational biologists and others. As a result, DFCI's clinical research center and all disease clinics will form an integrated web of treatment settings for advances in cancer. Collaboration between these diverse contributors and environments will be vital to the urgent task of converting research into effective therapies.

3.3.6 Administrative Offices

With research and clinical space needs rapidly growing, it is expected that administrative and support staff and operations space will need to increase. Dana-Farber has been working to move to off-site locations those support and administrative functions for which central locations are less critical in order to concentrate clinical and research facilities on its main campus. Many administrative functions that can efficiently function remotely have already been relocated to leased space outside the core campus. DFCI's senior administrative offices will continue to remain in the core campus for the foreseeable future. It is expected, however, that future expansion of administrative functions will need to be accommodated in additional off-site locations. Approximately 25,000 NSF of such office space will likely be needed by 2011 to support the Institute's mission.

3.3.7 Overall Employee Population Growth

DFCI currently employs 3,557 people. Dana-Farber is also a significant employer of Boston residents, with about 32 percent of its total employee population residing in the city. See Chapter 9, Consistency with LMA Interim Guidelines, for more detailed employment information.

Over the next ten years, DFCI expects its workforce to grow at an annualized rate of approximately 6.2 percent. This level of growth would result in approximately 3800 new positions being created throughout the Institute by 2017. Of this total, 250 permanent positions are anticipated as a result of the new Center for Cancer Care. Another 150 positions would be created by activities that have been in the LMA but are being shifted to DFCI's Harbor Campus in South Boston. It is expected that the new positions will reflect the full range of employment opportunities currently available at the Institute. Table 3-2 describes this projected employment growth.

Table 3-2 Projected Growth in Employment

Projected Growth: Employment	FY 2002	FY 2005	FY 02 – 05 Average Annual Growth	Projected FY 2011 (rounded)	Projected FY 2017 (rounded)	FY 05 - 17 Assumed Annual Rate of Growth
Clinical Staff	1,014	1,335	9.6%	2,000	2,700	5.8%
Research Staff	1,227	1,523	7.5%	2,400	3,300	6.7%
Administrative /Support Staff	483	631	9.3%	900	1,200	5.6%
Total	2,724	3,489	8.6%	5,300	7,200	6.2%

3.3.8 Facilities Condition and Challenges

Dana-Farber Cancer Institute is committed to respond to the forces of change in cancer care and research with appropriate, state-of-the-art programs and facilities. However, its ability to do so is currently impaired by a number of limitations on its campus and facilities infrastructure.

Factors that limit DFCI's continued growth are summarized below.

- *Aging Infrastructure:* The capacity of existing mechanical and electrical systems in DFCI's primary clinical building to accommodate modern air-exchange requirements for patient spaces is at its limits. New diagnostic and treatment facilities for radiology and radiation oncology will require significant expansion of building systems.
- *Inflexible Floor Plate Layouts:* As DFCI converts space from one type of use to another, structural grids, shafts, elevators, and other building elements limit the efficient use of existing space.
- *Limited Floor-to-Floor Heights:* As newer equipment in the treatment and prevention of cancer demand increasing mechanical requirements, what were once deemed generous floor-to-floor heights are no longer sufficient. In addition, new research, diagnostic, and treatment technologies often demand increased height as well as ventilation and cooling distribution.
- *Inadequate Vertical Circulation:* The existing elevators in the main clinical care building, the Dana Building, were designed to carry the standard patient load in 1972 and are inadequately sized for today's needs, resulting in cramped cabs and long wait times for elevators. Moreover, progress in standards for accessible design since that time means that the existing elevators do not

provide universal accessibility by current codes and standards. People in wheelchairs are forced to use the larger elevators originally designed for service, which are situated awkwardly in relation to the main patient flow corridors.

Confined to 3.3 acres of owned property in the LMA, and with all but one of its buildings constructed before 1986, DFCI in recent years has struggled to meet the needs of a growing patient population and technological and scientific advances. Although it has relocated increasing numbers of administrative and support staff off-site in order to accommodate expansion of patient care and research programs in its main campus, the continued growth has still left some programs in cramped and substandard facilities. Support staff and 'back of house' functions for both clinics and research have seen their space shrink, although current healthcare trends would indicate that these areas are growing in importance. As DFCI has worked to accommodate its growth, it has undertaken continuous renovations in an attempt to modernize and maximize the space available. This effort has resulted in the conversion of areas from one use to another, in some cases not optimally suited to the available space. DFCI has been forced to convert storage and support space into administrative facilities, and has retrofitted administrative space to make it suitable for clinical and dry research programs. Not only is this approach costly and difficult, but DFCI has reached the limit of the total amount of space available and the amount of space flexible enough for this type of upgrade.

3.4 Space Program Summary

Projected space increases in clinical and research programs have been estimated as shown in Table 3-3 which summarizes existing space usage and projected institutional space needs in 2011 and 2017.

With the addition of the new building, DFCI will have sufficient patient care facilities to accommodate the Institute's projected clinical growth through 2015. Beyond this date, research and administrative program needs for 2011 and beyond are expected to exceed the capacity of Dana-Farber's facilities following completion of the Center for Cancer Care. Additional leased space will be required to offset these shortfalls. Dana-Farber Cancer Institute is currently involved in planning to determine more precisely the scope and scale of future programmatic and facility requirements and potential space solutions.

Table 3-3 Campus-Wide Program Needs

Departments	Uses	Space Usage (NSF)[2]		
		Existing[1]	2011 Need	2017 Need
Research	Wet and Dry Laboratories, Research Service Centers, vivarium, research admin.	369,000	485,000	560,000
Clinical / Ancillary	Adult & Pediatric outpatient clinics and support, including admin., patient services, and food service	185,000	285,000	359,000
Administration	Administrative offices and support facilities	94,000	120,000	152,000
Total Program Area (NSF)		648,000	890,000	1,071,000
Total Program Area Existing / Needed (GSF)[3]		1,576,000	2,206,000	2,567,000
Additional Space Need vs. 2006 (GSF)			**484,000**	**846,000**

1. *These entries include all DFCI program space occupying either leased or owned property as of 10/1/06).*
2. *'NSF': net assignable areas (NSF) assigned to a department.*
3. *'GSF': total includes mechanical and other building systems space as well as parking, structure, and common space. GSF for Projected Program Need based on a 2.0 net-to-gross multiplier plus calculated parking requirements.*

3.5 Development Locations

Because there is a limit to how much existing space can be made to meet current requirements for clinical care and laboratory programs, and because there is also a limit to how much support space can be located remotely from these primary functions, DFCI has formulated planning strategies for both its owned properties and leased facilities.

3.5.1 On-Campus

DFCI has identified several opportunities on its existing campus to meet patient care demands, upgrade its facilities and improve the public domain.

The most prominent of these locations are the three adjacent lots, two of which are occupied by the Redstone Building and one of which is occupied by the 454 Brookline Avenue administrative building purchased from Children's Hospital in 1997, and a small surface parking lot. This location provides a combined rectangular parcel of underdeveloped land containing 33,414 SF at a key corner of DFCI's campus, and presents a unique opportunity for DFCI to establish a prominent architectural presence along Brookline Avenue. These three lots will be combined with the two lots situated under the Smith Building (which lots have an aggregate square footage of 29,428 SF) in order to create a lot that will be the site of the Center of Cancer Care and the Smith Building and will measure 62,842 SF. DFCI is in the process of withdrawing two of the lots from Land Court Registration and consolidating the lots into a single lot.

Another opportunity to consolidate interior program space and maximize the use of existing space within built footprints exists at the Dana Building. After this relocation, the existing 213 parking spaces on the second and third parking levels in the Dana Building will be relocated below grade under the new Center for Cancer Care development on the Redstone/454 Brookline lot. The grade-level vehicular drop-off area on Binney Street and the second and third level (open, above-grade parking decks) offer about 71,000 GSF of space which can be enclosed and converted into interior programmed area.

DFCI also plans to relocate and renovate areas which will be vacated in its existing buildings as programs are shifted to these new and repurposed developments. The lowest level of the Dana Building, L2, will be renovated to accommodate two additional linear accelerators to provide expanded radiation therapy operations. The L1 and first floor levels of this building will also be renovated and connected to the Center for Cancer Care via a new, below-grade tunnel to provide a major expansion of DFCI's Radiology and Imaging facilities. It is anticipated that additional infrastructure upgrades and renovations may occur in other spaces vacated by occupants to the new building.

3.5.2 Off-Campus

DFCI is committed to locating as many of its non-critical functions off-site as possible. Within the next year, DFCI will open new facilities in leased space at its new South Boston Harbor Campus location, 27 Dry Dock Avenue, and in facilities at the Center for Life Sciences in the LMA. Since its total projected research needs will exceed its facility capacity in 2011, DFCI will continue to seek additional research facilities in leased space in or near the LMA. With respect to its administrative departments, these are expected to remain at off-site locations, although DFCI intends to consolidate these leased spaces within fewer sites to improve efficiency.

DFCI signed a lease for 49,400 GSF of space at 27 Dry Dock Avenue in South Boston in April, 2006. This space is currently occupied, and renovations to relocate materials management and health information services from the Dana Building, plus research labs and a Cryopreservation core on the 4th level of that facility, and an Animal

Research Imaging facility on the 1st level are ongoing. Full occupancy is expected by October, 2007.

The Center for Cancer Care, supplemented by clinical facilities in the existing Dana Building, is projected to accommodate the Institute's adult clinical care needs until 2015. DFCI has sought to acquire leased space in the LMA to serve its growing research programs. DFCI has leased one floor, with approximately 51,000 GSF of space, in the Center for Life Sciences on Blackfan Street. It is envisioned that this location, when occupied in late 2007, will house DFCI's Biostatistics Department dry lab research, as well as wet laboratories.

For several years, Dana-Farber Cancer Institute has had a vision of care that extends beyond the Longwood Medical and Academic Area. Because it is difficult for some patients to make their way into Boston for treatment, and with Dana-Farber's patient volume growing, the Institute recognized a need to expand its sites of care by opening satellite clinics. These satellites offer patients the opportunity to receive world-class Dana-Farber care and resources with the convenience of access to their local community hospitals.

In June 2006, Dana-Farber opened its first satellite clinic at Faulkner Hospital in Jamaica Plain. This new unit allows the Dana-Farber/Brigham and Women's Cancer Center (DF/BWCC) and Faulkner Hospital to combine their strengths in providing an expanded, collaborative, ambulatory oncology service. The center is licensed and accredited under the Dana-Farber Cancer Institute and functions under the wider umbrella of the Dana-Farber/Brigham and Women's Cancer Center. Current Faulkner cancer patients will receive their care in the facility, while DF/BWCC patients will have the option to go there for treatment of certain cancers. Dana-Farber doctors see patients in this clinic, and patients have access to the same resources, support, and opportunities for clinical research as they find in the LMA. The new, 13,000 square-foot center offers expanded space for infusion, exams, reception, and support services such as social work and nutrition. Patients and families served at both facilities were included in the space-planning process to ensure that the new clinic is patient-friendly and supportive.

There are currently plans to open several more satellites at facilities throughout the Greater Boston area, including the Milford Regional Medical Center in Milford, Mass., the South Shore Hospital in Weymouth, Mass., and New Hampshire Oncology Hematology in Londonderry, New Hampshire in 2008.

3.6 Master Planning Principles

As it plans for the future, DFCI seeks to create a campus which allows the Institute to continue to provide the best possible care for patients living with cancer and at the same time continue to advance the understanding and treatment of this and other related diseases. In order to accomplish this, DFCI needs to realize an improvement in the type and flexibility of its spaces and re-prioritize use of existing space and new

space towards core clinical and research programs, as opposed to secondary functions of administration and coordination, which can largely be remote from the central campus.

DFCI's goals for its facilities reflect its mission and the central role of research and patient care. The strategic goal of the Dana-Farber Cancer Institute is to create a model cancer center through on-going advancements in patient care, research, and the application of scientific discovery to new therapies. The model cancer center will provide leadership in innovation and learning through recruitment and training of faculty and staff.

In terms of practical operations, DFCI strives to create an environment that:

- *Accommodates patient-care needs and enhances the patient experience.* The Institute intends not only to provide for the patient's clinical needs but also to develop an overall supportive environment. For first-time visitors as well as for patients in on-going treatment, it is vital to create a welcoming entrance to the campus, from which access is easily navigated to clinics, support services, and related patient facilities at Brigham and Women's Hospital and Children's Hospital Boston. Consolidation and reconfiguration of patient service facilities and improved vehicular and pedestrian access should enhance this experience. Relocation and consolidation of service access and loading separate from public vehicular or pedestrian access is a much-needed improvement.
- *Facilitates access to DFCI's partner institutions for both staff and patients.* Effective functional relationships between Dana-Farber and its partners at Brigham and Women's Hospital and Children's Hospital Boston is critical to the ability to provide quality patient care and to advance the scientific knowledge in the war against cancer. As a practical matter, since patient care is provided at BWH and CHB as well as at DFCI, seamless circulation between the institutions will improve the patient experience and facilitate efficiency and accessibility for physicians and staff. Enhancing existing physical links with these institutions and creating new circulation connections is necessary to support this goal.
- *Enables interdisciplinary collaboration between researchers and clinicians.* Patient care and research are increasingly converging. Because many DFCI clinicians participate in both treatment and research on a daily basis, proximity of clinical space, laboratories, and clinical offices are of prime importance. Facility layout and design should create opportunities for structured and casual interaction among clinicians and researchers.
- *Supports the proliferation of research avenues essential to scientific progress.* Recent scientific advances have created new approaches to understanding the causes and developing treatments for cancer. New state-of-the-art laboratories that combine flexibility to adapt to changing research needs with openness to encourage collaboration with other researchers are necessary to implement strategic initiatives.

3.7 Master Plan Goals and Urban Design Guidelines

DFCI has established the following goals and implementation objectives for future development.

3.7.1 Develop Ample Facility Resources

Dana-Farber has been based in the LMA since its founding, due to the essential and vigorous faculty, research and clinical relationships with Harvard Medical School, partners Brigham and Women's Hospital and Children's Hospital Boston, and other LMA institutions. Functional interactions require direct face-to-face contact and personal involvement at DFCI facilities and at the various nearby institutional sites. Over the past twenty years, DFCI clinical and research activities have grown in volume dramatically, and, as discussed above, this trend is predicted to continue for years to come. To serve this demand, DFCI has leased off-site facilities outside the LMA and relocated administrative, support and some research functions that do not need such immediate proximity. Developing ample space resources to serve the future DFCI functional demand in a well-planned balance of LMA and off-site facilities is a prime goal of this Master Plan.

3.7.1.1 Implementation Objective: Develop maximum facility capacity at the LMA campus consistent with effective functioning, area transportation, and the scale of the surrounding built context.

The existing main Dana-Farber Cancer Institute campus comprises 3.3 acres, densely built-out with interconnected 5-to-15-story buildings. The one exception is the site of the proposed 13-story Center for Cancer Care, now occupied by one-and-two-story structures. The campus is surrounded by fully-developed adjacent parcels with neighboring healthcare institutions, the retail/hotel/residential Longwood Galleria, and the MATEP power plant. Development of the current Center for Cancer Care project – and consideration of potential redevelopment of the sites of existing DFCI facilities – will be designed to achieve the maximum feasible site-use capacity. However, this must be accomplished within the constraints of good facility layout and operation, respect for the scale of and minimization of impacts upon adjacent properties, and the viable limits of area vehicular, transit and pedestrian systems.

3.7.1.2 Implementation Objective: Relocate functions non-essential for LMA location to satellite facilities, with effective operational coordination and connecting communication systems.

Dana-Farber is developing a system of satellite clinical facilities throughout the Eastern Massachusetts region, in coordination with other healthcare institutions, to

provide cancer care services to complement the cutting-edge clinical and research activities housed at the main LMA campus. DFCI has relocated major administrative, materials management, and some research and support functions to off-site facilities in the Fenway, South Boston and Brookline. Future growth of clinical, research and support activity will be accommodated through continued development and expansion of remote facilities, serviced with shuttle, delivery, and network communications systems for seamless Institute-wide functionality.

3.7.1.3 Implementation Objective: Upgrade, retrofit and reuse existing LMA campus facilities to optimize the potential service for current and future functional requirements.

DFCI has an on-going program to renovate and upgrade its existing buildings to state-of-the-art design and systems standards to accommodate new and evolving programs and modified operational requirements. Existing spaces vacated by functions relocated to the new Center for Cancer Care or off-site facilities will be upgraded and retrofitted for optimal utilization to serve other programs with new or expanded space needs.

3.7.1.4 Implementation Objective: Utilize a strategic portfolio of owned and leased facilities to accommodate expanding and evolving DFCI functional and capacity requirements.

For more than twenty years, Dana-Farber has supplemented its owned buildings with leased facilities within the LMA and beyond, to satisfy evolving short-and-long-term space needs. This practice will continue in the future – with facilities for clinical, research, administrative and support functions, as needed – designed to meet ever-changing capacity requirements, varying occupancy terms, and clustered locations for operational efficiency, accessibility and cost-effectiveness.

3.7.1.5 Implementation Objective: Enhance DFCI Institutional Identity and Campus Entry

DFCI facilities have grown incrementally without unified design coordination. They present an ambiguous image and confusing access situation inconsistent with the Institute's reputation and the quality of service it provides. Proposed IMP projects will help to rectify these deficiencies.

3.7.1.6 Implementation Objective: Provide a prominent public presence and a signature image for DFCI on Brookline Avenue.

The new Center for Cancer Care is sited on Brookline Avenue, the main artery of the LMA, to create a prominent, readily identifiable image and gateway for Dana-Farber. This will reorient the public "front" face of DFCI away from the present

unimpressive, hidden main entry to the Dana Building on Binney Street, a secondary service road filled with delivery vehicles, dumpsters and loading docks. The new 186-foot-tall building will present a dramatic exterior design, with generous glazing and contemporary materials, highly visible from the north and south along Brookline Avenue and from the west across Joslin Park.

3.7.1.7 Implementation Objective: Create a welcoming, identifiable new main entrance for the DFCI campus and DF/BWCC.

The entrance to the Center for Cancer Care will be the new main entry to the DFCI campus and will also serve as the primary entry point for the interconnected Dana-Farber/Brigham and Women's Cancer Center. An ample two-story lobby, accessed from Brookline Avenue and Jimmy Fund Way, will have a well-lit, transparent glazed façade to highlight a visible presence from the street. Dramatic design with warm-toned natural materials and easy access to public services and pedestrian circulation routes will create an inviting entrance. Jimmy Fund Way, on which are located the vehicular drop-off for the main entrance and access ramps to parking, will be widened to provide an ample gateway and sense of entry to the campus.

3.7.1.8 Implementation Objective: Reorganize and reorient all DFCI campus facilities for well-coordinated functional relationships to the new main entry and access patterns.

All Dana-Farber buildings and the paths to BWH and CHB are connected directly to the new main entrance lobby via the third-level pedestrian network. Tunnels under Jimmy Fund Way will connect the Center for Cancer Care with the Dana, Mayer and Shields Warren buildings, and consolidated underground parking joins the new Center for Cancer Care and Smith Laboratories Building. Access to all the routes will be identifiable immediately upon entry to the new lobby. The Dana Building entrance will be relocated to face the new main entrance across Jimmy Fund Way, and use of the first three floors of the building will be reallocated to patient-service and direct-support activities that benefit from close access. Smith Building lab floors will connect directly to the Center for Cancer Care clinical floors via new bridges, to encourage clinical-research relationships and personnel interaction. Loading and service functions will be consolidated and expanded along Binney Street, away from the main "public" face of the campus.

3.7.2 Improve Pedestrian Circulation and Public Space Experience

The existing outdoor public environment of Dana-Farber's 3.3-acre complex provides little sense of a campus, limited pedestrian amenity, and minimal greenery. Narrow sidewalks abut harsh, closed, unwelcoming ground-level facades. Visibility of and orientation to building entrances, public destinations and neighboring institutions are poor. The Master Plan and implementation projects will address improvement of the urban design of these campus spaces and systems.

3.7.2.1 Implementation Objective: Create an enhanced ground-level outdoor public environment throughout the DFCI campus.

Construction of the Center for Cancer Care and related upgrade projects at existing buildings will create more spacious sidewalks and pedestrian areas along Brookline Avenue, Jimmy Fund Way and Binney Street, to accommodate access and circulation more comfortably. Near-and-long-distance views to the Center for Cancer Care, public entries and destinations will be enhanced. Public spaces will be designed with high-quality amenities, including paving and façade materials, street furniture, lighting and plantings, with buffer treatments to shield loading dock activity.

3.7.2.2 Implementation Objective: Upgrade frontages of existing DFCI buildings on public ways.

Backfill and renovation projects in existing DFCI facilities will incorporate redesign, upgrade or replacement of ground-level uses and façade treatments to create more welcoming, open, pedestrian-friendly public environments. At the Dana Building, solid concrete walls, parking ramps and dark drop-off space will be replaced with public-and-visitor-oriented uses and more open, glazed, well-lit, friendly architectural treatments. Along Binney Street, drop-off and loading areas will be improved with human-scale use-spaces, new architectural finishes, glazing, screening and plantings.

3.7.2.3 Implementation Objective: Improve plantings and greenspace within the DFCI campus.

Urban design improvements to the DFCI campus will seek to provide a continuous sense of greenspace, connecting from Joslin Park along Brookline Avenue to the Riverway and along Jimmy Fund Way to the open space along Shattuck Street. The wide sidewalk in front of the Center for Cancer Care will allow ample tree-planting and seating areas along Brookline Avenue. Plantings will be added and enhanced at the Dana, Smith and Jimmy Fund buildings on Jimmy Fund Way and Binney Street, and the seating area at the corner of Binney and Shattuck Streets will be improved.

3.7.2.4 Implementation Objective: Extend and enhance the third-level pedestrian bridge system.

The third-level bridge system is already a critical pedestrian network for DFCI, linking the Jimmy Fund, Smith, Dana and Shields Warren buildings, and giving direct access to the BWH and CHB circulation systems. This network will connect directly to the Center for Cancer Care Building and new main entrance lobby, and will be enhanced with straighter routes, generous intersections, clearer orientation, and wayfinding directions. The third-floor will be a focus for "public" activities, as the location for the new cafeteria, conference rooms, patient service functions, healing garden, and the Jimmy Fund Pediatric Clinic.

3.7.2.5 Implementation Objective: Improve vehicular flow along Jimmy Fund Way and access to the DFCI entrance and parking.

Relocating the main entrance to the Center for Cancer Care reorganizes the DFCI access and circulation pattern, with primary vehicular access on Jimmy Fund Way, separate from service and emergency access on Binney Street. Jimmy Fund Way will be widened, with an added westbound lane to add capacity and facilitate egress for turning traffic onto Brookline Avenue. Signalization and operations of the Jimmy Fund Way/Brookline Avenue intersection will be improved to optimize flows for the new conditions. The drop-off area at the Center for Cancer Care and the expanded ramps to the consolidated underground parking will be designed for maximum efficiency and smooth access and egress. The Dana Building drop-off will be eliminated, removing a conflict and congestion point at the corner of Jimmy Fund Way and Binney Street.

3.7.2.6 Implementation Objective: Expand and consolidate parking for improved patron service.

All DFCI parking on the main campus will be consolidated in an underground seven-level garage extending under the Center for Cancer Care and Smith Building, a total of about 715 spaces, with 460 new spaces added to the 255 in Smith. This will operate as a single continuous facility with an added capacity of 217 net new parking spaces, using the two existing Smith Building access ramps on Jimmy Fund Way plus one new additional. The garage will be designed for valet and self-parking operation, with a major drop-off and valet area on the P1 level. Dana Building parking decks will be closed when the new facility begins operation and reused for other functions.

3.7.2.7 Implementation Objective: Relocate centralized receiving off-site and rationalize delivery systems to LMA-campus facilities.

DFCI is creating a centralized off-site materials management and receiving facility at 27 Dry Dock Avenue in South Boston. The enhanced service capacity will permit more efficient and cost-effective management of delivery volume and timing. Deliveries from 27 Dry Dock Avenue to the LMA will be coordinated and scheduled to reduce truck trips and traffic impacts at the DFCI loading docks in the LMA campus. The off-site centralization is integral to service operation and distribution reconfiguration in the Smith and Dana buildings, and provides the increased capacity to support expanded functional requirements of the growing DFCI complex.

3.7.2.8 Implementation Objective: Reconfigure the service docks for increased functional capacity, improved flow and rationalized operation.

The Smith and Dana Building loading docks will be expanded and reconfigured to serve the entire DFCI complex, including increased service requirements due to addition of the Center for Cancer Care. The Smith Building service area will be extended by two additional loading dock bays, created within the existing first floor area. One loading bay will be dedicated for ambulance use, with direct, separate access to the clinical facilities in the Center for Cancer Care. Internal service support space will be reconfigured to improve materials flow, delivery capacity and distribution management, with connections to the whole campus. The Dana loading dock will also be reconfigured, with support space added through reuse of part of the current Dana drop-off, for improved service capacity and operations management. Materials distribution will be enhanced by a new service tunnel under Jimmy Fund Way, allowing rationalization of delivery patterns at both loading docks and efficient distribution throughout the entire DFCI complex.

3.7.3 Enhance Physical and Visual Relationships among DFCI Buildings and with Institutional Neighbors and the Surrounding Urban Environment

Dana-Farber Cancer Institute facilities have grown incrementally to serve evolving clinical and research needs, but this has produced a complex of individual buildings with only partially coordinated functional and spatial relationships and a diverse assortment of exterior treatments. Future development and upgrades should yield better planning and design relationships among the facilities and uses, and should strive to achieve more consistent architectural design, compatible with the surrounding built context.

3.7.3.1 Implementation Objective: Coordinate design, usage and connections among DFCI facilities for optimal functional relationships and effective access.

Reallocation, renovation and redevelopment of existing DFCI buildings will respond to projected patterns of growth of component functional areas and desired proximity and access patterns among uses. Retrofit and reuse of areas such as the Dana Building parking decks, vacated clinical floors, and Jimmy Fund and Smith Building research floors will be planned to best relate to public access needs, circulation patterns to Center for Cancer Care clinical and patient-service spaces, and the third-level pedestrian bridge network. Infill and/or redevelopment of drop-off and service areas and potential future connections to adjacent institutions will optimize the use potential at prime locations proximate to the Center for Cancer Care and active pedestrian routes.

3.7.3.2 Implementation Objective: Improve architectural treatments to create an integrated, well-related design character and image coordination among all DFCI campus facilities.

Design of the Center for Cancer Care will set a new standard for high-quality architectural treatment for Dana-Farber buildings, with warm-toned natural materials and ample glazing to create an optimistic signature image. Renovation and retrofit projects in the Dana, Mayer, Smith and other existing DFCI buildings will attempt to reflect this architectural character, with compatible materials, type and scale of design elements, and details, to create a well-coordinated image for the whole DFCI campus.

3.7.3.3 Implementation Objective: Enhance the functional connections between neighbor institutions through shared facility planning and development of improved circulation networks.

As clinical and research relationships between Dana-Farber and its partners BWH and CHB have become more involved and interactive, coordinated facility planning has grown between the institutions. This is essential to achieve the most appropriate accommodation of changing future needs, and effective communication and circulation networks among the institutions for staff, patients and visitors. Future facility issues that may be addressed by these shared processes include: potential redevelopment of the Jimmy Fund Building site; joint use and/or development of specialized equipment and treatment suites; additional or replacement bridge and tunnel connections between DFCI and BWH and CHB; and more effective coordination of circulation and wayfinding systems.

3.7.3.4 Implementation Objective: Maintain the compatibility of building scale, massing and exterior treatments with the surrounding architectural and environmental context.

Building development by LMA institutions continues apace, increasing the scale and density of the area and replacing older lower-scale structures with larger contemporary facilities – particularly evident in the area immediately surrounding Dana-Farber. Planning and design of DFCI buildings and improvements, now and in the future, will consciously reflect the historic and evolving character of this built environment – in scale and massing of building elements, design relationship of built volumes, choice of architectural treatments and finish materials, and development of urban pathways, view corridors and greenspace.

3.7.4 Create a Healthier and More Sustainable Built Environment for DFCI and the Surrounding City

DFCI is committed to creating and sustaining a healthful environment for its patients, staff, and the larger contexts surrounding populations and future generations. The Institute will continue to pursue more advanced and holistic ways to provide care and treatment for its patients and facilitate forward-thinking and productive research. Goals for environmental quality and sustainability will be meet through conservation, reduction reuse and recycling programs, partnerships with others in the community, and implementation of efficient and responsive building technology in the Center for Cancer Care.

3.7.3.1 Implementation Objective: Create and deploy effective environmental strategies that are practicable for the existing DFCI campus and buildings.

DFCI will continue its aggressive programs to minimize resource use, reduce consumption of energy and materials, and manage its remaining waste responsibly. It is committed to promoting awareness of these environmental goals and encouraging environmental literacy among staff, faculty, trustees, patients, visitors, vendors, and contractors. DFCI will continue to work with its staff and its vendors to find substitute materials that do not generate toxic emissions and byproducts, strictly monitor interior and exterior air quality, and systematically evaluate and upgrade its systems for most efficient energy use and least emissions.

3.7.3.2 Implementation Objective: Apply Leadership in Energy and Environmental Design (LEED) and Green Guidelines for Healthcare Construction (GGHC) design principles in the Center for Cancer Care.

The design of the Center for Cancer Care will include features such as a green roof, water conservation fixtures and systems, energy-efficient lighting and equipment, centralized and integrated waste management and recycling, and healthy interior finishes and products. DFCI is targeting a silver LEED rating for the Center for Cancer Care.

3.8 Conclusion

Dana-Farber Cancer Institute has formulated a visionary and articulate strategy for accommodating and responding to the changing world of cancer care and research discovery. It has developed its plans within the context of sound and sustainable planning and programming principles, and is committed to a collaborative and inclusive process of development within the confines of its LMA campus and

throughout the Greater Boston area. This approach of thoughtful forecasting, prudent growth and well-planned facilities development will allow DFCI to remain at the competitive forefront in the fight to treat and eradicate cancer and other life-threatening diseases and to continue to be an important part of Boston's healthcare economy.

4

Proposed Projects

4.1 Introduction

This chapter describes each proposed IMP project contemplated over the ten-year term of this IMP, including new developments, campus improvements, additions and upgrades to existing buildings, and future leased space. Each project is discussed in terms of its fulfillment of Dana-Farber Cancer Institute, Inc. master planning goals, its location, program, massing, and schedule. This chapter also briefly outlines projects contemplated beyond the term of this IMP.

4.2 Proposed IMP Projects

The projects described in this IMP are intended to help attain DFCI's mission-driven goals for the future. They are designed to enable DFCI to continue to provide comprehensive and compassionate care, and to advance the treatment and cure of cancer and other life-threatening diseases. Implementation of these projects will allow DFCI to remain a leader in the field and a place of vision and hope for researchers and patients alike.

DFCI's proposed IMP projects are summarized in Table 4-1:

Table 4-1: IMP Projects

Project	Size	Use	Height	Construct-ion Start/End
Center for Cancer Care	257,500 GSF[1]	Clinical/Public	13 Stories above grade / 186 ft.	2007/ early 2011
Dana Garage Levels 2 and 3 & Drop-off Infill	71,000 GSF	Clinical Support/ Dry Research/ Clinical Administration	N/A	2011/2013
Dana/Mayer Buildings Façade Improvements	N/A	N/A	N/A	2011/2015
Campus Improvement Projects	N/A	Circulation/ Seating	N/A	2011/ 2017
Renovations to Existing Facilities	Approx. 150,000 GSF	Clinical/ Clinical Administration/ Support	N/A	2007/ 2017

See Figure 4-1 at the end of this chapter for a graphic overview of the IMP projects described above.

4.2.1 Center for Cancer Care

The Center for Cancer Care will be the first new clinical building on the DFCI campus in over 30 years. It is designed to provide ample, state-of-the-art facilities for leading-edge treatment of cancer and related diseases for an expanded patient population. It will create an enhanced healing environment with a strong patient-and-family-centered focus, improved patient safety, and support for safe staff practices. The building represents a critical opportunity not only to create an architectural statement and symbol of the Institute's forward-looking vision, but also to reorient many campus functions, patterns of movement and interactions. It will serve as the new entrance not only to the Dana-Farber campus but also to the Dana-Farber/Brigham and Women's Cancer Center (DF/BWCC) and the Dana-Farber/Children's Hospital Cancer Care (DF/CHCC). The Center for Cancer Care will incorporate sustainable design features that underscore DFCI's commitment to creating a healthy environment for patients, staff and the community.

[1] Building area as defined by Boston Zoning Code. Total above grade area of the Center for Cancer Care is 275,000 GSF.

4.2.1.1 Building Program

The Center for Cancer Care is a clinical and clinical research development with above-grade construction totaling approximately 275,000 GSF[2] plus approximately 215,000 GSF below grade dedicated to parking and support space. The building program reflects Dana-Farber Cancer Institute's strong desire to enhance the patient experience and reinforce important connections between clinical and research activities. The average area of each lower floor is approximately 24,500 GSF. The area of each upper floor is 22,700 GSF, including bridges. See Figures 4-2 through 4-8 at the end of this chapter for floor plans at some of the major levels.

The lower floors of the building will be dedicated to publicly-oriented facilities. The first floor will include entrance lobby, reception, patient and family services, and retail space, and will also provide service connections through the Smith Laboratories Building to the loading area at Binney Street. Because pedestrian traffic from other buildings converges on the third level, conference rooms and a new cafeteria will serve the entire campus at that level. Second level facilities are currently envisioned to include centralized registration, phlebotomy, outpatient pharmacy, chapel and pastoral care.

Upper floors will accommodate expanded DFCI adult outpatient clinics, with existing clinics relocated from the Dana Building, plus clinical offices, the Clinical Research Center and support facilities. Floor 4 and the rooftop penthouse will house mechanical equipment.

4.2.1.2 Connection to Existing Campus

The Center for Cancer Care will connect to DFCI's existing campus and to nearby LMA institutions in several ways. Seven stories of underground parking will connect to the adjacent Smith Building underground parking to provide a consolidated parking facility. Elevator access from all levels of parking to the Center for Cancer Care lobby and the public areas on the first two floors will be provided by a bank of garage elevators. A tunnel below Jimmy Fund Way will connect the Radiation Oncology facilities in the sub-basement L2 level of the Dana Building with the patient parking and circulation at the P2 level of the Center for Cancer Care to provide connection to clinical support and service facilities remaining in the Dana Building (see Figure 4-2). Patient elevators will provide direct access from the P1 valet drop-off level and the P2 parking level to all floors of the new building. See Figures 4-9 and 4-10 for sections showing how the Center for Cancer Care will connect to existing DFCI buildings.

The Center for Cancer Care will be set back 32 feet from the face of the Smith Building above the third floor. Above the fourth floor level, walkways will connect clinical floors five through ten of the Center for Cancer Care with research floors in

[2] GSF: Gross Square Feet, the total area measured to the exterior of the building and including all mechanical spaces, structure, and use spaces. This tally includes above-grade space but excludes rooftop mechanical support spaces. The zoning building area as defined by the BZC, which excludes all mechanical support spaces, underground parking, and storage areas is 257,500 SF.

the Smith Building to support the translational mission of DFCI. Along Jimmy Fund Way, the third floor of the new building will be connected to the third floor bridge system through the Smith Building, which links all buildings of the Dana-Farber complex and also provides access to Brigham and Women's and Children's Hospital Boston.

Several simultaneous renovations and upgrades to surrounding buildings on DFCI's campus will be implemented to facilitate these connections:

- Expansion of campus loading and receiving facilities in the first floor of the Smith Building on Binney Street.
- Renovation of Smith Building floors 1-3 to reconfigure space and uses to integrate continuously with the new building.
- Minor interior modifications of Smith Building research floors to facilitate connections to the Center for Cancer Care on most upper levels.
- Minor renovation of existing underground parking levels in the Smith Building to function continuously with the new Center for Cancer Care parking.

4.2.1.3 Building Design

The exterior massing of the thirteen-story Center for Cancer Care, as depicted in Figures 4-11 and 4-12 at the end of this chapter, will be responsive to interior program while stepping back to provide an open feel at the street level environment. At the base of this volume is a two-story glazed lobby at the corner of Brookline Avenue and Jimmy Fund Way that will welcome patients and visitors to the Institute. A glass-enclosed stair will lead to the pedestrian bridge over Jimmy Fund Way. The entrance will be set back from the curb approximately 20 feet along Jimmy Fund Way with a generous glass canopy over the drop-off area. Along Brookline Avenue, the entrance will be set back approximately 25 feet. Retail space will be located on the Brookline Avenue frontage and will be set back from approximately 30 to 35 feet to create a gracious tree-lined pedestrian way.

Above the entrance at the corner of Jimmy Fund Way and Brookline Avenue is a two-story healing garden, facing Joslin Park, which will create an optimistic and inviting image. Dining areas are located on the third level, facing Brookline Avenue. Above the three-story base, seven clinical levels rise above a mechanical level to take advantage of the views and natural light. Above this, two floors of clinical offices will step back from the clinical floors below to create an articulated top approximately 190 feet above the average grade of the abutting sidewalks. Further design of the building massing and character of the façade will be undertaken in consultation with the Boston Redevelopment Authority, the Boston Civic Design Commission, the LMA Forum and community advisory groups, as required by the Article 80 process.

Along Brookline Avenue, the cladding material at the first three stories is envisioned as terra cotta, with a granite base for durability, giving the building a warm tone and sense of human scale. Generous glazed openings at the lower floors will allow maximum light deep into the public spaces of the building and emit a soft glow in the evenings. North and west facades will include terra cotta sunscreens and vertical glass blades to filter the light and bring the positive effects of natural daylighting into the clinics and staff areas. South and east elevations facing the MATEP facility and Smith Building will be predominantly clad in terra cotta panels with a rhythm of punched openings and vertical ribbon windows. For elevation views see Figures 4-13 and 4-14 at the end of this chapter.

For additional information about how this building design respects the context of the LMA and the surrounding neighborhoods, and responds to the concerns and ideas raised in the BRA's Scoping Document, see Chapter 9, Consistency with Interim Guidelines, and the DPIR/DEIR for the Center for Cancer Care project, submitted simultaneously with this IMP.

4.2.1.4 Site Improvements

Public open space and amenities in the area surrounding the Dana-Farber Cancer Institute campus and the project site are limited. The Center for Cancer Care design strives to address these concerns by facilitating access while improving the quality of public space on the campus. The design of the new building enhances the pedestrian experience by creating a new campus entrance visible from Brookline Avenue, reducing pedestrian/vehicular conflicts, mitigating the negative visual impact of adjacent service areas, and improving the interface between private and public space.

The siting of the Center for Cancer Care provides generous setbacks and wide sidewalks at the busy intersection of Brookline Avenue and Jimmy Fund Way that will emphasize the new main campus entrance on Jimmy Fund Way. A widened sidewalk along Brookline Avenue, appropriate in scale to the significant new clinical facility, will accommodate the heavy foot traffic and retail uses along this busy thoroughfare. The broad setback along Jimmy Fund Way will create safer pedestrian movement and enhance visual and vehicular flow within the campus.

The pavement at these widened and improved sidewalks will be selected for accessibility, durability, and aesthetic relationships to the new building and the redressed facades of the Dana and Mayer buildings. Pavement selections will be reviewed with the BRA and the city's Public Improvement Commission.

New plantings will also enliven and soften the largely hardscaped environment of the DFCI campus. Street trees and smaller shrubbery will be planted along the Center for Cancer Care frontage on Brookline Avenue. Other planters are being investigated for the repaved sidewalks along Jimmy Fund Way and Binney Street. Development of the landscape design will also be coordinated with the BRA and the Public Improvement Commission. See Figure 4-15 at the end of this chapter for a visual depiction of these improvements.

4.2.1.5 Access and Circulation

The main pedestrian entrances to the Center for Cancer Care will be at the intersection of Brookline Avenue and Jimmy Fund Way. The primary vehicular drop-off for patients and visitors who are accompanied by people who plan to park at DFCI will be at the first underground parking level (P1). Motorists will have the opportunity to either self-park or to use DFCI's valet parking service. A secondary drop-off for patients not parking at DFCI, or traveling in taxicabs and for high clearance vans will be provided via an eastbound drop-off lane on Jimmy Fund Way. Jimmy Fund Way will remain a two-way street, with an added westbound lane for left-turn traffic in the area approaching Brookline Avenue. The existing drop-off at the Dana Building entrance on Binney Street will be taken out of service following completion of the Center for Cancer Care.

An important element of the proposed new building's design is the internal pedestrian circulation system at the first three levels. Patients and visitors arriving at the campus will enter the Center for Cancer Care two-story lobby at the grade level. They will proceed via prominent stairs and elevators to the second-floor registration and patient service areas and third-floor campus-wide circulation system, with connections to the surrounding institutions. Circulation paths from the main lobby and the garage to the program spaces, clinics and other service areas will be well-marked and direct.

To encourage pedestrian movement around the DFCI area, a pathway approximately fourteen feet wide will be maintained between the Center for Cancer Care Building and the adjacent MATEP facility, connecting Brookline Avenue to Binney Street. A rear entry to the main lobby and ground-floor patient-service areas will be located along this pedestrian corridor as well as a portion of DFCI's bicycle parking.

Ambulance access will be provided at the Binney Street service areas of both the Dana and Smith buildings. DFCI currently plans two ambulance bays at the Dana Building to accommodate drop-off activity for the Jimmy Fund Pediatric Clinic, Radiology, and Radiation Oncology departments and other clinical functions remaining in the Dana Building, as well as emergency use. The Center for Cancer Care will be served by one ambulance bay in the Smith Building. Design of these ambulance bays will provide separation of patients from the noise, odors and activity of the loading and service areas.

Service access for the Dana-Farber Cancer Institute campus, including the added Center for Cancer Care, will utilize existing loading docks in the Smith and Dana buildings on Binney Street. In order to accommodate the increased flow of materials through the Smith Building dock, DFCI intends to convert existing ground floor facilities to provide additional support and staging space. Improved internal circulation corridors and a service tunnel under Jimmy Fund Way will facilitate service distribution to all DFCI buildings from these two primary delivery areas.

Retail space in the Center for Cancer Care will be serviced from the Smith loading bays via a service corridor along the lobby level of the building. Retail deliveries on Brookline Avenue will be prohibited. DFCI will strive to improve management of its loading bays, storage, waste handling and other loading/delivery functions to minimize the impacts of these activities on adjacent streets and at key entrances to the DFCI campus.

4.2.2 Dana Building Parking Levels and Vehicular Drop-Off Infill

Dana-Farber Cancer Institute plans to renovate its existing Dana Building by removing the existing parking ramps and decks on Dana levels two and three and the vehicular drop-off/pick-up area on Binney Street. These spaces will be reclaimed and enclosed to create approximately 71,000 SF of space for clinical offices and research functions. The existing 213 parking spaces and vehicular drop-off area program will be relocated to the new Center for Cancer Care Building.

This infill project provides critical space to accommodate expanded DFCI program activities, maximizing the usability of its existing built area. Moving the vehicular patient and visitor drop-off from Binney Street to the front of the new Center for Cancer Care along Jimmy Fund Way will create a readily understandable and improved entrance experience for the campus.

By capturing built volume originally occupied by functions which can take place outside the building footprint or underground, DFCI is adapting and utilizing its existing available space for maximum efficiency. This project demonstrates DFCI's commitment to alternative means of adding program space to its facilities in addition to building new projects.

4.2.3 Dana / Mayer Façade Improvements

The parking deck infill project on Dana Building floors 2 and 3 and the reuse of the Dana drop-off will give DFCI the opportunity to improve the blank and uninviting façades of the interconnected Dana and Mayer buildings along Brookline Avenue, Jimmy Fund Way and Binney Street. This work will include creation of a new entrance to the Dana Building on Jimmy Fund Way, across from the Smith Building. The concrete ramp structures will be removed and the open parking deck facades will be enclosed with new glazing and wall systems. Part of the open exterior of the drop-off area will be enclosed, although the precise plan and design depends on space usage allocation.

The exterior treatment of these new façade enclosures will complement the new main entrance of the Center for Cancer Care across Jimmy Fund Way, and enhance the impact of the significant campus gateway created at the intersection of Jimmy Fund Way and Brookline Avenue. The design – which will be developed with review and coordination from the BRA – will continue the concepts embodied in the Center for

Cancer Care design and help to create a new, welcoming, optimistic image for the DFCI campus.

4.2.4 Campus Improvements

In addition to the campus and site improvements directly envisioned as part of the Center for Cancer Care development, DFCI plans to implement other improvements over the next ten years as it continues to improve the quality of its campus and the LMA. Other planned improvements include:

- New graphic panels, banners and improved lighting along Jimmy Fund Way and the Binney Street and Brookline Avenue intersections, to increase the consistent identity of DFCI facilities.
- Improvements to the Jimmy Fund Building to create an enhanced exterior seating area, emphasize Variety Club Auditorium entrance, and better screen the rooftop mechanical equipment over the auditorium and the adjacent BWH oxygen tanks.
- Lighting and pavement improvements along the pedestrian sidewalk areas fronting the existing DFCI buildings, and at the pedestrian passageways between the DFCI campus and the Longwood Galleria and MATEP.

After the Center for Cancer Care Building is completed and the campus improvements described above are implemented, the pedestrian flow and the character and quality of the public space around DFCI will be significantly enhanced. The widened, animated, landscaped open space along Brookline Avenue will respond to and visually extend the Joslin Park open space across the street. Consistent and attractive treatment of all pedestrian zones will unify the DFCI campus and clarify its identity amid the surrounding LMA institutions. Figure 4-16 illustrates the future open space resulting from DFCI's proposed projects and improvements.

4.2.5 Existing Facilities Upgrades

Dana-Farber Cancer Institute is committed to creating and maintaining the best possible environments for its patients, visitors, and staff. This commitment extends beyond the development of new facilities and improvements triggered by them to continuation of the upgrade and renovation of existing buildings. Major projects involved in this effort include the following.

Of the clinical departments remaining in the Dana Building following the Center for Cancer Care project, the one most urgently in need of decompression and expansion is the Radiation Oncology department on level L2. As radiation therapy continues to be a primary treatment option for patients with cancer, demand for cancer treatment continues to accelerate, and new technology replaces older machines, DFCI will continue to expand and upgrade these diagnosis and treatment facilities.

Expansion of the Radiation Oncology department to include up to three new Linear Accelerators will occupy the entire L2 level of the Dana Building, forcing relocation of other program activities. Several clinical support departments including Nuclear Medicine and Diagnostic Imaging are also overcrowded and in need of decompression and expansion. As a result, and combined with the pressure of the expanding Radiation Oncology departments, DFCI plans to expand and relocate these programs within Dana Building levels 1 and L1.

Other areas of the Dana and Mayer Building will be emptied as program activities are transferred to the Center for Cancer Care and relocated to leased space or other existing buildings. Levels 1B and 2 of the Mayer Building have been vacated because of the relocation of dry labs and bio-statistics functions to the Center for Life Sciences. These spaces can then be used by clinical offices. Similarly, Dana floors 1A and 1B will be partially emptied as the current program is accommodated in the new building. The remaining space will be reused for clinical administration and patient services.

Although the patient program now on the Dana Building clinical floors 9, 10, and 11 may be accommodated in the Center for Cancer Care, current patient volume projections indicate that the demand will exceed the capacity of the Center for Cancer Care soon after 2011. Therefore, DFCI will likely plan to reserve the clinical facilities on these dedicated floors in the Dana Building to help accommodate the additional outpatient volume beyond that date, through the term of this IMP.

4.2.6 Future Leased Space

Anticipated construction activities on Dana-Farber's main campus, described above, will accommodate the Institute's anticipated growth in its clinical core programs over the next ten years. However, corresponding growth in basic science and clinical research programs and expansion of Dana-Farber Cancer Institute administrative and support activities cannot be accommodated within the LMA campus facilities. Therefore, DFCI has made major recent commitments to leased space at the Harbor Campus, 10 Brookline Avenue, the Center for Life Sciences, and other sites, with a total of approximately 186,000 GSF of newly acquired program space.

Because of the projected continuing growth in clinical and research program activities and visitor and staff volumes over the term of the IMP, DFCI anticipates the need to lease additional space. Future locations have not yet been identified. DFCI anticipates that some of this capacity will be within or adjacent to the LMA, in existing buildings or in developments that have already been approved or are currently under construction. Only those clinical, research and support functions that require essential proximity and access convenience to the DFCI Main Campus and other LMA institutions will be located in these leased facilities within or nearby the congested LMA environment.

This leased space will be in addition to DFCI's existing patient care partnerships with Children's Hospital and Brigham and Women's Hospital, as well as its newly opened satellite facility at Faulkner Hospital. DFCI also plans to expand its satellite relationships to patient care locations throughout metropolitan Boston and nearby areas of New England, potentially including sites at South Shore Hospital, Milford Regional Medical Center, and New Hampshire Oncology Hematology. Refer to Figure 1-6 in Chapter 1 for a regional view of DFCI's existing and planned satellite facilities.

To respond to projected program growth over the term of the IMP, DFCI may also lease other facilities for research, clinical, administrative and support functions which may be located outside the sites described in this IMP. This should not require an amendment to this IMP as long as the use category of underlying zoning of the sites which most closely describes the use of such facilities is either allowed as-of-right by underlying zoning. This leasing and space-use strategy will give DFCI needed flexibility in meeting its space needs. It will also assist in fulfilling the goal of the BRA's Interim Guidelines to direct new hospital facilities to locations outside the LMA where appropriate.

4.2.7 Development Schedule

Relocation of occupants of the existing Redstone and 454 Brookline Avenue buildings began in 2005 and these two buildings were fully vacated by the fall of 2006. The construction period for the Center for Cancer Care project commenced during the fall of 2006 with initiation of demolition of the Redstone and 454 Brookline Avenue buildings and site enabling projects. Construction of the Center for Cancer Care is expected to be complete by early 2011. Inspectional approvals, commissioning, fit-out, and occupancy will occur by spring 2011.

Following occupancy of the new Center for Cancer Care Building, the Dana Building infill project, campus improvements, and renovation of vacated and relocated spaces in existing Dana-Farber Cancer Institute buildings are scheduled to begin in 2011 and continue through the succeeding years. A phased program for implementation of these projects in existing DFCI facilities will be developed as determined by availability of financial resources and feasible construction and relocation timetables. The acquisition and fit-out of additional leased space will be scheduled as needed over the ten-year term of the IMP.

4.3 Zoning

4.3.1 Existing Uses and Structures

4.3.1.1 Existing Zoning District Designation

The majority of the existing DFCI campus is located within the Dana-Farber Cancer Institute Institutional District (the "DFCI District"). Zoning of the DFCI District is governed by: (a) Article 73 of the Boston Zoning Code (the "Code"), which created the DFCI District; and (b) the Dana-Farber Cancer Institute Institutional Master Plan, 1993-2001 (the "DFCI IMP"), which has expired but which is still relevant to existing improvements and any development within the DFCI District. A portion of the DFCI campus, 454 Brookline Avenue, was acquired after creation of the DFCI District and is located in an L-1 (Local Business) zoning district outside the DFCI District.

The entire DFCI campus is located within the Longwood Medical and Academic Area (the "LMA") and is subject to the Longwood Medical and Academic Area Interim Guidelines, adopted by the BRA in February 2003 (the "Interim Guidelines"). The Interim Guidelines are used by the BRA in the implementation of its development review process as outlined in Article 80 of the Code. The BRA and the Boston Transportation Department ("BTD") are in the process of developing a master plan for the LMA. The entire DFCI campus is also located within the Restricted Parking District and the Institutional Overlay District.

Article 73 of the Code ("Article 73") was adopted by the Boston Zoning Commission (the "BZC") pursuant to Text Amendment No. 208 and the boundaries of the DFCI District were established by the BZC pursuant to companion Map Amendment No. 306, both effective as of April 8, 1994. Since the current version of Article 73 was printed, Article 73 has been modified in minor respects to insert new use definitions that apply across all neighborhood zoning articles.

4.3.1.2 Existing Uses

It is anticipated that the Center for Cancer Care will be used for a variety of mission related uses, primarily consisting of clinical facilities including outpatient clinics, office space and support space. Secondary uses will include meeting and administrative space, with retail, food service, lobby, chapel and other publicly oriented uses on the ground, second and third floors.

The seven underground parking levels will provide DFCI with an opportunity to consolidate the parking facilities currently located on the DFCI Campus. The parking garage in the new building will adjoin the underground garage in the Smith Laboratories Building, creating a single sub-grade garage containing approximately

715 parking spaces. With the development of the new building, the 30 parking spaces currently available for use by DFCI at 454 Brookline Avenue will be relocated to the proposed parking garage as will the 213 above-grade parking spaces now contained within the Dana Building. Following closure of the parking garage in Dana Building, DFCI intends to convert the current above-grade parking to office space. As a result of the above, the construction of the new building will result in a net increase in parking spaces available to DFCI of 217 spaces. Upon the completion of the new building and the conversion of the current parking facilities contained in the Dana Building to office use, the DFCI Campus will have use of 1,671 parking spaces (715 of which are located on the DFCI Campus and the 956 of which are located outside of the DFCI Campus (the location of which parking is more clearly set forth on Table 5-1).

Under Article 73, all existing hospital and research related uses are allowed either as-of-right or as a conditional use in the DFCI District, including hospital, clinic, clinical laboratory, research laboratory, medical office uses and the keeping of animals accessory to a research laboratory. In addition, all other existing uses, including retail, restaurant, service, educational and general and professional office uses, are also allowed as-of-right.

Under Article 8 of the Code, uses that are allowed on the more recently acquired 454 Brookline Avenue include (among others): most hospital and clinic uses; clinic or professional offices accessory to hospital uses; scientific research and teaching laboratories accessory to hospital uses; as an accessory use, the keeping of laboratory animals incidental to an institutional use; as an accessory use, incidental uses and services ordinarily found in connection with a lawful main use; local retail uses not open between 12 midnight and 6:00 AM.; restaurant uses; professional office uses; service uses not open between 12 midnight and 6:00 AM.; and, as an accessory use, the storage of flammable liquids and gases.

Parking, including accessory parking (other than parking accessory to residential or hotel uses) is a conditional use. In addition, under Section 10-1 of the Code, the accessory uses on a lot cannot, in the aggregate, occupy more than 25 percent of the floor area of the main buildings. To the extent that the Project will be used for a variety of functions which typically take place in a hospital or research institute and are classed as accessory uses under Article 8 of the Code, the IMP will need to address such uses and specifically permit the same.

4.3.1.3 Existing Structures

The DFCI Campus is currently improved with the seven structures identified in Table 2-2 and depicted on Figure 2-4 of Chapter 2. As shown in Figure 2-7 of Chapter 2, with the exception of the two-story building situated at 454 Brookline Avenue, all of the structures are situated within the DFCI District. As set forth in Table 2-3, the structures situated within the DFCI District either predated the adoption of Article 73 or were built in accordance with the provisions of the DFCI

IMP. As a result, the zoning regulations applicable to majority of the existing DFCI Campus are those set forth in Article 73.

Table B of Article 73 provides the dimensional requirements for the DFCI District. Pursuant to Section 3 of Article 73, the buildings that existed within the DFCI District prior to the adoption of Article 73 were deemed to be in compliance with the dimensional requirements of Article 73 and not considered dimensionally nonconforming.

The Smith Building, which is situated at 1 Jimmy Fund Way, was erected after the establishment of the DFCI District and the adoption of the DFCI IMP. The Smith Building was erected in accordance with the requirements of the DFCI IMP and, therefore, at the time of its construction complied with the terms and provisions of Article 73.

454 Brookline Avenue is the only parcel owned by DFCI that is situated outside the DFCI District. 454 Brookline Avenue is situated within an L-1 (General Business) Zoning District and is improved by a single two-story building that was constructed in 1957. In connection with the development of the new building, DFCI will demolish the building situated at 454 Brookline Avenue and the building situated at 464 Brookline Avenue. By letter dated April 28, 2006, the Boston Landmarks Commission determined that the buildings situated at 454 and 464 Brookline Avenue were "not significant buildings under the Criteria for determining significance in Section 85-5.3(a-e) of the Demolition Delay Ordinance (Article 85, Chapter 665 of the Acts of 1956 as amended)" and that no further review by the Commission under Article 85 of the Code was required.

According to Table 2-2, the existing Floor Area Ratio for the existing DFCI campus is 5.94. The new building will measure approximately 257,500 GSF and, when such square footage is combined with the square footage of the Smith Building, and the underlying lots are combined with the lots under the Smith Building (as provided in Section 3.5.1), will have an FAR of 7.68.

In addition to the construction of the new building, DFCI intends to expand the Dana Building, situated at 440 Brookline Avenue/44 Binney Street ("440 Brookline"), by adding approximately 4,000 GSF to the first floor of the Building. This addition would result in an increase of the DFCI Campus of approximately 4,000 GSF. DFCI also intends to convert the existing above-grade parking available within the Building to office use by employees of DFCI. This conversion, however, will not increase the gross floor area of the DFCI campus because, pursuant to Article 2A of the Code, above-ground parking is not excluded from a calculation of gross floor area. The addition of space discussed above will have the net effect of bringing the FAR for the combined Dana/Mayer Building from 8.63 to 8.70.

As a result of the actions above, the IMP, and the resulting zoning adopted by the BZC, will need to provide for an FAR for the DFCI campus of over 7.51.

In addition, the new building will have a height of approximately 190 feet to the top of the highest habitable floor from the average abutting sidewalk grade , and, therefore, the IMP, and the resulting zoning adopted by the BZC, will need to provide for a height of more than 190 feet.

The roof will contain a mechanical penthouse measuring approximately 7,820 SF. The roof of the building above the fourteenth floor measures approximately 16,478 SF. As a result, the mechanical penthouse will cover approximately 47 percent of the roof. The location and coverage of the mechanical penthouse is depicted on Figure 4-8 as the same may be refined as part of the final plan approval by the BRA. This element is shown in elevation in Figures 4-13 and 4-14. It should be noted that the square footage of the roof on the fourteenth floor is approximately 14,799 SF smaller than the largest floor plate of the building due to the fact that the building floor plates reduce in size significantly starting at the twelfth floor.

The building heights and FAR data after the completion of this project are described in Figures 4-17 and 4-18 at the end of this chapter.

4.3.2 Future Zoning Controls

DFCI will request that the BRA and the BZC rezone the DFCI campus to include 454 Brookline Avenue and redraw the DFCI Institutional District to include the 454 Brookline Avenue site.

The zoning controls for development within this revised DFCI district will be governed by the provisions of this IMP and the resulting zoning adopted by BZC. This IMP sets forth the use, dimensions, and parking and loading requirements for the DFCI campus and incorporates the provisions of the necessary zoning as granted by the BZC to authorize the planned development of the Center for Cancer Care. The projects described in this IMP, including the Center for Cancer Care, the Dana Building infill project, the campus improvements, the Dana and Mayer renovations and program expansions, *et al*., will be authorized by virtue of this rezoning and adoption of this IMP. The adoption of the DFCI IMP will result in changes in the zoning district designations currently set forth on the Boston Proper Zoning Map to include the DFCI Institutional District (as amended to include 454 Brookline Avenue) with an IMP designation.

Pursuant to Article 80D of the City of Boston Zoning Code, upon approval of the Institutional Master Plan for the DFCI District by the BRA and its adoption by the BZC, existing uses or structures described in such plan will be deemed to be in compliance with the use, dimensional, parking and loading requirements of underlying zoning (including special purpose overlay districts), notwithstanding any provision of underlying zoning to the contrary and without the requirement of further zoning relief. Approval and adoption of such Institutional Master Plan will also constitute approval of the proposed projects described in such plan, including the new building.

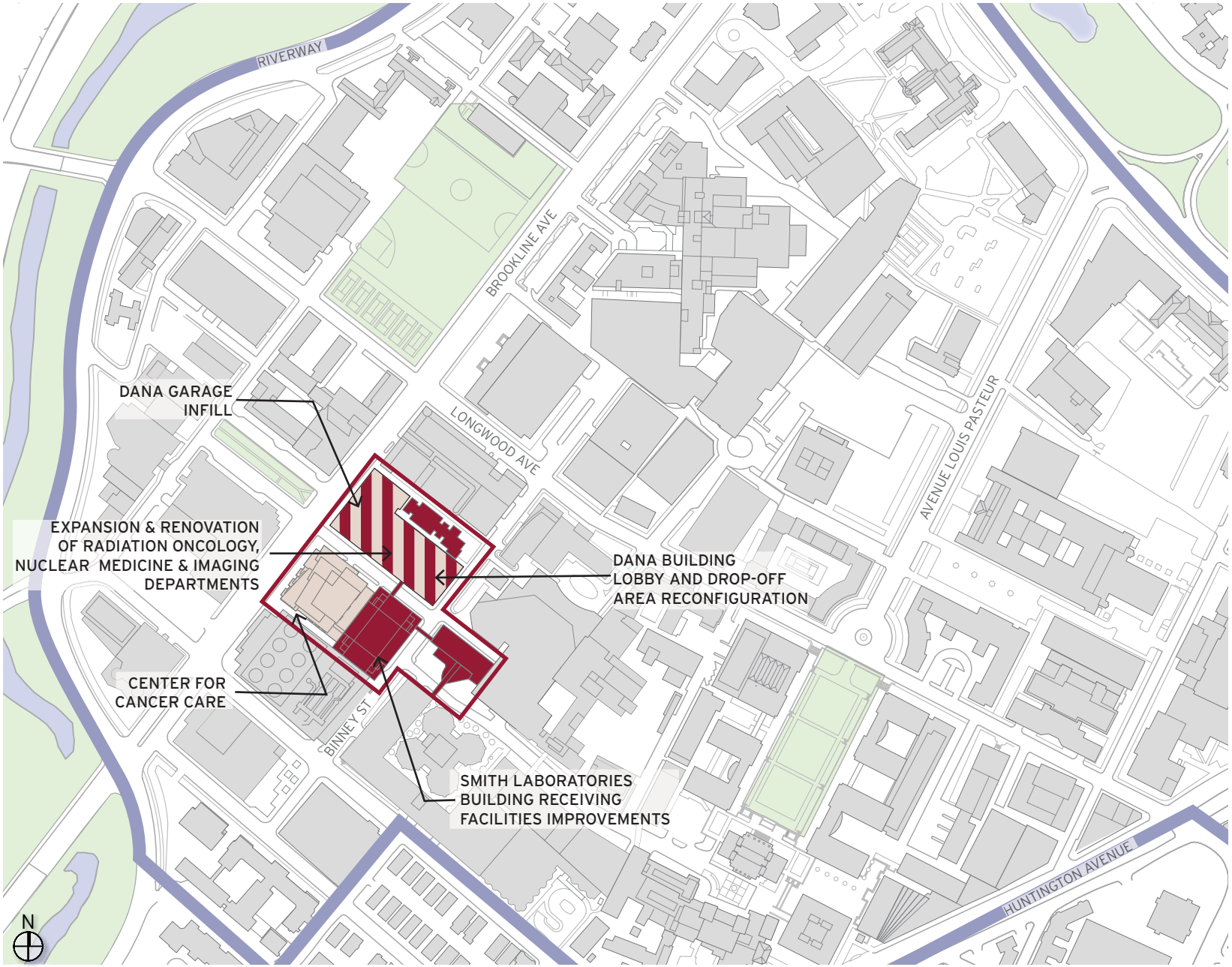
4.4 Campus Expansion

Within the ten-year term of the IMP, Dana-Farber Cancer Institute anticipates expanding its activities at locations outside of the LMA. No further expansion of DFCI-owned properties within the LMA is contemplated at this time.

4.5 Projects Contemplated Beyond the Term of the IMP

In addition to the Center for Cancer Care Building and the renovation and urban design projects outlined above, DFCI is studying longer-term campus improvements that potentially may include the following:

- A new third-level bridge connection across Binney Street between the Smith Building and the Brigham and Women's Amory Building. This bridge would improve access directly from the cancer oncology functions and new main campus entrance in the Center for Cancer Care to clinical and inpatient floors at BWH. The new Dana-Farber Center for Cancer Care Building also functions as the main entrance for the joint Dana-Farber/Brigham and Women's Cancer Center. This bridge would be important to maintain DFCI-BWH connections in the case of potential eventual redevelopment of the Jimmy Fund Building site.
- Potential replacement of the Jimmy Fund Building at some future date, beyond the term of this IMP, with a structure of undetermined clinical, clinical support, and/or research use.
- A new third-level bridge connection across Binney Street from the Dana Building to Children's Hospital. This would facilitate direct access from the pediatric Jimmy Fund Clinic in the Dana Building to inpatient facilities at Children's Hospital which are part of the joint Dana-Farber/Children's Hospital Cancer Center operation. This would also be important to permit eventual redevelopment of the Jimmy Fund Building site.



LEGEND

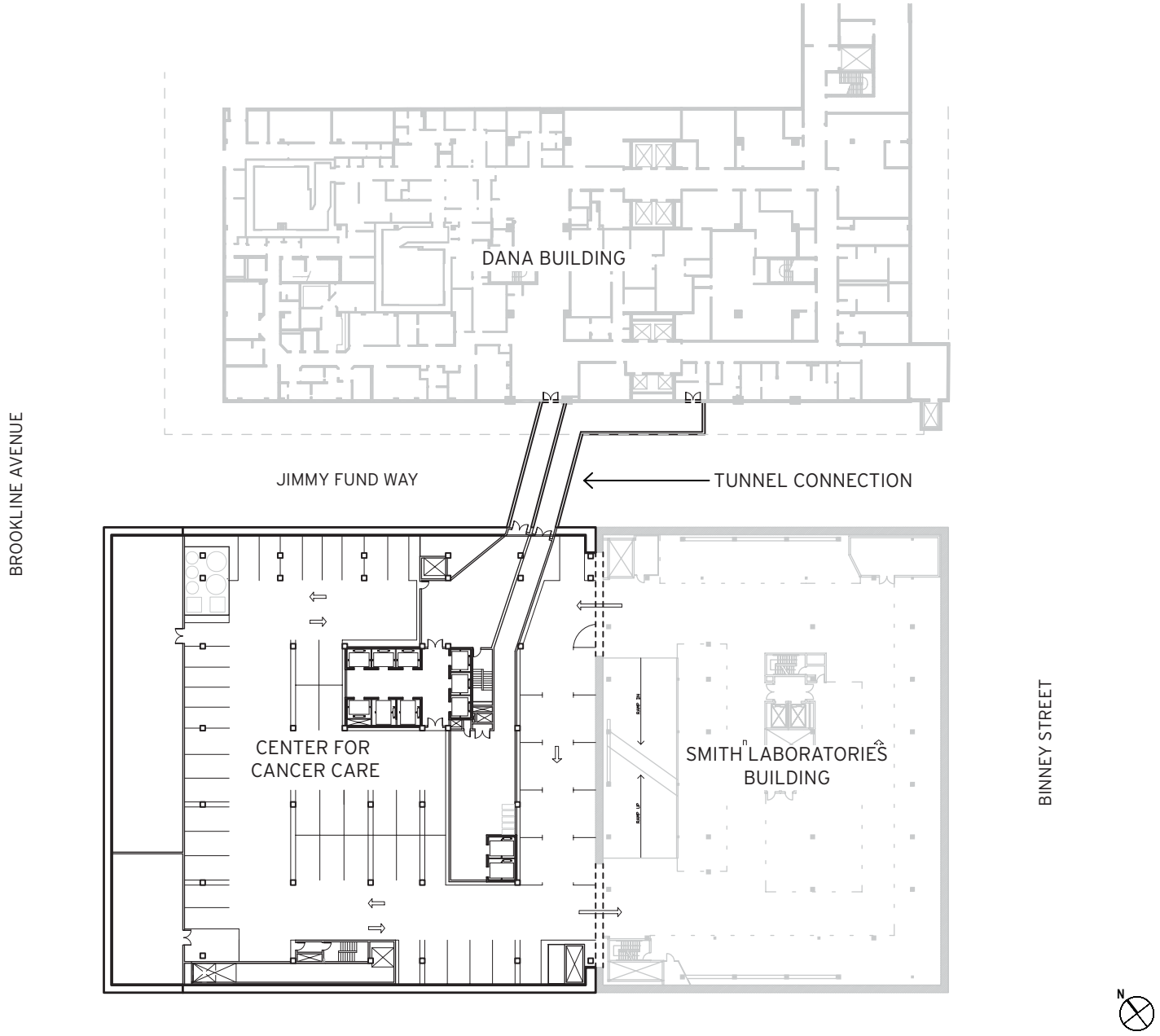
- DFCI Owned Facilities
- Proposed IMP Projects
- DFCI Campus
- Longwood Medical and Academic Area

SOURCE: DFCI Facilities

DANA-FARBER CANCER INSTITUTE
INSTITUTIONAL MASTER PLAN

Proposed IMP Projects

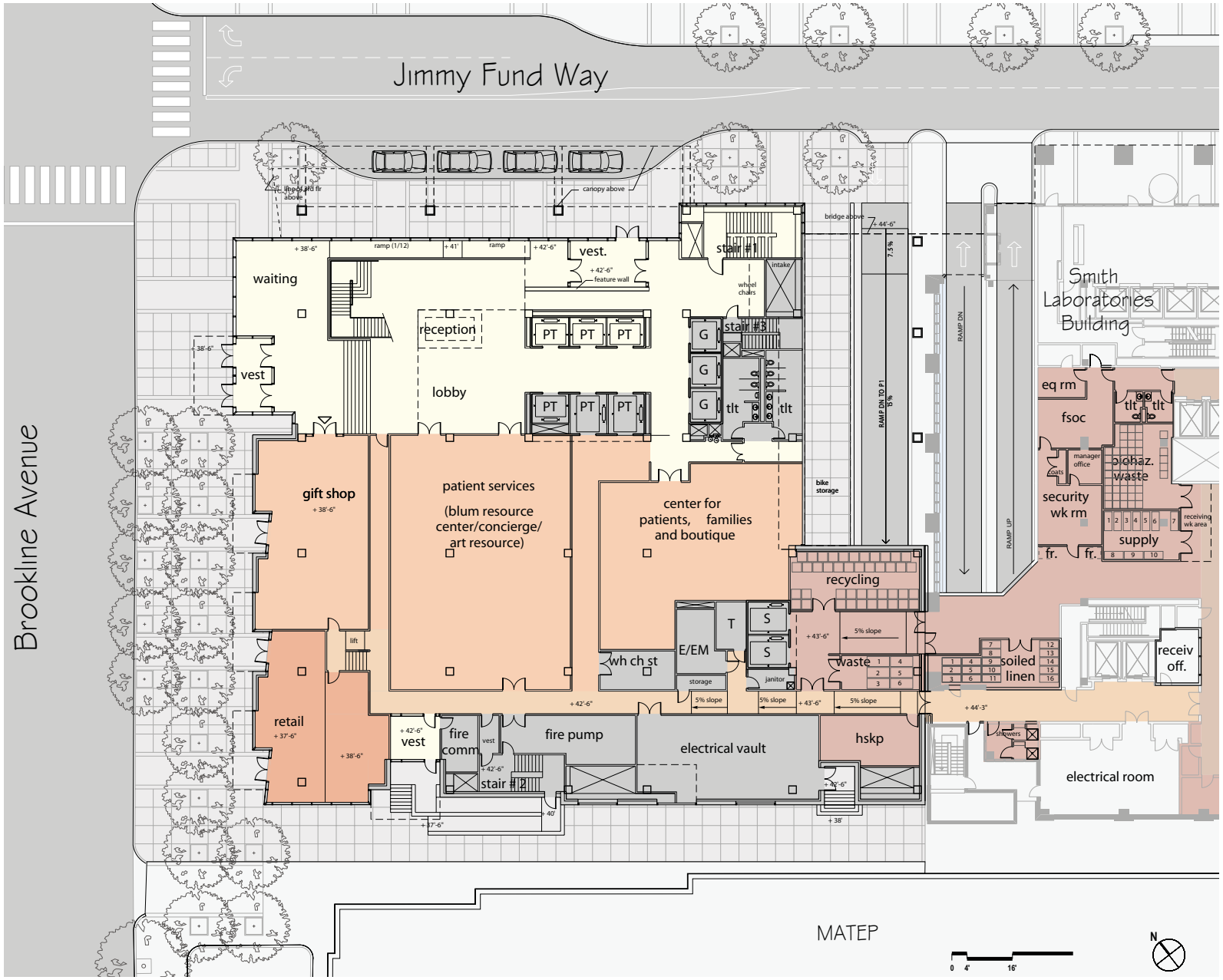
FIGURE 4-1



DANA-FARBER CANCER INSTITUTE
INSTITUTIONAL MASTER PLAN

Center for Cancer Care
Level P2 - Dana DL2 Tunnel Connection

FIGURE 4-2



LEGEND

- Public
- Retail
- General Support
- Service Circulation
- Public Circulation
- Building Services

DANA-FARBER CANCER INSTITUTE
INSTITUTIONAL MASTER PLAN

Center for Cancer Care
Level 1 Floor Plan

FIGURE 4-3

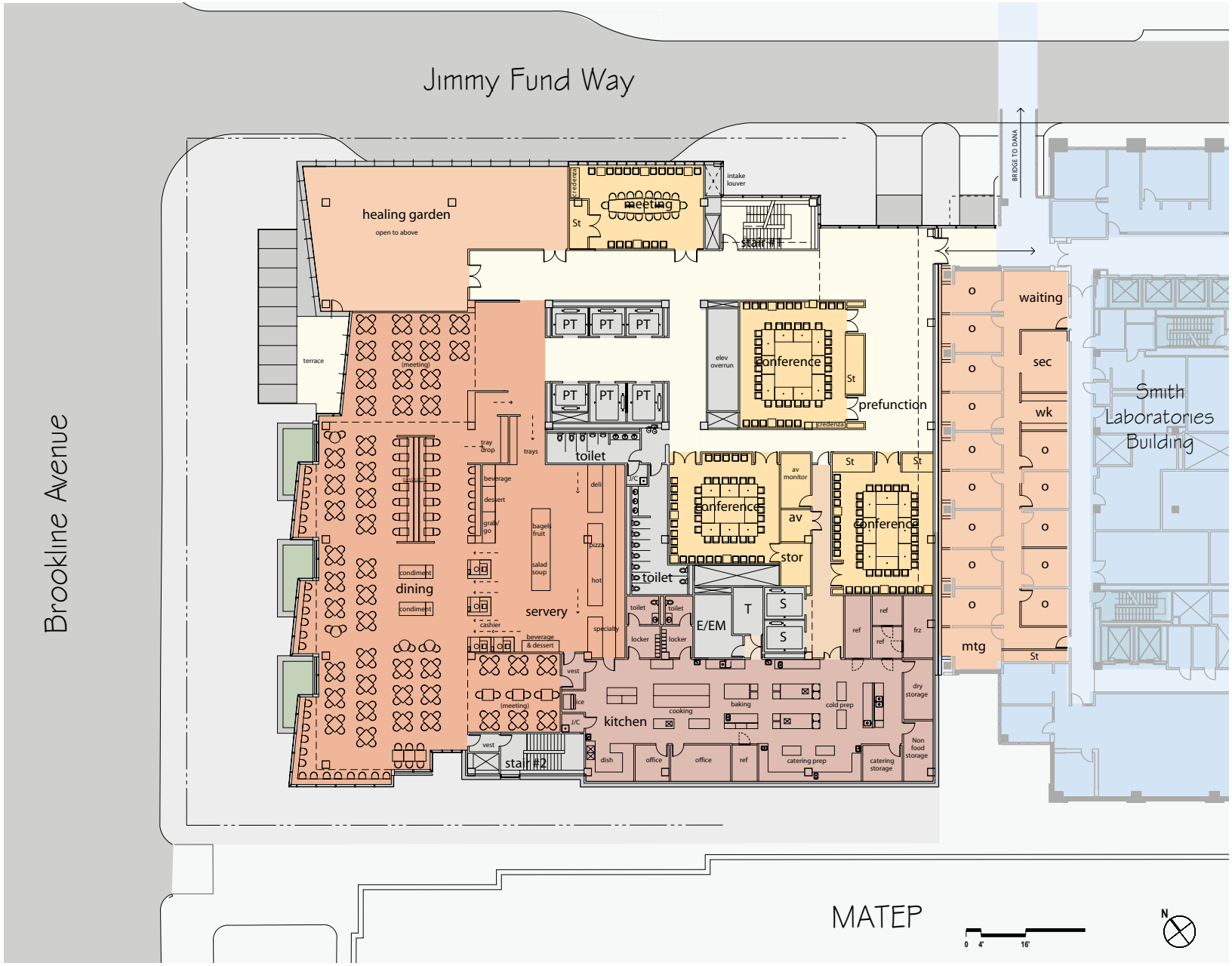
LEGEND

- Public
- Clinical Support
- Staff Circulation
- Public Circulation
- Building Services

DANA-FARBER CANCER INSTITUTE
INSTITUTIONAL MASTER PLAN

Center for Cancer Care
Level 2 Floor Plan

FIGURE 4-4



LEGEND

- Clinical Infusion
- Conference
- Food Services
- Cafeteria
- Public
- Staff Circulation
- Public Circulation
- Building Services

DANA-FARBER CANCER INSTITUTE
INSTITUTIONAL MASTER PLAN

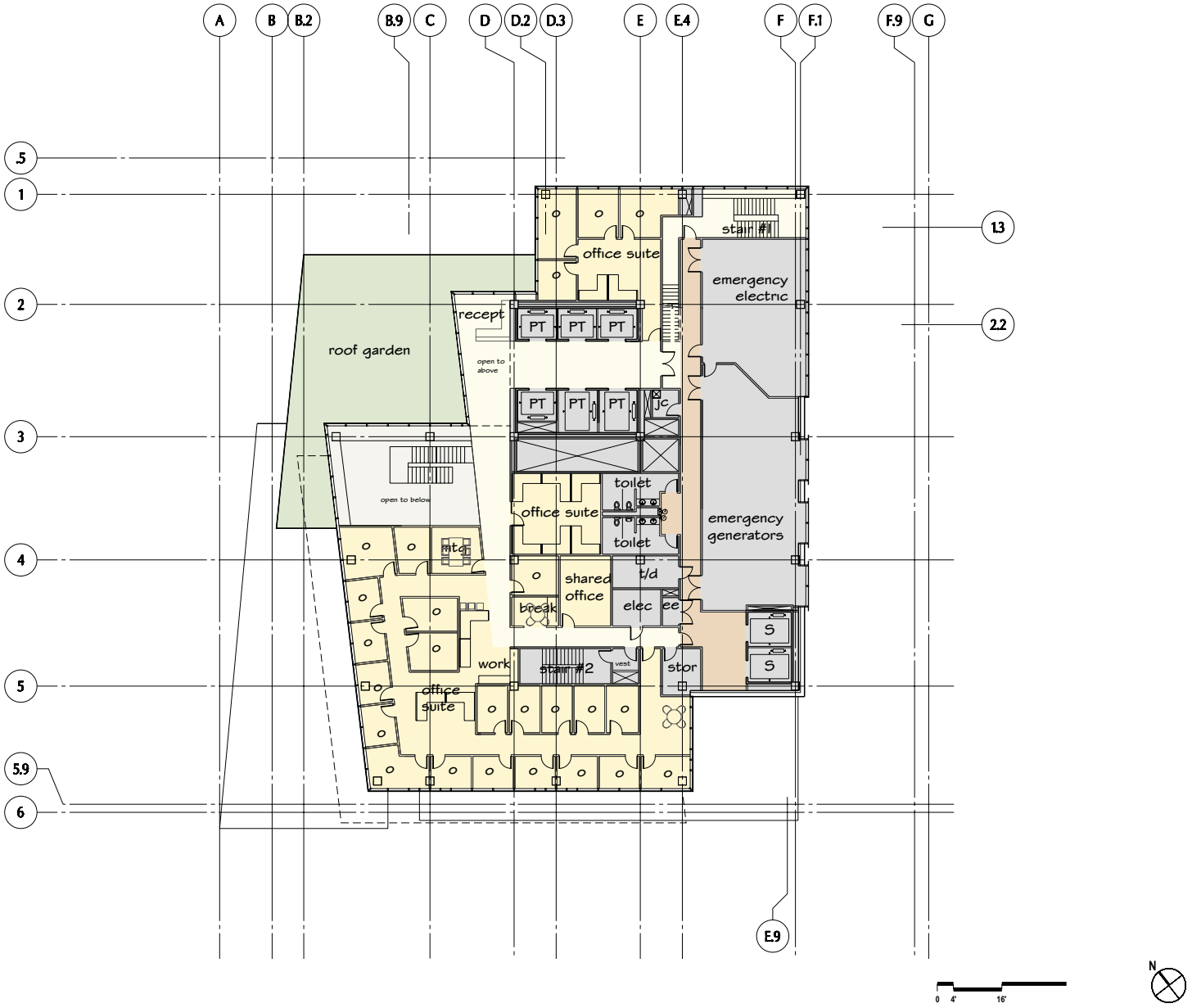
Center for Cancer Care
Level 3 Floor Plan

FIGURE 4-5

DANA-FARBER CANCER INSTITUTE
INSTITUTIONAL MASTER PLAN

Center for Cancer Care
Levels 7-10 Clinical Floor Plans

FIGURE 4-6



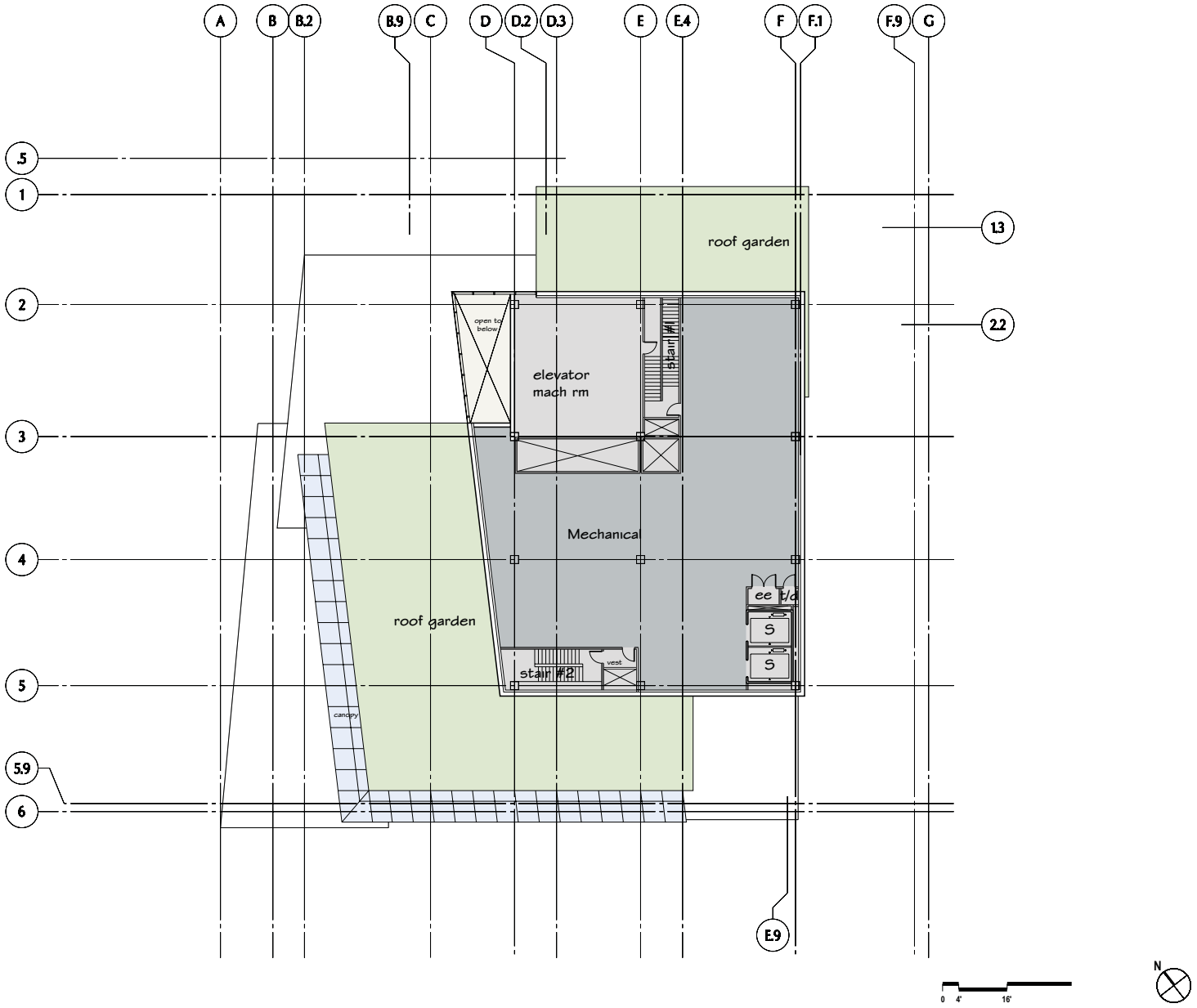
LEGEND

- Office
- Roof Garden
- Service Circulation
- Public Circulation
- Building Services

DANA-FARBER CANCER INSTITUTE
INSTITUTIONAL MASTER PLAN

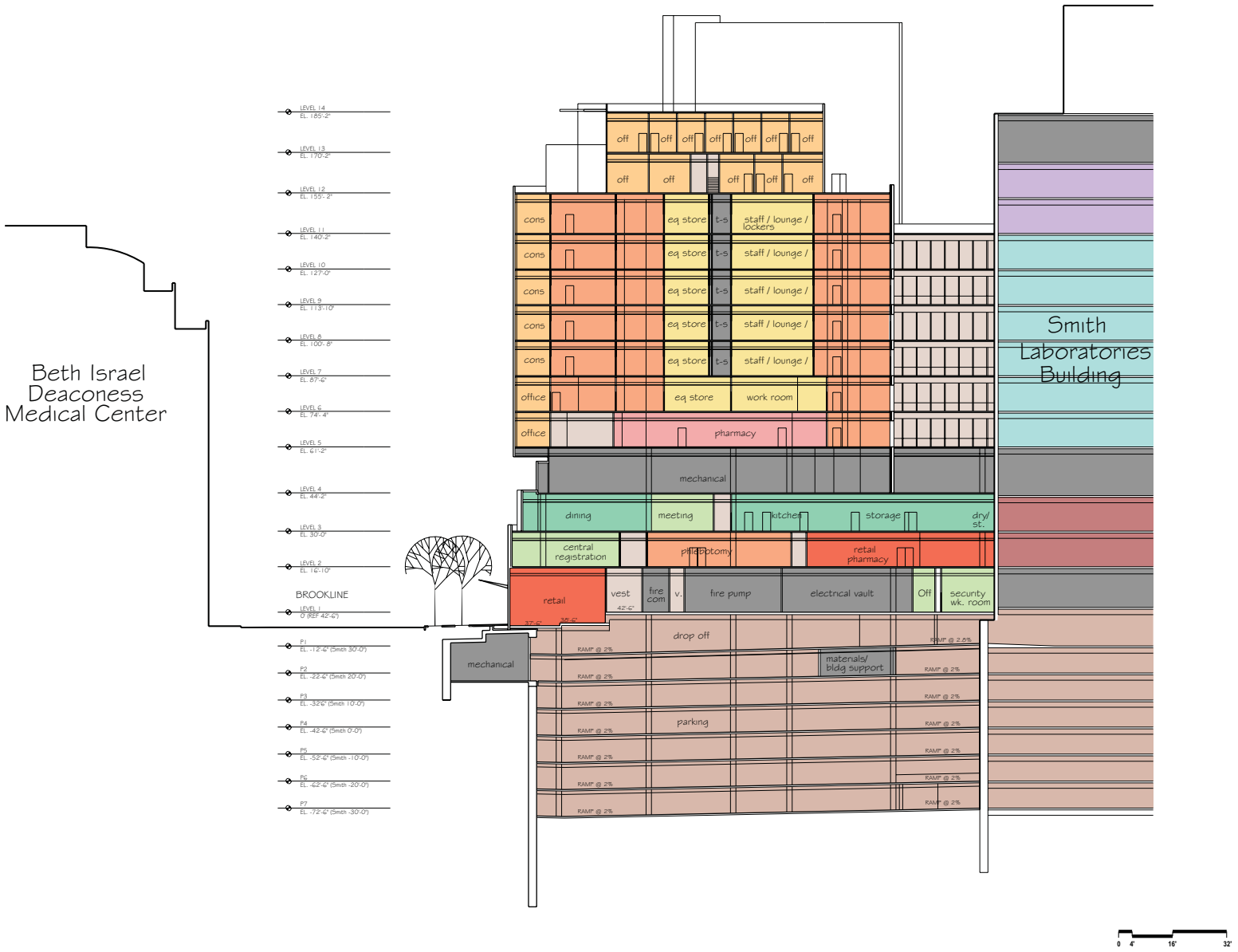
Center for Cancer Care
Level 13 Floor Plan

FIGURE 4-7



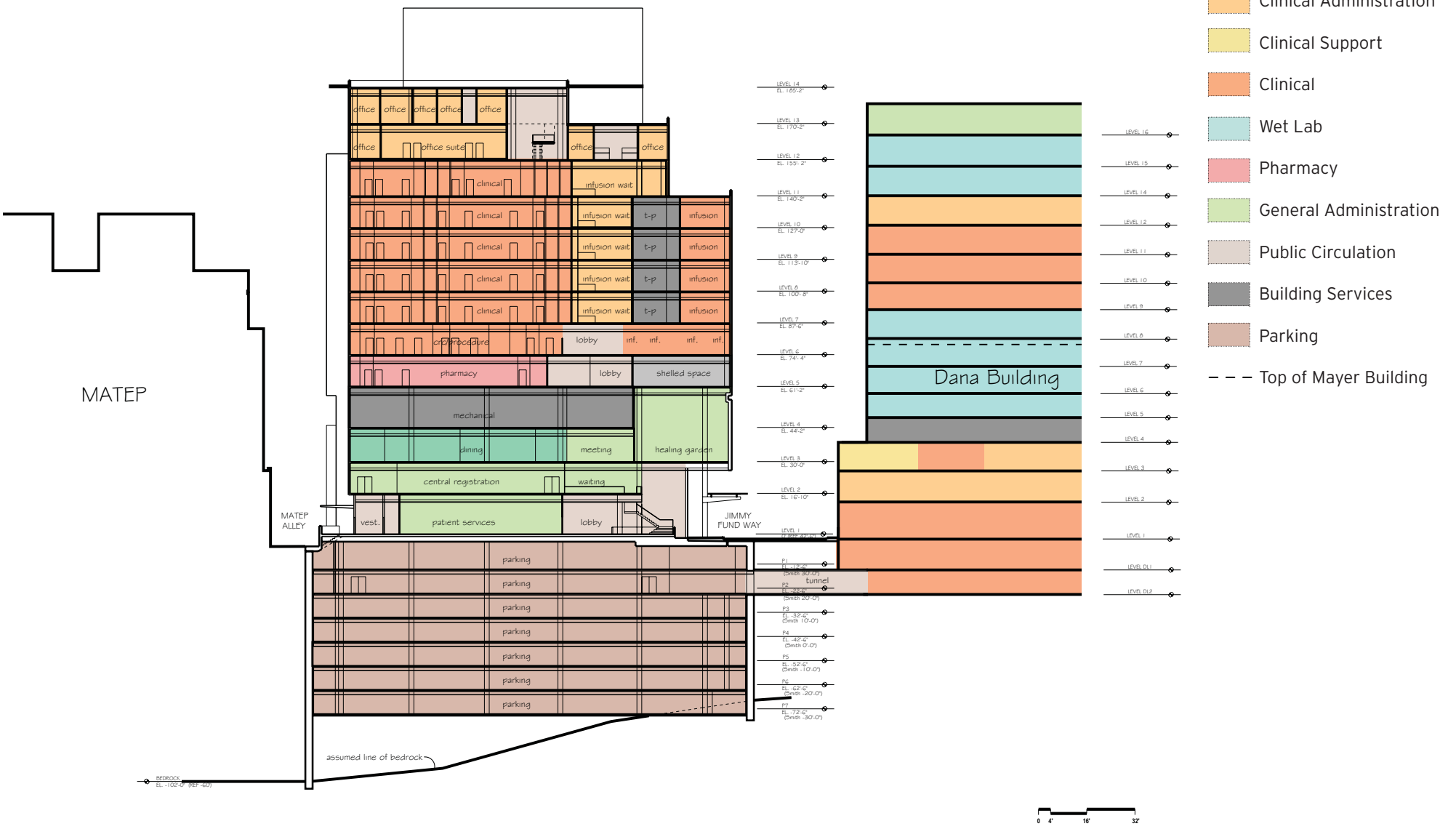
LEGEND

- Roof Garden
- Building Services
- Roof



LEGEND

- Clinical Administration
- Clinical Support
- Clinical
- Retail
- Dry Lab
- Wet Lab
- Vivarium
- Pharmacy
- General Administration
- Food Services
- Public Circulation
- Building Services
- Parking



DANA-FARBER CANCER INSTITUTE
INSTITUTIONAL MASTER PLAN

Center for Cancer Care
North - South Section

FIGURE 4-10

DANA-FARBER CANCER INSTITUTE
INSTITUTIONAL MASTER PLAN

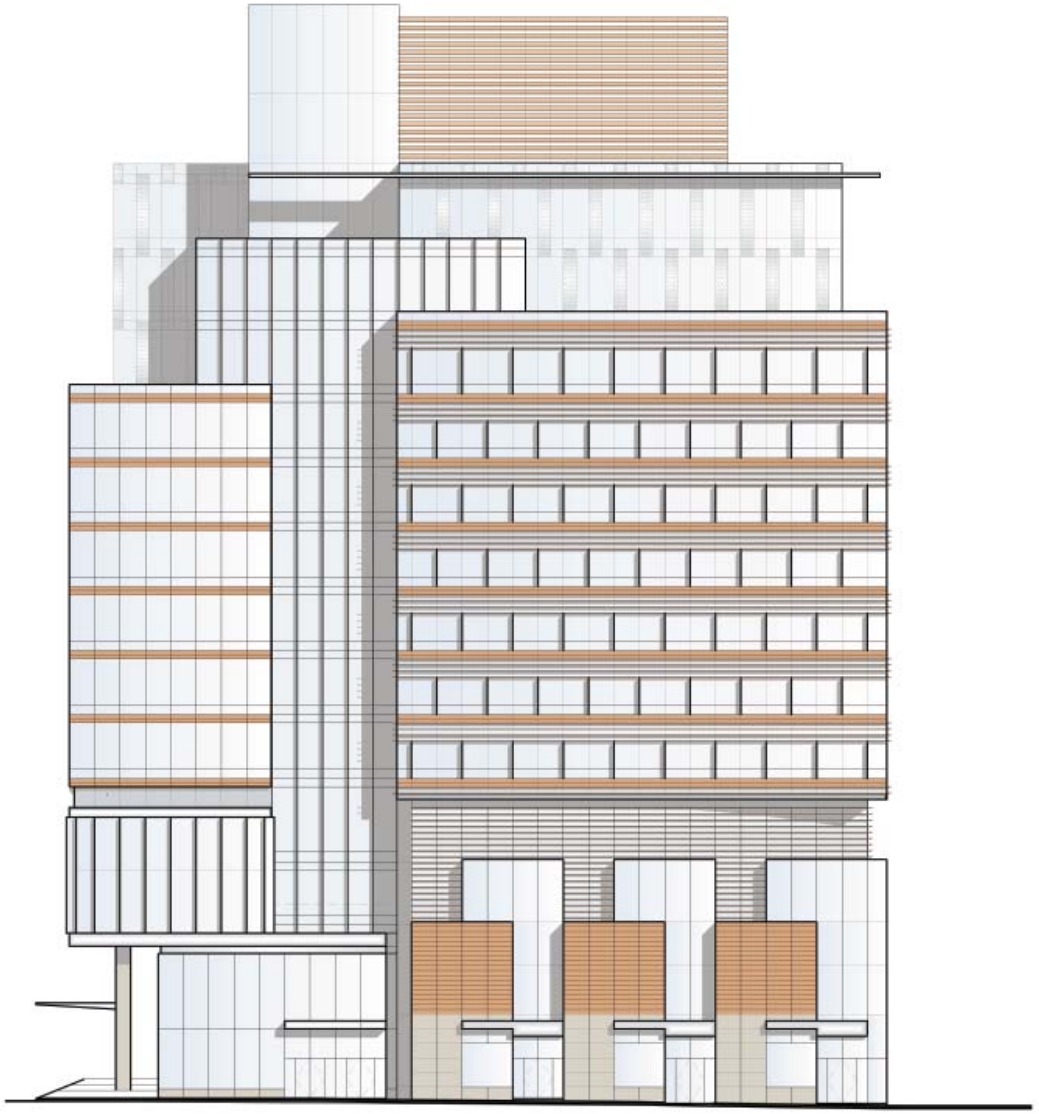
Center for Cancer Care
Perspective from Brookline Avenue

FIGURE 4-11

DANA-FARBER CANCER INSTITUTE
INSTITUTIONAL MASTER PLAN

Center for Cancer Care
Perspective From Brookline Avenue

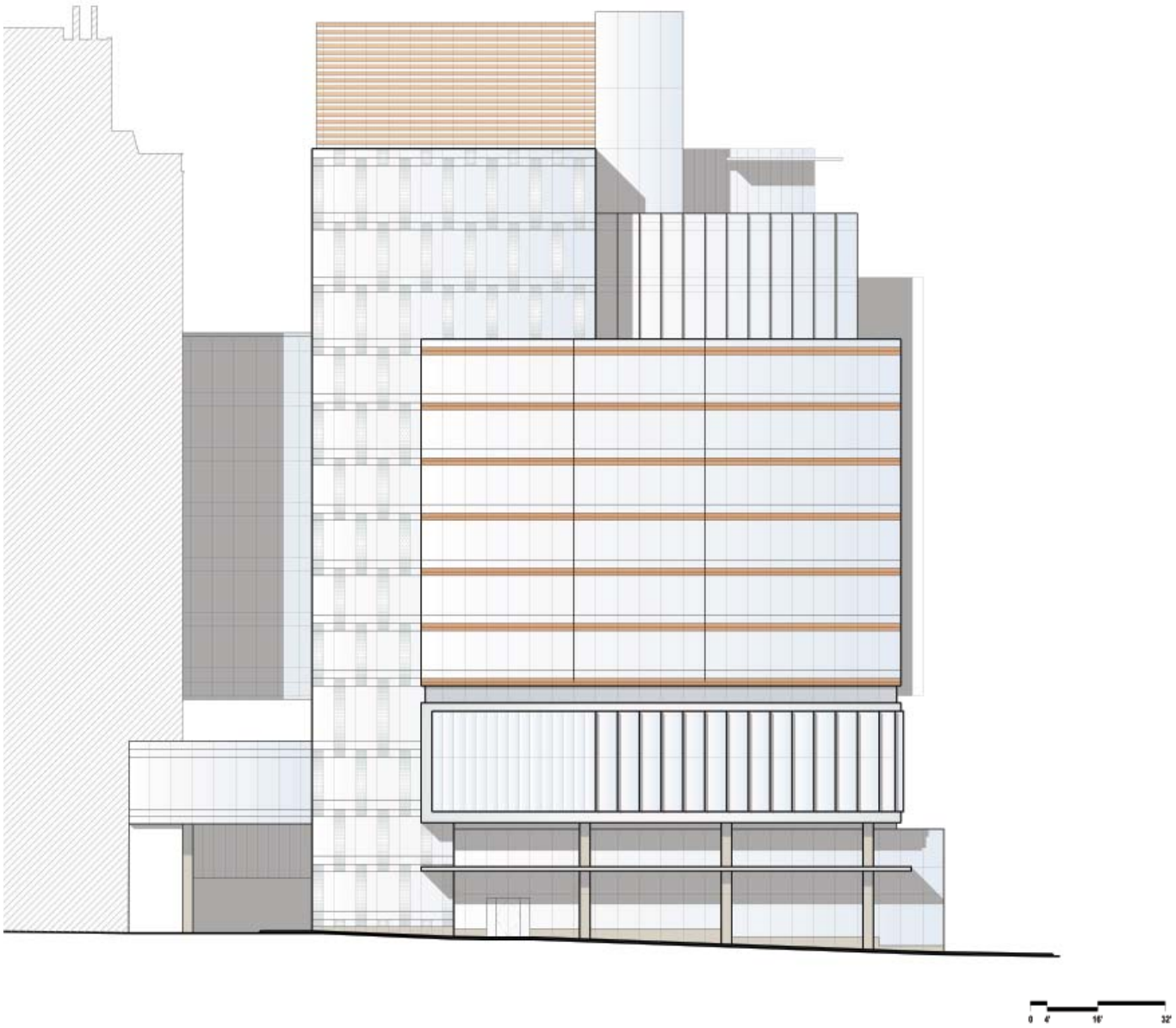
FIGURE 4-12



DANA-FARBER CANCER INSTITUTE
INSTITUTIONAL MASTER PLAN

Center for Cancer Care
Brookline Avenue Elevation

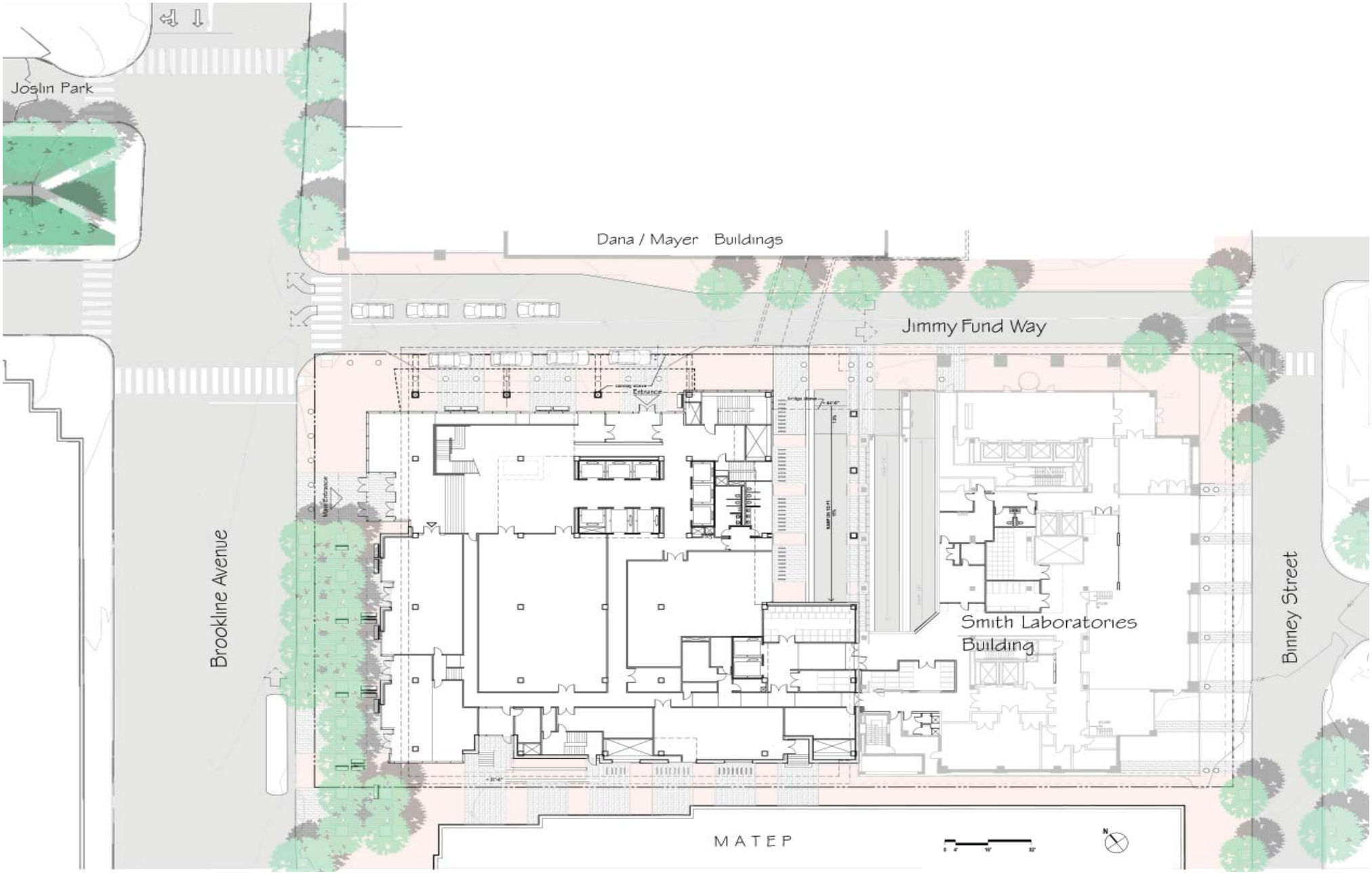
FIGURE 4-13



DANA-FARBER CANCER INSTITUTE
INSTITUTIONAL MASTER PLAN

Center for Cancer Care
Jimmy Fund Way Elevation

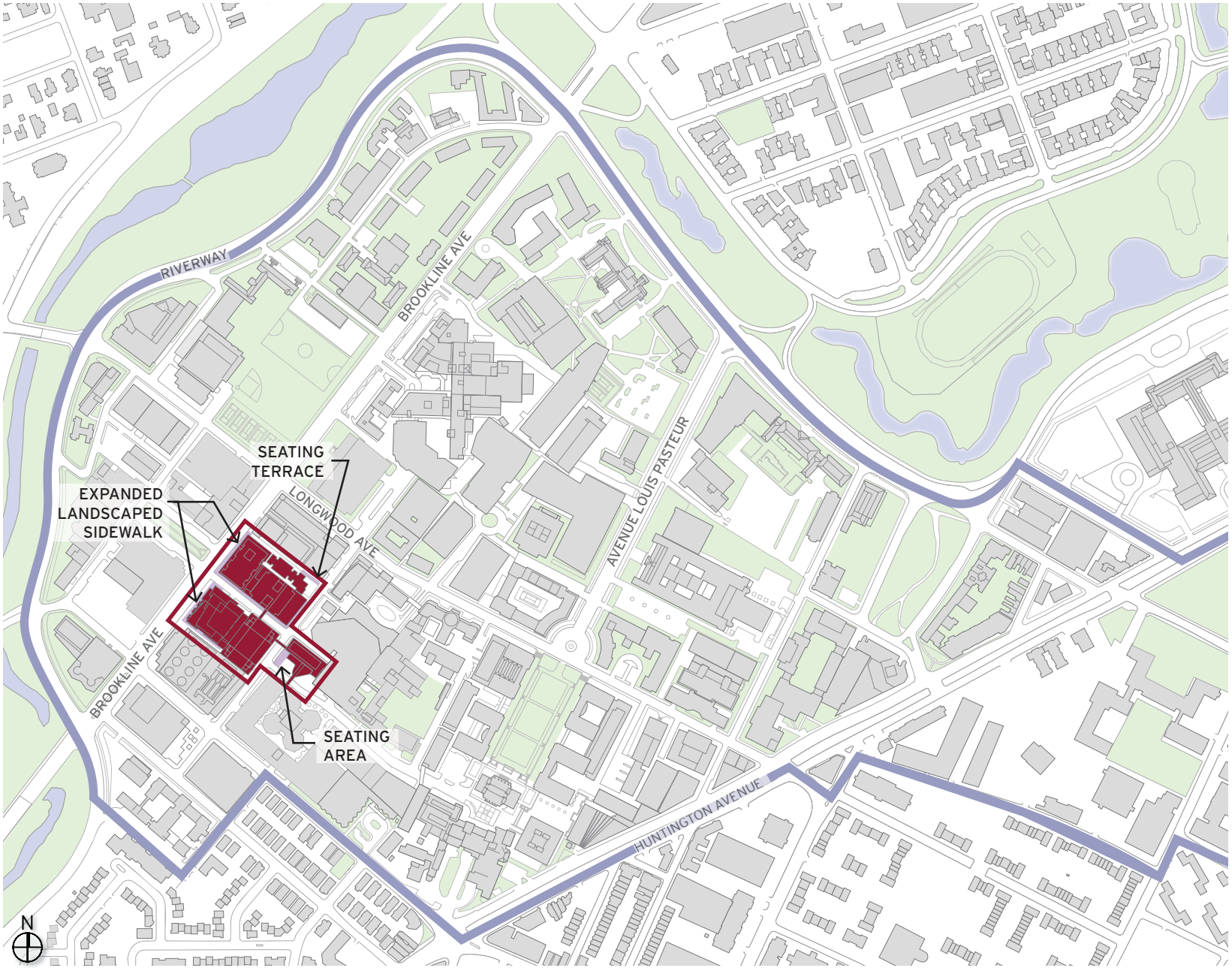
FIGURE 4-14



DANA-FARBER CANCER INSTITUTE
INSTITUTIONAL MASTER PLAN

Center for Cancer Care
Site Plan

FIGURE 4-15



LEGEND

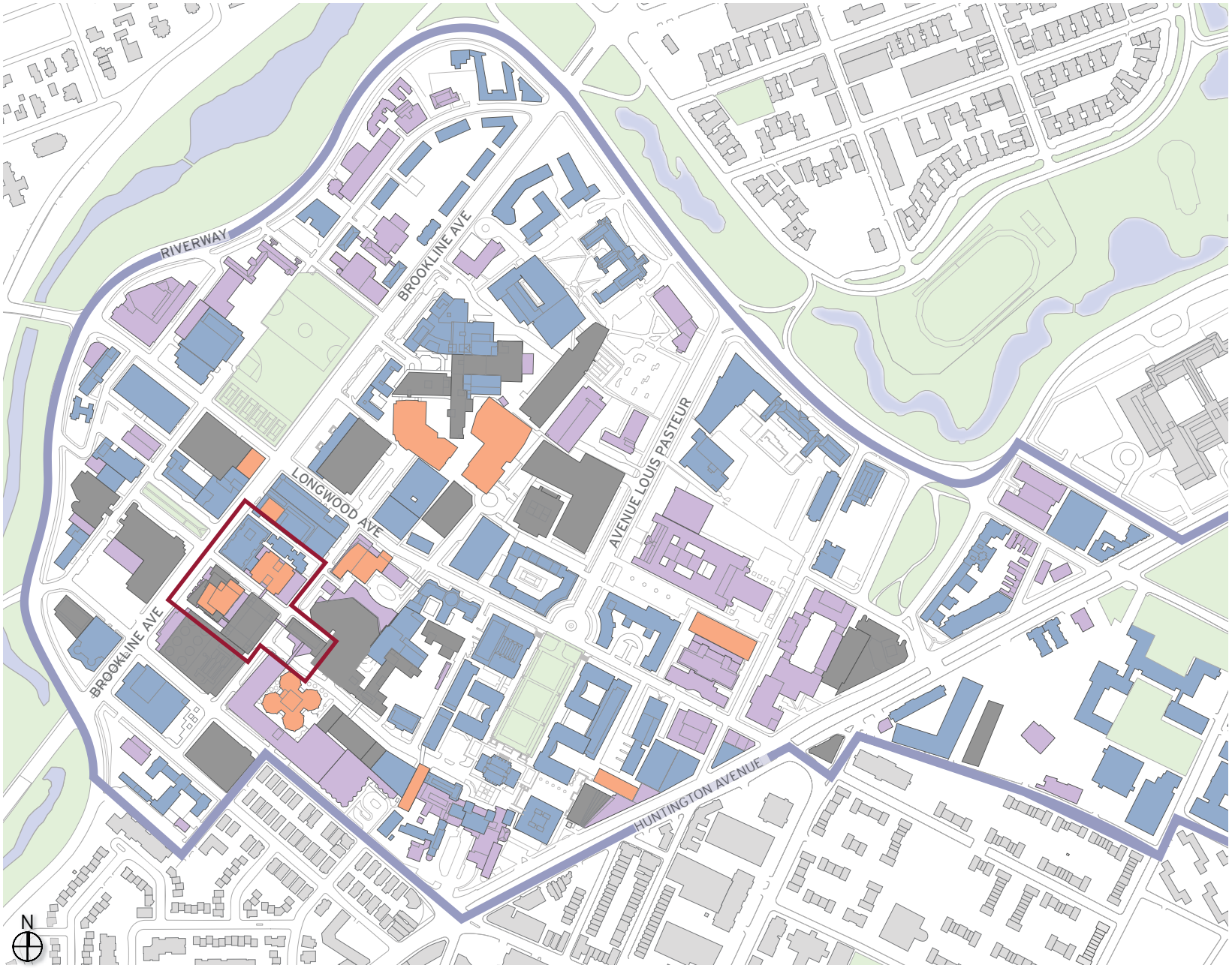
- DFCI Owned Facilities
- Longwood Medical and Academic Area
- DFCI Campus
- Built Space
- DFCI Public Pedestrian areas
- Public Pedstrian areas

SOURCE: MASCO & DFCI

DANA-FARBER CANCER INSTITUTE
INSTITUTIONAL MASTER PLAN

Future Public Pedestrian Areas in / around LMA

FIGURE 4-16



LEGEND

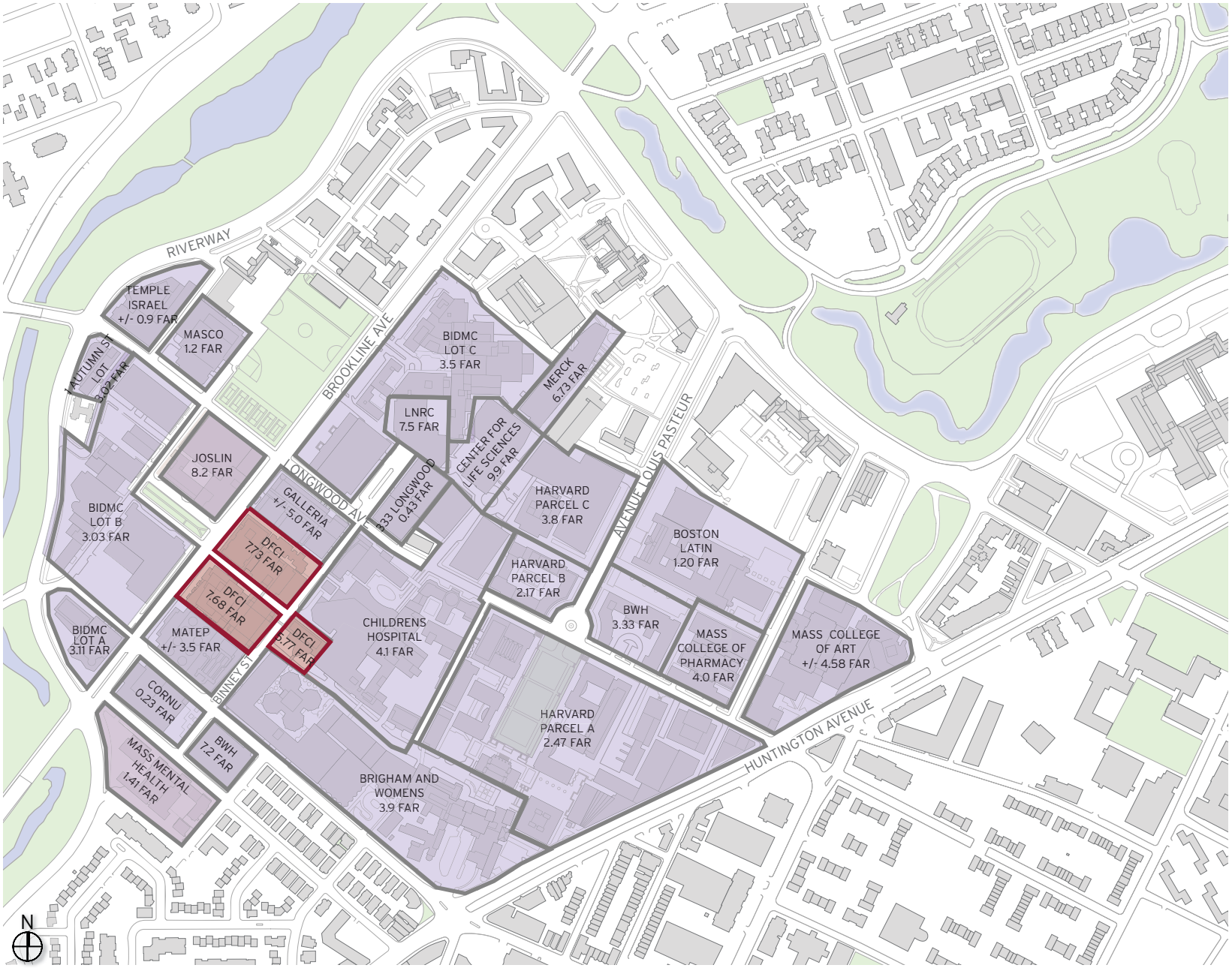
- DFCI Campus
- Longwood Medical and Academic Area
- 13+ Story Building
- 8-12 Story Building
- 4-7 Story Building
- 1-3 Story Building
- Street Level

SOURCE: MASCO & DFCI

DANA-FARBER CANCER INSTITUTE
INSTITUTIONAL MASTER PLAN

Future Area Building Heights

FIGURE 4-17



LEGEND

DFCI Owned Facilities

All Others

FAR = Floor Area Ratio

SOURCE: MASCO & DFCI

DANA-FARBER CANCER INSTITUTE
INSTITUTIONAL MASTER PLAN

Future Floor Area Ratios

FIGURE 4-18

5

Transportation

5.1 Introduction

This chapter presents a summary of the existing transportation aspects of Dana-Farber Cancer Institute and develops a thorough description of DFCI's transportation infrastructure 10 years into the future. This summary is based on the comprehensive Transportation Access Plan that was developed in connection with the Center for Cancer Care Draft Project Impact Report/Environmental Impact Report (DPIR/DEIR), filed simultaneously with this IMP. This chapter considers the transportation issues as clearly delineated by Article 80B of the City of Boston Zoning Code and the Commonwealth of Massachusetts' Environmental Policy Act (MEPA) and specifically addresses the Scoping Determination that was issued by the Boston Redevelopment Authority after its review of the Institutional Master Plan Notification Form/Project Notification Form dated May 30, 2006 and the Secretary of Environmental Affairs in his Certificate on the Environmental Notification Form (ENF) dated June 9, 2006. This study also addresses the issues raised by the Boston Transportation Department (BTD) as part of its review of the IMPNF/PNF and as outlined in their comment letter dated May 15, 2006.

In brief, this chapter:

- Summarizes existing conditions on DFCI's LMA campus;
- Summarizes the overall findings of the comprehensive Transportation Access Plan that was prepared and submitted with the Center for Cancer Care's DPIR/DEIR; and
- Presents a set of mitigation strategies and improvement measures that will provide transportation improvements to the LMA.

5.2 Existing Conditions

Existing transportation conditions and existing access characteristics of the DFCI campus are described in this section.

5.2.1 Summary of Existing DFCI Transportation Infrastructure and Services

Dana-Farber Cancer Institute is one of the world's premier cancer treatment centers. The mission of DFCI is to provide expert, compassionate care to children and adults with cancer while advancing the understanding, diagnosis, treatment, cure, and prevention of cancer and related diseases. DFCI employs approximately 3,557 people at its LMA campus of which approximately 32 percent are Boston residents. In 2005, DFCI conducted nearly 184,800 outpatient visits throughout the year and handled approximately 950 inpatient discharges.

DFCI actively manages a highly developed transportation infrastructure to provide safe and efficient access to and from its LMA campus for visiting patients, access by ambulances, its employees, and for service and delivery operations. The DFCI campus transportation infrastructure includes:

- A covered drop-off/pick-up area,
- Available on-campus self parking for patients and visitors,
- A combination of on-campus, off-campus and remote parking for DFCI employees,
- An extensive Transportation Demand Management (TDM) program for its employees to encourage commuting to work by transit and other alternative forms of transportation,
- Covered and secured bicycle parking,
- A campus shuttle bus system serving employees and patients,
- Ambulance activity at the dedicated drop-off area, and
- Consolidated loading and service operations.

Figure 5-1 serves as a transportation map for Dana-Farber Cancer Institute, identifying the specific locations of these various services on its LMA campus. Each of these components of the DFCI transportation infrastructure is described in detail in the following sections.

5.2.1.1 DFCI Parking System

DFCI provides a range of options to patients and visitors driving to its main LMA campus, including a pick-up/drop-off area, self-parking, and valet parking. The primary pick-up/drop-off area is located at the Dana Building on Binney Street – which is DFCI's current main patient entrance. Patients may also choose to self-park at the Dana Building garage or the Smith Laboratories Building garage.

DFCI currently has 498 on-campus spaces and controls/leases an additional 316 parking spaces nearby within the LMA. Parking spaces are made available for patients/visitors and to serve staff and physicians that need to park on the campus. In the LMA, approximately 340 spaces are used by patients while the remaining 474 are used by employees.

In addition to spaces within the LMA, DFCI leases an additional 640 spaces for employees in remote parking facilities. Most of the off-site parking is utilized by employees who either walk or use shuttle buses to travel between the campus and the remote parking facilities. Table 5-1 provides a summary of parking locations and user groups for the current DFCI parking supply.

Table 5-1 Existing Parking Space Inventory (Summer 2006)

Parking Facility	Current Number of Parking Spaces			Owned/Leased
LMA Parking	Total	Patient/ Visitor	Employee	
Smith Building Garage	255	106	149	Owned
Dana Building Garage	213	208	5	Owned
454 Brookline Avenue Lot	30	26	4	Owned
ServiCenter Garage	60	0	60	Leased
375 Longwood Avenue Garage	250	0	250	Leased
Harvard Institutes of Medicine	6	0	6	Leased
Total LMA Parking Spaces	814	340	474	
Off-Campus Parking	Total	Patient/ Visitor	Employee	
10 Brookline Place	118	0	118	Leased
1309 Beacon Street	34	0	34	Leased
Burlington Avenue/ Overland Street	45	0	45	Leased
Longwood Towers	95	0	95	Leased
Chestnut Hill	24	0	24	Leased
Crosstown Garage	150	0	150	Leased
Kenmore Lot	64	0	64	Leased
Lansdowne Garage	35	0	35	Leased
Ipswich Street	23	0	23	Leased
Wentworth Lot	52	0	52	Leased
Total Off-Campus Parking Spaces	640	0	640	
Grand Total DFCI Parking Spaces	1,454	340	1,114	

Source: Dana-Farber Cancer Institute, Parking, and Security.

Employee Parking Management

Of DFCI's 1,114 employee parking spaces, 474 spaces (43 percent) are located in the LMA and 640 spaces (57 percent) are at remote, off-site locations. Only 158 employee spaces are provided on the DFCI campus itself. Shuttle buses operated by MASCO or Partners connect the remote parking locations to the main DFCI campus.

All on-site and nearby employee parking spaces are priced competitively at $83.08 per week. Remote employee parking spaces cost $27.69 per week. DFCI charges competitive rates to its employees for the use of on-site parking to reduce the number of employee vehicles entering the LMA each day and make more nearby spaces available to patients and visitors.

Patient/Visitor Parking Management

Patient and visitor parking are located at the Dana Building garage at 44 Binney Street and at the Smith Garage across the street at 1 Jimmy Fund Way. Dana-Farber Cancer Institute offers a special discounted parking rate for patients with a maximum daily charge of $8. This parking rate was recently increased from $6 in October 2006. Patients must show their garage ticket and patient identification card at the cashier booth when leaving to receive the discounted rate.

The Dana Building garage is open 24 hours a day, 7 days a week. The Smith garage is open 6:00 AM – 10:00 PM, Monday through Friday only. A security officer and a garage attendant are located at the Dana entrance for patients requiring wheelchairs, assistance getting into the building, or assisted (valet) parking. Attendants are available weekdays during regular clinic hours.

Existing DFCI Peak Parking Accumulation

Table 5-2 shows existing weekday peak parking accumulation for the entire DFCI on-campus parking system. The parking facilities are currently at capacity between mid-morning and mid-afternoon on weekdays.

Table 5-2 Existing DFCI On-campus Parking Accumulation

Location	Parking Supply	Demand			Surplus/ (Deficit)
		Employee	Transient	Total	
Smith Building Garage	255	128	153	281	(26)
Dana Building Garage	213	6	192	198	15
454 Brookline Avenue Lot	30	0	37	37	(7)
DFCI Total	505	134	382	516	(18)

Source: DFCI Parking and Security.

The table shows that under existing conditions, the DFCI's parking system is just under the required capacity to meet typical weekday parking demands under current conditions. To accommodate this unmet demand, vehicles are parked in tandem in the Dana Building Garage and controlled by valet.

5.2.1.2 DFCI Employee Transportation Demand Management Program

Dana-Farber Cancer Institute actively supports efforts to reduce auto use for employees traveling to the LMA. Many actions to support this goal are actively employed by DFCI, including the following:

- **Employee Transportation Advisor.** DFCI employs an Employee Transportation Advisor (ETA) who provides information and implements Transportation Demand Management (TDM) measures at DFCI, assisted by MASCO's CommuteWorks TMA.
- **Employee transit pass subsidy.** Approximately 1,375 DFCI employees regularly purchase monthly transit passes and choose public transportation as their primary mode to work. DFCI offers a transit pass subsidy of 50 percent, up to the legal limit of $105 per employee per month. The cost of passes is deducted on a pre-tax basis resulting in additional savings to employees.
- **Carpooling assistance.** Ridematching services are available to employees through MASCO's CommuteWorks TMA. It is estimated that approximately 41 DFCI employees are registered with CommuteWorks. Additional employees may have informal/unregistered carpools.
- **Location-priced parking.** DFCI employs a parking rate structure to discourage on-campus parking. As of October 2006, off-campus parkers pay $27.69 per week while on-campus parkers pay $83.09 per week.
- **Shuttle bus services.** Both DFCI and MASCO operate shuttle services in the LMA. DFCI contracts shuttle services through Partners HealthCare for shuttling people between the main campus, the North Campus at Overland, the South Campus at 10 Brookline Place, 1309 Beacon Street, and Harbor Campus at 27 Drydock Avenue. DFCI jointly operates a shuttle to North Station with Children's Hospital Boston and Beth Israel Deaconess Medical Center. MASCO runs nine bus routes that provide service within one half mile of the DFCI campus.
- **Bicycling incentives and amenities.** DFCI participates in CommuteWorks' Commute Fit Program that provides rewards to employees who bicycle, walk, or rollerblade to work, based on the miles they log. On average, 175 employees bike to work during non-inclement weather. DFCI provides sheltered bike racks on campus. Employee lockers and showers are available on-site. Recently installed bicycle racks on the MASCO M2 Cambridge-Longwood shuttle buses provide more range and modal flexibility for bicyclists and public transportation riders.

- **Flexible work hours**. Dana-Farber Cancer Institute provides for flexible work hours, compressed workweeks, and telecommuting programs for positions where reasonably feasible.
- **Information dissemination.** DFCI promotes all forms of alternative transportation through a variety of employee newsletters, information kiosks, websites, e-mail, and special events.
- **Active CommuteWorks member.** DFCI has been an active member of the CommuteWorks Transportation Management Association (TMA) since its 1989 founding. CommuteWorks, operated by MASCO, offers an array of ongoing programs and periodically offers special limited-time incentive programs for employees and students of member institutions to try new modes. DFCI's role includes implementing and monitoring CommuteWorks programs; posting and distributing announcements; holding promotional events for employees to encourage alternative modes of transportation; and providing transit schedules and other information to facilitate alternative transportation.

DFCI will continue to promote and improve its TDM program to benefit its employees and reduce traffic impacts to roadways and parking facilities within the LMA and nearby neighborhoods.

5.2.1.3 DFCI Shuttle Bus System

Dana-Farber Cancer Institute operates four distinct shuttle bus routes that connect its main LMA campus to other satellite campuses outside the LMA, including the following:

- **The Dana-Farber's South Route** operates between the DFCI's main campus and the South Campus at 10 Brookline Place. The shuttle is used by employees traveling between the campuses, and for courier services. The shuttle runs every 30 minutes from 7:10AM to 6:40PM on weekdays only. There are no other stops on this route.

- **The Dana-Farber's North Route** operates between the DFCI's main campus and the North Campus administrative/research offices at 21/27 Burlington Avenue. The shuttle is used by employees traveling between the campuses, and for courier services. The shuttle runs every 30 minutes from 7:05AM to 6:40PM on weekdays only. There are no other stops on this route.

- **1309 Beacon Street Shuttle** operates between DFCI's and its facilities at 1309 Beacon Street.

- **DFCI's Harbor Campus Shuttle** runs two morning and two afternoon shuttles between its main campus and 27 Dry Dock Avenue.

5.2.1.4 DFCI Ambulance Operations

Ambulances arriving at DFCI arrive at the Dana Building via Binney Street. DFCI is served by over a half dozen ambulance services daily, most of which provide non-emergency patient transport. Non-emergency trips may be made to or from other cities, towns and states and tend to be synchronized with clinical treatment schedules.

5.2.1.5 DFCI Loading and Service Operations

Loading and service activities take place at five locations on the Dana-Farber Cancer Institute campus:

- Smith Building Loading Dock on Binney Street.
- Dana Building Ambulance Bay/Loading Area on Binney Street.
- Dana Building Loading Dock on Binney Street.
- Jimmy Fund Building Loading Area on Shattuck Street.
- Redstone Building Loading Area on Brookline Avenue.

These designated loading areas are shown in Figure 5-2 at the end of this chapter.

Loading activities were observed on the DFCI campus Monday through Wednesday between 5:30 AM and 3:00 PM in June 2005. Observations included monitoring all deliveries including vendor, truck size, time of delivery, and duration of the delivery. Delivery vehicle queuing on Binney Street was also monitored. The highest delivery activity occurred on Tuesday, June 21, 2005. The peak-day results are shown in Table 5-3.

Table 5-3 DFCI Loading and Service Operations (June 2005)

Time of Day	Smith Building	Dana Ambulance	Dana Loading	Jimmy Fund Building	Redstone Building	Total
5:00-6:00 AM	1	0	2	0	0	3
6:00-7:00 AM	2	0	1	0	1	4
7:00-8:00 AM	5	2	3	1	0	11
8:00-9:00 AM	2	2	4	0	0	8
9:00-10:00 AM	3	1	6	1	0	11
10:00-11:00AM	3	0	6	1	0	10
11:00-12:00PM	7	2	6	0	0	15
12:00-1:00 PM	3	0	1	0	0	4
1:00-2:00 PM	2	2	1	0	0	5
2:00-3:00 PM	1	0	0	0	0	1
Total	29	9	30	3	1	72

As shown in Table 5-3, DFCI receives over 70 deliveries daily. The majority of loading activity is at the Smith Building and the Dana Building between the hours of 7:00 AM and 12:00 PM Deliveries drastically decline after 3:00 PM. Approximately 56 percent are box type trucks, 37 percent are smaller vehicles such as delivery vans, and only seven percent of the trucks are tractor-trailer type trucks.

DFCI truck queuing consisted of occasionally one or two vehicles parked along Binney Street. More often than not, this appeared to be the case because the delivery duration was short, and although ddiscouraged by DFCI, it was more convenient for the driver rather than because the loading docks were being fully utilized at the time. However, general truck queuing (when all LMA institutions are considered together) is a continual issue along Binney Street. In addition to DFCI's loading docks, other area institutions and the Longwood Galleria all handle a substantial amount of truck deliveries at their own delivery facilities along or near Binney Street. As many as seven parked trucks were observed on Binney Street at the same time during the observations. The truck queuing had noticeable impacts to traffic flow, pedestrian and bicycle activities, and the movement of goods between the various institutions along this corridor.

The Receiving Department at DFCI accepts all outside deliveries brought to the DFCI campus. Generally the Dana dock is staffed by four or five persons. The Smith dock has one employee which manages all deliveries for the Smith Building. The other buildings are not staffed by the Receiving Department.

Trash and recyclables are collected at intermediate storage locations on each floor at each DFCI building. Consolidation of the waste is then made by custodial services that then transport the waste to either the Dana or Smith dock dumpsters.

5.2.1.6 DFCI Bicycle Accommodations

Dana-Farber Cancer Institute provides 16 bicycle racks on campus with a capacity totaling 192 bicycles. Bicycle racks are currently located in a securely caged area between the 454 Brookline Avenue parking lot and the Smith Building. Employee lockers and showers are available on-site. Recently installed bicycle racks on the MASCO M2 Cambridge-Longwood shuttle buses provide more range and modal flexibility for bicyclists and public transportation riders.

Approximately 175 DFCI employees bicycle to work during the Spring/Summer/Fall months. Of these, 55 employees continue to bicycle to work during the inclement winter months. For those commuters that bicycle to work, DFCI provides rewards through the Commute Fit program as commuters build up their mileage. DFCI employees also participate in the CommuteWorks' BikeWeek Commuter Challenge.

5.3 IMP Overview

DFCI plans to implement six projects over the course of the IMP. These projects are outlined in Table 4.1 in Chapter 4 of this document. Of these projects, the following two will affect transportation:

- The Center for Cancer Care project includes construction of a single building project totaling approximately 257,500 zoning square feet (ZSF) of space (as defined by the Boston Zoning Code) on a parcel of land along Jimmy fund Way in the LMA. Accounting for demolition planned at the site, the proposed project will create approximately 219,049 ZSF of "net new" construction on the 450 Brookline Avenue site.
- Additionally, DFCI plans to renovate its existing Dana Building. These renovations will include the reconfiguration of an existing above-grade structured parking area and surface vehicular drop-off/pick-up area into approximately 71,000 SF of administrative/institutional space. The existing 213 parking spaces and vehicular drop-off area located within the existing Dana Building will be relocated within the new Center for Cancer Care facility.

The proposed Center for Cancer Care project will be located west of the existing DFCI Smith Building on Jimmy Fund Way. The new building is planned to accommodate much needed clinical and clinical research space, but will also include some ground floor retail space, a campus dining area, and will serve as the campus' main entrance along Brookline Avenue. The building will provide public pedestrian access via entrances along both Brookline Avenue and Jimmy Fund Way. The building will also include provision of a new below-grade drop-off and valet parking

area on level P1. The new building's below-grade parking area will be integrated into the existing Smith Building parking facility, creating one unified parking garage to support DFCI's core campus. All of DFCI's on-campus parking will be located within this garage upon completion of the project. The project will include construction of approximately 460 underground parking spaces. Of these parking spaces, 243 are replacement parking from the Dana Building and the existing surface parking lot located on the Center for Cancer Care site. The remaining 217 parking spaces are new on-site parking spaces. The amount of net new on-site parking equates to 0.75 parking spaces per 1,000 GSF of new development, a ratio consistent with the Boston Transportation Department's (BTD) guidelines for construction of new on-site parking in support of development projects in the LMA.

The proposed DFCI IMP projects are presented in Table 5-4. A detailed discussion of the need for these projects and their features and timing was presented previously in Chapters 3 and 4.

Table 5-4 DFCI IMP Projects

Project Actions	Building Size* (sf)	Parking
Demolish Brookline & Redstone buildings	(38,451)	(30)
Construct Center for Cancer Care Project	257,500	460
Infill Dana Parking & Main Entrance Areas	71,000	(213)
Total "Net New" Construction	290,049	217

1. *Source: Dana-Farber Cancer Institute, Facilities and Planning.*
2. ** Zoning gross square footage.*

The following characterize future transportation conditions at the DFCI campus once the proposed IMP projects are completed:

- The existing Redstone Building, 454 Brookline Avenue Building, and adjacent 30-space surface parking lot on Jimmy Fund Way will be demolished to allow for new construction. These lost spaces will be relocated to the new below-grade parking facility within the Center for Cancer Care project.
- The Dana Building Garage currently has 213 parking spaces. These spaces, along with the existing drop-off area for the building, will be taken out of service to allow for the design and implementation of approximately 71,000 ZGSF of infill space. These parking spaces will be relocated to the new parking garage at the Center for Cancer Care.
- The Smith Building Garage has 255 parking spaces. Some existing spaces may need to be relocated or modified to accommodate access modifications within the expanded floor plate, but the gross number of available spaces is not expected to change as a result of the project.
- The Center for Cancer Care facility will include seven below-grade levels, which will accommodate up to 460 parking spaces, a dedicated patient and valet drop-off area, and some support and mechanical spaces.

- The Center for Cancer Care will be physically connected to the adjacent Smith Building on most levels.
- Loading and service activities for the proposed project will be handled from a modified Smith Building loading dock. The existing 3-bay dock will be expanded by 2 additional service bays to accommodate the additional amount of truck, delivery, and ambulance traffic that is expected with the proposed Center for Cancer Care building in place. The access for this loading and service area is via Binney Street. DFCI also plans to maintain some loading and service functions at its existing Dana loading facility on Binney Street.

5.3.1 Summary of Findings

The primary finding of this transportation analysis, which is presented in more detail in the DPIR/DEIR, is that the comprehensive transportation improvement and mitigation plan proposed by Dana-Farber Cancer Institute will provide an improved transportation infrastructure for patients, visitors, and employees traveling to the LMA. DFCI will proactively manage a creative, underground drop-off and valet parking facility as a means to reduce traffic activity on area streets, particularly along Brookline Avenue. DFCI is also committed to reconstructing the intersection of Brookline Avenue/Jimmy Fund Way/Deaconess Road/Joslin Place to allow for a safe and legal left-turn for motorists traveling southbound on Brookline Avenue toward the DFCI campus. DFCI will also set its new building back to allow for the creation of wide pedestrian sidewalks along both Brookline Avenue and Jimmy Fund Way and to create an additional left-turn lane from Jimmy Fund Way onto Brookline Avenue. DFCI is also committed to improving existing traffic cameras in the area and to the installation of a new pan-tilt-zoom camera at the Brookline Avenue/Jimmy Fund Way intersection. The proposed parking complies with the LMA Interim Guidelines. Roadway improvements and enhanced valet parking operations management have been devised to help manage peak hour traffic flow adjacent to the site. Finally, DFCI will continue to expand its proactive transportation demand management measures (TDM) to its employees to encourage the use of transit and other alternative forms of transportation.

5.3.1.1 Parking Summary

Dana-Farber Cancer Institute currently controls approximately 1,454 total off-street parking spaces, with 340 parking spaces available for use by its patients and visitors, and 1,114 parking spaces available for staff and physicians. About 498 (34 percent) of these parking spaces are located on the DFCI campus and another 316 (22 percent) are nearby on sites adjacent to or near DFCI facilities. Approximately 640 parking spaces (44 percent) are located off-site in remote parking facilities. The majority of employees who park off-site either walk or use shuttle buses to travel between the DFCI campus and these remote parking facilities.

At the end of the term of the IMP, DFCI will have constructed 290,049 SF of net new space and 217 net new parking spaces, which complies with the LMA Interim

Guidelines for construction of new on-site parking spaces (less than 0.75 new parking spaces per 1,000 SF of space). New parking that is proposed within the IMP is intended to serve its patients and visitors only and to provide a sufficient on-campus patient parking supply that is conveniently located where core patient services are offered. No new parking is proposed to accommodate employees. When the proposed project is completed, it is expected that the overall parking supply on the DFCI Campus will increase by only 217 parking spaces.

As shown below in Table 5-5, when the DFCI IMP projects are completed, DFCI's parking ratio will decrease from to 0.94 to 0.89.

Table 5-5 DFCI Parking Ratios

DFCI IMP Actions	DFCI Building Floor Area* (sf)	DFCI_Controlled Parking Spaces in the LMA	Parking Ratio (spaces/1,000sf)
Existing Conditions	862,184	814	0.94
Net Change	290,049	217	0.75
Future Conditions	1,152,233	1,031	0.89

Source: Dana-Farber Cancer Institute Facilities and Management, and Parking/Security Departments.

1. *Note: Parking ratios are based on both owned and leased building space and parking within the LMA.1/See Table 5-4 for a more detailed description of DFCI-controlled parking spaces in the LMA.*

5.3.1.2 Traffic Impacts

The effects of the Dana-Farber Cancer Institute IMP projects, including a detailed analysis of intersection level of service (LOS), were examined at twenty-one intersections specified by the BTD during the study area's morning and evening peak commuter hours for 2006 Existing Conditions. In addition, traffic analyses were also conducted for 2016, which consider background growth, growth attributable to other projects, and employee and patient growth expected by Dana-Farber Cancer Institute during the term of the IMP. In particular, roadway and intersection improvements that are proposed as part of the DFCI IMP projects will have a positive impact on providing more efficient traffic flow along Brookline Avenue and at its intersection with Jimmy Fund Way. The left-turn lane from Brookline Avenue to Jimmy Fund Way and associated signalization improvements will help manage traffic flow towards Binney Street and can be accommodated in a synchronized lead phase similar to what is provided at the nearby Brookline Avenue/Francis Street intersection. Further, the Jimmy Fund Way approach to Brookline Avenue will be widened to provide both exclusive left- and right-turn lanes. This will help to manage queues at the intersection and allow for the heavier right-turn movement to dissipate more efficiently than its does under current conditions. Proposed transportation improvements are summarized in Table 5-6 and illustrated in Figures 5-3 and 5-4 at the end of this chapter. A detailed discussion of intersection levels of service and the traffic impacts is presented in Chapter 5 of the DPIR/DEIR simultaneously submitted with this IMP.

5.3.1.3 Pedestrian Access

The effects of the DFCI IMP on pedestrians will be concentrated along Binney Street, Brookline Avenue, Jimmy Fund Way, and in the pedestrian alleys between the DFCI campus and the Longwood Galleria and MATEP. Existing and projected future pedestrian conditions for these locations (and all study area intersections) were analyzed in detail. The planned pedestrian mitigation will help to significantly improve the LMA's pedestrian infrastructure through several proposed pedestrian related improvements and connections on the campus. New sidewalks will be constructed along both sides of Jimmy Fund Way and Binney Street adjacent to the Smith Building. The Jimmy Fund Way sidewalks will be wider than the existing, and provide with plantings and attractive pavement treatments. Binney Street sidewalk improvements will include separation between pedestrian and loading dock areas.

On Brookline Avenue, the existing 6-foot sidewalk will be replaced with a wide sidewalk that varies in width from 25 feet up to 35 feet. This section of sidewalk will also be fitted with a double row of trees, street furniture, and other amenities, and appropriate redesign of the sidewalk area at the relocated public transit bus stop. DFCI will also construct countdown pedestrian signals in connection with the reconstruction of the Brookline Avenue/Jimmy Fund Way/Deaconess Road/Joslin Place intersection.

The pedestrian alleys between the DFCI buildings and the Longwood Galleria and the MATEP facility will be upgraded with improved pavement treatments, landscaping, lighting and other pedestrian amenities.

5.3.1.4 Loading and Service

Dana-Farber Cancer Institute plans to modify its Smith Building loading dock to support the proposed Center for Cancer Care. The existing facility will be modified to include 2 additional service bays, resulting in a 5-bay dock that will service both the Smith Building and the new Center for Cancer Care building. DFCI also plans to maintain loading and service functions currently taking place at its existing Dana Building loading facility on Binney Street. Finally, DFCI recently leased space in 27 Dry Dock Avenue in South Boston. This facility will house new research laboratories and administrative offices, as well as a significant off-site storage facility for DFCI. This will allow for the receiving of large orders off-site where they can then be broken down and shipped to the main LMA campus daily, utilizing "just in time" shipping techniques. This is an important and innovative commitment by DFCI as a means to reduce truck activity and queuing in the LMA and control flow-timing, which can sometimes have a negative impact on traffic operations and pedestrian flow.

5.3.1.5 Transportation Demand Management

Dana-Farber Cancer Institute is committed to continuing to offer a wide array of Transportation Demand Management (TDM) incentives as a means to reduce single

occupant driving and increase use of alternative forms of transportation to access the workplace. DFCI actively supports efforts to reduce auto use for employees traveling to the hospital. Many actions to support this goal are currently actively employed by DFCI, including the following:

- Employee Transportation Advisor.
- Membership in MASCO's CommuteWorks TMA.
- Full support of MASCO's other ongoing transportation initiatives.
- 50 percent transit pass subsidy for employees.
- Carpool assistance and incentives.
- Bicycling/walking incentives and amenities.
- Location-priced parking (i.e.; offering competitive-rate parking on-campus and Subsidized parking off-campus).
- Telecommuting and compressed workweeks, where reasonably feasible.
- Promotional efforts.

DFCI is committed to maintaining its employee transit subsidy at 50 percent in connection with the construction of the Center for Cancer Care project. DFCI will also continue to promote and improve its TDM program to benefit its employees and reduce traffic impacts to roadways and parking facilities within the LMA and nearby neighborhoods.

5.3.1.6 Public Transportation

The DFCI IMP projects are projected to have only a modest incremental impact on transit operations in the area by 2016. The analysis assumed that future DFCI employees, patients, and visitors will have access to the many public transportation services offered by the MBTA, as well as the array of private shuttle and transportation demand management services that are offered in the LMA through MASCO. The analysis indicates that by 2016, some existing public transportation services will be operating at or above capacity during peak periods if services are not expanded to meet expected passenger demands.

Because there are so many public transportation options that provide service to and from the LMA, no single service appears to be unduly affected by anticipated increases in activities because of the DFCI IMP under future conditions. Consequently, DFCI transit trips are expected to affect the transit system only minimally under future conditions.

5.4 Transportation Mitigation and Improvement Actions

This section describes the transportation improvements and mitigation plan developed by Dana-Farber Cancer Institute. The purpose of the transportation mitigation plan is to:

- Help alleviate transportation impacts generated by the DFCI IMP projects;
- Provide transportation infrastructure enhancements to the LMA, including improved pedestrian corridors, and public space amenities; and
- Exceed the requirements of the BRA's Interim Guidelines for the LMA relative to transportation.

DFCI has also made important mitigation commitments in the form of policies and management actions. Key commitments are to continue to establish and maintain a proactive TDM program, parking management strategies to limit the construction of new parking spaces to the .75 parking spaces per 1,000 SF of development guideline established by the LMA Interim Guidelines, implementation of an improved pick-up/drop-off and patient valet parking operations management plan, and carefully coordinated construction management actions related to the forthcoming IMP projects. DFCI believes that these transportation mitigation actions will lessen the impacts of their proposed development plans and, when complete, will help improve the LMA's existing transportation infrastructure. This transportation mitigation plan includes several elements:

- Roadway and traffic operations improvements
- Transit enhancements
- Parking consolidation and management strategies
- Transportation demand management enhancements
- Sustainability
- Pedestrian access and open space improvements
- Construction management
- Participation in and partial funding of several system-wide transportation improvement studies for the LMA

Many of these mitigation elements will improve the LMA transportation infrastructure in addition to addressing potential impacts of the DFCI IMP projects. Table 5-6 lists each transportation mitigation element that is proposed by DFCI and provides a summary of the following:

- Description of the proposed action
- Summary of the purpose and benefit of that action
- Implementation responsibility

Additionally, Figures 5-3 and 5-4 illustrate the physical location of the various transportation improvements that are proposed.

Table 5-6: Proposed Dana-Farber Cancer Institute Transportation Mitigation and Improvement Plan

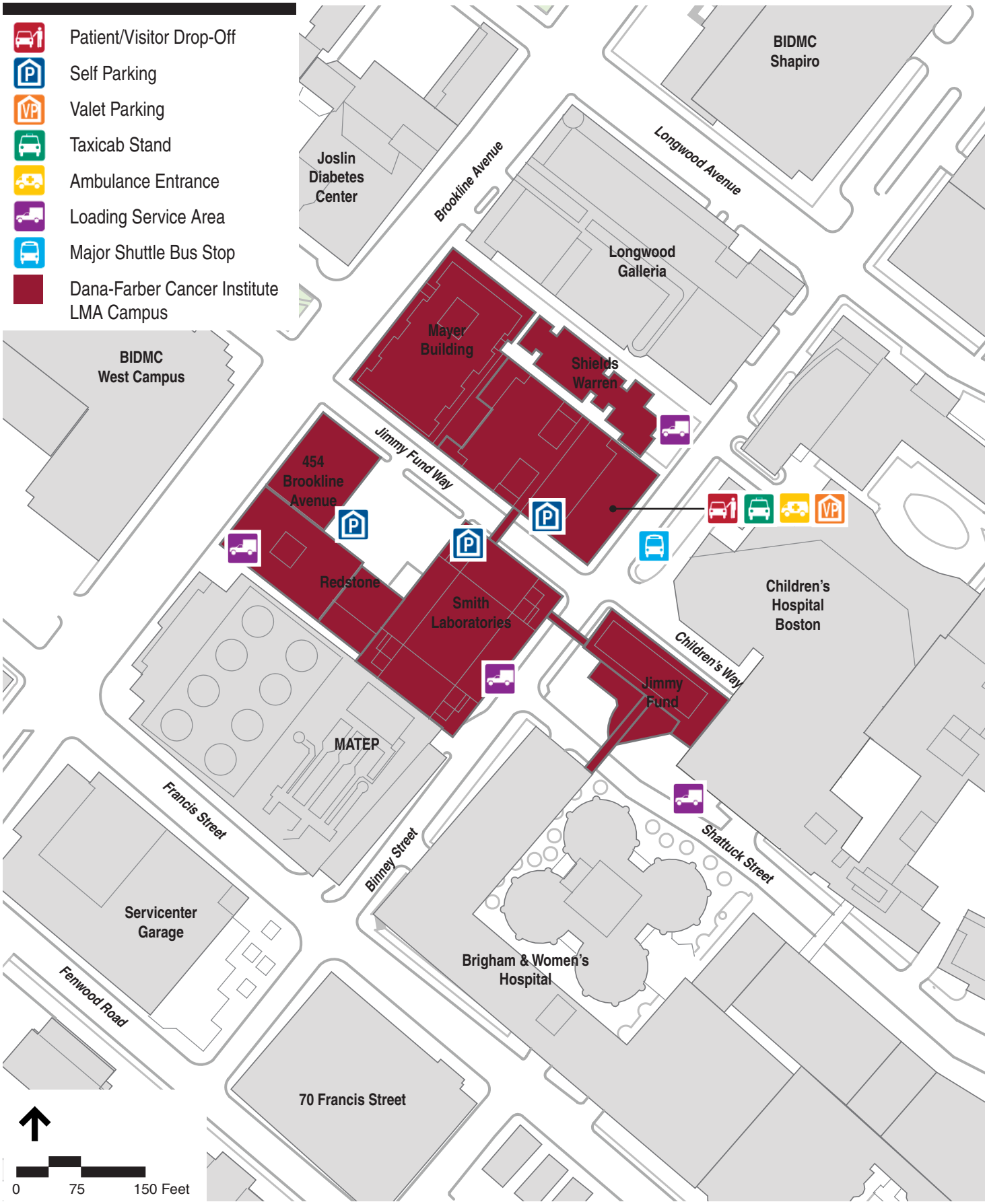
	Mitigation Element	Description	Purpose/Benefit	Implementation Timing
		Traffic Management Plan		
1	Patient Drop-off on Jimmy Fund Way	Provide a minimized off-street drop-off along Jimmy Fund Way – which will be made available for first-time DFCI patients, chair cars, taxis and ambulances only.	Minimize streetside traffic conditions along JFW and Brookline Avenue	C of O for the Center for Cancer Care
2	Below-Grade Drop-off on P1.	Implement a cutting-edge drop-off on P1 of the new Center for Cancer Care.	Improve patient experience at DFCI. Provide simplified wayfinding to desired points in the DFCI campus.	C of O for the Center for Cancer Care
3	Loading and Service Improvements	Reconfigure the DFCI Smith Loading Dock to include 2 additional loading bays.	Improve off-street loading conditions, eliminate potential illegal loading along Brookline Avenue.	C of O for the Center for Cancer Care
4	Off-Site Materials Management Actions	Implement an off-site Materials Management Center in 27 Dry Dock Avenue.	Allows for "just in time" delivery techniques, which will reduce truck trip frequency and dock utilization times.	Early 2007
		Local Street Network / Systemwide Transportation Improvements		
5	Brookline Ave/Jimmy Fund Way/Deaconess Rd Signal Improvements	Modify the existing traffic signal operations to accommodate a protected left-turn movement from Brookline Avenue to Jimmy Fund Way. Modifications will include provision of a new traffic controller, mast arms, signal posts, pedestrian signals, crosswalks, and signage.	Will improve patient wayfinding and safety in the area.	C of O for the Center for Cancer Care
6	Brookline Ave/Jimmy Fund Way/Deaconess Rd Pedestrian Improvements	Modify corner radii at the intersection, install ADA-compliant accessible ramps, and include countdown pedestrian indications in the new signal design.	Improve pedestrian safety.	C of O for the Center for Cancer Care
7	Widen Jimmy Fund Way	Widen Jimmy Fund Way to include 2 approach lanes at its intersection with Brookline Avenue.	Will decrease traffic queues on JFW and provide an improved traffic flow along both JFW and Binney Street.	C of O for the Center for Cancer Care
8	Area Sidewalk Improvements	Reconstruct wide sidewalks along Brookline Avenue and Jimmy Fund Way adjacent to the Center for Cancer Care project site.	Improve pedestrian access, safety, and urban design of the area.	C of O for the Center for Cancer Care

Table 5-6 (Continued): Proposed Dana-Farber Cancer Institute Transportation Mitigation and Improvement Plan

	Mitigation Element	Description	Purpose/Benefit	Implementation Timing
9	PTZ Camera Installation	Install an internet-connected Pan-Tilt-Zoom traffic monitoring camera at the intersection of Brookline Avenue/Jimmy Fund Way	Improve traffic and incident management system for the City of Boston.	C of O for the Center for Cancer Care
Urban Design				
10	Center for Cancer Care Pedestrian Plaza	Provide significant public space at the entrance to the Center for Cancer Care at the intersection of Brookline Avenue/Jimmy Fund Way.	Provide public space enhancement that complements open space at Joslin Park	C of O for the Center for Cancer Care
11	Jimmy Fund Way Urban Design Improvements	Provide widened sidewalks, street trees and other hardscape amenities along JFW.	Provide public space enhancement to the DFCI campus	In connection with future Dana Building Infill project
Parking Ratios				
12	Limit new on-site parking to be constructed as part of the IMP	DFCI IMP projects will include construction of 217 parking spaces for 290,049 SF of development.	Resultant parking ratio for the DFCI IMP will be 0.75 spaces per 1,000 s.f., that complies with the ratio that has been established by the BTD within the LMA Interim Guidelines.	C of O for the Center for Cancer Care
13	Convert employee parking to patient parking	Convert existing employee parking spaces to patient parking spaces.	Maintain quality patient care/customer service. Reduce peak hour traffic volumes. Minimize need to construct new on-campus parking spaces.	As needed during the term of the IMP
14	Employee Parking Pricing	Evaluate and charge market rates for monthly employee parking.	Encourage shift employee mode share from auto to transit. Will help to curb parking demands.	Short-term
Transportation Demand Management Plan				
15	Maintain proactive relationship in MASCO's CommuteWorks TMA	Maintain access to wide array of TDM programs and amenities that seek to encourage the use of transit as a regular means of commuting.	Encourage shift in employee mode share from auto to transit.	Ongoing
16	Maintain high percentage employee transit subsidy	Maintain employee/tenant transit subsidy at 50 percent.	Encourage shift in employee mode share from auto to transit.	Increased November 2005

Table 5-6 (Continued): Proposed Dana-Farber Cancer Institute Transportation Mitigation and Improvement Plan

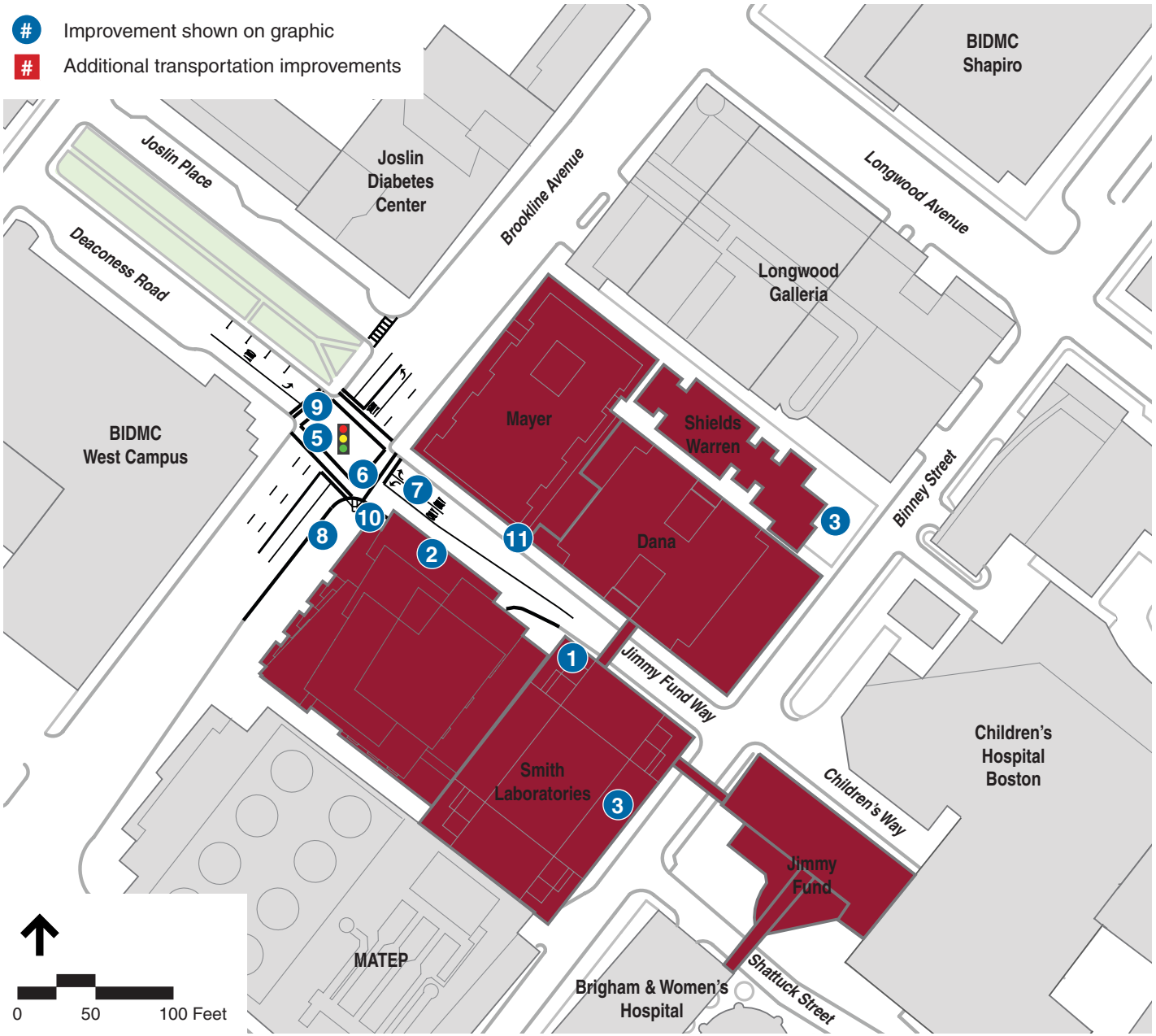
	Mitigation Element	Description	Purpose/Benefit	Implementation Timing
17	Zip Car Provision	Coordinate with ZipCar representatives to add one designated space for this shared-car service at the Center for Cancer Care.	Encourage shift in employee mode share from auto to transit.	C of O for the Center for Cancer Care
Sustainability				
18	Provide preferential parking for hybrid vehicles	Allocate preferential parking spaces for hybrid and other alternatively-fueled vehicles.	Encourage the use of alternatively fueled vehicles.	C of O for the Center for Cancer Care
Construction Management				
19	Prepare Construction Management Plan	Prepare and submit a detailed Construction Management Plan (CMP) for the Center for Cancer Care project	Minimize construction impacts.	Complete



DANA-FARBER CANCER INSTITUTE
INSTITUTIONAL MASTER PLAN

Dana-Farber Cancer Institute
Campus Transportation Infrastructure

FIGURE 5-1



Traffic Management Plan

1. Below-Grade Drop-off on P1 (Primary)
2. Patient Drop-off on Jimmy Fund Way (Secondary)
3. Loading and Service Improvements
4. Off-Site Materials Management Actions

Local Street Network / System-wide Transportation Improvements

5. Brookline Ave/Jimmy Fund Way/Deaconess Rd Signal Improvements
6. Brookline Ave/Jimmy Fund Way/Deaconess Rd Pedestrian Improvements
7. Widen Jimmy Fund Way
8. Area Sidewalk Improvements
9. PTZ Camera Installation

Urban Design

10. Center for Cancer Care Pedestrian Plaza
11. Jimmy Fund Way Urban Design Improvements

Parking Ratios

12. Limit new on-site parking to be constructed as part of the IMP
13. Convert employee parking to patient parking
14. Employee Parking Pricing

Transportation Demand Management Plan

15. Maintain proactive relationship in MASCO's CommuteWorks TMA
16. Maintain high percentage employee transit subsidy
17. Zip Car Provision
18. Loading Dock Manager

Sustainability

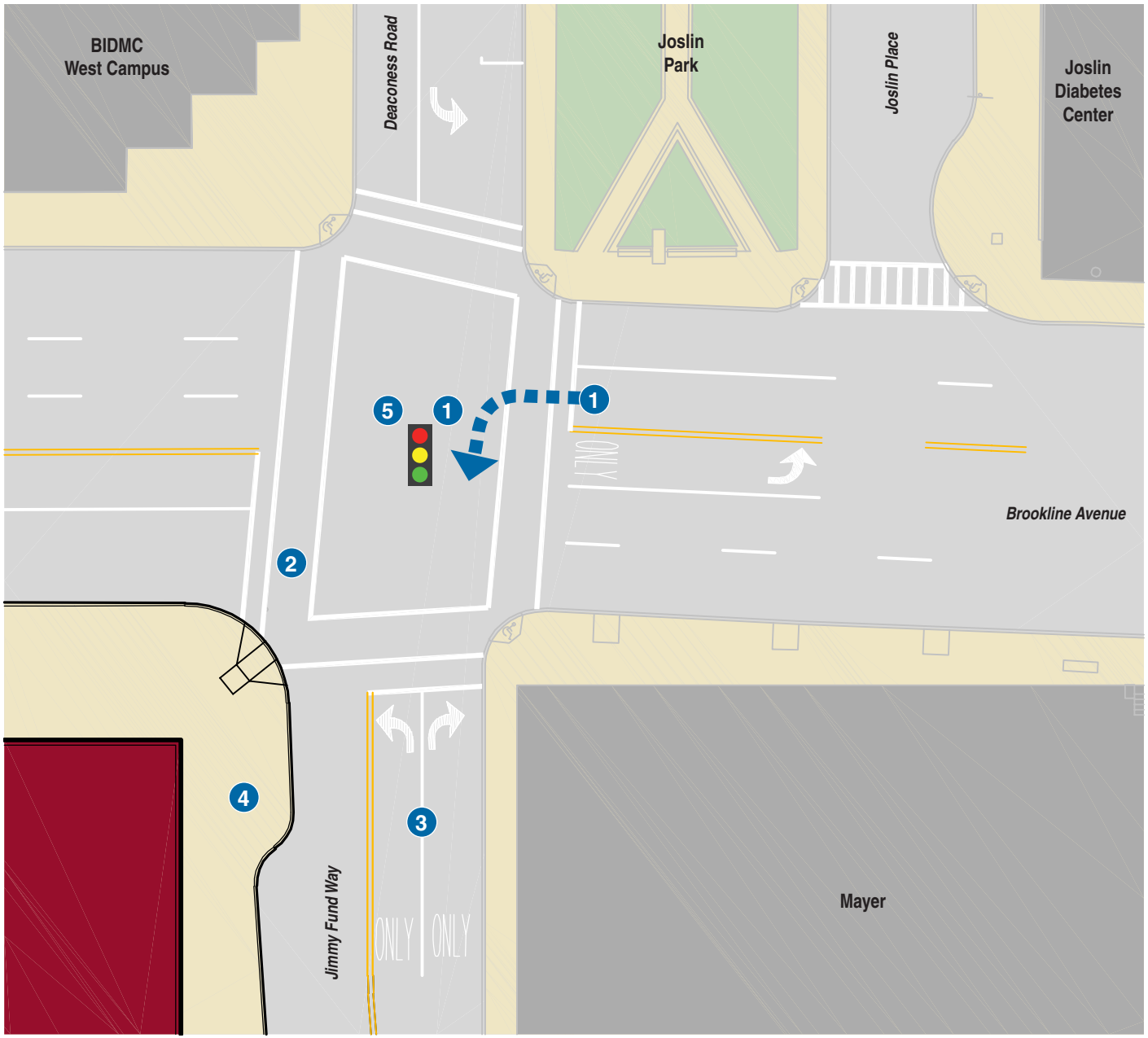
19. Provide preferential parking for hybrid vehicles

Construction Management

20. Prepare Construction Management Plan

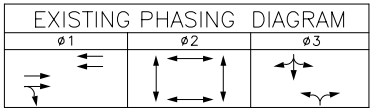
Proposed DFCI Transportation Mitigation and Improvement Plan

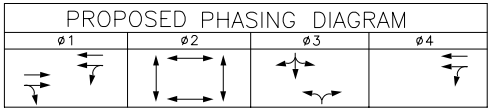
FIGURE 5-2



Local Street Network/Systemwide Transportation Improvements

1. Improve Brookline Avenue/Jimmy Fund Way/ Deaconess Road signal and provide protected left-turn movement from Brookline Avenue to Jimmy Fund Way.
2. Improve pedestrian facilities at Brookline Avenue/ Jimmy Fund Way/Deaconess Road.
3. Widen to two lanes at Jimmy Fund Way approach northwest bound.
4. Significantly widen and improve area sidewalks.
5. Install PTZ camera at intersection of Brookline Avenue/Jimmy Fund Way/Deaconess Road.





Proposed DFCI Transportation Mitigation and Improvement Plan
Brookline Avenue/Jimmy Fund Way/Deaconess Road Intersection

FIGURE 5-3

6

Infrastructure Systems

6.1 Introduction

This chapter describes the infrastructure systems that serve the Dana-Farber Cancer Institute's campus in the Longwood Medical and Academic Area of Boston. The following utilities are evaluated: wastewater, water, stormwater management, steam, natural gas, electricity, and telecommunications.

A detailed description of the proposed Center for Cancer Care's infrastructure requirements is included in the Draft Project Impact Report/Draft Environmental Impact Report, filed under separate cover.

The systems discussed herein include those owned or managed by the Boston Water and Sewer Commission (BWSC), private utility companies, and on-site infrastructure systems.

Other sections of this report outline DFCI's sustainable design initiatives which include water conservation and energy-saving measures.

6.2 Water Service

DFCI is served by the BWSC Southern Low Service water system, which provides both domestic and fire protection water to the campus (see Figure 6-1). BWSC has the following water mains in the streets adjacent to DFCI buildings:

- A 12-inch main in Brookline Avenue;
- An 8-inch main in Jimmy Fund Way;
- An 8-inch main in Binney Street; and
- An 8-inch main in the service corridor behind the Jimmy Fund Building.

There is a 48-inch water main in Brookline Avenue which is part of the regional system that delivers water to the area surrounding and including the Longwood Medical and Academic Area.

6.3 Sanitary Sewer

Sanitary sewerage from DFCI facilities is discharged to the BWSC sanitary sewer system within adjacent streets (see Figure 6-2). The following sanitary sewer lines service the DFCI campus and flow west into Brookline, Massachusetts where the sewerage is intercepted and transmitted through regional interceptor sewers to the Deer Island Treatment Plant for treatment and disposal:

- A 15-inch gravity sewer in Brookline Avenue; and
- A 10-inch gravity sewer in Jimmy Fund Way.

The following sanitary sewer lines service the DFCI campus and flow east towards Longwood Avenue, ultimately connecting to the same regional interceptor system described above:

- A 12-inch gravity sewer in Binney Street; and
- A 12-inch private gravity sewer running through Children's Hospital to Longwood Avenue.

6.4 Storm Drainage

Storm drainage from the Dana-Farber Cancer Institute is discharged to the BWSC storm drainage system located in the adjacent streets (see Figure 6-2). The following storm drains service the DFCI campus and flow westerly toward the Muddy River:

- A 12-inch drain in Brookline Avenue;
- A 12-inch drain in Jimmy Fund Way; and
- An 18-inch drain in Binney Street.

The following storm drains service the DFCI campus and flow easterly toward Longwood Avenue, ultimately discharging into the Muddy River:

- A 12-inch drain in Binney Street; and
- A 15-inch private drain running through Children's Hospital to Longwood Avenue.

6.5 Energy Systems

DFCI facilities are provided steam, chilled water, and electrical service from the Medical Area Total Energy Plant (MATEP), which is adjacent to DFCI's campus and is located at the intersection of Brookline Avenue and Francis Street. MATEP provides steam and chilled water service to DFCI both directly from the MATEP facility to DFCI's buildings and via a system of underground service tunnels in Binney Street and Shattuck Street. MATEP also has electric service duct banks running in Binney Street. Figures 6-1 and 6-3 show the location of adjacent chilled water, steam, natural gas and electrical systems.

NSTAR also has a substantial electric duct bank system in Brookline Avenue and Binney Street and can provide power to DFCI's proposed Center for Cancer Care. At this time it is expected that NSTAR will be the electrical power provider to the proposed facility.

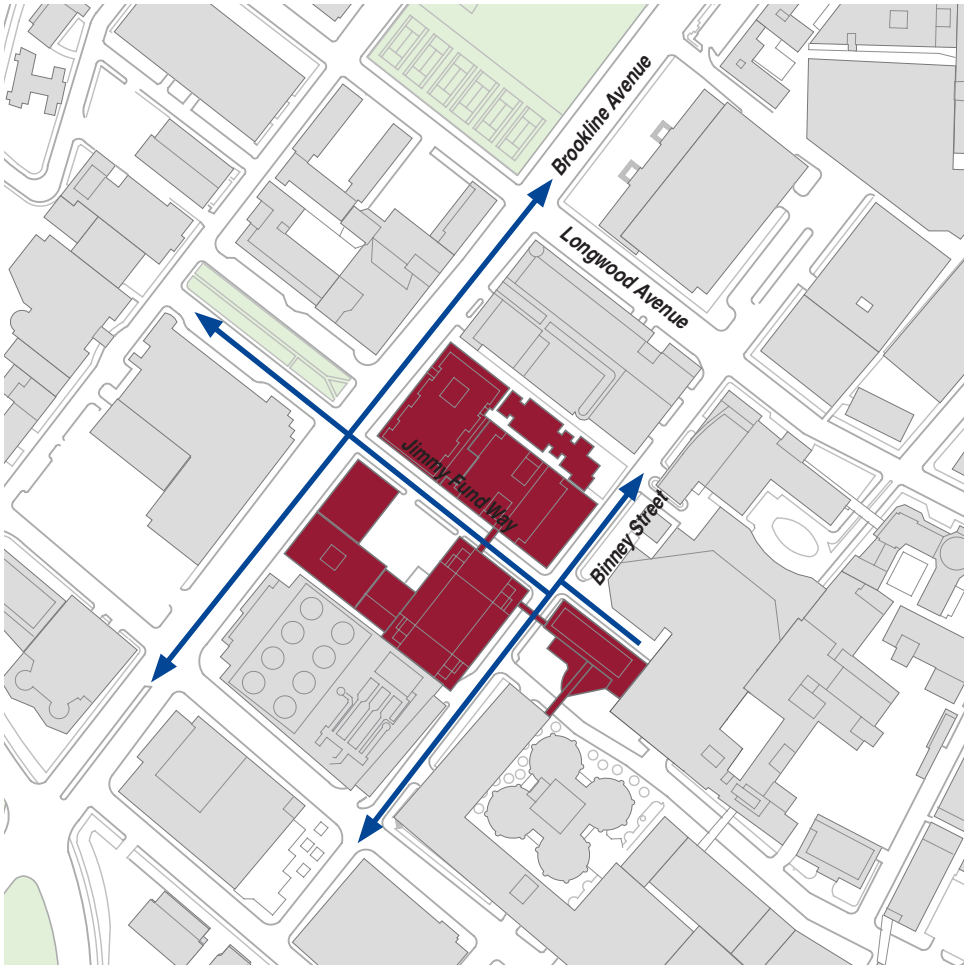
6.6 Telecommunications

Verizon and Comcast provide telecommunications infrastructure in the street network adjacent to the Dana-Farber Cancer Institute's campus, including Brookline Avenue, Jimmy Fund Way and Binney Street.

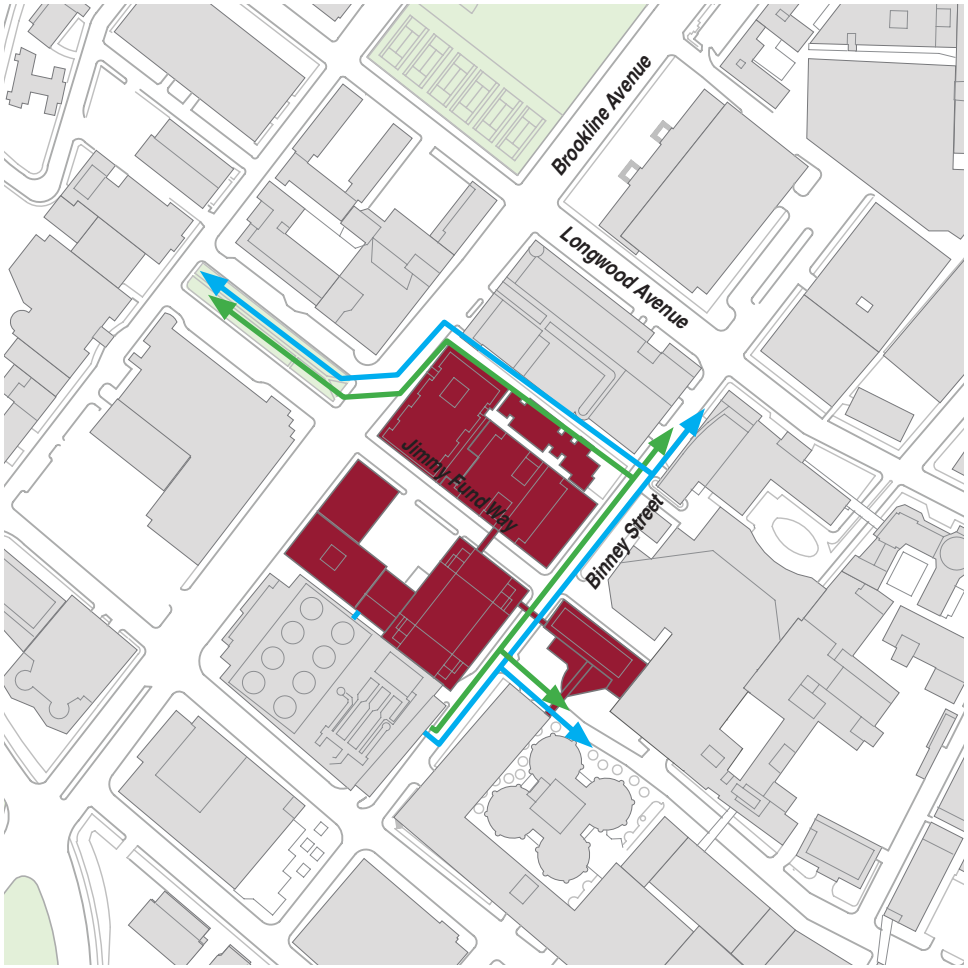
6.7 Participation in LMA-wide Planning Activities

The Medical Academic and Scientific Community Organization, Inc. (MASCO) is a charitable corporation established in 1972 by its member institutions to plan, develop and enhance the LMA for the benefit of the general public and its members, and to create and implement programs that assist the institutions and individuals in the LMA. MASCO's mission is to pursue programs that promote a sense of community among its members and create and deliver services more effectively provided on a shared basis.

DFCI is an active participant in numerous committees that coordinate infrastructure and support activities to the benefit of DFCI and other LMA institutions. The major support committees consist of the Board and Supporting Management Committees, Energy, Information Technology, Security, Transportation, Parking, Emergency Preparedness, Facility Planning, Construction Coordination, Materials Management, Workforce Development, Long-Range Planning, and Childcare.



Existing Potable Water



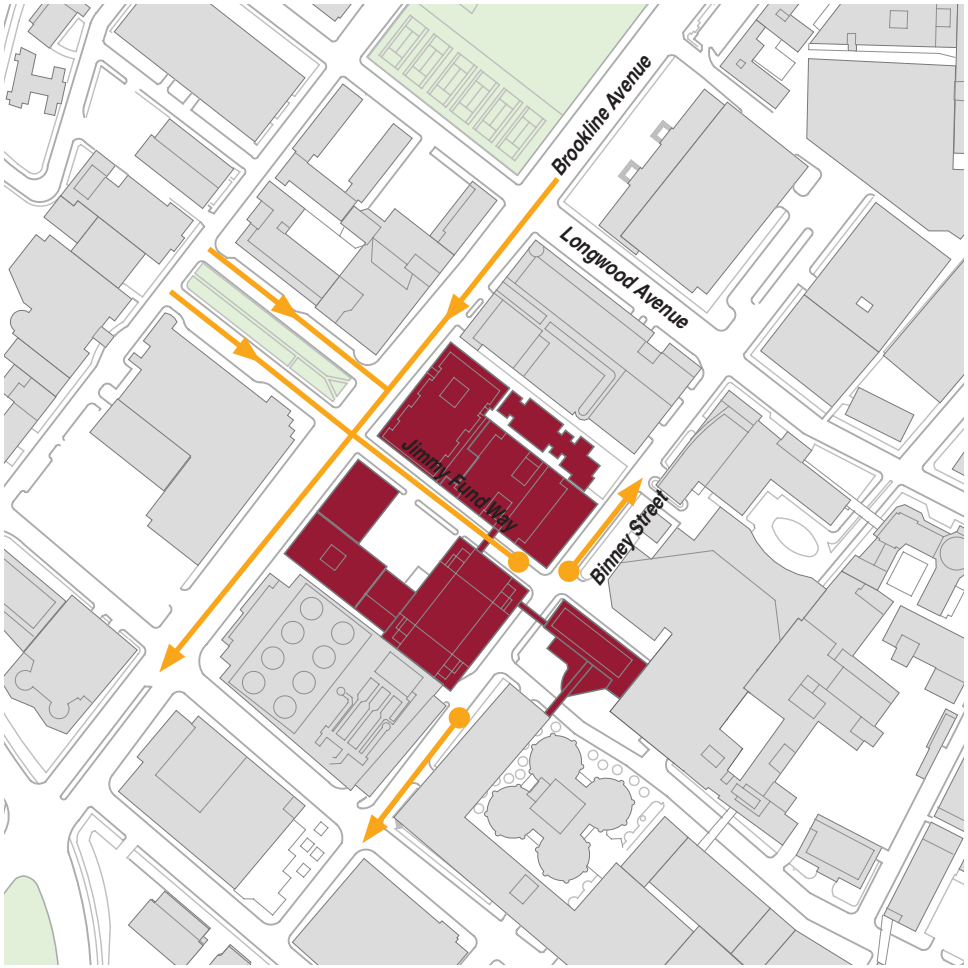
Existing Chilled Water and Steam

Chilled Water
Steam

DANA-FARBER CANCER INSTITUTE
INSTITUTIONAL MASTER PLAN

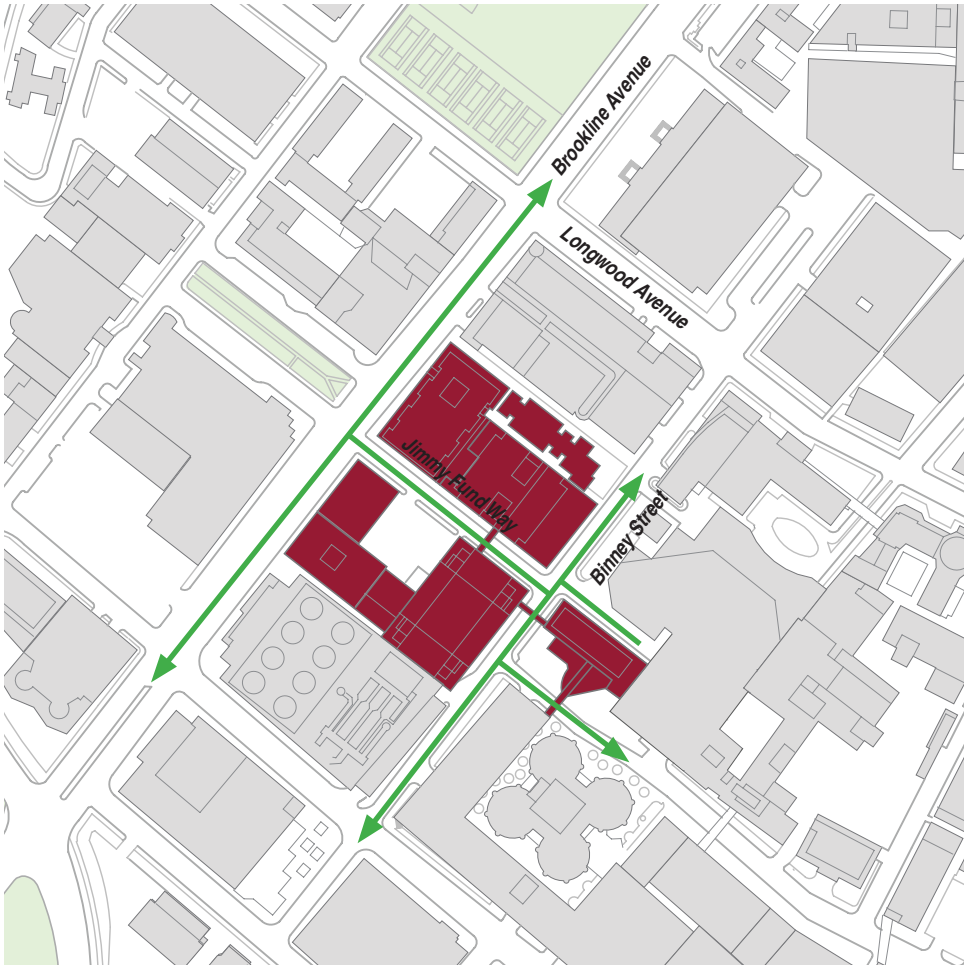
Site Utilities

FIGURE 6-1

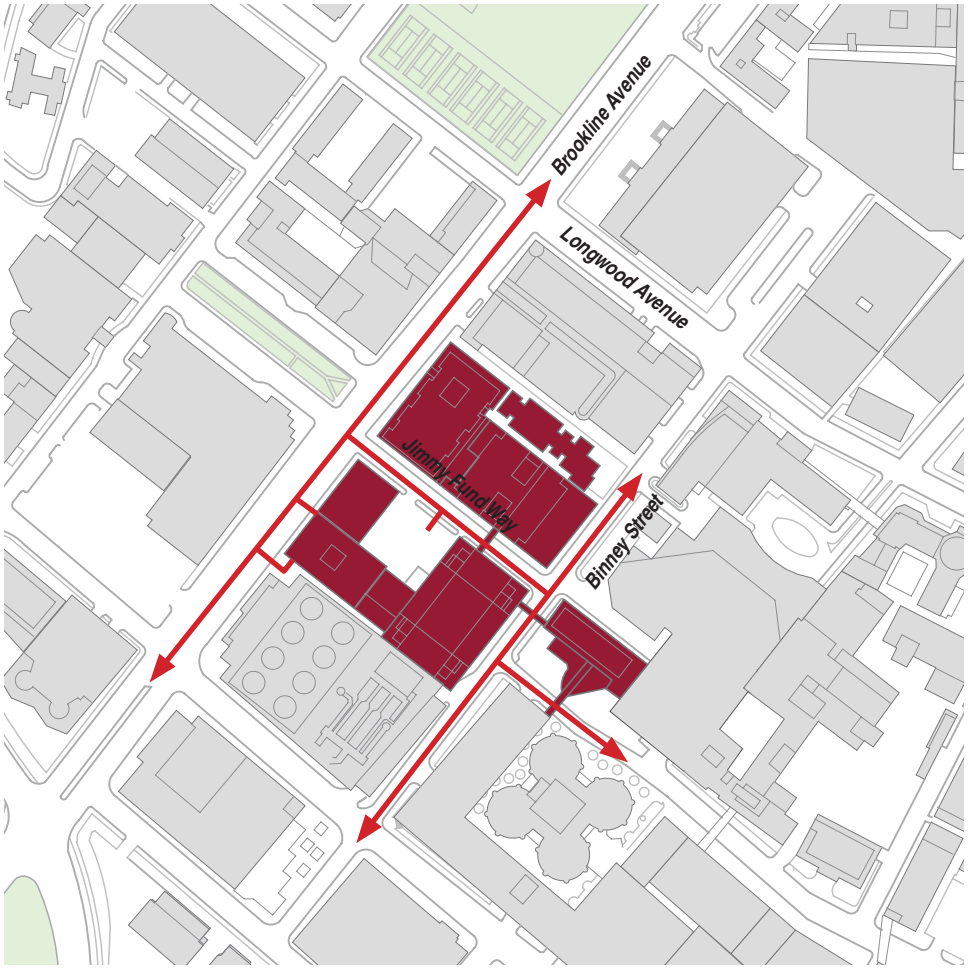


Existing Sanitary Sewer

Existing Storm Water



Existing Natural Gas



Existing Electrical

7

Sustainable Design

7.1 Introduction

As a responsible provider of healthcare services and research into the causes and prevention of cancer, Dana-Farber Cancer Institute is committed to the health of its patients, staff, and their communities and environment. Research results from multiple studies show a significant correlation between sustainable design concepts such as daylighting, effective ventilation, healthy interior finish materials, occupant control over ambient conditions, contact with nature, and access to views with physical, psycho-social, and neuro-cognitive well-being. DFCI proactively seeks new and better ways to meet its environmental goals through conservation, reduction, reuse, and recycling programs, and through partnerships with others in the community to safeguard the environment.

DFCI is specifically committed to reducing and minimizing resource use, reducing consumption of energy and materials, and management of its remaining waste responsibly. It is committed to promoting awareness of these environmental goals and encouraging environmental literacy among staff, faculty, trustees, patients, visitors, vendors, and contractors. DFCI works with its staff and its vendors to find substitute materials that do not generate toxic emissions and byproducts.

While DFCI complies with all applicable laws and regulations, it also reduces, and wherever possible, eliminates hazardous waste disposal through source reduction and recycling. In 1999, DFCI established the Recycling Committee, a volunteer effort to oversee the recycling efforts of the Institute. The committee's name was changed to the "Green Team" to reflect the broader scope of issues and initiatives that the committee oversaw. The Green Team won the DFCI Quality Improvement Teamwork Award in 2003.

7.2 Site Sustainability

Dana-Farber Cancer Institute's primary IMP project, the Center for Cancer Care is being developed with a focus on optimal application of sustainable design features and operating procedures. The project has been registered with the United States Green Building Council (USGBC) and is targeting a Silver Leadership in Energy and Environmental Design (LEED) rating. In addition, the Green Guidelines for

Healthcare Construction (GGHC) rating system is being followed as a guideline to further best practices in green construction specific to healthcare facilities.

Beyond this commitment to sustainability in new construction, DFCI has a history and current policy of environmentally responsible practices in transportation, habitat restoration, and sustainable building maintenance. DFCI has been named by the EPA on the New England's Best Workplaces for Commuters list, in recognition of its innovation and commitment to reducing traffic congestion and air pollution and improving the health and quality of life for commuters and neighboring populations.

To minimize the number of private vehicles commuting to the campus, building occupants are encouraged to use public transportation, carpooling, car sharing, or bicycling as alternate means of transportation. The campus is located near several bus and rail stops. DFCI has existing carpooling and car-sharing programs (which use alternative-fuel vehicles) available for staff use. Bicycle storage and showering and changing facilities will be available on-site and nearby to accommodate at least five percent of the Center for Cancer Care's full-time occupants. DFCI also takes full advantage of MASCO's low-emission and fuel efficient vehicles by offering employees discounted passes towards participating in this ecologically responsible transport.

Dana-Farber Cancer Institute's new building will incorporate a green roof to be planted with native, drought-tolerant plants. This will provide landscaped open space and natural habitat currently not found on the site, and decrease both the rate of storm water runoff and the contribution to the heat island effect from current conditions. The green roof will help reduce energy use by reducing heat gain and loss. Although DFCI has had little opportunity for planting within its campus in the past, the development of the Center for Cancer Care provides new avenues for native and adaptive planting strategies. In addition to planting native plants on the Center for Cancer Care's green roof, DFCI plans to landscape at the ground level with similar species.

Other examples of DFCI's commitment to overall site sustainability include the Institute's sustainable approach reducing the head island effect on its campus by placing parking underground and employing high-albedo pavement along Jimmy Fund Way, research into the feasibility of using locally manufactured products to reduce the need for pollution-causing transport, and commitment to minimizing light pollution by employing city-specified outdoor lighting and reducing the glare of specified interior lighting.

7.3 Water Conservation and Erosion Control

Dana-Farber Cancer Institute is committed to responsibly conserving and utilizing potable water resources. The Institute's central intent for its water-efficient practices in both landscape and building water consumption is to reduce demand on local water supplies and the load on local sewage and treatment facilities, and to minimize

the need to take water out of its natural cycle. DFCI has committed to reducing its water consumption overall on its campus by 20 percent. With the exception of make-up water to the cooling tower loop, potable water will not be used for once-through equipment cooling. For all cooling equipment requiring heat rejection, the Center for Cancer Care will use either outdoor ambient air or recirculated condenser air.

DFCI has an excellent long-term record of water conservation and waste water reduction in partnership with the Massachusetts Water Resources Authority (MWRA). DFCI's facility department has conducted comprehensive surveys to track water use and water flow throughout the Institute, and has documented and implemented alternative practices and equipment upgrades for reduced consumption. One of DFCI's wastewater reduction techniques has been to re-use first pass reject water in all of its existing reverse osmosis systems. This has produced a 70 percent reduction in this wastewater stream.

In its new Center for Cancer Care development, DFCI has incorporated important water conservation features into the design. These features include a design to capture rainwater and air handling unit (AHU) condensate. The feasibility of installing a below-grade cistern at the Center for Cancer Care to store this water and use it to reduce potable water demand from landscaping, equipment cooling and toilets is being evaluated. The design also specifies low-flow and ultra low-flow plumbing fixtures, including WC's, urinals, and showers.

Dana-Farber Cancer Institute's landscaping design for its new building and campus improvements reduces water use by using native/drought resistant plantings on the green roof and in other landscaped areas, and eliminating turf grass. DFCI has committed to placing "Don't Dump: Drains to the Charles River" plaques at each of its storm drain locations throughout the campus, and adopted an erosion and sedimentation control plan that is based on the 2003 EPA Construction General Permit.

Because water quality is as important as water conservation, DFCI is very proactive about oil spill prevention. Dana-Farber maintains a current Spill Prevention Countermeasure and Control Plan (SPCC), signed and inspected by an engineer. DFCI conducts SPCC inspections annually, has added a monthly inspection of all generators to the electricians' preventative maintenance program, and trains all maintenance workers and contractors in oil spill prevention. There is also a preventative maintenance program to clean oil/water separators bi-annually or as needed.

7.4 Energy

Because medical institutions like DFCI are intensive users of high-demand, sophisticated equipment, they are significant energy consumers. DFCI takes very seriously its responsibility to wisely steward its energy and environmental resource consumption.

DFCI has incorporated a number of energy-saving practices into its current facility operations, including a system for powering down all equipment at night, the systematic replacement and upgrade of lighting throughout the Institute with energy-efficient fluorescent and electronic-ballast fixtures, and the replacement of all CFC-using equipment. Renovations to existing buildings are required to comply with Chapter 13 of the Massachusetts Building Code, which mandates wise energy usage, and meet Energy Star standards. Dana-Farber Cancer Institute is in the process of thoroughly assessing all infrastructure on its campus and has budgeted funding for each upcoming capital-year program to systematically upgrade its equipment and systems in response to this analysis.

The Center for Cancer Care project has been designed to comply with the mandatory and prescriptive requirements of Mass Energy Code 2007, which is based on ASHRAE/IESNA 90.1-2004. Strategies for energy reduction under consideration include optimization of the curtainwall design and lighting design, and incorporating heat recovery in the HVAC systems. DFCI is using an Eco-Tect model and other energy modeling programs to optimize the building skin's thermal properties and daylighting potential. Lighting systems are being designed to maximize energy efficiency while providing occupants with appropriate light levels. DFCI plans for the Center for Cancer Care's chilled water to be provided by new, non-CFC equipment that will be added to MATEP's existing system. The new equipment will be sized so that the minimum capacity is at least equal to the project's maximum demand. DFCI is also considering increased medical equipment efficiencies for its new facility. The new building design incorporates strategies to maintain desired thermal comfort and adaptive comfort controls to suit both individual needs and those of groups in shared spaces.

The Center for Cancer Care design also incorporates energy-saving techniques such as uniform ambient illumination, pendant-mounted systems combined with high reflectance ceiling surfaces and finishes, and maximized daylighting, including toplighting, lighting from high on the window wall, and integrated daylighting sensors. There will also be a comprehensive Building Management System that ties the Center for Cancer Care to the rest of the campus and allows holistic energy-efficiency monitoring. This system will control all utilities, temperature, lighting, and sun control.

Other examples of current DFCI energy saving practices include:

- Maximized chilled water use through coils and controls to re-circulate water before it is returned to the MATEP plant
- Upgrades to variable speed drives on renovated air handling systems
- Use of energy efficient light fixtures in all garages
- Steam trap computerized tracking and preventive maintenance system
- Night set-back on all computerized air systems in all buildings

- Monitors and controls for all steam condensate economizers
- Energy-efficient freezers and refrigerators required in all labs
- Maximum free-cooling prioritized through outside air economizers
- A full-time controls technician to manage system performance and achieve optimum energy conservation

7.5 Waste Handling and Recycling

DFCI is a leader in responsible, thorough, and creative institute-wide recycling, and has been recognized for its outstanding accomplishments in this area by government and non-government agencies.

In 2004, DFCI was the recipient of the EPA's WasteWise Program Partner of the Year Award to recognize its overall waste reduction achievements, efforts to purchase recycled-content products, and activities to promote WasteWise. DFCI also received a 2004 Making Medicine Mercury Free Award from the EPA's Hospitals for a Healthy Environment program to acknowledge its outstanding efforts to virtually eliminate mercury from the healthcare sector and for providing real examples to show how hospitals can phase out mercury-containing products while maintaining quality patient care. In the same year Dana-Farber Cancer Institute was also recognized with an EPA Environmental Merit award.

Dana-Farber played a role in the passage of a City of Boston decree aimed at reducing people's exposure to dioxin by offering testimony for The Dioxin Resolution passed unanimously by the Boston City Council on Oct. 29, 2003. Dana-Farber testified "purchasing departments must be the drivers of change by making knowledgeable purchasing decisions, demanding more information from manufacturers, and looking for cost-effective alternatives." DFCI is listed with Healthcare Without Harm as a "Healthcare Institution Undertaking Efforts to Reduce Polyvinyl Chloride (PVC) and/or Di(2-Ethylhexyl) Phthalate (DEHP)". One example of the removal of this toxin from DFCI was the change from PVC patient identification bracelets to recyclable Tyvek bracelets. Dana-Farber's Purchasing Department and Green Team have worked to minimize the use of items containing PVC, ranging from gloves and needle disposal boxes to three-ring binders. Purchasing staff members review contracts for items with PVC and seek out distributors and manufacturers who share "environmentally preferable purchasing" goals.

Dana-Farber has served on the Environmentally Preferable Purchasing Roundtable with the Executive Office of Environmental Affairs, the MWRA/MASCO Mercury Workgroup, the Massachusetts Office of Technical Assistance Steering Committee on Environmental Management Systems, the EPA's Memorandum of Understanding with the American Hospital Association education subcommittee, and was instrumental in the 2000 passage of the City of Boston's mercury thermometer ban.

Dana-Farber recycles all batteries through DFCI's recycling contractor. This eliminates the need to determine if each battery is hazardous or not because despite the mercury battery management act, batteries can still contain minute amounts of mercury. Lead acid batteries used by Simplex are recycled off-site by Simplex. Labeled collection containers are located in areas determined to use the greatest volume of batteries.

Sphygmomanometers and patient and lab thermometers have all been replaced with non-mercury versions. Mercury devices including thermostats, floats, manometers, switches, water meters, thermometers, and gauges are collected by the Maintenance Department and recycled through ENVIRONMENTAL HEALTH AND SERVICES (EH&S). If a device cannot be replaced, it is labeled with a "Do Not Throw Away-contact EH&S" sticker. DFCI's Green Team has hosted mercury thermometer exchanges and given away over 400 digital thermometers in exchange for mercury thermometers that were sent to a hazardous waste contractor. DFCI has implemented a program to collect all lab antibody waste that might contain less than 200 parts per billion mercury to ensure that this wash material is not drain-disposed. Mercury vapor lamps used in research are collected as hazardous waste and stored in hazardous waste rooms. Germicidal lamps used in research are collected by the DFCI Utility Shop and separately stored for recycling through Dana-Farber Cancer Institute's universal waste contractor. Most other fluorescent light bulbs used in the Institute pass the EPA's TCLP test and are not considered hazardous waste. However, these are still collected and recycled to ensure that no bulbs that do not pass the TCLP are discarded in the regular trash stream.

Dana-Farber is very proud to be a leader in the reduction and recycling of solid waste. Dana-Farber recycles computers, printers, scanners, wood pallets, batteries, cardboard, scientific equipment, drink containers (plastic and metal), kitchen food waste to compost, kitchen glass and metal waste, Styrofoam containers, cell phones, printer and copier toner cartridges, Tyvek, acetate transparencies, CDs, floppy disks and DVDs, video tapes, plastic pipette tip racks, and all paper including newspapers. Usable furniture and office materials are donated or similarly recycled. The blood donor center uses cloth covered bags of beans that are microwaved for heating bags rather than the disposable kind. Finally, large volumes of plastic pipettes and serological pipettes can be disposed of through a recyclable container rather than the standard sharps containers that are ultimately incinerated. These large gray containers are double lined with red waste bags and an outside vendor removes the contents and cleans the containers for re-use. Dana-Farber's Green Team holds an annual "Weird Waste Day" to collect odd, not normally collected waste streams and to increase education for the Institute's recycling program. Eyeglasses, textbooks and other materials as well as the normally recycled materials listed above are collected during this highly successful annual event.

DFCI has always had a comprehensive environmental health and safety program. Minimization of hazardous and solid waste is a goal of all of DFCI's programs. DFCI has recognized its obligation to preserve the environment and has instituted a program to ensure the proper disposal of hazardous waste. It is the researcher's responsibility to ensure that all hazardous waste materials are properly contained

and labeled at all times in the laboratory. Environmental Health and Safety collects chemical waste, upon request, twice a week. Once a month, a chemical waste disposal firm, licensed by the EPA, picks up and subsequently incinerates, landfills or otherwise treats these materials. Hazardous waste minimization is the EPA's first-choice method of pollution prevention. Waste minimization means a reduction in both the volume and the physical hazards or toxicity of the material. DFCI integrates pollution prevention into experimental design and laboratory management. It is DFCI's policy to order only the quantity of hazardous material which they anticipate using. Only one person orders chemicals for a research group, thereby minimizing duplicate orders. DFCI keeps an updated inventory of all the chemicals that are in the lab so that unnecessary orders are not placed. DFCI shares excess and unexpired chemicals with other groups through the Orphaned Chemicals Program, which redistributes chemicals that can be re-used by other groups.

Chemical waste is stored in a Satellite Accumulation Area (SAA), which is a chemical fume hood or other secure container. SAAs are inspected weekly, and Dana-Farber Cancer Institute maintains rigorously enforced procedures for checking, containerizing, labeling, and disposing chemical waste.

The Center for Cancer Care will utilize many strategies to lessen the impact of the proposed new construction on the environment. One way to achieve this is through proper waste management during the demolition and construction of the Center for Cancer Care. Throughout these phases, the construction manager will be responsible for diverting at least 75 percent of all construction, demolition, and land clearing waste away from landfills or incinerators. Given the current recycling resources and capabilities in the Greater Boston area, this is both an economical and practical goal for the Center for Cancer Care. The construction manager routinely achieves 95 percent construction waste diversion. These proactive source-reduction measures will allow DFCI to maximize recycling and resource management during the construction of the Center for Cancer Care.

7.6 Environmental Quality

As a leader in the fight against cancer and environmental hazards that can cause cancer or other serious diseases, DFCI implements extensive environmental quality controls, from management of indoor air quality throughout its campus to dedicated efforts to improve and protect outdoor air quality and control and mitigate against the risks of infection and the spread of viruses.

7.6.1 Indoor Air Quality

DFCI maintains a stringent program for protection from airborne contaminants. The Institute's safe practices are governed by an Integrated Chemical Hygiene / Environmental Management Plan in concert with the DFCI Safety Manual and a detailed Respirator Program. If airborne or surface contamination is detected, Environmental Health and Safety arranges for workplace samples to be taken to

determine the extent of contamination, informs staff members of the results, and uses the collected data to aid in the evaluation and facilitation of appropriate conditions. DFCI has programs in place to monitor for and eliminate airborne contamination from formaldehyde, methylene chloride, benzene, asbestos, anesthetics, and other toxins of concern. In addition, DFCI has extensive protocols and restricted locations for chemical mixing, and monitors these types of activities vigilantly.

Dana-Farber Cancer Institute also reviews past indoor air quality events and adjusts its filtration type and levels at suspect air intakes based on this forensic data. DFCI has a map showing all locations of air intakes and filter types. DFCI designs its mechanical systems for new and renovated spaces on its campus to comply with ASHRAE 62.1-2004 for increased ventilation, and employs Minimum Efficiency Reporting Value (MERV) filters at its fresh air intakes. In the design for the new Center for Cancer Care, grills have been incorporated at all entryways directly connected to the outdoors to control the level of particulate carried into the building.

To ensure good indoor air quality (IAQ) during construction, DFCI closely monitors work near indoor and outdoor chemical and pollutant sources, and has a detailed plan describing appropriate management and containment in place. Construction-related indoor air quality complaints are reported to the Institute Safety Committee monthly, reviewed at Contractor/Safety meeting weekly, and checked by the Environmental Health and Safety Office daily. Contact information for lodging complaints is posted and available for all staff, patients and visitors.

7.6.2 Outdoor Air Quality

Dana-Farber Cancer Institute is equally committed to improving the outdoor air quality of its campus, the surrounding LMA, and the City of Boston. DFCI requested a 25 percent cap on emissions from DEP rather than a permit system in 1997. DFCI reports annual emissions to DEP and has maintained all emissions at less than 10 percent of its allowable limit. In 1998, Dana-Farber participated in Healthcare Without Harm's Environmental Practices Survey. Healthcare Without Harm is a global coalition of 443 organizations in 52 countries working to protect health by reducing pollution in the healthcare industry. DFCI exceeds the requirements set by the NIH/CDC for prevention of airborne contaminant release by ten percent. In 2004, DFCI added a catalytic converter and heater to its Jimmy Fund Building generator to reduce diesel odors and emissions. The Institute further minimizes the release of exhaust by using return air where possible and lowering its discharge at non-peak hours.

DFCI has a strictly enforced policy of zero tolerance when it comes to idling vehicles, and has signage posted at each loading dock that reads: "It is Dana-Farber's policy not to accept goods from idling vehicles." In addition, DFCI has a network of carbon monoxide sensors in the existing garage areas in the campus which will be extended to its new underground parking following the construction of the Center for Cancer Care.

For its new building project, Dana-Farber has put together a program to ensure that there are no airborne contaminants produced or released during demolition or construction. This program was developed in collaboration with Environmental Health and Safety, Infection Control, the construction manager and a contract sampling company. The program will be used to monitor the effectiveness of work-area isolation techniques. A set of samples have been taken to determine baseline measurements for fungal spore counts, viable fungal counts and airborne particulate counts. During critical times of the demolition/ construction, samples will be taken from eleven different site locations. In addition, real-time 24-hour airborne particulate sampling will also be conducted. DFCI has set a level of particulates that will automatically prompt an investigation of work conditions and methods by the construction manager, and has also established a slightly higher level which will trigger a total stoppage of work until the problem can be identified and remediated. For continuous compliance, the outside contractor will also audit and provide reports on the engineering controls as well as the work practices as they apply to construction containment. The construction manager will also require emissions control devices or clean fuel alternatives for most construction vehicles.

7.6.3 Infection Control / Risk Assessment

Dana-Farber Cancer Institute began implementing its infection control program in 1978. This program is focused on providing a safe environment for patients, visitors, and staff from healthcare-related infections through a combination of monitoring, reporting, policies and procedures. Safe practices instituted include respiratory etiquette, which educates patients, visitors and staff about the symptoms and dangers of respiratory infections and provides hand-sanitizing stations, tissues, and masks at all entries, integration of filtration and monitoring systems within the mechanical systems in order to eliminate HVAC transport of fungal spores, and close construction and demolition monitoring and rigorous training and policies to ensure that spores, dust, and other particulate matter which might endanger the health of immune-weakened patients are adequately contained. DFCI employees are reminded not to come to work sick, and contractors are required to submit a completed infection control matrix to the Infection Control program for review and approval at the start of any construction or demolition, regardless of scale. This program was upgraded to meet the current Joint Commission of the Accreditation of Healthcare Organizations (JCAHO) standards of June 2006, and is continuously updated to conform to current standards of practice and code.

7.7 Products and Building Materials

Dana-Farber Cancer Institute has always preferred environmentally safe products and its choice of materials reflects this. Environmental Services products are reviewed by Environmental Health and Safety and the lowest toxicity materials are used. This priority is reflected in the day-to-day products DFCI uses to clean and maintain its spaces and systems, as well as in the standards it maintains for finish materials and building supplies.

Dana-Farber uses a system of integrated pest management, so minimal amounts of pesticides are needed. The limited pesticides that are used are brought in from an outside contractor and are not stored at Dana-Farber. The Institute's housekeeping department also uses cleaning materials which contain extremely low levels of toxic chemicals, and is exploring ways to transition to cleaning materials which are completely free of these harmful elements.

DFCI has systematically eliminated the use of R-12 coolant, which has been proven to have a detrimental effect on the ozone, by replacing equipment which uses this refrigerant. The DFCI campus has been R-12 independent for over ten years. DFCI has a program in place to review retiring refrigerants and replace equipment that relies on these before it becomes necessary. DFCI also does not purchase items or materials containing persistent biotoxins (PBT's), or volatile organic compounds (VOC's), or that are finished with a chrome-plating process which results in toxic byproducts, and is committed to reducing the residual items and levels of these toxins within its campus.

Construction projects at DFCI are reviewed for their use of hazardous materials in order to ensure that the least toxic and most effective materials are used. Materials must meet low volatile organic materials (VOC) requirements. DFCI uses the EPA definition of low VOC as less than 100 g/L. Material Safety Data Sheets (MSDS) must be submitted before materials are purchased and used for any construction or renovation project and the VOC content is calculated from this information. When new carpeting is put in, DFCI insists on low VOC adhesives and that the carpet be off-gassed in the warehouse before being installed. Materials are also reviewed for their carcinogen, mutagen and teratogen contents as well as their content of hazards like nephrotoxins, hepatotoxins, neurotoxins, sensitizers and other acute and chronic effect toxicants. Materials containing these hazardous elements are only used if there are no other viable options available, in which case extra containment, filtration and air sampling for contaminants is conducted as needed. All contractors are trained in the environmental policies of DFCI at bimonthly training sessions.

DFCI has long recognized the importance of eliminating from its facilities known hazards and carcinogens which were once commonly used in construction. Asbestos has been removed systematically from the DFCI campus in accordance with appropriate regulations. Lead paint has also been completely abated throughout DFCI's facilities.

DFCI's Center for Cancer Care will eliminate chlorinated polyethylene (CPE), chlorinated polyvinyl chloride (CPVC), chlorosulfonated polyethylene (CSPE), neoprene, and polyvinyl chloride (PVC) from exterior and structural materials and the mechanical and electrical systems. These toxins will also be reduced in interior finish materials throughout the new facility. The building's design also eliminates mercury from mechanical and electric system switches and relays, eliminates lead in wiring, solder, and roofing, eliminates leaded cadmium in interior paints, and will use no cement from kilns fired with hazardous waste. In addition to incorporating these healthful products into the design and initial building construction, the clinical

and clinical support floors of the Center for Cancer Care will feature modular planning and fit-out to allow flexible use of space with minimum future retrofit construction and resultant production of construction waste.

7.8 Conclusion

As this summary of policies, procedures, and priorities demonstrates, Dana-Farber Cancer Institute is committed to proactively improving the health of its campus and its environment, wisely recycling and eliminating unnecessary waste, minimizing the use of natural resources within its facility, and, in general, maintaining as small an energy footprint as possible by implementing current technology and sustainable practices. DFCI is proud of its history of ecologically and environmentally sensitive achievements, and dedicated to continuing leadership in this important area.

8

Community Benefits

8.1 Introduction

Dana-Farber Cancer Institute's community outreach mission is to establish quantifiable and sustainable programs in cancer and AIDS prevention, focusing on at-risk and underserved populations in Massachusetts, to provide expertise in cancer prevention and care to city and state health departments, community-based agencies and healthcare providers, and to inform community members about clinical trials. To carry out this mission, DFCI has developed a comprehensive set of initiatives that focus broadly on cancer control, workforce development and community development in the Boston area. As needs are identified, DFCI develops new programs based on community input as well as evidence-based research and evaluation.

In fiscal year (FY) 2005, DFCI's community benefits expenditures totaled $10.1 million, which included free care, payments to the uncompensated care pool, grants received by the Center for Community-based Research, and community programs. The figure represents 6.5 percent of DFCI's total patient care-related expenses of FY 2005, which exceeds the Attorney General's recommended guideline of 3 percent for a hospital of its size. For additional information, DFCI's complete FY 2005 Community Benefits Report is included in Appendix B.

This section includes descriptions of the various community benefits provided by DFCI including:

- Community Care Outreach and Advocacy (Section 8.2)
- Career, Employment and Training (Section 8.3)
- Services to Patients, Families, and Communities (Section 8.4)
- Other Community Benefits (Section 8.5)
- Transportation Benefits (Section 8.6)
- Tax Benefits (Section 8.7)
- Estimated Development Impact Payments (Section 8.8)

8.2 Community Care Outreach and Advocacy

DFCI is committed to educating the community about cancer through its collaborative work in local neighborhoods and through statewide public and professional education initiatives. DFCI is an active partner in a wide range of programs and community events to help raise awareness about the importance of cancer prevention, outreach, screening, early detection and research and to reduce the burden in underserved communities.

8.2.1 Community-Based Cancer Control Initiatives

8.2.1.1 Boston's Mammography Van (BMV)

Since May 2002, Dana-Farber Cancer Institute and the City of Boston have collaborated to operate and support Boston's Mammography Van, the only mobile mammography van in the Commonwealth of Massachusetts. The Van provides critical breast cancer screening, health education, and follow-up tracking for underserved and uninsured women throughout the City of Boston, regardless of a patient's ability to pay.

As word has spread about the Van's success and accessibility, screening has steadily improved, increasing volume by approximately 10 percent each year. In its first four years of operation, the BMV has provided more than 10,000 mammograms to more than 7,000 individual women in the Boston area. In 2005, the BMV provided breast health education and mammography services to over 3,200 women in the Boston area, 80 percent of whom are uninsured or publicly insured and 90 percent of whom are of ethnic minority backgrounds. Priority populations include women who are uninsured, underserved, elderly, immigrant, non-English speaking, and of ethnic/racial minority backgrounds; priority neighborhoods in Boston include Roxbury, Mattapan, Jamaica Plain, Dorchester, South End, Roslindale, and Hyde Park.

Each van screening day is the result of tremendous collaboration between DFCI, the Boston Public Health Commission, and one or more community partners within Boston. DFCI's community partners conduct extensive outreach, recruitment, promotion and planning for the van day. DFCI provides the clinical service and breast health education on the van day, and manages the patient registration, billing, reporting of results to provider and patient, and follow-up tracking as needed. Skilled, licensed technologists conduct mammography screenings on the van, and films are interpreted by Board-certified radiologists from DFCI, both clinicians with extensive experience dedicated to mammography. DFCI is responsible for the licensing, maintenance, staffing and all operational costs of the van.

In addition to its central purpose of providing breast cancer screening and education, Boston's Mammography Van serves as a point of entry into the healthcare system; the program helps connect women without a Primary Care Provider (PCP) to

primary care at a facility of her choice. The rescreening rate of van patients - over 50 percent in 2005 - demonstrates that Boston's Mammography Van provides an effective way for women to continually monitor their health.

To supplement its cancer screening activities, the Van collaborates with DFCI's Women's Cancers Program to host a spring and fall series of free community workshops on the myths and facts about breast and gynecological cancer. In an effort to provide attendees with an immediate opportunity to translate their commitment into action, the Van visits the community site a couple of weeks after the workshop to provide mammogram services.

8.2.1.2 Breast and Cervical Screening Collaborative (The Collaborative)

In July of 2005, The Collaborative began its eighth year as a Women's Health Network (WHN) provider through the Massachusetts DPH. The WHN provides funding for breast and cervical health services for uninsured women. The Collaborative's goal is to reduce breast and cervical cancer mortality through early detection, focusing on reaching uninsured women who are medically underserved due to financial, linguistic, ethnic, and/or cultural barriers.

Through the program, eleven community health centers in the Greater Boston area, along with Dana-Farber Cancer Institute and Partners, work collaboratively to promote and enhance the early detection of breast and cervical cancer. DFCI and Partners have provided significant supplemental funding to support the BCSC's central administration, outreach and inreach activities, and additional fundraising efforts.

Since its inception, The Collaborative has provided health services to more than 6,000 women. During FY05, the BCSC provided screening services for nearly 1,800 women from diverse cultural, linguistic, and socioeconomic backgrounds and this year The Collaborative projects it will serve over 2,000 women. Women diagnosed with breast or cervical cancer through screening provided by The Collaborative are eligible for coverage by the MassHealth program during the course of their treatment.

8.2.1.3 Blum Family Education and Resource Van

DFCI commissioned the new Blum Family Education and Resource Van and launched the mobile unit program in October 2004. Committed to tackling the issues of health disparities in cancer incidence, morbidity, mortality, treatment, and quality of life, and the pressing need for more minority and medically underserved participants in clinical trials, the Blum Van enables DFCI to expand its mission and share its expertise with the larger community. The Blum Van offers a unique and innovative way to bring cancer education, prevention, and screening to people directly in the communities where they live, work, and play. It is equipped with

state-of-the-art technology and has been designed to accommodate the multiple needs of the community, ranging from space for small groups to private space for individual needs.

The following is a selected list of initiatives that take place on the Blum Resource Van:

- Prostate cancer education and screening targeting African-American men and other men at elevated risk of the disease. Over the past two years alone, The Blum Van educated over 1200 men and screened 480 men.
- Sun protection awareness and skin cancer prevention and screening in collaboration with the Massachusetts Dermatological Nurses Association. Target sites include local beaches, parks, and community fairs.
- Outreach and education in the African-American community regarding sickle cell disease.
- Counseling and information programs on tobacco cessation, with a focus on adolescents.
- Nutrition and diet programs and cooking demonstrations.
- Education on the National Marrow Donor Program and the critical need to recruit potential donors from different racial and ethnic backgrounds.
- Education and workforce initiatives, including recruitment of students and residents of underserved communities and assistance with career paths in the healthcare professions. The Van provides mobile space for employment teams to host job fairs, career education, and recruitment interviews.

8.2.1.4 Whittier Street Health Center

As a new initiative to expand its community outreach, Dana-Farber Cancer Institute is exploring the possibility of developing new cancer control programs in partnership with the Whittier Street Health Center (WSHC). WSHC is planning a new and expanded health center that will be constructed as part of an urban renewal effort along Tremont Street in Roxbury. DFCI will plan to lease space in this facility, with the amount of space and lease terms to be determined, and which will be subject to institutional approvals. WSHC and DFCI will commence a planning process to generate possible implementation plans for utilizing the space in ways that best meet the needs of WSHC patients and the local community.

8.2.1.5 Boston Mayor's Task Force to Eliminate Health Disparities

The City of Boston launched the Mayor's Task Force to Eliminate Health Disparities in 2003 and mobilized leaders and organizations from the healthcare and public health communities to partner in citywide efforts. As an active member of the full Task Force and the Hospital Working Group, DFCI is involved in initiatives in data collection and measurement, workforce development, cultural competency, and

community outreach. Examples include financial support for facilitation and evaluation of task force initiatives, participation as one of two hospital sites piloting collection of expanded ethnicity data on patients, ongoing service as an internship site for minority Boston Public School students, and participation in the Boston REACH 2010 Breast and Cervical Cancer Coalition.

8.2.1.6 National Marrow Donor Program (NMDP)

The National Marrow Donor Program, whose mission is to recruit potential donors in the African-American, Asian and Latino community, has taken advantage of the available community collaborations and resources available at DFCI, e.g., the Blum Family Education and Resource Van. The institute will continue to increase its minority population of potential donors with its continued campaigns and available resources. Aggressive recruitment efforts have allowed NMDP to give several bone marrow transplant recipients a second chance of life.

8.2.1.7 Community Education and Health Fairs

Dana-Farber Cancer Institute participates in numerous community events and distributes cancer prevention and screening information. Below is a partial list of events DFCI has supported and attended:

- Boston Race for the Cure
- Making Strides Against Breast Cancer
- Raise Your Racquet to Good Health – Breast and Prostate Health
- Men's Health Summit
- Mission Hill Walk for Health
- Mattapan Healthcare Revival
- Billboard and media campaign in local neighborhoods

8.2.2 Statewide Initiatives

DFCI plays a leadership role in efforts to increase awareness of cancer and other life-threatening diseases and facilitate access to diagnosis and treatment across cultural and socio-economic divides throughout the Commonwealth.

- **Massachusetts Comprehensive Cancer Control Coalition (MCCCC):** As a member of the Massachusetts Comprehensive Cancer Control Coalition and its Executive committee, DFCI worked with coalition members to develop a comprehensive cancer control plan that was funded by the Centers for Disease Control (CDC).
- **Colorectal Cancer Education**: DFCI is a member of the Massachusetts Colorectal Cancer Working Group, whose mission is to reduce colorectal

cancer incidence, morbidity, and mortality in Massachusetts by increasing public and professional awareness of risk factors, prevention strategies, and the need for timely and appropriate screening.

- **Prostate Cancer Education and Screening:** DFCI is partnered with the Massachusetts Department of Public Health's (MDPH) Men's Health Partnership Program to promote educational workshops on prostate health and screening with particular emphasis on reaching audiences of men of color.
- **Massachusetts Prostate Cancer Symposium:** Dana-Farber Cancer Institute is one of the lead sponsors of the annual statewide Prostate Cancer Symposium.
- **Skin Cancer Education:** DFCI supported initiatives of the Massachusetts Skin Cancer Prevention Collaborative (MSCPC) by developing a skin cancer education and screening program utilizing a new DFCI Blum Resource Van. The program takes place at parks and beaches and offers education on skin protective behaviors and screening opportunities in the van. DFCI has also partnered with dermatologists from the Brigham and Women's Hospital to create *The Skin Cancer and Sun Protection Awareness Program*. This joint venture is highly successful, screening 144 visitors over the course of 2005 in 24 outdoor events.

8.2.3 National Cancer Institute-Sponsored Activities

8.2.3.1 National Black Leadership Initiative on Cancer (NBLIC):

DFCI has been actively involved in the Greater Boston Chapter of the National Black Leadership Initiative on Cancer since its inception in the mid 1990's. NBLIC is a coalition of community-based organizations, health professionals, cancer survivors, and concerned individuals that works to mobilize and educate communities of Black and African descent in the fight against cancer.

DFCI and NBLIC continue their support of a prostate cancer support group for men of color in collaboration with the community group Prostate Health Education Network (PHEN). The goal of the group is to address the unique concerns of men of color as it pertains to newly diagnosed men and survivors of the disease. DFCI continues to provide financial and in-kind support for NBLIC's infrastructure to expand its board and membership and to firmly establish its community programming.

8.2.3.2 National Cancer Institute Collaborative Demonstration Project

Dana-Farber Cancer Institute and Whittier Street Health Center have formed a collaborative effort to increase cancer screening and early detection for breast, cervical, colorectal, and prostate cancers. Health care providers working at WSHC will receive evidence-based specialized training on how to incorporate information

on the value of health behavior change and cancer screening into their routine clinical interactions. This specialized method of primary care health delivery will be evaluated and lessons learned will be disseminated to other health care providers.

8.2.4 DF/BWCC Patient Navigator Program

The Dana-Farber/Brigham and Women's Cancer Center (DF/BWCC) Patient Navigator Program is part of the DF/BWCC strategic initiative to reduce healthcare disparities among diverse populations. The program was established to address the needs of a target population, of women at risk for or diagnosed with breast or cervical cancer, who may enter the care system through either the DFCI or the Brigham and Women's Hospital.

The goal of this program is to provide access and identify resources for women from diverse backgrounds, whose socio-economic status, limited English proficiency, disability status, or payment status (uninsured/underinsured) may be a potential barrier to care. The program, which began in May 2005, offers two Patient Navigators, bilingual in Spanish, who assist this patient population by identifying and accessing resources for them, providing education about the importance of follow-up care, and offering support through the healthcare continuum.

8.2.5 Center for Community-Based Research

The Center for Community-Based Research (CCBR) at DFCI conducts research aimed at cancer prevention and control, with a particular emphasis on the development and evaluation of effective interventions designed to modify behaviors, policies and practices to reduce cancer risk and to provide increased access to and comprehension of cancer risk information. This research program has a special focus on reducing racial/ethnic and socio-economic disparities in cancer risk.

These interventions ideally are evaluated in randomized, controlled studies, with the intent that the tested models will ultimately be applied broadly through community and health organizations nationally. These public health approaches that target organizations or communities are an important complement to the clinical and basic research also being conducted at DFCI.

To test the effectiveness of community-based educational and policy interventions within defined populations, solid partnerships with community organizations are necessary. Community organizations act as collaborators in its research, providing both study populations, and shaping the interventions.

Another priority of CCBR is to place and mentor students from a range of academic levels and including many from racial and ethnic minorities.

The projects include programs to encourage improved nutrition, weight-loss and smoking cessation among workers and ethnically diverse patients, to encourage

cancer screening and prevention in various settings including low-income housing and the workplace.

A representative list of projects is given below.

- Cancer Prevention Through Small Businesses
- Cancer Prevention Delivered through Health Centers
- Cancer Prevention for Unionized Blue-Collar Workers
- Organized Labor and Tobacco Control Network.
- Tobacco Industry Targeting of Young Adults of Low-Socioeconomic Status: Lessons for Public Health
- Project Watch
- Massachusetts Cancer Prevention Community Research Network
- Health Promotion for Mobile Workers
- Physical and Social Hazards: Jobs, Race, Gender and Health
- Weight Control, Physical Activity and Cancer Risk Reduction Among Racially Diverse Obese Women in an Urban Community Setting, Pilot Project
- Colon Cancer Prevention through Low Income Housing
- Web-Based Smoking Intervention for Cancer Survivors
- Design about Making Prostate Cancer Screening
- Computer-Based Prostate Cancer Education in Worksites
- Prostate Cancer Screening Decision Aid for African-American Men
- Factors Associated with Follow-up of Abnormal Mammograms Among Low-Income Ethnic Minority Women
- Increasing Cancer Screening Through the Use of Small Media Interventions: Evaluation of Materials for Mammographic Abnormalities
- Smoking Cessation Intervention with Building Trade Unions
- Identifying Facilitators and Impediments to Adopting US Public Health Service Guidelines for Smoking Cessation Treatment Among Labor-Management Health and Welfare Funds
- Rest, Stress, and Physical Activity
- Determinants of Cancer Risk in Low-Income Housing
- Family-Responsive Workplace Policies and Practices in Small Business with Low-Wage and Racially / Ethnically Diverse Workforces
- Click to Connect Pilot
- Electronic Tools for Community-Based Weight Management

8.2.6 United Way/Jimmy Fund Collaboration

United Way/Jimmy Fund Collaboration awards funds to community-based organizations that provide culturally appropriate cancer prevention, education, and outreach services for at-risk populations in low-income communities.

8.3 Career, Employment and Training Initiatives

Dana-Farber Cancer Institute participates in numerous workforce development initiatives—both within the Institute and in the Greater Boston community. These initiatives are designed to inform community members about employment opportunities at DFCI, to interest youths in careers in healthcare and science, and to provide training to current employees to encourage their career advancement.

DFCI plans to continue and expand its involvement in workforce development and training initiatives and is currently developing its Workforce Development Plan. Initiatives under consideration in that plan are discussed in Chapter 9.

8.4 Services to Patients, Families, and Communities

DFCI offers a variety of services to patients, families, and the wider community ranging from support groups, workshops, seminars, and educational and referral resources. These services are facilitated and provided by social workers, nurses, and other DFCI staff and are designed to help people cope with the challenges that accompany a cancer diagnosis. Examples include:

Eleanor and Maxwell Blum Patient and Family Resource Center and Satellites: The Blum Patient and Family Resource Center, which was established in 1996, is located in the DFCI lobby and houses brochures, computers, videotapes, compact discs, and over 550 books in its loan library. The Blum Resource Center provides patients, families, and anyone from around the country and the world seeking services with the most current and useful educational materials available, as well as support, resources, and referrals. The Blum Resource Center and its 4 satellite resource rooms boast more than 10,000 visits annually.

Perini Family Survivors' Center: The Perini Family Survivors' Center was launched in 2004 to serve as an umbrella organization for survivorship activities. The Perini Program's research efforts are designed to reduce and eliminate harmful effects of treatments for past, current and future patients. The Center houses two clinical programs for cancer survivors: the David B Perini, Jr. Quality of Life Clinic and the Lance Armstrong Foundation (LAF) Adult Survivorship Clinic. The David B. Perini, Jr. Quality of Life Clinic is in its 14th year of operation as a multidisciplinary pediatric survivorship program that works to meet the unique medical and psychosocial needs of childhood cancer survivors. Established in early 2005, The Lance Armstrong Foundation (LAF) Adult Survivorship Clinic serves the needs of

adult cancer survivors. Modeled on the multidisciplinary approach of the Perini Clinic, the LAF Clinic provides patients with a complete assessment of their survivorship needs, with referrals to specialists as appropriate.

8.5 Other Community Benefits

8.5.1 Fenway and Mission Hill Neighborhoods

Financial support is provided annually to community health centers and community development corporations in Boston's Fenway and Mission Hill neighborhoods. DFCI also participates in the Longwood Medical and Academic Area Forum to discuss ongoing community needs and concerns.

8.5.2 Housing and Community Activities

Among its new commitments, Dana-Farber has committed $2.5 million towards the construction of *Hope Lodge*, a new facility operated by the American Cancer Society that will provide housing for patients and families.

DFCI provides support to housing programs for cancer patients and their families. Programs include the *Ronald McDonald House*, a home away from home for pediatric oncology patients at DFCI and Children's Hospital, Boston, the *Shannon McCormack House*, a residence for out-of-town cancer patients undergoing cancer treatment in the Longwood area and their families, and the *Hospitality Program*, which provides lodging for cancer patients and their families through its network of more than 180 volunteer hosts in the Greater Boston area.

DFCI participates in a variety of other community activities, including the *Annual Food Drive* sponsored by MASCO, which donates to the food bank operated by Action for Boston Community Development in Mission Hill, and the *Caps for Kids Program*, which provides knitted hats for Tobin Elementary School, BWH newborn intensive care, and various community centers.

8.5.3 Reducing LMA Density / Promoting City Economic Development

While in discussions over a new clinical and research building on Brookline Avenue, City officials made DFCI administrators aware of potential expansion space for research and other uses in South Boston's Marine Industrial Park. Included in the City's stated goals for the Longwood Medical and Academic Area are an interest in reducing overall density and traffic congestion, and identifying appropriate areas where the economic development benefits of LMA institutions can be redirected to other parts of the City.

As a result of these discussions, DFCI leased 49,400 SF at 27 Dry Dock Avenue for a research imaging facility, wet bench laboratory space, cryopreservation core facility (freezer farm), medical records, and materials-management facility. In addition to reducing density in the LMA, the relocation of the materials-management facility allows DFCI to better control truck deliveries to the main campus.

During this same time period, DFCI signed a lease for 51,000 SF square of wet and dry lab research space in the Center for Life Sciences Boston, a new research building under construction on Blackfan Street in the LMA. Moving research space to a new building already approved for the LMA and developing the research and support space at 27 Dry Dock Avenue allowed DFCI to significantly reduce the size of the building it had originally proposed for the Brookline Avenue location.

8.5.4 Utility Upgrades

During negotiations with the Boston Water and Sewer Commission (BWSC) and Public Improvement Commissions (PIC), Dana-Farber Cancer Institute committed to replacing the sewer and drain lines under Jimmy Fund Way at its own expense.

8.6 Transportation Benefits

DFCI has made significant commitments in the form of policies and management actions to mitigate against the effects of its proposed projects on the LMA and the surrounding communities.

DFCI has made important mitigation commitments in the form of policies and management actions. Key commitments are to continue to establish and maintain a proactive TDM program, parking management strategies to limit the construction of new parking spaces to 0.75 parking spaces per 1,000 SF of development guideline established by the LMA Interim Guidelines, implement an improved pick-up/drop-off and patient valet parking operations management plan, and carefully coordinate construction management actions related to the forthcoming IMP projects. DFCI believes that these transportation mitigation actions will lessen the impacts of their proposed development plans and, when complete, will help improve the LMA's existing transportation infrastructure.

This joint transportation mitigation plan includes several elements:

- Roadway and traffic operations improvements
- Parking consolidation and management strategies
- Transportation demand management enhancements
- Sustainability
- Pedestrian access and open space improvements
- Construction management

- Participation in and partial funding of several system-wide transportation improvement studies for the LMA

Many of these mitigation elements will improve the LMA transportation infrastructure in addition to addressing potential impacts of the DFCI IMP projects. Table 5-3 (presented previously) lists each transportation mitigation element that is proposed by DFCI and provides a summary of the following:

- Description of the proposed action
- Interim Guideline criterion that is met by that action
- Summary of the purpose and benefit of that action
- Implementation responsibility

Additionally, Figures 5-1 and 5-2 (also presented previously) illustrate the physical location of the various transportation improvements that are proposed.

8.7 Tax Benefits

Dana-Farber Cancer Institute currently has a Payment in Lieu of Taxes (PILOT) agreement in place with the City of Boston. DFCI anticipates executing an amendment to its PILOT agreement.

8.8 Estimated Development Impact Payments

Article 80B of the Boston Zoning Code, Section 80B-7, Development Impact Project Exaction, requires developers of Development Impact Projects, such as the proposed Center for Cancer Care, to make a Housing Contribution Grant to the Neighborhood Housing Trust or contribute to the creation of low and moderate income housing (the Housing Creation Option) or a combination thereof; and make a Jobs Contribution Grant to the Neighborhood Jobs Trust or utilize the grant to create a job training program for workers who will be employed at the project (the Jobs Creation Option). The BRA currently requires housing exaction payments of $7.87 for every zoning square foot above 100,000 SF devoted to development impact uses and jobs linkage payments of $1.57 per square foot above 100,000 SF.

Consistent with Article 80B, Dana-Farber Cancer Institute will make a housing exaction payment for the Center for Cancer Care project of approximately $1,239,525.00 and a jobs exaction payment of approximately $247,275.00, depending upon the final square footage of the project.

9

Consistency with Interim Guidelines

9.1 Introduction

This chapter discusses the Dana-Farber Cancer Institute Institutional Master Plan in terms of its relationship and consistency with the Interim Guidelines for the LMA, as adopted by the BRA in February 2003. Included in this chapter are analyses of Urban Design features of this IMP, the Transportation issues and impacts on the LMA, and the DFCI Workforce Development Plan, as required by the Interim Guidelines.

9.2 Overall Relationship to Interim Guidelines

The BRA and the Office of Jobs and Community Services (OJCS), in conjunction with the Boston Transportation Department (BTD), initiated a master planning process for the LMA in the fall of 2002. The BRA adopted Interim Guidelines in February 2003 to inform the review of proposed projects and Institutional Master Plans pursuant to Article 80 of the Boston Zoning Code, prior to completion of the LMA master plan. The DFCI IMP responds to these guidelines and conforms to the urban design and institutional goals that they seek to implement.

The overall organizing features of this IMP and the planning and design of specific proposed projects – including the new Center for Cancer Care, Campus and Existing Building Façade Improvements, Renovation and Infill of Existing Facilities, and Future Leased Space plans – reflect the purposes and concepts of these guidelines.

- The Center for Cancer Care is designed as a signature building, creating an impressive public presence for DFCI, oriented to the major thoroughfare of Brookline Avenue. The project provides a new main entrance to the Institute and incorporates a mix of uses, including public services, information, food service and retail facilities on the first three levels. The design minimizes any negative impacts on adjacent land uses and open space, and improves the pedestrian flows to, through and around the DFCI campus.
- Improvements to the DFCI Campus, as part of the Center for Cancer Care development and other proposed projects, will enhance the pedestrian

experience and provide a better sense of place. These projects will enable Dana-Farber to create ample landscaped public open space on its campus, connected to the surrounding LMA greenspace, and turn Jimmy Fund Way into the pedestrian focus of the complex. Proposed site improvements to be implemented over the term of this IMP will enhance institutional identity, place-making and way-finding, and provide increased campus visibility along Jimmy Fund Way and Brookline Avenue.

- DFCI will continue its practice of locating outside the LMA those functions that do not require critical adjacency to clinical and research activities sited in the core campus. This may include certain types of clinical, clinical and research support, administrative and general support functions. To accommodate these needs, DFCI will expand the provision of facilities in leased space, as already done at the South Campus, North Campus and Harbor Campus, described in Chapter 2, with over 260,000 GSF currently under lease outside the LMA.
- The proposed facility projects will generate new employment opportunities for Boston residents, both in project construction and in on-going operation of the programs to be housed. DFCI workforce initiatives, as described later in this chapter, provide substantial commitments to workforce development and training programs.

9.3 Urban Design

The Urban Design section of the Interim Guidelines establishes a set of principles and criteria for planning and design of projects in the LMA. The guidelines identify the physical assets of the LMA, outline dimensional objectives for designated zones, including height and setbacks, and describe public benefits that may be provided by project proponents and institutions in order to achieve building heights greater than the specified base criteria.

9.3.1 Protection of Assets / Shadow Criteria

The guidelines establish a principle of protecting the physical assets of the LMA, and include restrictions on new shadow impacts on City of Boston parks. The Interim Guidelines state that:

> "…no project will be approved if it casts any new shadow for more than one hour on March 21st on the Emerald Necklace, Joslin Park or Evans Way Park."

The location of the DFCI campus and particularly the site of the Center for Cancer Care development to the south and east of Joslin Park raises issues concerning design consistency with and the approach to these shadow criteria.

Shadow studies for build and no-build conditions of the Center for Cancer Care have been conducted for the spring and fall equinoxes and the summer and winter solstices. Shadows were estimated for each study date at 9:00 AM, 12:00 noon, 3:00

AM, and 6:00 PM, except for the winter solstice and vernal equinox, which do not include studies after 3:00 because the sun sets before 6:00.

On the vernal equinox, net new shadows will fall to the west, north, and east of the Center for Cancer Care. During the summer solstice, shadow conditions are generally limited to the sidewalks around the Center for Cancer Care and on the opposite side of Brookline Avenue. During the fall equinox, shadow impacts from the Center for Cancer Care will be limited to the building's immediate vicinity with only fleeting shadows on adjacent buildings. For both equinoxes and the summer solstice, no net new shadow will be cast on Joslin Park. The winter solstice creates the least favorable conditions for sunlight in New England. The low angle of the sun during the winter months will elongate the shadows produced by the Center for Cancer Care and surrounding buildings. Net new shadow will fall briefly on Joslin Park in the afternoon on December 21st. Detailed plans and descriptions of these shadow study results are found in Section 6.3 of the DPIR/DEIR simultaneously submitted with this document.

The Center for Cancer Care's massing has been carefully designed to minimize shadow impacts on the surrounding LMA, particularly on Joslin Park. The shadow conditions projected for the Center for Cancer Care will not cause substantial impacts to the surrounding area for a large part of the year. Impacts will generally be to the immediate surrounding public ways and sidewalks with fleeting shadow on Joslin Park in the afternoon on December 21st. This project complies with the BRA's LMA Interim Guidelines because it does not cast net new shadow on Joslin Park at all during the Spring Equinox.

9.3.2 Height Zones

The Interim Guidelines specify building height limits in the LMA for three separate zones. The entire DFCI campus falls within a height zone that limits the base height of buildings to 150 feet, with a potential maximum height of 205 feet.

The proposed Center for Cancer Care development, to be built under this IMP, is consistent with these guidelines. The maximum height of the building will be 190' from the average grade elevation at the abutting sidewalks to the top of the highest occupiable space.

The increase over the 150' base height for the tower is available due to the provision of Exceptional Public Benefits, including in the following areas of Relocating Appropriate Uses, Workforce Development, and various Urban Design features:

- **Relocating Appropriate Uses**. Dana-Farber Cancer Institute is committed to relocate to other parts of the city, outside the LMA, those functions that do not require critical adjacency to clinical and research activities in the core campus. These include some types of clinical, clinical and research support, administrative and general support functions. Including its recent major lease of 49,400 GSF at 27 Dry Dock Avenue, DFCI currently leases over 260,000 SF of

space outside the LMA for such purposes and will continue and expand this practice for appropriate uses.

- **Workforce Development**. DFCI is preparing a Workforce Development Plan, in coordination with the BRA and the Office of Jobs and Community Services, as discussed later in this chapter.
- **Open Space and Streetscape**. The Center for Cancer Care project includes creation of an ample new landscaped public open space along Brookline Avenue, enhancing the pedestrian environment along this major thoroughfare, and connecting the DFCI campus entrance to the LMA greenspaces in Joslin Park and the Emerald Necklace. Center for Cancer Care work also includes improvements to the pedestrian streetscape environment along Jimmy Fund Way, Binney Street and pedestrian way next to MATEP, with upgraded paving materials, lighting, plantings, graphics and street furnishings. Over the term of the IMP, similar streetscape enhancements will continue to be implemented along Jimmy Fund Way and Binney Street at the Dana-Mayer and Jimmy Fund buildings.
- **Public Realm Improvements**. The first three floors of the Center for Cancer Care will be designed as public-oriented environments. They accommodate the main entrance to the DFCI campus, patient and family reception and services, public information, a resource center on cancer oncology and support services, retail space, food service and conference facilities, the chapel, pastoral care and a healing garden. The two-story lobby will create an open, welcoming place to invite visitors into these public spaces, with visible accessible circulation to all service areas on the three levels.
- **Roadway and Public Transportation Improvements.** DFCI's implementation of a comprehensive traffic management plan, including widening Jimmy Fund Way, developing a creative solution for a drop-off below grade and away from traffic, improving to loading and services, and relocating central receiving and materials management activities outside the LMA will provide significant relief from traffic congestion in the LMA surrounding the campus. In addition, local street network improvement such a signal upgrades and camera installations, together with a reduction in DFCI's overall parking ratio and the Institute's continuing commitment to subsidized and facilitated alternatives to employee driving in the LMA will benefit its neighbors and the city.
- **Sustainable Design.** The Center for Cancer Care is being developed with a focus on optimal application of sustainable design features and operating procedures. The project has been registered with the United States Green Building Council (USGBC) and is targeting a silver Leadership in Energy and Environmental Design (LEED) rating. In addition, the Green Guidelines for Healthcare Construction (GGHC) rating system is being followed as a guideline to further best practices in green construction specific to healthcare facilities.

9.3.3 Setbacks and Stepbacks

The Interim Guidelines specify criteria for setbacks and stepbacks of new buildings in the LMA, stating that: "Setbacks from curb shall match the most appropriate prevailing setbacks; and Building mass above the prevailing streetwall (potential maximum of 75') must be either 75' from the setback line, or, not be visible at street level from the back of the opposite sidewalk." For the site of the Center for Cancer Care development, there is no stepback line designated on the maps in the Interim Guidelines.

The proposed Center for Cancer Care design is generally consistent with these setback and stepback provisions. The building is set back along Brookline Avenue to match the general pattern of setbacks along the east side of the street, as defined by the Service Center Garage, MATEP and Mayer buildings. The façade of the Center for Cancer Care along Jimmy Fund Way is designed to align with the face of the adjacent Smith Laboratories Building.

9.3.4 Mix of Uses

The Interim Guidelines require that new developments "improve the character, security, and vitality of the LMA by increasing the mix of housing, supporting retail, recreation, and community facilities in the institutional projects. The ground floors of buildings shall include retail use or other uses that engage the public."

The proposed Center for Cancer Care meets these criteria by dedicating the first three floors to publicly active and accessible DFCI programs including public information, patient and family reception and services, a resource center on cancer oncology and support services, food service, an outpatient pharmacy, dining and conference facilities, the chapel, pastoral care and a healing garden. These program-spaces will be accessible to the public and visible from the exterior, main entrance and the open, inviting two-story lobby area. The ground floor along Brookline Avenue will be dedicated to retail space, directly accessible from the public sidewalk. These amenities will be designed to make patients, visitors and the larger public feel welcomed, oriented and engaged in the Dana-Farber campus and its clinical and research activities.

9.3.5 Character

The Interim Guidelines state that: "New projects should build on and reinforce the distinctive physical, historic, and architectural characteristics of each of the institutions within the LMA" through measures concerning way-finding, access and circulation, preservation of significant buildings, and appropriate width and spacing of tall elements. The proposed new Center for Cancer Care and the other IMP projects described in this document achieve this goal by:

- Simplification and improvement of way-finding to and through the DFCI complex by creation of a prominent new main entrance in the Center for Cancer Care at the corner of Brookline Avenue and Jimmy Fund Way, providing visible and accessible routes from the main entrance lobby to all parts of the DFCI campus and its neighbor institutions, and establishment of a clear institutional identity through better master planning, coordinated upgrade of exterior architectural treatments on existing buildings, reorientation of entries and reinforcement of the third-level pedestrian bridge system connecting all facilities.
- Improved access for patients and visitors arriving by car, public transportation or foot through design of the new main entrance and drop-off in the Center for Cancer Care. This involves a primary drop-off and valet parking at the first underground level, with direct elevator access to all public floors of the building and to the third-floor pedestrian bridge system. There is also an inset curb-side drop-off along Jimmy Fund Way for rapid drop-off and pick-up, with DFCI staff stationed as "ambassadors" to assist patients and visitors at this entry point. Doorways to the main entrance lobby open to both Jimmy Fund Way and Brookline Avenue for optimal identification and access into the DFCI complex.
- Consolidation of all on-site parking for the DFCI campus in the underground levels of the combined Center for Cancer Care-Smith Building facility. This removes the negative visual, environmental and operational impacts of existing on-grade and above-grade parking, and creates the opportunity to enclose and reuse the above-ground parking decks in the Dana Building for primary institute functions.
- Design of the proposed Center for Cancer Care as a signature architectural project, befitting the stature of the Dana-Farber Cancer Institute. The design breaks the massing of the tower into smaller elements that diminish any sense of bulkiness and emphasize the verticality of the construction. The new tower is set back from the face of the Smith Building by about 35 feet. The Center for Cancer Care is similar in massing to Smith but distinctive in exterior design, creating a related but varied complex of volumes and lively urban streetscape on the DFCI campus.
- Preservation and enhancement of significant existing DFCI facilities – the Dana Clinical Building and Jimmy Fund, Mayer and Smith Laboratories buildings – through façade treatments improvements, entrance reorientation, renovation and infill projects to increase functionality and accommodate evolving user needs, and related sidewalk treatments, landscaping and street furnishing enhancement projects, to be implemented over the term of this IMP.

9.4 Transportation

The LMA Interim Guidelines specify five transportation-related subjects that must be addressed by every project in the LMA. These five topics include:

- Parking ratios
- Transportation Demand Management
- Traffic Management
- Local Street Network
- System-Wide Transportation Projects

DFCI projects under this IMP provide responses and actions on these issues as described below. These efforts are intended to improve local vehicular circulation, reduce congested conditions and improve pedestrian access in and around the LMA.

9.4.1 Parking Ratios

DFCI currently controls approximately 1,454 total off-street parking spaces, with 340 parking spaces available for use by its patients and visitors, and 1,114 parking spaces available for staff and physicians. About 498 (34 percent) of these parking spaces are located on the DFCI campus and another 316 (22 percent) are nearby on sites adjacent to or near DFCI facilities. Approximately 640 parking spaces (44 percent) are located off-site in remote parking facilities.

At the end of the term of the IMP, Dana-Farber Cancer Institute will have constructed 290,049 SF of net new space and 217 net new parking spaces at its LMA campus, which complies with the LMA Interim Guidelines for construction of new on-site parking spaces (less than 0.75 new parking spaces per 1,000 zoning gross SF of space). New parking that is proposed within the IMP is intended to serve its patients and visitors only and to provide a sufficient on-campus patient parking supply that is conveniently located where core patient services are offered. No new parking is proposed to accommodate employees. When the proposed project is completed, it is expected that the overall parking supply on the DFCI Campus will increase by only 217 parking spaces.

When the DFCI IMP projects are completed, DFCI's parking ratio within the LMA will decrease from to 0.94 to 0.89 spaces per 1000 ZGSF.

9.4.2 Transportation Demand Management

DFCI is committed to continuing to offer a wide array of Transportation Demand Management (TDM) incentives as a means to reduce single occupant driving and increase use of alternative forms of transportation to access the workplace. DFCI

actively supports efforts to reduce auto use for employees traveling to the hospital. Many actions to support this goal are actively employed by DFCI today, including the following:

- Employee Transportation Advisor.
- Membership in MASCO's CommuteWorks TMA.
- Full support of MASCO's other on-going transportation initiatives.
- 40 percent transit pass subsidy for employees.
- Carpool assistance and incentives.
- Bicycling/walking incentives and amenities.
- Location-priced parking (i.e.; offering competitive-rate parking on-campus and subsidized parking off-campus).
- Telecommuting and compressed workweeks, when feasible.
- Promotional efforts.

Dana-Farber Cancer Institute is committed to maintaining its employee transit subsidy to 50 percent in connection with the construction of the Center for Cancer Care project. DFCI will also continue to promote and improve its TDM program to benefit its employees and reduce traffic impacts to roadways and parking facilities within the LMA and nearby neighborhoods.

9.4.3 Transportation Mitigation and Improvement Actions

This sub section delineates the transportation improvements and mitigation plan developed by DFCI. The purpose of this transportation mitigation plan is to:

- Help alleviate transportation impacts generated by the DFCI IMP projects;
- Provide transportation infrastructure enhancements to the LMA, including improved pedestrian corridors, and public space amenities; and
- Exceed the requirements of the BRA's Interim Guidelines for the LMA relative to transportation improvements and mitigation.

DFCI has also made important mitigation commitments in the form of policies and management actions. Key commitments are to continue to establish and maintain a proactive TDM program, parking management strategies to limit the construction of new parking spaces to 0.75 parking spaces per 1,000 SF of development guideline established by the LMA Interim Guidelines, widening of Jimmy Fund Way, implement an improved pick-up/drop-off and patient valet parking operations management plan, and carefully coordinate construction management actions related to the forthcoming IMP projects. DFCI believes that these transportation mitigation actions will lessen the impacts of their proposed development plans and, when complete, will help improve the LMA's existing transportation infrastructure.

This joint transportation mitigation plan includes several elements:

- Roadway and traffic operations improvements
- Parking consolidation and management strategies
- Transportation demand management enhancements
- Sustainability
- Pedestrian access and open space improvements
- Construction management
- Participation in and partial funding of several system-wide transportation improvement studies for the LMA

Many of these mitigation elements will improve the LMA transportation infrastructure in addition to addressing potential impacts of the DFCI IMP projects. Table 9-2 at the end of this chapter lists each transportation mitigation element that is proposed by DFCI and provides a summary of the following:

- Description of the proposed action
- Summary of the purpose and benefit of that action
- Implementation responsibility

Additionally, Figures 5-1 and 5-2 (presented previously in Chapter 5, Transportation) illustrate the physical location of the various transportation improvements that are proposed.

9.5 Workforce Development

The Interim Guidelines require institutions or developers contemplating development to present to BRA and the Office of Jobs and Community Services (OJCS) workforce development staff, as part of the development review process, an assessment of current and projected workforce needs, and to work with BRA/OJCS staff to formulate a workforce development plan to address those needs.

DFCI is preparing a workforce development plan in consultation with the BRA and OJCS that outlines existing and proposed future workforce development initiatives.

To advance our workforce development program, Dana-Farber Cancer Institute is committed to hiring a full-time Workforce Development Manager to work closely with DFCI's management team (which includes a newly hired Vice President for Diversity), the Office of Jobs and Community Service, local neighborhood agencies and community groups. The responsibilities of this leadership position include building upon our current Workforce Development programs, skills/needs assessment, community outreach specific to workforce development, enhancing

school partnerships, identifying opportunities for DFCI's incumbent workforce, and establishing career ladders.

Some of the major elements of DFCI's existing and proposed initiatives are summarized below.

9.5.1 Employment Assessment

DFCI is a major institutional employer of Boston residents. With a workforce of approximately 3,557 employees at its facilities in the Boston area, current data indicates that approximately 32 percent, or 1,123, are Boston residents. These employees work in the full range of positions available at the Institute. Included in these totals are 246 workers who are employees of outside vendors that provide services at DFCI. The existing workforce is summarized by job family in Table 9.1.

Table 9.1 DFCI Boston Resident Employees by Job Families

Job Family	Number of Boston Resident Employees	Number of Boston Residents Contract Workers	Total DFCI & Contract Workers	Percent of Boston Resident Workers	Number of DFCI Employees	Percent of DFCI Employees
Service	4	86	90	49.72%	181	5.09%
Unskilled	24		24	38.10%	63	1.77%
Semi-skilled	9		9	47.37%	19	0.53%
Skilled	4		4	12.90%	31	0.87%
Student/ Intern	93		93	49.73%	187	5.26%
Clerical	200		200	43.29%	462	12.99%
Technician	70		70	38.46%	182	5.12%
Professional	550	7	557	28.00%	2,034	57.18%
Manager	76		76	19.10%	398	11.19%
Totals	**1,030**	**93**	**1,123**	**32%**	**3,557**	**100.00%**

9.5.2 Existing DFCI Workforce Development & Training Initiatives

Although DFCI's workforce is highly skilled, with most positions requiring post-secondary education, DFCI is committed to identifying and providing employment opportunities for community residents and is targeting the development of career ladders and internal advancement for positions that include administrative assistants, clinical coordinators, and patient coordinators.

Dana-Farber Cancer Institute participates in job outreach to local residents through Roxbury Community College, Grace Baptist Church, The Latino Job Fair through El Mundo, Community Care day at the Hispanic Office of Planning, Sociedad Latina, Jewish Vocational Services, YMCA Training Institute, and Roxbury Multi-Service Center.

9.5.2.1 Youth Programs

DFCI also seeks to encourage interest in healthcare and science-related fields among Boston students as well as offering programs for current workers to advance within DFCI positions.

DFCI maintains educational partnerships with Boston area high schools and colleges to provide underrepresented students of color internship opportunities to explore and pursue careers in health and science. DFCI works closely with the following schools to place students who have a specific interest in health and science.

Educational Partnerships

- Boston Latin School Science Mentorship Program
- Fenway High School
- Madison Park Technical Vocational High School – Allied Health and Human Services Academy

During the 2004-05 academic year and summer 2005, more than 75 Boston Public Schools students from diverse backgrounds worked at DFCI in clinical, research, and administrative departments. A number of students participated through the Boston Mayor's Summer Jobs Program. Students had opportunities to receive CPR certification, participate in presentation skills and PowerPoint classes, engage in site visits at biotech companies, and attend educational seminars. In addition to the schools noted above, students hailed from the following Boston Public Schools:

- Boston Arts Academy
- Boston Latin Academy
- Boston Leadership Academy
- Brighton High School
- Charlestown High School
- Community Academy of Science and Health
- Health Careers Academy
- John D. O'Bryant School of Math and Science
- Muriel Snowden International School
- West Roxbury High School

Dana-Farber also participates in Explorations, a partnership among Boston-area healthcare institutions, Harvard Medical School, and Boston public schools. In this program, middle school students interested in science and math are paired with PhD's in the research community for a one-day job-shadow. Annually, approximately 200 students participate at various institutions.

Another successful program has been our Continuing Umbrella of Research Experiences (CURE), which introduces high school students from underrepresented minority populations to the world of cancer research, in real research settings.

DFCI actively participates in school-to-work programs with the Boston Private Industry Council (PIC). PIC programs include:

- Classroom at the Workplace – DFCI provides paid internships for high school students who had not passed one or both sections of the statewide test MCAS. Students work up to 40 hours per week with two hours of classroom instruction per day. Each summer, DFCI provides internships to 4-8 students.
- Groundhog Job Shadow Day – Students shadow DFCI employees to learn about their job responsibilities, as well as the skills and training needed for their position.

DFCI also participates in hands-on programs for students that include:

- Biomedical Science Career Program (BSCP)
- Summer Science Enrichment Program for Women

In addition, DFCI participated in Career fairs specifically for Boston area youth:

- Mission Hill Youth Forum
- Fenway High Career Day
- The Partnership 2006 Career Connection Conference

9.5.2.2 Incumbent Worker Programs

In addition to working with youth and young adults, Dana-Farber offers career development opportunities for its staff through the following programs:

- *Boston Healthcare and Research Training Institute*: comprehensive training and educational programs for entry and mid-level employees. Courses allow employees to build upon existing skills, while helping them to advance along career pathways.
- *Tuition Reimbursement* for DFCI full- and part-time staff
- *Bunker Hill Community College*: program in Medical Coding
- *English as a Second Language (ESL)*
- *DFCI-Sponsored Training*: classes in Spanish, medical terminology, and computer training.

- *Sponsorship of Boston Associates and Fellows through The Partnership:* collaboration with the Boston Chamber of Commerce increase the number of people of color in leadership roles in the Boston community.
- *University of Massachusetts at Boston:* In 2004, Dana-Farber entered into a new affiliation with the University of Massachusetts at Boston (UMass). Eight UMass Boston nursing students from diverse backgrounds completed their community health rotation at DFCI during the fall of 2005.

9.5.3 Future Employment

DFCI current employs approximately 1,123 Boston residents as part of a diverse work force of 3557 full-time and part-time employees. Development of the IMP projects described in this document is expected to generate 400 permanent new jobs, including medical, technical, and support positions. These include approximately 150 new research and support jobs at DFCI's new facility at 27 Dry Dock Avenue and 250 clinical and support jobs as a result of the construction of the Center for Cancer Care.

Construction of the Center for Cancer Care, the Dana Infill Project, the Dana/Mayer Façade Improvements and the planned campus improvements will contribute directly to the local economy by providing construction employment opportunities. Approximately 280-320 full-time construction jobs are anticipated as a result of these projects. A Boston Residents Construction Employment Plan will be submitted in accordance with the Boston Jobs Policy. The Plan will provide that the proponent will make reasonable good-faith efforts to have at least fifty percent of the total employee work hours be by Boston residents, at least 25 percent of total employee work hours be by minorities and at least ten percent of the total employee work hours be by women.

In addition, over the next ten years, DFCI expects its workforce to grow at an annualized rate of approximately 6.2 percent (refer to Table 3-2 in Chapter 3). This level of growth would result in approximately 3,800 new positions being created by 2017.

9.5.4 Future DFCI Workforce Development Activities

DFCI is preparing a Workforce Development Plan in consultation with the BRA and the Office for Jobs and Community Services, with the following goals in mind: increasing the percentage of community residents, diversifying our workforce, and becoming a leader at exposing careers in health and science. Initiatives under consideration include the following:

Increasing the Community Pipeline:

- Develop a robust partnership with community-based organizations, such as Hispanic Office of Planning and Evaluation in Jamaica Plain. This will strengthen our community pipeline by establishing closer relationships.
- Utilizing DFCI vans, establish mobile job fairs and career information sessions.
- Facilitate career development presentations/seminars at community-based organization and provide career consultation.
- Establish a comprehensive volunteer program, "Volunteers for Health Careers," in which DFCI employees in clinical positions provide information about their careers to youth, incumbent workers, and/or community residents through activities such as presentations, job shadows, internships, and mentoring.
- Increase participation in career development classes at DFCI for incumbent workers.
- Hold an annual Health Day for the community in which both health information and career information would be showcased.

Investing in Education and Training for Our Incumbent Workforce

- Develop targeted outreach for contract employees in the areas of health career exposure and educational opportunities provided through the Research and Training Institute and the DFCI training department.
- Support and celebrate incumbent employees who are successfully developing their careers.
- Provide individual career counseling and group career development seminars through the Harvard Medical School Center for Workforce Learning and Performance.
- Act as primary liaison with the Boston Research and Training Institute. Track and support employees who are moving along an educational plan from basic skills to pre-college classes to enrollment in college. Work with the Employment and Compensation Team to enhance career ladders.

Health Care Exposure through Youth Programs

- Develop a scholarship program for a few outstanding Boston Public School graduates each year who have successfully participated in DFCI programs and who have been accepted into a college health professions program.
- Collaborate with the Massachusetts State Science and Engineering Fair to create a linkage between DFCI scientists and researchers and students in the Boston area

- Partner with the United Way of Mass Bay's after-school Science, Math and Technology Initiative.
- Team with local middle schools to create excitement around science. DFCI researchers "go back" to the classroom to work with teachers and students for hands on clinical activities.
- Participate with MASCO and the John D. O'Bryant Schools of Mathematics and Science with the LMA Gateway Project, which is designed to enhance the teaching experience for the inner city youth interested in careers in medicine and science

9.6 Conclusion

The above discussion of consistency with the LMA Interim Guidelines shows that this IMP and the specific projects proposed – including the Center for Cancer Care, Campus and Existing Building Façade Improvements, Renovation and Infill of Existing Facilities, and Future Leased Space – are consistent with the guidelines. Any minor exceptions are justified as acceptable due to provision of Exceptional Public Benefits as part of Dana-Farber Cancer Institute programs. Overall, the IMP and the proposed DFCI projects fundamentally meet the spirit and the overarching urban design and development purposes of the LMA Interim Guidelines, as adopted by the BRA.

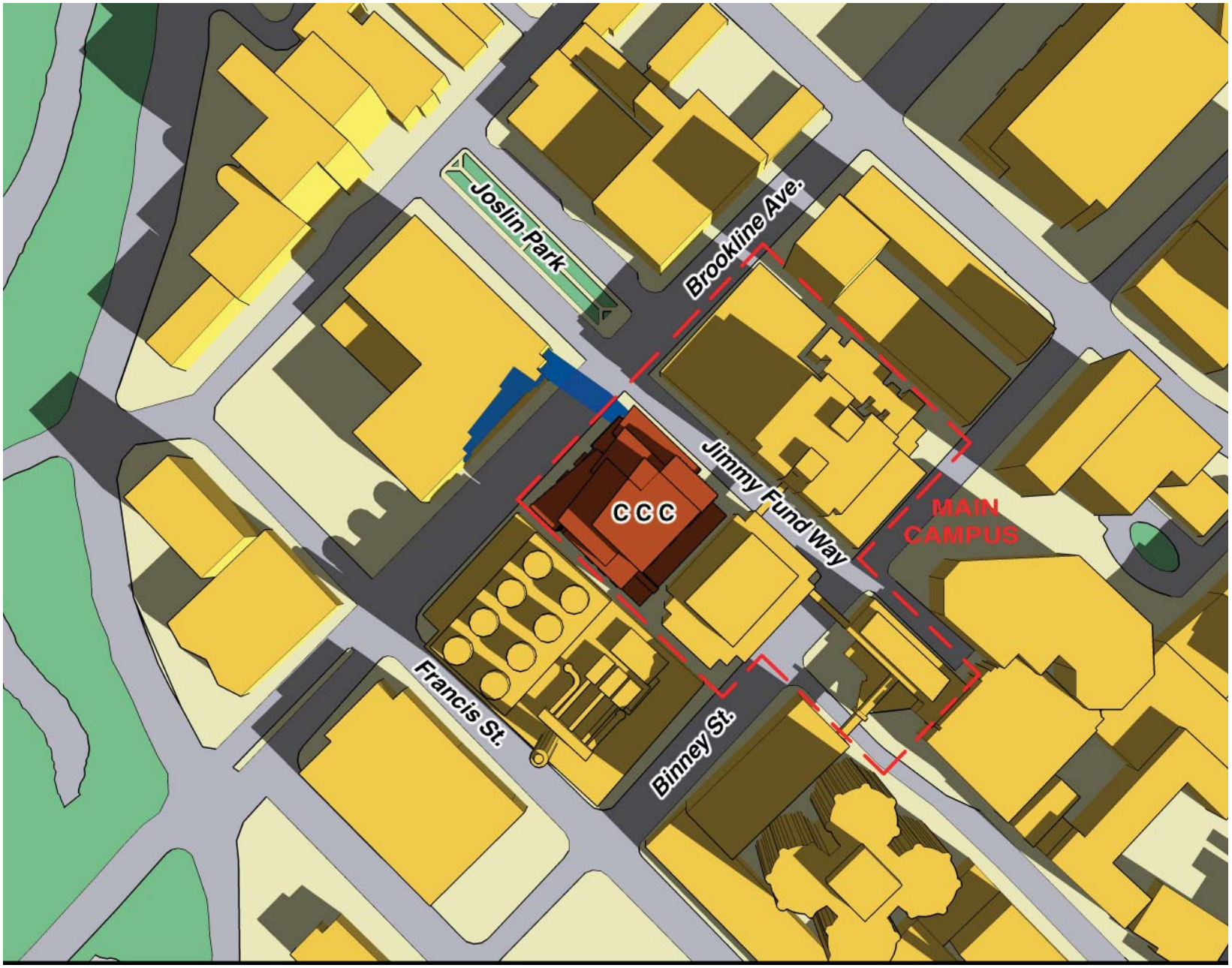
Table 9-2: Proposed Dana-Farber Cancer Institute Transportation Mitigation and Improvement Plan

	Mitigation Element	Description	Purpose/Benefit	Implementation Timing
Traffic Management Plan				
1	Patient Drop-off on Jimmy Fund Way	Provide a off-street drop-off along Jimmy Fund Way – which will be made available for first-time DFCI patients, chair cars, active taxis, and ambulances only.	Minimize street-side traffic conditions along JFW and Brookline Avenue	Certificate of Occupancy Center for Cancer Care Project
2	Below-Grade Drop-off on P1.	Implement a drop-off on P1 of the new Center for Cancer Care.	Improve patient experience at DFCI. Provide simplified wayfinding to desired points in the DFCI campus.	Certificate of Occupancy Center for Cancer Care Project
3	Loading and Service Improvements	Reconfigure the DFCI Smith Loading Dock to include 2 additional loading bays.	Improve off-street loading conditions, eliminate potential illegal loading along Brookline Avenue.	Late 2007
4	Off-Site Materials Management Actions	Implement an off-site Materials Management Center in 27 Dry Dock Avenue.	Allows for "just in time" delivery techniques, which will reduce trucks trip frequency and dock utilization times.	2008
Local Street Network / System-wide Transportation Improvements				
5	Brookline Ave/Jimmy Fund Way/Deaconess Rd Signal Improvements	Modify the existing traffic signal operations to accommodate a protected left-turn movement from Brookline Avenue to Jimmy Fund Way. Modifications will include provision of a new traffic controller, mast arms, signal posts, pedestrian signals, crosswalks, and signage.	Will improve patient wayfinding and safety in the area.	Certificate of Occupancy Center for Cancer Care Project
6	Brookline Ave/Jimmy Fund Way/Deaconess Rd Pedestrian Improvements	Modify corner radii at the intersection, install ADA-compliant accessible ramps, include countdown pedestrian indications in the new signal design.	Improve pedestrian safety.	Certificate of Occupancy Center for Cancer Care Project
7	Widen Jimmy Fund Way	Widen Jimmy Fund Way to include two approach lanes at its intersection with Brookline Avenue.	Will decrease traffic queues on JFW and provide an improved traffic flow along both JFW and Binney Street.	Certificate of Occupancy Center for Cancer Care Project

	Mitigation Element	Description	Purpose/Benefit	Implementation Timing
8	Area Sidewalk Improvements	Reconstruct widened sidewalks along Brookline Avenue adjacent to the project site and along both sides of Jimmy Fund Way.	Improve pedestrian access, safety, and urban design of the area.	Certificate of Occupancy Center for Cancer Care Project
9	PTZ Camera Installation	Install an interconnected pan-tilt-zoom traffic monitoring camera at the intersection of Brookline Avenue/Jimmy Fund Way/Deaconess Road.	Improve traffic and incident management system for the City of Boston.	Certificate of Occupancy Center for Cancer Care Project
Urban Design				
10	Center for Cancer Care Pedestrian Plaza	Provide significant public space at the entrance to the Center for Cancer Care at the intersection of Brookline Avenue/Jimmy Fund Way.	Provide public space enhancement that complements open space at Joslin Park	Certificate of Occupancy Center for Cancer Care Project
11	Jimmy Fund Way Urban Design Improvements	Provide street trees and other hardscape amenities along Jimmy Fund Way.	Provide public space enhancement to the DFCI campus.	Certificate of Occupancy Center for Cancer Care Project
Parking Ratios				
12	Limit new on-site parking to be constructed as part of the IMP	DFCI IMP projects will include construction of 217 parking spaces for 290,050 SF of development..	Resultant parking ratio for the DFCI IMP will be 0.75 spaces per 1,000 SF that complies with the ratio that has been established by the BTD within the LMA Interim Guidelines.	Certificate of Occupancy Center for Cancer project
13	Convert employee parking to patient parking	Convert existing employee parking spaces to patient parking spaces.	Maintain quality patient care/customer service. Reduce peak hour traffic volumes. Minimize need to construct new on-campus parking spaces.	As needed during the term of the IMP
14	Employee Parking Pricing	Evaluate and charge market rates for monthly employee parking.	Encourage shift employee mode share from auto to transit. Will help to curb parking demands.	Immediate

Table 9-2 (Continued): Proposed Dana-Farber Cancer Institute Transportation Mitigation and Improvement Plan

	Mitigation Element	Description	Purpose/Benefit	Implementation Timing
Transportation Demand Management Plan				
15	Maintain proactive relationship in MASCO's CommuteWorks TMA	Maintain access to wide array of TDM programs and amenities that seek to encourage the use of transit as a regular means of commuting.	Encourage shift in employee mode share from auto to transit.	Ongoing
16	Maintain high percentage employee transit subsidy	Maintain employee/tenant transit subsidy at 50 percent.	Encourage shift in employee mode share from auto to transit.	Increased November 2005
17	Zip Car Provision	Coordinate with ZipCar representatives to provide one ZipCar vehicle on the DFCI campus.	Encourage shift in employee mode share from auto to transit.	Certificate of Occupancy Center for Cancer project
18	Loading Dock Manager	Oversee loading operations.	Oversee delivery scheduling to maintain dock efficiency and reduce truck queuing.	Certificate of Occupancy Center for Cancer project
Sustainability				
19	Install charge stations for hybrid vehicles	Allocate preferential parking spaces for hybrid and other alternatively-fueled vehicles.	Encourage the use of alternatively fueled vehicles.	Certificate of Occupancy Center for Cancer Care project
Construction Management				
20	Prepare Construction Management Plan	Prepare and submit a detailed Construction Management Plan (CMP) for the Center for Cancer Care project	Minimize construction impacts.	Completed



DANA-FARBER CANCER INSTITUTE
INSTITUTIONAL MASTER PLAN

Shadow Study
March 21 - 9am

FIGURE C-1

DANA-FARBER CANCER INSTITUTE
INSTITUTIONAL MASTER PLAN

Shadow Study
March 21 - 12pm

FIGURE C-2

DANA-FARBER CANCER INSTITUTE
INSTITUTIONAL MASTER PLAN

Shadow Study
March 21 - 3pm

FIGURE C-3

DANA-FARBER CANCER INSTITUTE
INSTITUTIONAL MASTER PLAN

Shadow Study
June 21 - 9am

FIGURE C-4

DANA-FARBER CANCER INSTITUTE
INSTITUTIONAL MASTER PLAN

Shadow Study
June 21 - 12pm

FIGURE C-5

DANA-FARBER CANCER INSTITUTE
INSTITUTIONAL MASTER PLAN

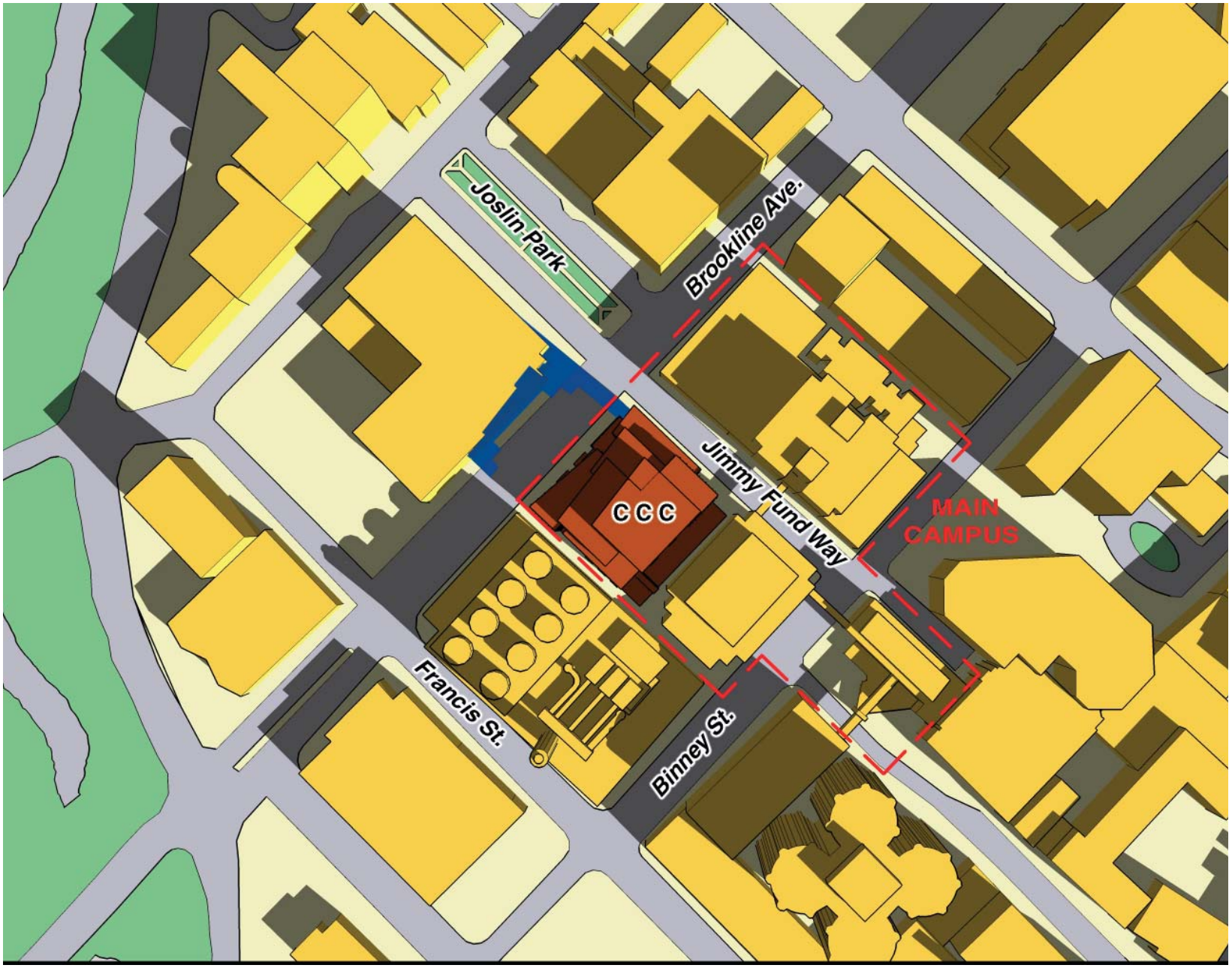
Shadow Study
June 21 - 3pm

FIGURE C-6

DANA-FARBER CANCER INSTITUTE
INSTITUTIONAL MASTER PLAN

Shadow Study
June 21 - 6pm

FIGURE C-7



DANA-FARBER CANCER INSTITUTE
INSTITUTIONAL MASTER PLAN

Shadow Study
September 21 - 9am

FIGURE C-8

DANA-FARBER CANCER INSTITUTE
INSTITUTIONAL MASTER PLAN

Shadow Study
September 21 - 12pm

FIGURE C-9

DANA-FARBER CANCER INSTITUTE
INSTITUTIONAL MASTER PLAN

Shadow Study
September 21 - 3pm

FIGURE C-10

DANA-FARBER CANCER INSTITUTE
INSTITUTIONAL MASTER PLAN

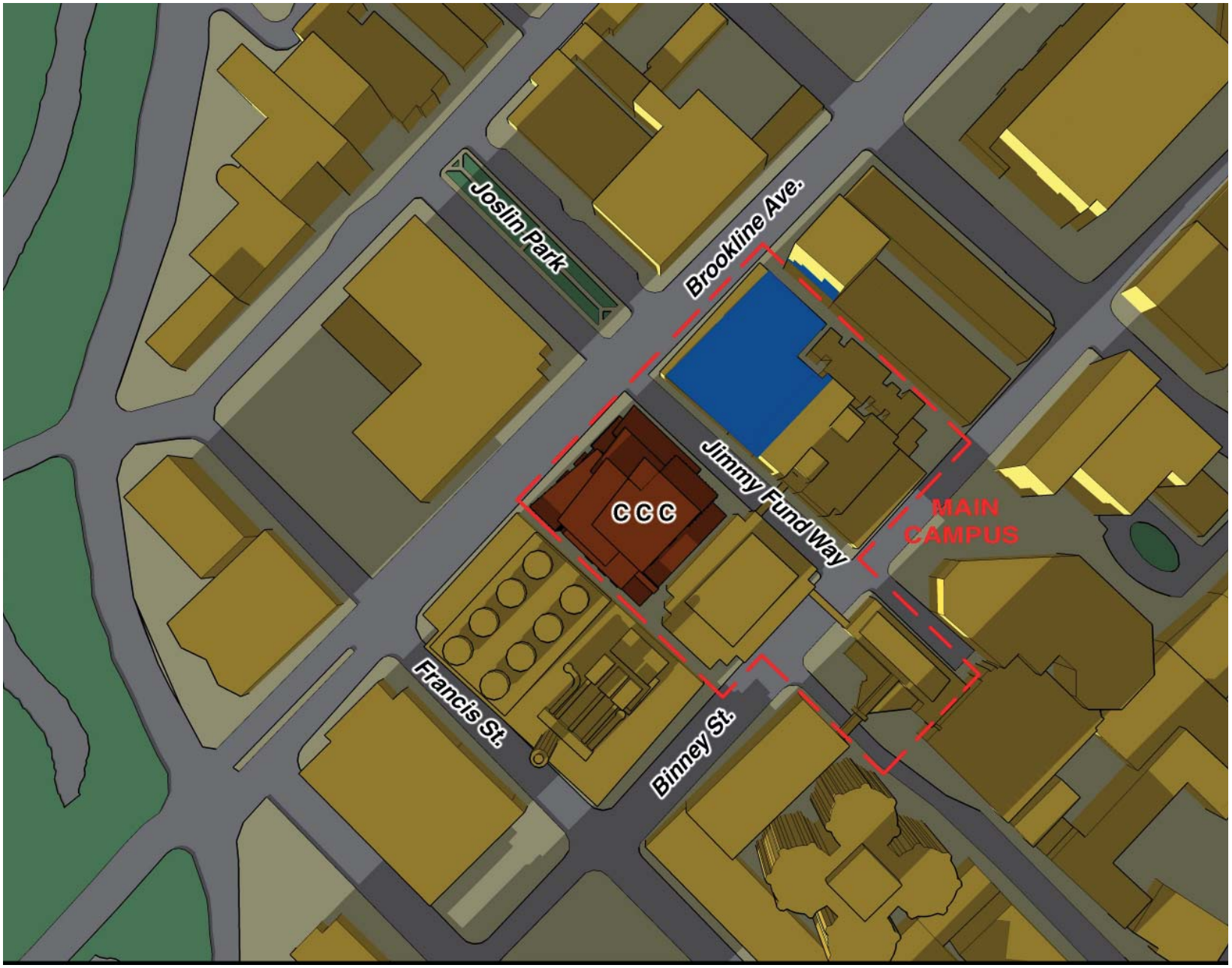
Shadow Study
December 21 - 9am

FIGURE C-11

DANA-FARBER CANCER INSTITUTE
INSTITUTIONAL MASTER PLAN

Shadow Study
December 21 - 12pm

FIGURE C-12



DANA-FARBER CANCER INSTITUTE
INSTITUTIONAL MASTER PLAN

Shadow Study
December 21 - 3pm

FIGURE C-13